

Ms Lisa Bradley
Department of Environment, Parks and Water Security
GPO Box 3675,
DARWIN, NT 0801

Dear Ms Bradley

Re: Tiwi H2 Project – Provaris Energy Ltd - Referral under the *Environment Protection Act 2019*

The Department of Environment, Parks and Water Security (DEPWS) has assessed the information contained in the above application and provides the following comments:

Flora and Fauna Division

There are a large number of threatened species that potentially occur (or are known to occur) within the project area. For many of these species, the Flora and Fauna Division is satisfied that the Referral provides sufficient information to demonstrate that there is a low likelihood of significant impact from the proposal.

The Fauna and Flora Division has identified information gaps and uncertainties relating to the potential risk to some threatened species. Recommendations for further information that will assist in clarifying these risks are outlined in Appendix 1.

Rangelands Division

Land Assessment Unit

The disturbance of land with an acid sulfate soil risk should be avoided, however if disturbance is necessary for a proposed development area, then an acid sulfate soil field investigation will be required.

The investigation must be undertaken by a suitably qualified and experienced professional, in accordance with the *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines v4.0 (Dear et al. 2014)* or the *Western Australian Acid Sulfate Soils Guideline Series (DER 2015)*. Essential to an investigation is the requirement for Chromium Reducible Sulfur (CRS) soil testing at an appropriate site density and to a soil depth immediately below the proposed disturbance.

If acid sulfate soils are detected through CRS testing, and exposure of these soils is still unavoidable then an acid sulfate soil management plan is required. The acid sulfate soil management plan will include the following:

- exact location of the proposed disturbance;
- depth and volume of soil to be disturbed (m³);
- clearly presented CRS results;
- acid base accounting results which clearly indicate an accurate liming rate;

- appropriately designed treatment pads;
- lime/soil mixing regimes; and
- an appropriate monitoring program

Vegetation Assessment Unit

A permit under the *Planning Act 1999*, will be required for all instances where native vegetation is required to be cleared (including within the export precinct if any clearing is required). The proposed footprint shows several potential instances of non-conformance with the NT Planning Scheme and Land Clearing Guidelines (LCG), including, but not limited to, retention of sensitive and significant vegetation, riparian vegetation, watercourses and threatened species habitat (wildlife corridors) and road buffers.

Section of Referral	Theme or issue	Comment
1.4.1 Relevant NT legislation	Clearing native vegetation – permit required (EIS Factor: LAND)	<p>Pursuant to section 51(1)(a) of the <i>Planning Act 1999</i> the consent authority must take into account, any planning scheme that applies to the land to which the application relates. The proposed development footprint is subject to the NT Planning Scheme Clearing of Native Vegetation (CNV) overlay and a permit (clearing permit) is required for the clearing of native vegetation.</p> <p>There are no existing clearing permits within the proposed project footprint. While Referral Section 1.4.1 acknowledges the requirement for a clearing permit for clearing native vegetation to develop the solar precinct, transmission line corridor and H2 production precinct, the spatial data provided shows native vegetation present within the proposed export precinct footprint. If this vegetation is to be cleared, a permit will be also be required for those areas.</p> <p>Prior to submitting an application for a clearing permit it is advised contact is made with the Vegetation Assessment Unit to discuss the application requirements.</p> <p>An application for a clearing permit should be submitted to DEPWS via Development Applications Online¹.</p> <p>Information about how to apply for a clearing permit is available online²:</p> <p>Please contact the Vegetation Assessment Unit on (08) 8999 4446 for further advice.</p>
Spatial Data 2.1 Key elements Appendix B: Executive Summary	Proposed footprint - inconsistencies (native vegetation clearing requirements)	<p>It is unclear if there any native vegetation will be required to be cleared within the proposed export precinct, as there appears to be inconsistencies within the referral, attachments and spatial data. Any areas that require the clearing of native vegetation should be more clearly defined. Additionally, areas of remnant vegetation within the spatial data footprints provided for the export and H2 production precinct boundaries do not align with the proposed infrastructure areas.</p> <ul style="list-style-type: none"> • Section 2.1 of the referral report states the export precinct will be “within 32ha Port Melville lease area, including 5ha of native vegetation • Appendix B, the Terrestrial Ecology report Executive Summary states proposed export precinct is “within 32ha of the Port Melville lease and 0.9ha of native vegetation.” • Section 2.2 of the Terrestrial Ecology report describes 4.5ha remnant native vegetation, of which 0.9ha is to be cleared.

¹ <https://www.ntlis.nt.gov.au/planning>.

² <https://nt.gov.au/property/land-clearing/freehold-land/apply-to-clear-freehold-land>

	<ul style="list-style-type: none"> • Section 2.6 the Terrestrial Ecology report describes 3.2ha of native vegetation within the export precinct, where the <i>Typhonium</i> are found. • Although Tables 4.1 and Section 9.2.2 indicate that the footprint has been amended to avoid impacts to <i>Typhonium</i> sp., the spatial data provided still shows these areas within the export precinct boundary (although outside areas of proposed infrastructure). <p>Clause 3.2.6(f) of the NT Planning Scheme requires that applications for vegetation clearing should consider whether the clearing is necessary for the intended use. If these areas are included within the proposal, the proposed use for these areas should be specified. Areas that are not intended for use or clearing should be excluded from the proposed footprint. An application to clear native vegetation (as required under the <i>Planning Act 1999</i>) should be accompanied by spatial data showing the specific area to be cleared and the proposed use of that area.</p> <p>More information about the minimum spatial data requirements for applications to clear native vegetation can be found online³.</p>
<p>General</p> <p>Potential non-conformance with Land Clearing Guidelines</p>	<p>Applications for clearing permits are subject to assessment in accordance with the NT Planning Scheme. Pursuant to sections 3.2(5) of the NT Planning Scheme, the clearing of native vegetation is to:</p> <ul style="list-style-type: none"> (a) avoid impacts on environmentally significant or sensitive vegetation; (b) be based on land capability and suitability for the intended use; (c) avoid impacts on drainage areas, wetlands and waterways; (d) avoid habitat fragmentation and impacts on native wildlife corridors; and (e) avoid impacts on highly erodible soils. <p>Sections 3.2(6) requires an application for the clearing of native vegetation to demonstrate consideration of the environment, cultural and heritage factors as well as the NT Planning Scheme Land Clearing Guidelines (LCG).</p> <p>The proposed footprint shows several potential instances of non-conformance with the NT Planning Scheme and the LCG, including but not limited to retention of sensitive and significant vegetation, riparian vegetation, watercourses and threatened species habitat (wildlife corridors) and road buffers. It is noted that in many instances justification and mitigation measures have been provided. These are covered in more detail in the following comments.</p> <p>For more information, refer to the NT Planning Scheme Land Clearing Guidelines available online⁴.</p>
<p>9.2.3 – Potential Impacts</p> <p>‘Direct loss of significant wetland and riparian vegetation due to land clearing for the</p>	<p>Impacts on Sensitive/significant vegetation - drainage lines, wetlands, GDEs, riparian vegetation and riparian rainforest and hollow bearing trees</p> <p>Pursuant to NT Planning Scheme 3.2.5(a) and (c) clearing of native vegetation is to avoid impacts on environmentally significant or sensitive vegetation, drainage areas, wetlands and waterways. The LCG define sensitive or significant vegetation communities such as rainforest, vine thicket, closed forest or riparian vegetation, and includes vegetation containing large trees with hollows suitable for fauna habitat.</p> <p>The LCG (Section 4.4) state that the minimum acceptable width of buffers depends on the value of the wetland and the risks posed by the clearing and recommend:</p> <ul style="list-style-type: none"> • Drainage depressions should be buffered from the outer edge of the drainage depression by 25m. • The recommended buffer on wetlands and Groundwater Dependant Ecosystems (GDEs) depends on their value, with buffers of 50, 100 and

³ <https://nt.gov.au/property/land-clearing/freehold-land/apply-to-clear-freehold-land/spatial-data-for-clearing-applications>

⁴ https://nt.gov.au/_data/assets/pdf_file/0007/236815/land-clearing-guidelines.pdf

Transmission Line Corridor.'	Transmission corridor and production precinct	<p>250m from the outer edge of riparian vegetation for wetlands and GDEs) for low, medium and high value sites respectively.</p> <ul style="list-style-type: none"> • Similarly, the recommended buffer on significant and sensitive vegetation depends on their value, with buffers of 50, 100 and 250m for low, medium and high value sites respectively. • Vegetation considered sensitive/significant on the basis of the density of large trees with hollows suitable for fauna will be attributed a default value of 'high' and require a 250m buffer. • Where conflicting recommendations are provided in the LCG the precautionary principle should be applied (i.e. the larger buffer applied).
	(EIS Factor: LAND and WATER)	<p>Appendix B notes both a spring fed and dry rainforest occur 'adjacent' to the proposed footprint. A desktop review indicates that these potentially occur less than 50m from the proposed project boundary. Appendix B also notes large hollow-bearing trees in the areas proposed for the Transmission Line Corridor and the Hydrogen Production Precinct.</p>
		<p>There are seven water crossings in the Transmission Line Corridor, namely Blue Water Creek (stream order 1, with riparian rainforest present), three unnamed first-order seasonal drainage lines and three wetlands which include high potential for GDEs.</p>
		<p>It is noted that mitigation measures are proposed, including placement of transmission towers, pruning techniques, using a helicopter to string the cables and avoidance of clearing shrubs below 1m.</p>
		<p>The referral report Table 9.2.3 claims that impacts to these areas will be avoided due to the 450m spacing of the towers.</p>
		<p>However, depending on the width of the wetland and associated riparian vegetation the 450m spacing of the 30x30m clearing area for each tower may result in tower placement within the recommended buffer, or within the wetland itself. For example, desktop assessment indicates that 'wetland 2' could be approximately 500m wide where the proposed transmission corridor intersects.</p>
		<p>While tower placement may reduce impacts in most instances, impacts are not avoided and the removal of trees in a 50m corridor through these sensitive areas constitutes land clearing. According to the LCG, 'clearing of native vegetation 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.' Therefore, the removal of trees within a 50m corridor constitutes clearing and the LCG applies.</p>
		<p>The proposal indicates impacts will be managed during construction through standard Erosion and Sediment Control (ESC) measures. However, if some intersecting sensitive areas cannot be avoided, these areas may require specific controls, and further advice from the Land Management Unit should be sought in the development of an ESC plan. Clearing practises in the transmission corridor are described. Clearing within other areas should be best practice. More information can be found online⁵.</p>
		<p>Impacts associated with the transmission corridor should be considered within the context of site selection for the solar precinct, which is only briefly justified in the referral report. Desktop review indicates plantations much closer to the production and export precinct than the ones selected for the solar precinct which is 30km away. If feasible, choosing a closer location for the solar precinct, could potentially reduce impacts significantly.</p>

⁵ <https://nt.gov.au/environment/soil-land-vegetation/soil-management-erosion-sediment-control>

		<p>Where activities within sensitive areas cannot be avoided, appropriate measures for erosion and sediment control should be developed.</p> <p>See the Land Clearing Guidelines for more information online⁶</p>
9.2.3 potential impacts	Native vegetation clearing for the solar precinct - wildlife corridors	The three proposed transmission lines that cross the existing wildlife corridor between the larger solar precinct clearing areas may not conform with recommendations for wildlife corridors in the LCG (Section 4.4.10), and adequate justification and mitigation strategies may be required.
5.2 Transmission lines	Road buffers	<p>Section 4.3.5.1 of the LCG states that for land adjoining a NTG road reserve, Transport and Civil Services Division of the Department of Infrastructure, Planning and Logistics (DIPL) generally recommend the following:</p> <ol style="list-style-type: none"> 1. 'where the land proposed for clearing is adjacent to a public road reserve, the developer shall retain a vegetated buffer, a minimum of 50m wide as native vegetation or established groundcover, to reduce overland flow 2. the clearing and future use of the land shall not prevent or impede the drainage of the public road reserve through the blocking of offlet drains or natural drainage channels.' <p>The developer should refer to the relevant local council for advice regarding road networks owned by local council.</p> <p>Note: Where conflicting recommendations are provided in the LCG the precautionary principle should be applied (i.e. the larger buffer applied).</p>

Land Management Unit

The Land Management Unit provide the following comments:

Section of Referral	Theme or issue	Comment
2.4 & 5.1 Solar Precinct	Erosion and Sediment Control	<p>Land resource information SRTM DEM indicates slope between 2-3% and areas of slope >3% occurring within the proposed Solar Precinct. The Land Clearing Guidelines (LCG) describe erosion risk associated with clearing slope 2 to 3% as high and >3% very high and highlights these areas would require very careful and detailed planning, and intensive on-going management to prevent erosion and land degradation. The LCGs recommend in instances where exclusion of land with slope greater than 2% is deemed to be unfeasible, the proponent will be required to demonstrate the reasons why exclusion is not feasible and how the risk will be mitigated.</p> <p>Clearing method and timing has not been described by the proponent. The LCGs require the proponent to demonstrate best practice will be adopted and every clearing operation should comply with best practice. Best practice clearing methods (at a minimum) include:</p> <ul style="list-style-type: none"> • Clearing when soil moisture conditions are optimal; • Working machinery across the slope; • Timing and staging works to minimise exposure of bare soil; and • Removing windrows and machinery tracks.

⁶ https://nt.gov.au/_data/assets/pdf_file/0007/236815/land-clearing-guidelines.pdf

The proponent has described a buffer zone of up to 50m is being considered between the surrounding native vegetation and the edge of the solar farm, to account for sun shading and to act as a firebreak. Works required for the establishment and maintenance of a buffer/firebreak should be included in the project Erosion and Sediment Control Plan (ESCP). Vegetation clearing associated with the creation of a buffer zone/fire break should be undertaken utilising minimum disturbance clearing methods to maximise the retention of stabilising groundcover e.g. slashing, blade up clearing or mulching.

The development is scheduled to occur over two years and will involve significant disturbance during the clearing and construction phases including excavation, cutting and filling, drainage works, construction of access roads, hardstand areas, fencing, stockpiling with a number of gravel pits potentially being created resulting in an extreme erosion risk.

The referral describes sowing native grasses between solar panels across as much of the solar precinct as practicable. The application, establishment and maintenance of suitable, stable long term cover must be considered and implemented for all disturbed areas including drains, batters and hardstand areas. Details of types, application and maintenance of temporary and permanent cover must be included in an ESCP for the project. The end land use should also be considered in order to determine decommissioning and rehabilitation requirements for the project area.

Land resource information SRTM DEM indicates some slope between 2-3% approximately midway along the proposed transmission line corridor and areas of 3-5% slope along the southern portion of the corridor. The LCGs describe erosion risk associated with clearing slope 2 to 3% high and >3% very high and highlights these areas would require very careful and detailed planning, and intensive on-going management to prevent erosion and land degradation. The LCG recommend in instances where exclusion of land with slope greater than 2% is deemed to be unfeasible, the proponent will be required to demonstrate the reasons why exclusion is not feasible and how the risk will be mitigated.

The referral identifies 7 waterway crossings along the proposed transmission line corridor. Land resource information and aerial imagery show these features along with another potential drainage line associated with a first order stream approximately 1.07km to the north of what has been described in the referral as *Drainage Line 1*. The LCG recommend 25m buffers be retained over drainage depression and first order streams and buffers of 50m, 100 and 250m be retained over low, medium and high value wetlands. The proponent must ensure that native vegetation buffers to waterways are maintained in accordance with LCG recommendations.

Works associated with the development of the transmission line includes clearing areas of approximately 30mx30m to accommodate the construction of transmission towers and the construction of access tracks to each tower. The remaining vegetation within the corridor is proposed to be cut at ground level leaving the roots in situ with low shrubs under 1m being retained. DEPWS supports minimal disturbance clearing methods to maximise the retention of ground cover. However, the creation of access roads and other ground disturbing activities should be carried out in such a way as to minimise the

**2.5 & 5.2
Transmission
on Line**

Erosion
and
Sediment

	<p>erosion risk and in accordance with the project Erosion and Sediment Control Plan (ESCP).</p> <p>Land resource information SRTM DEM indicates slope between 2-3% and >3% occurring within the proposed H2 production and export precinct. The LCG describe erosions risk associated with clearing slope 2 to 3% high and >3% very high and highlights these areas would require very careful and detailed planning, and intensive on-going management to prevent erosion and land degradation. The LCG recommend in instances where exclusion of land with slope greater than 2% is deemed to be unfeasible, the proponent will be required to demonstrate the reasons why exclusion is not feasible and how the risk will be mitigated.</p>
<p>5.3 H2 Production and Export Precincts</p>	<p>The development of the H2 production and export precinct will result in significant disturbance and is likely to include clearing of native vegetation, earthworks works involving excavation, cutting and filling, drainage works, the construction of access roads, hardstand areas, stockpiles, fences and firebreaks with the likelihood of gravel pits being created. These activities combined with the size of the development will result in an extreme erosion risk.</p> <p>The south eastern boundary of the H2 production and export precinct is situated adjacent to an area identified through land resource information as spring fed rainforest. Construction activities likely to be associated with the development of the H2 production and export precinct may lead to habitat degradation through altered surface water hydrology, accelerated erosion and sediment deposition. The LCG recommend sensitive/significant vegetation types be assessed for the values they possess and appropriate buffers (low value 25m, medium value 100m and high value 250m) be retained.</p>
<p>General Comment Soils</p>	<p>Soils within the proposed project areas have not been described in the referral. A suitable soil sampling regime should be implemented prior to disturbance to determine amongst other things the erosivity, sodicity (percentage sodium) and potential for acid sulphate soils (PASS) within the project area. This information should be available for utilisation in the ESCP so appropriate remediation and mitigation measures can be developed and implemented.</p>

Recommendation

Considering the extreme risk of erosion associated with the clearing, construction and operation of the Tiwi H2 Project the Land Management Unit recommends any subsequent environmental approval should include the following conditions.

Prior to the commencement of works, a Type 3 Erosion and Sediment Control Plan (ESCP) must be developed in accordance with the Department of Environment, Parks and Water Security Erosion and Sediment Control Plan (ESCP) procedures available at <https://depws.nt.gov.au/rangelands/technical-notes-and-fact-sheets/land-management-technical-notes-and-fact-sheets>. The ESCP must be certified by a Certified Professional in Erosion and Sediment Control (CPESC), and must be subsequently reviewed and approved by an independent CPSEC auditor; to the satisfaction of the approving authority. The auditor-approved ESCP should be submitted for acceptance prior to the commencement of any ground disturbing activities (including clearing and early works) to the approving authority.

All works relating to this approval must be undertaken in accordance with the endorsed Type 3 Erosion and Sediment Control Plan (ESCP) to the requirements of the approving authority. Should the endorsed Type 3 Erosion and Sediment Control Plan (ESCP) need to be amended, the revised ESCP must be developed and

certified by a Certified Professional in Erosion and Sediment Control (CPESC), and must be subsequently reviewed and approved by the independent CPESC auditor; to the satisfaction of the approving authority.

Onsite implementation of the endorsed Type 3 Erosion and Sediment Control Plan (ESCP) must be regularly monitored and reported on by the CPESC auditor in accordance with the audit schedule in the ESCP to ensure erosion and sediment control management is in accordance with the endorsed ESCP and is effective; to the satisfaction of the approving authority.

All reasonable and practicable measures must be undertaken to prevent: erosion occurring onsite, sediment leaving the site, and runoff from the site causing erosion offsite. Appropriate erosion and sediment control measures must be effectively implemented throughout the construction phase of the development (including clearing and early works) and all disturbed soil surfaces must be satisfactorily stabilised against erosion at completion of works, to the satisfaction of the approving authority on advice from the CPESC auditor. For further information refer to the information below.

Note: Information regarding erosion and sediment control can be obtained from the IECA Best Practice Erosion and Sediment Control 2008 books available at www.austieca.com.au and the Department of Environment, Parks and Water Security ESCP Standard Requirements 2019 and Land Management Factsheets available at <https://nt.gov.au/environment/soil-land-vegetation>. For further advice, contact the Development Coordination Branch: (08) 8999 4446.

Weed Management Branch

The Weed Management Branch provide the following comments:

Section of Referral	Theme or issue	Comment
General Comment	<p>Weed management as it pertains to EPA themes:</p> <ul style="list-style-type: none"> World Heritage properties • National Heritage places • Wetlands of international importance (listed under the Ramsar Convention) • Listed threatened species and ecological communities • Migratory species protected under international agreements 	<p>Relative to weeds, the proposal does have the potential to have significant environmental impact through the introduction and spread of weeds on to Melville Is. Weeds are capable of adversely affecting social, cultural, physical, biological and economic interests on the Island. The species <i>Andropogon gayanus</i>, <i>Cenchrus polystachios</i>, <i>Cenchrus pedicellatus</i> are identified as components of the Key Threatening Process 'Invasion of northern Australia by Gamba Grass and other introduced grasses' listed under the Commonwealth legislation the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) and do occur on the Tiwi Island at varying levels.</p>
Section 10	Weeds	<p>Degradation and or loss of "Land, Water and People" environmental objectives is possible from weed introduction and/or spread on Island. The referral does discuss this threat in a limited capacity but is not comprehensive about how this will be managed.</p> <p>In Section 10 of the referral, five of the nine Matters of National Environmental Significance (MNES) protected under</p>

	<p>the EPBC Act could be adversely affected by weeds (Key Threatening Process). The five matters are:</p> <ul style="list-style-type: none"> • World Heritage properties • National Heritage places • Wetlands of international importance (listed under the Ramsar Convention) • Listed threatened species and ecological communities • Migratory species protected under international agreements <p>The proponent does mention some of the potential adverse impacts of weeds that could occur as a result of the project. The proponent claims that these potential adverse impacts will be managed through a Weed and Groundcover Management Plan. No Plan was provided.</p> <p>To address the specific threats posed by weeds to the identified values will require a comprehensive weed management plan.</p>
<p>General Comment Weeds</p>	<p>DEPWS Weed Management Branch recommends the following specific information and or documentation to be developed and implemented pre, during and post construction including the operational phase of the project:</p> <ol style="list-style-type: none"> 1. comprehensive weed management plan that, at a minimum, addresses: <ol style="list-style-type: none"> a) Weed control prior to construction phase (reduce weed seed load within and adjacent to project areas); b) Hygiene procedures for all items coming on to the Island. How will this be assured and monitored; c) Managing weed spread of weed species already present in and adjacent to the project areas and corridors (power lines, roads and tracks etc.); d) If soil/sand or 'fill' or other construction elements are brought in from elsewhere (i.e. the mainland) to the project area, how the proponent intends to ensure that these items are free of weed seeds or plant parts; e) Current weed management aspirations of the Tiwi Is Rangers and Tiwi Land Council; f) The timing and management of weeds in the project areas and adjacent areas; g) Detection and management of new weed species incursions in the project areas; h) Assessing effectiveness of the implementation of the weed plan and capacity of the plan to be dynamic if the

	<p>aims and goals of the plan and statutory obligations are not being met;</p> <p>i) Statutory weed management requirements including all relevant NTG statutory weed management plans;</p> <p>j) If the EPBC Act is applicable to this project then requirements of the Threat Abatement Plan to reduce the impacts on northern Australia's biodiversity by the five listed grasses should be met;</p> <p>k) Ongoing weed management and weed monitoring post construction (operational phase).</p> <p>2. Implementation and monitoring of a - k above.</p>
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Water Resources Division

The Water Resources Division provides the following advice in relation to the EIS for Tiwi H2 Project – Provaris Energy Ltd on NT Portion 1644.

General comments:

The project is located outside of a Water Control District, and therefore outside of a water allocation plan area, and no beneficial uses apply to the area.

Directed comments:

Comment	EMP section / topic	Comment
1	Surface Water	<p>No flood or storm surge extent mapping exists for the solar precinct area, however risks from riverine flooding or storm surge for the proposed location is minimal. No significant changes to runoff or infiltration are expected due to the existing surface cover being retained. Potential for increased risk of sediment runoff into waterways due to ground disturbance during the construction phase should be investigated and managed, however sufficient buffer appears to exist between the proposed development area and headwaters for nearby waterways.</p>
2	Groundwater	<p>The Water Assessment Branch (Groundwater) has no major concerns regarding the H2 Production Precinct.</p> <p>The proponent has recognised potential impacts to Pirlangimpi's water supply and have made arrangements with PWC to ensure that if water quality and water availability are impacted they will consult with PWC to alleviate the impact. Thus, the only general comments for groundwater are provided below:</p> <p>While no substantive impacts are expected, and although consultation with PWC has been mentioned - there has been no statement regarding a monitoring plan/regime to determine the</p>

			<p>effects of construction and water extraction are having on the aquifer system.</p> <p>How to fix: To ensure groundwater levels and water quality are not impacted during and post construction a monitoring program - under the direction of PWC - should be devised.</p> <p>Furthermore, while the use of the 'Port' bore is temporary and not expected to drawdown the water supply, the proponent has not included the expected volumes to be extracted. It is difficult to assess the effects on the aquifer without knowing the expected volumes that will be pumped.</p> <p>How to fix: The proponent to advise on the expected groundwater extraction volumes from the Port bore.</p>
3	Licensing Regulation	and	<p>The project is not located within a water control district or water allocation plan area. Accordingly, no permit is required for investigative drilling, bore construction and work on an existing bore. However, all bore work must be undertaken by an NT licensed driller in accordance with the Minimum Construction Requirements for Water Bores in Australia. The final Statement of Bore must be provided to Water Resources via email to water.regulation@nt.gov.au.</p> <p>The proponent must be aware of the Power and Water 'bore protection zones' when constructing new bores for the completion of the project.</p>

Environment Division

Environment Regulation Branch

The action may require approvals and licences under NT legislation administered by the Environment Division such as the *Water Act 1992* (NT) and the *Waste Management and Pollution and Control Act 1998* (NT). See below information on when a secondary approval might be required.

All persons are required to comply at all times with the General Environmental Duty under section 12 of the *Waste Management and Pollution Control Act 1998* (NT). To help satisfy the General Environmental Duty, the proponent is advised to take notice of the list of environmental considerations below. The list is not exhaustive and the proponent is responsible for ensuring their activities do not result in non-compliance with NT laws.

1. **Waste.** If the proponent will collect, transport, store, recycle or treat listed wastes on a commercial or fee for service basis as part of the development or operations of the action, then an Environment Protection Approval or Licence may be required to authorise the activity under the *Waste Management and Pollution Control Act 1998* (NT).
2. **Dust.** The proposed activities have the potential to generate dust, particularly during the dry season. The proponent must ensure that nuisance dust and/or nuisance airborne particles are not discharged or emitted beyond the boundaries of the premises.

3. **Noise.** The proponent is to ensure that the noise levels from the proposed action comply with the latest version of the Northern Territory Environment Protection Authority Northern Territory Noise Management Framework Guideline available online⁷.
4. **Water.** If this action requires the discharge of waste to water or could cause water to be polluted then it is likely that a secondary authorisation is required, such as a waste discharge licence under the *Water Act* (NT). Without authorisation, the proponent must ensure that there is no discharge of contaminated water from the premises into the groundwater or any surface waters. Guidance on waste discharge licences is available online⁸.
5. **Erosion and Sediment Control.** The proponent must ensure that soil erosion control measures are employed throughout the construction stage of the development in accordance with Northern Territory Environment Protection Authority publications: *Guidelines to Prevent Pollution from Building Sites and Keeping Our Stormwater Clean*, available online⁹.
6. **Storage.** If an Environment Protection Approval or Environment Protection Licence is not required, the proponent should store liquids only in secure bunded areas in accordance with VIC EPA Publication 1698: *Liquid storage and handling guidelines*, June 2018, as amended. Where these guidelines are not relevant, the storage should be at least 110% of the total capacity of the largest vessel in the area. Where an Environment Protection Approval or Environment Protection Licence is required, the proponent must only accept, handle or store at the premises listed waste, including asbestos, as defined by the *Waste Management and Pollution Control Act 1998* (NT), in accordance with that authorisation.
7. **Site Contamination:** The development proposal relates to a change of land use, which triggers the requirement for a contaminated land assessment, in accordance with the *National Environment Protection (Assessment for Site Contamination) Measure* (ASC NEPM). In order to facilitate protection of public health and the environment and ensure that the land is fit for purpose, the proponent must ensure that a Statement/Certificate of Environmental Audit is provided to the NT EPA in accordance with the *Northern Territory Contaminated Land Guideline, 2017*. The Statement/Certificate of Environmental Audit must be prepared by a suitably qualified person in accordance with section 68 of the *Waste Management and Pollution Control Act 1998*, certifying that the site is suitable for its intended use and that any contaminated materials have been suitably remediated or disposed of appropriately.
8. **Waste Management - Import and Export of Fill:** The proposed activities have the potential to generate fill (waste material) and/or involve the importation of fill for use on-site. Prior to the removal of fill (waste material) from the site, or the importation of fill onto the site, waste classification assessment is to be undertaken in accordance with NSW EPA *Waste Classification Guidelines, Part 1: Classifying Waste, 2014*, and associated waste classification guidelines, available online¹⁰. All imported material must be accompanied by details of its nature, origin, volume, and transportation details. All records must be retained and made available to authorised officers, upon request, to confirm compliance with the General Environmental Duty detailed in the *Waste Management and Pollution Control Act 1998*. The proponent should also consider the following NT EPA fact sheets, available online¹¹: (a) How to avoid the dangers of accepting illegal fill onto your land, and (b) Illegal Dumping – What You Need To Know.

⁷ https://ntepa.nt.gov.au/_data/assets/pdf_file/0004/566356/noise_management_framework_guideline.pdf

⁸ [Guidelines on waste discharge licencing under the Northern Territory Water Act 1992.](#)

⁹ https://ntepa.nt.gov.au/_data/assets/pdf_file/0010/284680/guideline_prevent_pollution_building_sites.pdf and https://ntepa.nt.gov.au/_data/assets/pdf_file/0006/284676/guideline_keeping_stormwater_clean_builders_guide.pdf

¹⁰ <http://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines>

¹¹ <https://ntepa.nt.gov.au/publications-and-advice/environmental-management>

Should you have any further queries regarding these comments, please contact the Development Coordination Branch by email DevelopmentAssessment.DEPWS@nt.gov.au or phone (08) 8999 4446.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'M Wauchope', written in a cursive style.

Maria Wauchope
Executive Director Rangelands
28 September 2022

Appendix 1 – Flora and Fauna Detailed comments

Government authority: Department of Environment, Parks and Water Security – Flora and Fauna Division

Theme or issue	Comment																												
Terrestrial Ecosystems -	<u>Tiwi –Coburg Bioregion</u> : Melville Island is situated within the Tiwi-Cobourg Bioregion, with a total area of approximately 1.01 million hectares. Current figures for cumulative loss of native vegetation cover within the Tiwi-Cobourg Bioregion indicate that approximately 40 100ha or 3.97 % of the native vegetation cover has been cleared. Virtually all of this clearing is contained within the Tiwi Subregion. Additional clearing associated with this proposal will increase this by no more than 0.03% at both Bioregional and Subregional scales.																												
Terrestrial Ecosystems Threatened Species	<p>Based on a search of DEPWS databases within 10km of the project, expert knowledge of species' habitat requirements, and information about habitats occurring within the proposed localities, the following threatened species may occur within or immediately adjacent to the application area.</p> <p>Table 1. Species listed as threatened under the <i>Territory Parks and Wildlife Conservation Act 1976</i> (TPWC Act) / <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) (EPBC Act)</p> <table border="1"> <thead> <tr> <th>Common Name</th> <th>Scientific Name</th> <th>TPWC Act</th> <th>EPBC Act</th> </tr> </thead> <tbody> <tr> <td>Partridge Pigeon</td> <td><i>Geophaps smithii smithii</i></td> <td>Vulnerable</td> <td>Vulnerable</td> </tr> <tr> <td>Tiwi Islands Treesnail</td> <td><i>Amphidromus cognatus</i></td> <td>Vulnerable</td> <td>-</td> </tr> <tr> <td>Melville Squat-keeled Snail</td> <td><i>Trochomorpha melvillensis</i></td> <td>Vulnerable</td> <td>-</td> </tr> <tr> <td>Northern Brush-tailed Phascogale</td> <td><i>Phascogale pirata</i></td> <td>Endangered</td> <td>Vulnerable</td> </tr> <tr> <td>Brush-tailed Rabbit-rat</td> <td><i>Conilurus penicillatus</i></td> <td>Endangered</td> <td>Vulnerable</td> </tr> <tr> <td>Northern Brushtail Possum</td> <td><i>Trichosurus vulpecula arhemensis</i></td> <td>-</td> <td>Vulnerable</td> </tr> </tbody> </table>	Common Name	Scientific Name	TPWC Act	EPBC Act	Partridge Pigeon	<i>Geophaps smithii smithii</i>	Vulnerable	Vulnerable	Tiwi Islands Treesnail	<i>Amphidromus cognatus</i>	Vulnerable	-	Melville Squat-keeled Snail	<i>Trochomorpha melvillensis</i>	Vulnerable	-	Northern Brush-tailed Phascogale	<i>Phascogale pirata</i>	Endangered	Vulnerable	Brush-tailed Rabbit-rat	<i>Conilurus penicillatus</i>	Endangered	Vulnerable	Northern Brushtail Possum	<i>Trichosurus vulpecula arhemensis</i>	-	Vulnerable
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	Brush-tailed Rabbit-rat	<i>Conilurus penicillatus</i>	Endangered	Vulnerable
	Northern Brushtail Possum	<i>Trichosurus vulpecula arhemensis</i>	-	Vulnerable
	Butler's Dunnart	<i>Sminthopsis butleri</i>	Vulnerable	Vulnerable
	Black-Footed Tree Rat	<i>Mesembriomys gouldii</i>	Vulnerable	Vulnerable
	Pale Field Rat	<i>Rattus tunneyi</i>	Vulnerable	-
	Water mouse	<i>Xeromys myoides</i>		Vulnerable
	Fawn Antechinus	<i>Antechinus bellus</i>	Endangered	Vulnerable
	Mertens' Water Monitor	<i>Varanus mertensi</i>	Vulnerable	-
	Red Goshawk	<i>Erythrotriorchis radiatus</i>	Vulnerable	Vulnerable
	Grey Falcon	<i>Falco hypoleucos</i>	Vulnerable	-
	Masked Owl	<i>Tyto novaeholladiae (melvillensis)</i>	Endangered	Endangered
	An orchid	<i>Calochilus caeruleus</i>	Vulnerable	-
	Darwin Cycad	<i>Cycas armstrongii</i>	Vulnerable	-
	A shrub	<i>Dendromyza reinwardtiana</i>	Vulnerable	-
	Hoya	<i>Hoya australis subsp oramicola</i>	Vulnerable	Vulnerable
	An orchid	<i>Luisia corrugata</i>	Vulnerable	-
	A vine	<i>Mitrella tiwiensis</i>	Vulnerable	Vulnerable
	A tree	<i>Tarennoidea wallichii</i>	Vulnerable	-
	An orchid	<i>Thrixspermum congestum</i>	Vulnerable	-
	Typhonium	<i>Typhonium jonesii</i>	Endangered	Endangered

	Typhonium	<i>Typhonium mirabile</i>	Endangered	Endangered
Threatened Species	<p>The Referral has identified a number of threatened species that are likely to occur within the proposal footprint but lacks sufficient detail to demonstrate that the risks have been assessed against the EPBC Significant Impact Guidelines 1.1. In particular, the proponent has not provided the results of targeted surveys for many species and appears to rely on unproven mitigation measures (pre-clearance surveys) as a basis for avoiding significant impacts.</p> <p>It is recommended that the proponent provide a thorough assessment of the proposal's risks against all criteria in the Significant Impact Guidelines. The assessment should also be based on recent surveys targeted at confirming the presence or absence of important populations and understanding the significance of any occurrences from a regional context.</p> <p>Species that require further assessment include: Pale Field-rat, Fawn Antechinus, Black-footed Tree-rat, Masked Owl, Brush-tailed Rabbit-rat, Butler's Dunnart and Northern Brush-tailed Phascogale. Further comment on other threatened species is provided below.</p>			
Partridge Pigeon	<p>Partridge Pigeon are mobile, exploiting patches of suitable foraging resources within the savannah woodland habitat matrix. It is considered unlikely that the habitat present within the project area is important to the survival of the species at the regional scale. Based on the small area of habitat proposed for clearing and the proportion of the regional population potentially impacted, the Flora and Fauna Division consider it unlikely that the project would lead to a significant impact upon the Tiwi Island population of Partridge Pigeon.</p>			
Masked Owl	<p>Historical records indicate that a number of Masked Owl territories may overlap the proposal. No additional surveys were undertaken by the proponent to identify potential breeding or roost sites for the species.</p> <p>Removal of native vegetation within the proposed road alignment and gravel extraction pits will reduce the availability of these habitat types, however the likelihood of this having a significant impact upon the species is considered low due to the small total area of disturbance relative to the estimated size of the territory of a breeding pair (c. 1000 ha). As noted in the referral, there is a large amount of relatively unfragmented habitat across Melville Island and the Flora and Fauna Division considers that the removal of the small amount of habitat for the proposal would not impact on the area of occupancy of the species, fragment the population, lead to a long-term decrease in the population or reduce its ability to successfully reproduce on the Tiwi Islands.</p> <p>However, there is some uncertainty about whether tree hollows, for which Masked Owls have relatively specific requirements, are limited on the Tiwi Islands. This uncertainty could be reduced by further assessment on the availability of large (DBH>40cm) and very large (DBH>50cm) trees. Trees of this size have a higher likelihood of containing hollows that over time may be</p>			

	<p>suitable for this species. In the event that potentially hollow bearing trees are not limited in the vicinity of known occurrences, the proposed clearing of native vegetation is unlikely to impact on habitat availability for the species.</p>
<p>Water Mouse, Migratory and Threatened Shorebirds</p>	<p>Potential habitat for the Water Mouse and shorebirds has been identified in Mangrove habitats along Apsley Strait. The proposal will use existing infrastructure at Port Melville for mooring of ships and does not require any disturbance of any potential habitat for this species.</p>
<p>Mertens' Water Monitor</p>	<p>The Transmission Line Corridor traverses both watercourses and wetlands which is potential habitat for this species. The Flora and Fauna Division considers that the risk to this species is very low as the proposal is unlikely to exacerbate existing threats to the species (Cane Toads).</p>
<p><u>Darwin Cycad</u></p>	<p>Darwin Cycads were observed on all precincts, with individuals being common in native vegetation. In a regional context, high (>400 mature stems/ha) and very-high (>700 mature stems/ha) stands of Darwin Cycad are considered likely to be important to the maintenance of genetic diversity within the population. The consultant, however, used the threshold of >1,000 individuals per hectare, rather than the generally accepted density.</p> <p>It is unclear from the survey results what densities of cycads were recorded within the project area or the degree of certainty with which the plants could be confidently identified as <i>C. maconochiei</i> as opposed to <i>C. armstrongii</i>. The Transmission Line Corridor will have minimal impact on Darwin Cycads, but there is potential for the Hydrogen Production and Hydrogen Export Precincts to have a significant impact if the densities of mature individuals are higher than 400 per ha. The densities should be clarified by the proponent along with confirmation that the species is <i>C. armstrongii</i> and not the sympatric <i>C. maconochiei</i>.</p>
<p><u>Monsoon and Riparian Rainforest Species</u></p>	<p>No targeted survey for these species was conducted by the consultant. A number of species associated with monsoon or riparian rainforest occur within the project, with the highest number of historical records occurring along the Transmission Line Corridor Precinct. <i>Mitrella tiwiensis</i> has been recorded near Pirlangimpi (Garden Point). Although currently not known from the project area, the following species may occur based on their habitat preferences being present: <i>Tarennoidea wallichii</i>, <i>Calochilus caeruleus</i>, <i>Dendromyza reinwardtiana</i>, <i>Hoya australis subsp oramicola</i>, <i>Luisia corrugata</i>, and <i>Thrixspermum congestum</i>. The general patterns of occurrence of these species are either as sparsely distributed individuals (orchids and pandans in particular) or small populations restricted to defined geographic areas with a strong bias toward immature plants (trees, vines and shrubs). Consequently, it is important to understand the confidence around any survey and the (lack of) detection as part of an impact assessment for these species.</p> <p>The incidental survey report provided in the Referral did not identify any of these target species. However, the report does not state the level of precision or intensity that was undertaken during searches for these species. In the absence of this information,</p>

	<p>there is uncertainty around the presence of these species' and the potential risk to important populations. It is recommended that the proponent provide additional information to support the absence of these species from the project area.</p>
<p><u>Dry, Riparian, & Spring-fed Rainforest:</u></p>	<p>The largest contiguous dry rainforest vine thicket on the Tiwi Islands is adjacent to the Solar Precinct. Based on the size of the rainforest patch it is considered to have high value using the criteria outlined in the Land Clearing Guidelines. High value patches are recommended to be buffered by 250m of native vegetation. The siting of the Solar Precinct is located within the existing forestry plantation which has been historically cleared and modified. The boundary of the plantation is located such that a 250m buffer is not possible in several places along the northern boundary. As a native vegetation buffer of 250m around the proposal is not possible, the Flora and Fauna Division recommends that the proponent maintain the largest native vegetation buffer possible and ensure clearing does not occur outside of the forestry boundary.</p> <p>An area of spring fed rainforest is mapped as occurring adjacent to the Hydrogen Production Precinct at Port Melville. Spring fed rainforest patches are generally considered to be of high value and may support a range of threatened and restricted species. The referral has identified this vegetation but provides no information on the importance of the vegetation community or how the recommended buffers in the Land Clearing Guidelines have been incorporated into the proposal design.</p> <p>Riparian rainforest occurs downstream of the current crossing of Blue Water Creek in the Transmission Line Corridor. Careful planning of placement of transmission pole pads is required to avoid any impact on this vegetation. There is no mention of upgrading the road to an all-weather road in the referral. If this were to happen, the construction could have significant impacts on this vegetation community.</p>
<p><u>Typhonium jonesii, Typhonium mirabile</u></p>	<p>Targeted surveys were conducted, using habitat modelling and selecting high likelihood areas based on current guidelines. Sixty-six plants were recorded only in the Hydrogen Export Precinct and Port Melville lease area. All plants were vegetative so it was not possible to identify them to species. A DNA analysis is currently being conducted to determine the species identification. Flora and Fauna consider that surveys for Typhonium were appropriate and would inform an assessment against the significant impact criteria.</p> <p>There is uncertainty around the identification of the Typhonium and until this is resolved it is not possible to conclude whether the proposal poses a significant impact to the threatened <i>T. jonesii</i> and/or <i>T. mirabile</i>.</p>
<p><u>Old growth/ large hollow-bearing trees:</u></p>	<p>It is recommended that the proponent assess the density of large (DBH>40 cm) and very large (DBH>50cm) trees with the potential to support tree hollows within the areas proposed for clearing. Comparison with densities in surrounding areas of similar habitat adjacent to the project footprint should be made to contextualise the potential impacts of any loss of large trees on habitat availability for threatened species at the local scale. Similar approaches have been utilised to assess large-tree</p>

	<p>densities in proximity of linear infrastructure development on the Tiwi Islands including for the Tiwi Islands Energy Solutions Overhead Power Network project that was assessed by the NT EPA in 2019 (DENR2019/0167).</p> <p>If densities within proposed clearing areas are similar to those in surrounding habitat then it provides additional evidence that the loss of large trees within the relatively small area proposed to be cleared will not impact significantly on resource availability for populations of threatened species including Masked Owl, Brush-tailed Phascogale and Black-footed Tree-rat. It may also be possible to avoid relatively dense patches of larger trees if these are shown to occur within the project area.</p>
<p><u>Marine Megafauna:</u></p>	<p>While the referral concentrates on terrestrial flora and fauna, hydrogen export ships will travel through the Apsley Strait which contains habitat used by marine megafauna. In particular, nesting sites for Olive Ridley, Flatback and Green Turtles have been identified north of Pirlangimpi and adjacent to the shipping route. The developer has avoided impact on breeding turtle populations by positioning the Hydrogen Export Precinct at Port Melville, away from beaches that are preferred habitat.</p> <p>In the waters adjacent to the proposed shipping lane, the following marine animals have been recorded: Dugong, Humpback Whale, and Australian Snubfin Dolphin. These three species are susceptible to vibration and noise from ships. Lighting from navigational aids can also attract marine species increasing the likelihood of vessel collisions.</p> <p>In order to reduce interference with nestling activity from excessive lighting, navigational aids are to be kept to a minimum, and are placed where the lane crosses a shoal. The Notice of Intent for Port Melville estimated that shipping traffic in 2019 would be 28.5 movements per month. Provaris intend to have 22.5 movements per month when operating the proposal at full capacity. The Flora and Fauna Division considers that shipping traffic from the proposal poses a low risk to marine megafauna.</p>