# Terms of Reference for an EIS

## Australia-ASEAN Power Link

Sun Cable Pty Ltd

Barkly to Darwin Regions; Darwin Harbour

January 2021

ntepa Northern Territory Environment Protection Authority

Further information and guidance on the environmental impact assessment process is available on the NT EPA website at: www.ntepa.nt.gov.au

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| **Document title** | Terms of Reference for an EIS |
| **Document type** | Terms of Reference |
| **Version** | 1.0 |
| **Date approved** | 19 January 2021 |
| **TRM number** | NTEPA2020/0081-007~0005 |

# Contents

# 1. Introduction

## 1.1. Overview

The Australia-ASEAN Power Link (the proposal) proposed by Sun Cable Pty Ltd (the proponent) is being assessed by the Northern Territory Environment Protection Authority (NT EPA) under the *Environment Protection Act 2019* (EP Act) at the level of an environmental impact statement (EIS).

These terms of reference (TOR) set out the matters relating to the environment that are to be addressed in the draft EIS for this proposal. The draft EIS must also address all requirements in the NT EPA's *Preparing an environmental impact statement – Environmental impact assessment guidance for proponents*.

## 1.2. Background

A proponent initiated EIS referral was submitted to the NT EPA on 7 October 2020 for consideration under the EP Act. The proposal is to establish a large-scale solar farm in the Northern Territory with power exported to Darwin and then by subsea cable to Singapore.

The proposal is described in the referral at: (https://ntepa.nt.gov.au/your-business/public-registers/environmental-impact-assessments-register/assessments-in-progress-register/australia-asean-power-link-project).

The NT EPA decided that an EIS was required on 12 January 2021. The notice and statement of reasons for the decision are on the NT EPA website.

## 1.3. Assessment under accredited assessment process

The proposal was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The delegate of the Australian Government Minister for the Environment decided under section 75 of the EPBC Act that the proposed action is a controlled action and, as such, requires assessment and an approval decision due to the potential for a significant impact on matters of national environmental significance (MNES) protected under Part 3 of the EPBC Act.

The proposal is being assessed under an accredited assessment process (in accordance with section 87(4) of the EPBC Act as referenced in section 45 of the EP Act). These TOR have been prepared to meet the requirements of both government jurisdictions.

## 1.4. Assessment timeline

**Table 1 Indicative assessment timeline for the Proposal**

| Key assessment milestones | Proposed / Completion date |
|---|---|
| Acceptance of proponent initiated EIS referral | 16 October 2020 |
| Referral consultation period including draft Terms of Reference | 27 November 2020 |
| Decision on accepted referral | 12 January 2021 |
| Terms of Reference approved | 19 January 2021 |

| Key assessment milestones | Proposed / Completion date |
|---|---|
| Draft EIS submitted to the NT EPA | May 2021 |
| Public and government authority consultation period | May to July 2021 |
| Direction to prepare Supplement issued | August 2021 |
| Supplement submitted | October 2021 |
| Public and government authority consultation period | October 2021 |
| Assessment report provided to Minister | December 2021 |
| NT Minister's approval decision | February 2022 |
| Commonwealth Minister's approval decision | March 2022 |

# 2. Matters to be addressed in the draft EIS

## 2.1. Summary

A summary of the draft EIS is required as part of the EIS documentation. The summary should be written as a stand-alone document, able to be provided on request to interested parties who may not wish to read the full EIS.

The summary should provide the following at a minimum:

- a clear and concise overview of the proposal, including key components and activities, lifespan, closure outcomes and intended future use of the site
- an explanation of the approvals process and function of the EIS
- a summary of the site selection process and alternatives considered
- an overview of the existing environment including location of the nearest sensitive receptors
- a summary of the environmental impacts of the proposal
- summary of measures to avoid, mitigate and, if applicable, offset potential impacts of the proposal.

## 2.2. Proposal description

### 2.2.1. Overview

Provide a clear description of the proposal and the full scope of works for which approval is sought. The proposal description should include:

- a summary table listing the key physical components of the proposal
- maps, figures, images, diagrams and flow charts
- any variations or modifications to the proposal since the referral information was submitted

- where there is uncertainty in the detailed design, footprint, capacity or life of the proposal, the approach to resolving this uncertainty should be clearly explained and the maximum extent for each parameter provided.

### 2.2.2. Proponent

Provide background to the proponent, including information on the environmental history of the proponent and its compliance with state/territory and Commonwealth environmental approval conditions. Outline any partnerships with other organisations or industries as part of the proposal.

### 2.2.3. Objectives of the proposal

State the rationale and justification for the proposal, considering social, economic and other environmental benefits and costs to the NT, in particular to local and regional communities, during the life of the proposal.

List the key objectives of the proposal and include a description of how the proposal meets these objectives.

The proponent should demonstrate in the draft EIS how the objectives of a proposal address the specific requirements of sections 42 and 43 of the EP Act.

### 2.2.4. Statutory framework

The EIS must provide information on the statutory framework including a description of any permits, consents, or other approvals that will be required from Northern Territory or Commonwealth agencies and/or authorities. While the proposal components within Singaporean and Indonesian jurisdictions are outside of the scope of the EIS, summarise the assessment and approval processes for these components.

### 2.2.5. Construction and operation

Provide a detailed description of all construction and operational aspects of the proposal as outlined in Table 2.

**Table 2 Minimum information requirements for the proposal description**

| Topic | Required information |
|---|---|
| Site layout maps | The description of the proposal must include, but not be limited to, detailed maps and graphic illustrations of:<br>• the location and dimensions of existing disturbance, infrastructure, roads/tracks and natural and modified landforms (including a depiction of these overlaid on aerial photos or high-resolution satellite imagery) within the proposal area<br>• the location and approximate dimensions of areas to be disturbed, structures to be built or repurposed, including (where applicable):<br>  ○ all areas to be cleared[1] or disturbed<br>  ○ solar farm and electrical infrastructure, including cables |

[1] *In accordance with the NT Land Clearing Guidelines and/or requirements under the NT Planning Scheme.*

| Topic | Required information |
|---|---|
| | ○ access roads, rail, airstrip and service infrastructure<br>○ water storage, stormwater and drainage infrastructure<br>○ buildings, structures and laydown areas<br>○ borrow areas<br>○ hazardous waste storage areas<br>○ other significant infrastructure.<br>• the proposal layout in relation to environmental values and existing infrastructure (e.g. roads, cables, shipping channels, railway and pipelines).<br>The boundaries of the proposal area in relation to any overlapping or adjacent licenses and permits (mineral, petroleum or other); and any other interests in land including native title (claims or determined), Aboriginal freehold land, and pastoral land. |
| Design | Describe design options considered, including alternative configurations of the solar farm, reasons for selection of preferred design options, and how the proposed design avoids and/or mitigates environmental constraints and potential impacts and risks to the surrounding environment.<br>Outline any site/route selection processes that have been undertaken, any alternatives considered, and justify why the proposed site/route was selected. Outline and justify any trade-offs in the site/route selection. Site/route selection should consider the potential for disruption or damage to existing infrastructure, particularly where design of the proposal intends to share existing corridors.<br>Describe how the proposal has been designed, or allows for, adaptation to a changing climate e.g. capacity and efficiency of water facilities to allow for potential increase in evaporation and/or large rainfall events. |
| Construction | Describe all elements of the construction phase including:<br>• construction methods and any limitations of these in the area of the proposal. Where multiple alternatives exist, the choice of the preferred option(s) should be clearly explained and a comparison provided against other options in terms of potential environmental impacts<br>• equipment and machinery required<br>• construction materials required – major types, quantities, qualities, sources, storage requirements and potential hazards<br>• available and potential sources of fill / borrow material<br>• an overview of water quality of any controlled discharge (including targets in accordance with ANZG (2018) or otherwise), location of the discharge point/s, and schedule for the discharge<br>• timeframes<br>• any new ancillary infrastructure and upgrades required to service the proposal, including supply of electricity, road access and rail sidings<br>• water requirements and sources (include a water balance)<br>• waste classification and management, including drill muds from horizontal directional drilling (HDD)<br>• controls to prevent creation of biting insects habitat<br>• applicable legislation, guidelines and standards<br>• details of how the proponent intends to address terrestrial and marine environmental management during construction, including:<br>○ erosion and sediment control |

| Topic | Required information |
|---|---|
| | ○ water capture, use and management including stormwater drainage<br>○ biosecurity measures to address weeds, feral animals and other pests<br>○ controls to avoid spills/discharges from vessels to marine environment<br>○ waste management<br>○ air quality management<br>○ maintenance of components and servicing of infrastructure<br>○ noise and vibration management (onshore and offshore, including noise from drilling activities, and underwater noise). |
| Operation | Describe all onshore and offshore elements of the proposed operation including:<br>• environmental management of all aspects of the proposed operation with detailed maps, diagrams and facility design specifications and standards where relevant, including:<br>○ erosion and sediment control<br>○ water requirements and sources (provide a water balance)<br>○ water management including stormwater drainage biosecurity measures<br>○ waste management, including disposal/recycling of expended solar panels and batteries, and containment and disposal of contaminated wastewater and solids with details of pits, bunds, treatment and recycling<br>○ weed management<br>○ air quality management, including containment of dust<br>○ ongoing maintenance of onshore and offshore components and servicing of infrastructure<br>○ noise and vibration management (onshore and offshore)<br>○ applicable legislation, guidelines, and standards.<br>• any feasible operation alternatives including alternatives for land management at the solar farm precinct (e.g. inclusion of grazing). Where multiple alternatives exist, the choice of the preferred option(s) should be clearly explained, and a comparison provided against other options in terms of potential environmental impacts. |
| Transport and traffic | Describe traffic and transport activities during construction and operation, including but not limited to:<br>• proposed transport methods including rail, marine vessel and road freight<br>• forecast vehicle/vessel movements including type, size, volume and frequency of movements<br>• details on access, routes, vehicle/vessel types, volumes of traffic<br>• details of rail use and proposed rail siding. |
| Energy | Provide relevant information with respect to energy during construction and operation, including but not limited to:<br>• energy requirements and sources<br>• consideration of renewable sources of energy and justification of selected options<br>• estimate of the greenhouse gases emissions and savings<br>• measures to maximise energy efficiency and avoid and/or reduce greenhouse gas emissions consistent with the NT Government's target of achieving net zero greenhouse |

| Topic | Required information |
|---|---|
| | gas emissions by 2050 (DENR 2020). |
| Workforce | Provide a summary for each phase of the proposal, of the:<br>• estimated number of people to be employed<br>• skills base required<br>• likely sources (local, regional, overseas)<br>• on-site facilities provided (including any accommodation). |

### 2.2.6. Rehabilitation and closure

This section should outline the planned rehabilitation and decommissioning of infrastructure and establish decommissioning objectives and goals. It should include:

- an overview of the pre-proposal environment and land use
- proposal lifespan
- procedures for decommissioning and rehabilitation planning including stakeholder engagement
- the biological, cultural, economic and social viability of options for decommissioning, removal and disposal of infrastructure and components, including implications of solar panels' disposal at the end of the proposal's life
- proposed rehabilitation measures including rehabilitation objectives and completion criteria, and proposed monitoring
- the proposed land use after closure (including alternatives).

# 3. Information requirements for environmental factors

The NT EPA identified 12 key environmental factors that could be significantly impacted by the proposal (Table 3). These have been selected from the *NT EPA Environmental factors and objectives – Environmental impact assessment guidance*.

**Table 3 Preliminary environmental factors that must be considered in the draft EIS**

| THEME | FACTOR | ENVIRONMENTAL OBJECTIVE |
|---|---|---|
| LAND | Terrestrial environmental quality | Protect the quality and integrity of land and soils so that environmental values are supported and maintained. |
| | 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. |

| THEME | FACTOR | ENVIRONMENTAL OBJECTIVE |
|---|---|---|
| | 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. |
| SEA | Marine environmental quality | Protect the quality and productivity of water, sediment and biota so that environmental values are maintained. |
| | Marine ecosystems | Protect marine habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning. |
| AIR | Air quality | Protect air quality and minimise emissions and their impact so that environmental values are maintained. |
| | Atmospheric processes | Minimise greenhouse gas emissions so as to contribute to the NT Government's target of achieving net zero greenhouse gas emissions by 2050. |
| PEOPLE | Community and economy | Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians |
| | Culture and heritage | Protect sacred sites, culture and heritage. |
| | Human health | Protect the health of the Northern Territory population. |

The draft EIS for the proposal should address how each of the above factors may be impacted by the relevant component of the proposal. While it is for the NT EPA to decide whether potential impacts are significant, the draft EIS should consider the significance of the identified potential impacts with reference to section 11 of the EP Act and significant impact guidelines for MNES.

A proposal footprint (direct disturbance) and area of influence (indirect disturbance) are to be established to identify the aspects of the environment (under each environmental factor) and the specific environmental values that could be impacted by implementation of the proposal. Consideration should be given to impacts associated with normal operations, abnormal operations, unplanned shutdowns of part or all of the proposal, and emergency shutdowns of part or all of the proposal.

For each of the key environmental factors listed in Table 3, the draft EIS is to provide an assessment of how the NT EPA's environmental objective would be met, as outlined in the NT EPA's *Preparing an environmental impact statement – Environmental impact assessment guidance for proponents* and detailed below.

If additional potential environmental impacts are identified through the environmental impact assessment process, they must also be included in the draft EIS, even if this requires addressing additional environmental factors not specified in Table 3.

The following sections and tables outline the information to be addressed for each environmental factor. The below information requirements should be addressed in an appropriate format within the draft EIS, with technical assessment reports appended to the EIS as applicable.

## 3.1. Terrestrial environmental quality

**Table 4: Minimum information required for assessment of Terrestrial environmental quality**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective: Protect the quality and integrity of land and soils so that environmental values are supported and maintained.** | |
| Environmental values | • Describe the soil/sediment characteristics of the area of influence for the proposal with consideration of the following aspects as appropriate:<br>  ○ the presence of contamination and/or acid sulfate soils<br>  ○ physical and chemical properties of the soil (including erosivity, fertility)<br>  ○ existing erosion and other disturbances.<br>• Provide detailed maps to support these descriptions.<br>• Provide results and interpretation of any geotechnical and soil investigations and surveys of the area of influence and an assessment of the suitability of sites for each relevant proposal component. |
| Potential impacts and risks | Describe potential impacts to the NT EPA's environmental objective associated with the proposed construction and operation activities and development, including:<br>• direct disturbance of landforms and soils from earthworks during construction<br>• indirect disturbance from project construction, such as erosion/topsoil migration<br>• direct disturbance to the tidal zone as a result of construction of the land sea joint/shore crossing and potential for disturbance to associated ecological and hydrological values during project construction and operation<br>• leaks of hazardous materials from batteries, transformers or other infrastructure installed at the solar farm precinct and Darwin VSC, or from vehicles<br>• contamination of soils due to the disturbance of acid sulfate soils.<br>Determine the areas that could feasibly experience those impacts. Classify the areas as:<br>• proposal footprint – or direct disturbance footprint. These are the areas of proposed infrastructure, vegetation clearing and direct use.<br>• area of influence – or indirect disturbance footprint. These are surrounding areas that may be indirectly affected by proposed activities, for example via the release of contaminants (air, water, land), changes to land, water etc.<br>Provide an assessment of potential impacts, benefits and risks to terrestrial environmental quality utilising outcomes of investigations and other relevant information. As a minimum, the assessment should take into consideration:<br>• scope, methods, equipment, timing and frequency<br>• potential contaminants/pollutants including breakdown products<br>• cumulative impacts with other industries or proposals<br>• reversibility of potential impacts.<br>The assessment must identify potential impacts and risks to terrestrial environmental |

| Aspect | Specific information required |
|---|---|
| | quality and quantify their significance. Consideration should be given to any policies, procedures and plans relevant to environmental values within the proposal footprint and area of influence. |
| Avoidance, mitigation and management | Outline the measures for avoiding, mitigating, or offsetting impacts identified above, with consideration of section 26 (Environmental decision making hierarchy) and section 27 (Waste management hierarchy) of the EP Act. Also include here measures to enhance or restore environmental quality.<br>These should address at a minimum:<br>• facility design and layout<br>• erosion and sediment control<br>• stormwater<br>• acid sulfate soil management (if present)<br>• emergency/hazard/spill response management<br>• end-of-life solar panel and battery management<br>• compliance with any statutory or policy basis for the proposed measures.<br>Discuss adaptation to a changing climate including design and resultant viability of the proposal, with reference to the NT policy *Northern Territory Climate Change Response: Towards 2050* (DENR 2020) and Climate Change in the Northern Territory: State of the science and climate change impacts (NESP ESCC Hub 2020).<br>All mitigation measures should be substantiated and in accordance with best practice, including advice from relevant NTG advisory agencies. |
| Monitoring and reporting | Outline proposed monitoring and reporting activities related to potential impacts and risks, and mitigation and management measures. The proposed monitoring and reporting should specify which project phase it relates to, i.e. construction or operations.<br>All monitoring activities should be substantiated and in accordance with best practice including advice from relevant NTG advisory agencies. |
| Residual impact | Assess the significance of any residual impact or risk of the Proposal to identified values. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework[2] (as published) and the EPBC Act environmental offsets policy[3]. |

[2] NT Offset Framework is available at: https://depws.nt.gov.au/environment-information/northern-territory-offsets-framework/northern-territory-offsets-framework
[3] The EPBC Act environmental offsets policy is available at: http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy

## 3.2. Terrestrial ecosystems

Table 5: **Minimum information required for assessment of Terrestrial ecosystems**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective:** Protect terrestrial habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning. | |
| Environmental values | Describe the terrestrial ecosystems of the proposal footprint and area of influence with detail on vegetation communities (vegetation mapping to at least NVIS level 4 or higher for key infrastructure precincts), flora species and fauna species, detailing communities and species of regional and national significance, and pest and exotic species.<br><br>The known, likely and potential presence of threatened ecological communities and species (identified in preliminary terrestrial ecology studies for the proposal and Protected Matters Search Tool (PMST) as target species) under the EPBC Act must be described, including but not limited to:<br><br>• *Acacia praetermissa*<br>• *Atalaya brevialata*<br>• *Helicteres macrothrix*<br>• *Stylidium ensatum*<br>• Painted honeyeater<br>• Princess parrot<br>• Greater bilby<br>• Night parrot<br>• Brush-tailed mulgara<br>• Arnhem Plateau Sandstone Shrubland Complex threatened ecological community<br>• *Typhonium taylori*<br>• *Goodenia quadrifida*<br>• *Xylopia monosperma*<br>• *Erythrura gouldiae*<br>• *Falco hypoleucos*<br>• *Amytornis woodwardi*<br>• *Tyto novaehollandiae kimberli*<br>• *Erythrotriorchis radiatus*<br>• *Geophaps smithii smithii*<br>• *Falcunculus frontatus whitei*<br>• *Petrogale concinna canescens*<br>• *Dasyurus hallucatus*<br>• *Hipposideros inornatus*<br>• *Mesembriomys gouldii gouldii*<br>• *Phascogale pirata*<br>• *Macroderma gigas*<br>• *Xeromys myoides*<br>• *Antechinus bellus*<br>• *Saccolaimus saccolaimus nudicluniatus*<br>• *Bellatorias obiri*<br>• *Acanthophis hawkei*<br><br>The known and potential presence of species (identified as target species in preliminary terrestrial ecology studies for the proposal) under the *Territory Parks and Wildlife Conservation Act 1976* (TPWC Act) must be described, including but not limited to:<br><br>• *Acacia praetermissa*<br>• *Cleome insolata*<br>• *Cycas armstrongii*<br>• *Helicteres macrothrix*<br>• *Stylidium ensatum* |

| Aspect | Specific information required |
|---|---|
| | • *Typhonium praetermissum*<br>• *Ultricularia singeriana*<br>• *Apus pacificus*<br>• *Motacilla flava*<br>• *Motacilla cinerea*<br>• *Hirundo rustica*<br>• *Pluvialis fulva*<br>• *Calonectris leucomelas*<br>• *Tringa brevipes*<br>• *Calidris melanotos*<br>• *Calidris alba*<br>• *Calidris ruficollis*<br>• *Pluvialis squatarola*<br>• *Sula sula*<br>• *Sula leucogaster*<br>• *Gallinago megala*<br>• *Charadrius veredus*<br>• *Numenius phaeopus*<br>• *Numenius minutus*<br>• *Arenaria interpres*<br>• *Calidris acuminata*<br>• *Pandion haliaetus*<br>• *Limnodromus semipalmatus*<br>• *Limosa lapponica*<br>• *Gallinago stenura*<br>• *Limicola falcinellus*<br>• *Glareola maldivarum*<br>• *Charadrius dubius*<br>• *Cuculus optatus*<br>• *Fregata minor*<br>• *Fregata ariel*<br>• *Limosa limosa*<br>• *Actitis hypoleucos*<br>• *Xenus cinereus*<br>• *Phaethon lepturus*<br>• *Cecropis daurica*<br>• *Tringa incana*<br>• *Tringa stagnatilis*<br>• *Tringa nebularia*<br>• *Tringa glareola*<br>• *Anous stolidus*<br>• *Rhipidura rufifrons*<br>• *Calidris subminuta*<br>The likely occurrence of listed migratory species associated with Lake Woods must be described.<br>Existing condition of habitat and vegetation communities should also be described along with any existing threatening processes.<br>Provide detailed maps to support the above descriptions.<br>Provide results and interpretation of any terrestrial ecology surveys of the area of influence. |

| Aspect | Specific information required |
|---|---|
| Potential impacts and risks | Describe potential impacts to the NT EPA's environmental objective associated with the proposed construction and operation activities and development, including:<br>• direct loss of flora/ecological communities from vegetation clearing and ongoing maintenance (e.g. fire and vegetation management) including significant and sensitive habitats and potential habitats for threatened species listed under TPWC Act and EPBC Act. Provide an overview of the extent (ha) of the loss in table and map format<br>• indirect disturbance or degradation of flora and vegetation, possibly resulting in a long-term decline or loss over time, for example from erosion, dust, weeds/pathogens, shading from solar panels, disturbance of acid sulfate soils, etc.<br>• introduction or increase of weed and pest species due to construction, operation or maintenance activities<br>• changes in bushfire risk (fire frequency and intensity) due to vegetation clearing and weeds<br>• direct disturbance of fauna and fauna habitat as a result of clearing<br>• indirect impacts to fauna habitat due to changes to water quality, introduction or spread of weed or pathogens or pest species, fragmentation and edge effects<br>• indirect impacts to fauna as a result of reduced habitat availability or fragmentation<br>• direct impacts to fauna as a result of collision with overhead transmission lines<br>• direct impacts to fauna as a result of collision with vehicles orequipment, including solar panels<br>• changes to fauna behaviours as a result of noise or lighting from proposal areas, including potential glare from solar panels or the 'lake effect' (solar farm mistaken for a water body)<br>Determine the areas that could feasibly experience those impacts. Classify the areas as:<br>• proposal footprint – or direct disturbance footprint (proposal footprint). These are the areas of proposed infrastructure, vegetation clearing and direct use<br>• area of influence – or indirect disturbance footprint. These are surrounding areas that may be indirectly affected by proposed activities, for example via the release of contaminants (air, water, land), changes to land, water etc.<br>Provide an assessment of potential impacts, benefits and risks to terrestrial ecosystems utilising outcomes of investigations and other relevant information. As a minimum, the assessment should take into consideration:<br>• methods, equipment, timing and frequency<br>• potential contaminants/pollutants. |
| Avoidance, mitigation and management | Outline the measures for avoiding, mitigating, or offsetting impacts identified above, with consideration of sections 26 (Environmental decision-making hierarchy) and section 27 (Waste management hierarchy) of the EP Act. Also include here measures to enhance or restore environmental quality.<br>These should address at a minimum:<br>• Facility design and layout.<br>• Clearing of native vegetation.<br>• Fauna relocation and management.<br>• Pest/weed/pathogen control and management. |

| Aspect | Specific information required |
|---|---|
| | • Compliance with any statutory or policy basis for the proposed measures.<br>Discuss adaptation to a changing climate including design and resultant viability of the proposal.<br>All mitigation measures should be substantiated and in accordance with best practice, including advice from relevant NTG advisory agencies. All clearing of native vegetation should comply with the NT Land clearing Guidelines (DENR 2019). |
| Monitoring and reporting | Outline proposed monitoring and reporting activities related to potential impacts and risks and mitigation and management measures to terrestrial ecosystems. The proposed monitoring and reporting should specify which project phase it relates to, i.e. construction or operations.<br>All monitoring activities should be substantiated and in accordance with best practice advice from relevant NTG advisory agencies. |
| Residual impact | Assess the significance of any residual impact or risk of the proposal to identified values. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework (as published) and EPBC Act environmental offsets policy. |

## 3.3. Hydrological processes

Table 6: **Minimum information required for assessment of Hydrological processes**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective:** 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. | |
| Environmental values | Describe the following:<br>• climate and meteorological conditions of the proposal's area of influence with reference to hydrological regimes, the frequency and severity of extreme weather conditions, such as storms and cyclones<br>• surface water catchment systems of the proposal's area of influence including detail on any waterways of significance, drainage patterns, flow variations and flooding<br>• groundwater systems of relevant proposal areas<br>• any relevant water control districts and water allocation plans<br>• declared beneficial uses, existing users, water quality objectives and environmental values of water resources in proposal's area of influence<br>Provide detailed maps to support the above descriptions.<br>Provide results and interpretation of any hydrological and hydrogeological surveys of the area of influence. |
| Potential impacts and risks | Describe potential impacts to the NT EPA's environmental objective associated with the proposed construction and operation activities and development, including:<br>• changes to the natural catchment and surface and groundwater hydrology, for example from the creation of hardstand surfaces and other infrastructure through construction and operation of the proposal |

| Aspect | Specific information required |
|---|---|
| | • localised erosion from ground disturbance and surface water flow changes<br>• groundwater use (including impacts to other groundwater users)<br>Determine the proposal footprint and influence that could feasibly experience those impacts.<br>Provide an assessment of potential impacts, benefits and risks to hydrological processes utilising outcomes of investigations and other relevant information. As a minimum, the assessment should take into consideration:<br>• methods, equipment, timing and frequency<br>• cumulative impacts with other industries or proposals<br>• environmental management requirements associated with seasonal weather, extreme weather conditions such as storms and cyclones for the 2, 10 and 100 year average recurrence interval events<br>• reversibility of potential impacts<br>The assessment must take into account all construction and operation activities of the proposal.<br>The assessment must identify potential impacts and risks to hydrological processes and quantify their significance:<br>• against relevant guideline thresholds<br>• on the beneficial uses, water quality objectives and identified environmental values including groundwater dependent ecosystems and existing ground and surface water users. |
| Avoidance, mitigation and management | Outline the measures for avoiding, mitigating, or offsetting impacts identified above, with consideration of sections 26 (Environmental decision making hierarchy) and section 27 (Waste management hierarchy) of the EP Act. Also include here measures to enhance or restore environmental quality. These should address at a minimum:<br>• facility design and layout<br>• water management and efficiency, including stormwater and wastewater management<br>• water efficiency<br>• waste management including a detailed description of management methods for all types of wastes<br>• geomorphic stability<br>• erosion and sediment control<br>• compliance with any statutory or policy basis for the proposed measures<br>Discuss adaptation to a changing climate including design and resultant viability of the proposal.<br>All mitigation measures should be substantiated and in accordance with best practice, including advice from relevant NTG advisory agencies. |
| Monitoring and reporting | Outline proposed monitoring and reporting activities related to potential impacts and risks and mitigation and management measures to hydrological processes.<br>The proposed monitoring and reporting should specify which project phase it relates to, i.e. construction or operations.<br>All monitoring activities should be substantiated and in accordance with best practice advice from relevant NTG advisory agencies. |

| Aspect | Specific information required |
|---|---|
| Residual impact | Assess the significance of any residual impact or risk of the proposal to identified values. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework (as published) and EPBC Act environmental offsets policy. |

## 3.4. Inland water environmental quality

Table 7: **Minimum information required for assessment of Inland water environmental quality**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective**: 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. | |
| Environmental values | Describe the water quality (chemical, physical and biological) of surface water and groundwater in the proposal's area of influence.<br>Provide detailed maps to support the above descriptions.<br>Provide results and interpretation of any hydrological and hydrogeological surveys of the area of influence. |
| Potential impacts and risks | Describe potential impacts to the NT EPA's environmental objective associated with the proposed construction and operation activities and development, including:<br>• localised erosion from ground disturbance and surface water flow changes<br>• groundwater treatment<br>• contamination from hazardous materials.<br>Determine the proposal footprint and area of influence that could feasibly experience those impacts.<br>Provide an assessment of potential impacts, benefits and risks to inland water environmental quality utilising outcomes of investigations and/or other relevant information. As a minimum, the assessment should take into consideration:<br>• methods, equipment, timing and frequency<br>• potential contaminants/pollutants<br>• cumulative impacts with other industries or proposals.<br>• environmental management requirements associated with seasonal weather, extreme weather conditions such as storms and cyclones for the 2, 10 and 100 year average recurrence interval events<br>• the physical and chemical characteristics, volume, timing and location of any discharges<br>• the reversibility of potential impacts.<br>The assessment must take into account all construction and operation activities of the proposal.<br>The assessment must identify potential impacts and risks to inland water environmental quality and quantify their significance:<br>• against relevant guideline thresholds including ANZG 2018 |

| Aspect | Specific information required |
|---|---|
| | • on the beneficial uses, water quality objectives and identified environmental values. |
| Avoidance, mitigation and management | Outline the measures for avoiding, mitigating, or offsetting impacts identified above, with consideration of sections 26 (Environmental decision making hierarchy) and section 27 (Waste management hierarchy) of the EP Act. Also include here measures to enhance or restore environmental quality.<br>These should address at a minimum:<br>• facility design and layout<br>• water management and efficiency, including stormwater and wastewater management<br>• waste management including a detailed description of management methods for all types of wastes, including end-of-life panels and batteries<br>• erosion and sediment control<br>• compliance with any statutory or policy basis for the proposed measures.<br>Discuss adaptation to a changing climate including design and resultant viability of the proposal.<br>All mitigation measures should be substantiated and in accordance with best practice, including advice from relevant NTG advisory agencies. |
| Monitoring and reporting | Outline proposed monitoring and reporting activities related to potential impacts, risks, mitigation and management measures.<br>The proposed monitoring and reporting should specify which proposal phase it relates to, i.e. construction or operations.<br>All monitoring activities should be substantiated and in accordance with best practice advice from relevant NTG advisory agencies. |
| Residual impact | Assess the significance of any residual impact or risk of the proposal to identified values. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework (as published) and EPBC Act environmental offsets policy. |

## 3.5. Aquatic ecosystems

Table 8: **Minimum information required for assessment of Aquatic ecosystems.**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective**: Protect aquatic habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning. | |
| Environmental values | Describe the aquatic ecosystems and groundwater dependent ecosystems in the proposal's area of influence, including a description of Lake Woods and its values.<br>Provide detailed maps to support the above descriptions.<br>Provide results and interpretation of any aquatic ecology surveys of the area of influence. |
| Potential impacts and risks | Describe potential impacts to the NT EPA's environmental objective associated with the |

| Aspect | Specific information required |
|---|---|
| | proposed construction and operation activities and development, including:<br>• direct and indirect disturbance to waterways and/or wetlands and associated ecological and hydrological values during proposal construction and operation, including:<br>  ○ trenching on the Middle Arm peninsula (if applicable)<br>  ○ construction of OHTL towers, where in proximity to waterways/wetlands, e.g. sedimentation, erosion, uncontrolled runoff<br>  ○ heat island effects from the solar farm precinct, particularly on the values of Lake Woods.<br>Determine the proposal footprint and area of influence that could feasibly experience those impacts.<br>Provide an assessment of potential impacts, benefits and risks to aquatic ecosystems utilising outcomes of investigations and/or other relevant information. As a minimum, the assessment should take into consideration:<br>• methods, equipment, timing and frequency<br>• cumulative impacts with other industries or proposals<br>• the reversibility of potential impacts.<br>The assessment must take into account all construction and operation activities of the proposal.<br>The assessment must identify potential impacts and risks to aquatic ecosystems and quantify their significance:<br>• against relevant guideline thresholds<br>• on the beneficial uses, water quality objectives and identified environmental values including groundwater dependent ecosystems and existing ground and surface water users. |
| Avoidance, mitigation and management | Outline the measures for avoiding, mitigating, or offsetting impacts identified above, with consideration of sections 26 (Environmental decision-making hierarchy) and section 27 (Waste management hierarchy) of the EP Act. Also include here measures to enhance or restore environmental quality.<br>These should address at a minimum:<br>• facility design and layout<br>• erosion and sediment control<br>• compliance with any statutory or policy basis for the proposed measures.<br>Discuss adaptation to a changing climate including design and resultant viability of the proposal.<br>All mitigation measures should be substantiated and in accordance with best practice, including advice from relevant NTG advisory agencies. |
| Monitoring and reporting | Outline proposed monitoring and reporting activities related to potential impacts and risks and mitigation and management measures to aquatic ecology.<br>The proposed monitoring and reporting should specify which project phase it relates to, i.e. construction or operations.<br>All monitoring activities should be substantiated and in accordance with best practice advice from relevant NTG advisory agencies. |

| Aspect | Specific information required |
|---|---|
| Residual impact | Assess the significance of any residual impact or risk of the proposal to identified values. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework (as published) and EPBC Act environmental offsets policy. |

## 3.6. Marine environmental quality

Table 9: **Minimum information required for assessment of Marine environmental quality.**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective**: Protect the quality and productivity of water, sediment and biota so that environmental values are maintained. | |
| Environmental values | Describe the water quality (chemical, physical and biological) and sediment characteristics of the marine environment in the proposal's area of influence.<br>Describe water quality objectives and declared beneficial uses.<br>Provide results and interpretation on any marine investigations undertaken<br>Descriptions and interpretation of the environmental values should take into consideration the range of seasonal variation within the proposal footprint and area of influence. |
| Potential impacts and risks | Describe potential impacts to the NT EPA's environmental objective associated with the proposed construction and operation activities and development, including:<br>• temporary impacts to fishing (commercial, recreational, charter, etc…), recreation, industry use of the harbour during construction<br>• installation of subsea cables causing increased sedimentation in water column, negatively impacting upon harbour water quality and aquatic environments<br>• voltage source converter and land-sea joint station development and the potential to produce site run- off, with impacts on water quality in the adjacent harbour<br>• spills of hazardous materials<br>• acid sulfate soils<br>• all direct impacts to seabed from cable laying, anchors, HDD at shore crossing, trenching and rock armouring.<br>Determine the proposal footprint and area of influence that could feasibly experience those impacts.<br>Provide an assessment of potential impacts, benefits and risks to marine environmental quality utilising outcomes of investigations and/or other relevant information. As a minimum, the assessment should take into consideration:<br>• methods, equipment, timing and frequency<br>• the likely scale of disturbance<br>• water management, including stormwater and wastewater management<br>• erosion and sediment control<br>• cumulative impacts with other industries or proposals |

| Aspect | Specific information required |
|---|---|
| | • reversibility of impacts.<br>The assessment must take into account all construction and operation activities of the proposal.<br>The assessment must identify potential impacts and risks to marine environmental quality and quantify their significance:<br>• against relevant guideline thresholds.<br>• on the beneficial uses, water quality objectives and identified environmental values. |
| Avoidance, mitigation and management | Outline the measures for avoiding, mitigating, or offsetting impacts identified above, with consideration of sections 26 (Environmental decision making hierarchy) and section 27 (Waste management hierarchy) of the EP Act. Also include here measures to enhance or restore environmental quality.<br>These should address at a minimum:<br>• facility design and layout<br>• construction/installation methods<br>• erosion and sediment control<br>• marine water management, including ballast water management and marine pest control<br>• potential acid sulfate soil management<br>• spill response<br>• compliance with any statutory or policy basis for the proposed measures.<br>Discuss adaptation to a changing climate including design and resultant viability of the proposal.<br>All mitigation measures should be substantiated and in accordance with best practice, including advice from relevant NTG advisory agencies. |
| Monitoring and reporting | Outline proposed monitoring and reporting activities related to potential impacts and risks, and mitigation and management measures.<br>The proposed monitoring and reporting should specify which project phase it relates to, i.e. construction or operations.<br>All monitoring activities should be substantiated and in accordance with best practice advice from relevant NTG advisory agencies. |
| Residual impact | Assess the significance of any residual impact or risk of the proposal to identified values. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework (as published) and EPBC Act environmental offsets policy. |

## 3.7. Marine ecosystems

Table 10: **Minimum information required for assessment of Marine ecosystems.**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective:** Protect marine habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning. | |
| Environmental values | • Provide maps and interpretation of regional bathymetry, geology, geomorphology, sediments and seabed features at the local-scale for the area of influence within NT and Commonwealth waters.<br>• Provide results and interpretation of any marine investigations undertaken in the area of influence to inform the EIS.<br>• Describe the oceanic processes within Darwin Harbour and the offshore proposal area, such as local and regional tides, as well as seasonal current patterns and wave magnitudes.<br>• Describe the marine ecosystems values of the proposal's area of influence, including but not restricted to benthic communities dominated by mangroves, seagrass, macro algae, corals, filter feeders, mixed communities and bare substrates.<br>• Describe any listed or threatened marine species within the proposal's area of influence and the Commonwealth Marine Area, and the habitats they rely on, including (but not limited to) the following list derived from the results of the PMST search:<br>o All relevant cetaceans<br>o Dugong (*Dugong dugon*)<br>o Green turtle (*Chelonia mydas)*<br>o Leatherback turtle *(Dermochelys coriacea)*<br>o Loggerhead turtle (*Caretta caretta)*<br>o Flatback turtle (*Natator depressus)*<br>o Olive Ridley Turtle (*Lepidochelys olivacea*)<br>o Saltwater crocodile *(Crocodylus porosus)*<br>o Whale shark (*Rincodon typus)*<br>o *Pristis pristis*<br>o *Pristis zijsron*<br>o *Pristis clavata.*<br>Describe the existing health/condition/amenity of marine ecosystems in the proposal's area of influence, with reference to threatening processes (e.g. pest species, habitat degradation), noise and vibration, and sedimentation. |
| Potential impacts and risks | Describe potential impacts to the NT EPA's environmental objective associated with the proposed construction and operation activities and development, including:<br>• indirect impacts to fauna habitat (feeding, nursery, epibenthic, infauna, pelagic, water column etc.) due to changes to marine environment, introduction or spread of contaminants or pest species<br>• direct impacts to fauna as a result of collision with vessels or survey and/or construction equipment<br>• changes to marine fauna behaviours as a result of electric and magnetic fields |

| Aspect | Specific information required |
|---|---|
| | (EMF), noise, thermal emissions or lighting from proposal areas<br>• direct loss of mangrove vegetation (including significant fauna habitat) in Darwin Harbour from cable trenching<br>• direct disturbance/loss to benthic habitats from survey activities, cable laying (including anchoring, vessel maneuvers and trenching if required) and HDD for subsea cable installation<br>• indirect disturbances to benthic habitats – sedimentation/erosion from surface runoff.<br>Determine the proposal footprint and area of influence that could feasibly experience those impacts.<br>Provide an assessment of potential impacts, benefits and risks to marine ecosystems utilising outcomes of investigations and/or other relevant information. As a minimum, the assessment should take into consideration:<br>• methods, equipment, timing and frequency<br>• the likely scale, extent of disturbance<br>• cumulative impacts with other industries or proposals<br>• environmental management requirements associated with seasonal weather, extreme weather conditions such as storms and cyclones for the 2, 10, and 100 year average recurrence interval events<br>• reversibility of impacts.<br>The assessment must identify potential impacts and risks to marine ecosystems and quantify their significance:<br>• against relevant guideline thresholds<br>• on the beneficial uses, water quality objectives and identified environmental values. |
| Avoidance, mitigation and management | Outline the measures for avoiding, mitigating, or offsetting impacts identified above, with consideration of sections 26 (Environmental decision-making hierarchy) and section 27 (Waste management hierarchy) of the EP Act. Also include here measures to enhance or restore environmental quality.<br>These should address at a minimum:<br>• facility design and layout<br>• construction/installation methods, such as:<br>  ○ erosion and sediment control<br>  ○ potential acid sulfate soil management<br>  ○ marine water and sediment management, including ballast water management and marine pest control<br>• compliance with any statutory or policy basis for the proposed measures.<br>Discuss adaptation to a changing climate including design and resultant viability of the proposal.<br>All mitigation measures should be substantiated and in accordance with best practice, including advice from relevant NTG advisory agencies. |
| Monitoring and reporting | Outline proposed monitoring and reporting activities related to potential impacts and risks, and mitigation and management measures. |

| Aspect | Specific information required |
|---|---|
| | The proposed monitoring and reporting should specify which project phase it relates to, i.e. construction or operations.<br><br>All monitoring activities should be substantiated and in accordance with best practice advice from relevant NTG advisory agencies. |
| Residual impact | Assess the significance of any residual impact or risk of the proposal to identified values. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework (as published) and/or EPBC Act environmental offsets policy. |

## 3.8. Air quality

Table 11: **Minimum information required for assessment of Air quality.**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective:** Protect air quality and minimise emissions and their impact so that environmental values are maintained. | |
| Environmental values | • Describe the sensitive receivers within and in proximity to the proposal area.<br>• Describe the existing air quality environment.<br>• Describe any sources of emissions which could impact on air quality.<br>• Provide maps to support descriptions as appropriate. |
| Potential impacts and risks | Describe potential impacts to the NT EPA's environmental objective associated with the proposed construction and operation activities and development, including reduction in local air quality due to the emission of dust and/or diesel exhaust during construction and/or operation of the proposal.<br><br>Determine the proposal footprint and area of influence that could feasibly experience those impacts.<br><br>Provide an assessment of potential impacts, benefits and risks to air quality utilising outcomes of investigations and/or other relevant information. As a minimum, the assessment should take into consideration:<br>• methods, equipment, timing and frequency<br>• the likely source, scale and extent or emissions<br>• nature of sensitive receptors<br>• cumulative impacts with other industries or proposals<br>• reversibility of potential impacts.<br><br>The assessment must identify potential impacts and risks to air quality and quantify their significance:<br>• against relevant guideline thresholds<br>• on identified environmental values. |

| Aspect | Specific information required |
|---|---|
| Avoidance, mitigation and management | Outline the measures for avoiding, mitigating, or offsetting impacts identified above, with consideration of sections 26 (Environmental decision making hierarchy) and section 27 (Waste management hierarchy) of the EP Act. Also include here measures to enhance or restore environmental quality.<br>These should address at a minimum:<br>• facility design and layout<br>• construction methods<br>• emission suppression or management measures<br>• compliance with any statutory or policy basis for the proposed measures.<br>All mitigation measures should be substantiated and in accordance with best practice, including advice from relevant NTG advisory agencies. |
| Monitoring and reporting | Outline any proposed monitoring and reporting activities related to potential impacts and risks, and mitigation and management measures.<br>The proposed monitoring and reporting should specify which project phase it relates to, i.e. construction or operations.<br>All monitoring activities should be substantiated and in accordance with best practice advice from relevant NTG advisory agencies. |
| Residual impact | Assess the significance of any residual impact or risk of the proposal to identified values. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework (as published) and EPBC Act environmental offsets policy. |

## 3.9. Atmospheric processes

Table 12: **Minimum information required for assessment of atmospheric processes.**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective:** Minimise greenhouse gas emissions so as to contribute to the NT Government's target of achieving net zero greenhouse gas emissions by 2050. | |
| Environmental values | Describe the current energy mix of the NT with reference to greenhouse gas (GHG) emissions and proportion of renewables in use. |
| Potential impacts and risks | Describe the proposal's impact on:<br>• direct GHG emissions due to Scope 1 and Scope 2 emissions (e.g., land clearing, diesel exhaust/etc. during construction and operation)<br>• comparison with NT and national emissions<br>• contribution to the NT target of net zero greenhouse gas emissions by 2050 and broader efforts to reduce global greenhouse gas emissions<br>• improvements in the supply of renewable energy and meeting NT renewable energy targets. |

| Aspect | Specific information required |
|---|---|
| Avoidance, mitigation and management | Describe any energy efficiency and mitigation and management measures that will be adopted during the construction and operation phase of the proposal to reduce or minimise GHG emissions, and demonstrate best practice. |
| Monitoring and reporting | Outline any proposed monitoring and reporting activities related to potential impacts and risks to atmospheric processes, and mitigation and management measures.<br>The proposed monitoring and reporting should specify which proposal phase it relates to, i.e. construction or operations.<br>All monitoring activities should be substantiated and in accordance with best practice advice from relevant NTG advisory agencies. |
| Residual impact | Assess the significance of any residual impact or risk of the proposal to identified values. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework (as published) and EPBC Act environmental offsets policy. |

## 3.10. Community and economy

Table 13: **Minimum information required for assessment of Community and economy.**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective:** Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians. | |
| Environmental values | Describe the existing socio-economic profile of the proposal's areas of influence, including reference to:<br>• key landowners/custodians/stakeholders/communities, and other persons with overlapping or intersecting interests<br>• social values as identified by stakeholders<br>• demographics, including skills audit of affected communities and workforce characteristics<br>• relevant accommodation type and quantity<br>• existing and required local businesses relevant to supply chain, construction and operations<br>• primary economic characteristics within the proposal area<br>• primary employment source/s of townships/cities/communities within or in proximity to the proposal area<br>• proximity to existing infrastructure and associated operators (e.g. rail, gas pipeline, cables etc.)<br>• social amenity and use of the proposal area and adjacent areas for other purposes, including, residential, commercial, industrial, recreational/leisure, tourism, and traditional land use. |
| Potential impacts and risks | Describe potential impacts to the NT EPA's environmental objective (including net positive benefits, particularly to local communities) associated with the proposed construction and operational activities, including: |

| Aspect | Specific information required |
|---|---|
| | • changes to population (local and NT), employment market and businesses and indirect impacts to housing market, community and social services, infrastructure and economy. Inclusion of Sun Cable's Territory Benefit Plan may be included in the EIS to satisfy the consideration of potential impacts and risks relevant to local content<br>• social integration of non-local construction personnel during construction<br>• direct and indirect impacts to recreational and commercial areas and industries including Lake Woods, Middle Arm peninsula in Darwin Harbour, and offshore areas (e.g. fisheries)<br>• impacts to waste management facilities, particularly from disposal or recycling of solar panels and batteries during the life of the proposal and following decommissioning<br>• changes or restrictions on railway access by local traffic due to transmission line corridor during construction, operation and maintenance<br>• changes or restrictions to local traffic due to development of new roads and intersections and construction vehicles resulting in delays or inconvenience to local communities and other road users<br>• potential future land use conflicts within the footprint e.g. mineral and petroleum titles<br>• visual impact of infrastructure<br>• impacts to amenity (e.g. noise and dust)<br>• interference with aviation/flight paths and shipping channels (current and planned)<br>• economic assessment of the proposal's impact on the NT economy<br>• details of the financial capacity to implement the proposal and the potential risks to project implementation<br>• total contribution to Gross Territory Product and Gross Domestic Product over the economic life of the proposal<br>• expected employment and availability of appropriately skilled labour during construction and operation phases of the proposal<br>• potential adverse impacts to local and regional industries due to competition for limited skilled labour resources.<br>• use of non-local workforce<br>• estimated capital and annual operational expenditure<br>• value of residual infrastructure at end-of-life of the proposal<br>• impact on the local and NT energy market and energy prices<br>• future NT Government infrastructure within utility corridors e.g. future electricity transmission.<br>Provide a social impact assessment including assessment of potential impacts, benefits and risks to communities and the economy utilising modelling, outcomes of investigations, and/or other relevant information.<br>The assessment must quantify the significance of potential impacts and risks to communities and the economy.<br>The assessment of each aspect should consider cumulative impacts and the reversibility of potential impacts. |

| Aspect | Specific information required |
|---|---|
| Avoidance, mitigation and management | Outline the measures for preferentially avoiding, mitigating, or offsetting adverse impacts, and maximizing benefits identified above.<br>Develop a stakeholder engagement plan and communication strategy.<br>Discuss adaptation to a changing climate including design and resultant viability of the proposal.<br>All mitigation measures should be substantiated and in accordance with best practice, including advice from relevant NTG advisory agencies. |
| Monitoring and reporting | Outline proposed monitoring and reporting activities related to potential impacts and risks to community and economy, and mitigation and management measures.<br>The proposed monitoring and reporting should specify which project phase it relates to i.e., construction or operations.<br>All monitoring activities should be substantiated and in accordance with best practice advice from relevant NTG advisory agencies. |
| Residual impact | Assess the significance of any residual impact or risk of the proposal to identified values. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework (as published) and EPBC Act environmental offsets policy. |

## 3.11. Culture and heritage

Table 14: **Minimum information required for assessment of Culture and heritage.**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective:** Protect sacred sites, culture and heritage. | |
| Environmental values | Describe the local Aboriginal communities and traditional owners within (or in proximity to) the proposal area and any native title claims.<br>Describe the nature and location of Aboriginal and non-Aboriginal historic cultural heritage sites/values within the proposal area, including:<br>• areas listed on Commonwealth and Northern Territory registers of historic and/or cultural heritage.<br>• a description and location of Aboriginal and non-Aboriginal sites, places or objects of natural, historic or cultural heritage significance, current utilisation and spiritual significance. Information sources should include published archaeological and anthropological information, respective registers, consultations and other research.<br>• Describe traditional land use or industry within or in proximity to the proposal area (if any). |
| Potential impacts and risks | Describe potential impacts to the NT EPA's environmental objective associated with the proposed construction and operation activities and development, including:<br>• direct and indirect disturbance to significant Aboriginal cultural heritage sites and values (e.g. artefact scatters, shell middens, earth mounds, quarries, stone arrangements, petroglyphs, rock shelters, rock art, etc.) during construction, operation, and maintenance activities including vegetation clearance, topsoil stripping and subsoil |

| Aspect | Specific information required |
|---|---|
| | excavation<br>• direct and indirect disturbance to traditional and/or contemporary Aboriginal values (including sacred sites) or uses of land (e.g. hunting and ceremonial use) due to construction, operation or maintenance activities<br>• direct and indirect disturbance to non-Aboriginal cultural heritage sites and values during project construction, operation, and maintenance activities including vegetation clearance, topsoil stripping and subsoil excavation<br>• change or permanent land use restrictions in areas of project infrastructure<br>• tangible and intangible impacts to cultural values and landscapes due to cultural connection to country and potential disturbance to flora and fauna, ecosystems, landscapes and landforms from construction, operation or maintenance activities<br>• details of unexploded ordinance clearance (marine).<br>Determine the proposal footprint and area of influence that could feasibly experience those impacts.<br>Provide an assessment of potential impacts, benefits and risks to culture and heritage utilising outcomes of investigations and/or other relevant information.<br>The assessment must identify potential impacts and risks to sacred sites, culture and heritage and quantify their significance.<br>The assessment of each aspect should consider cumulative impacts and the reversibility of potential impacts. |
| Avoidance, mitigation and management | Outline the measures for avoiding, mitigating, or offsetting impacts identified above.<br>Outline approach to both substantial initial and ongoing consultation and engagement with traditional owners/representatives.<br>All mitigation measures should be substantiated and in accordance with best practice, including advice from relevant NTG advisory agencies and traditional owners. |
| Monitoring and reporting | Outline proposed monitoring and reporting activities related to potential impacts and risks and mitigation and management measures to culture and heritage.<br>The proposed monitoring and reporting should specify which project phase it relates to i.e., construction or operations.<br>All monitoring activities should be substantiated and in accordance with best practice advice from relevant NTG advisory agencies. |
| Residual impact | Assess the significance of any residual impact or risk of the proposal to identified values. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework (as published) and EPBC Act environmental offsets policy. |

## 3.12. Human health

Table 15: **Minimum information required for assessment of Human health.**

| Aspect | Specific information required |
|---|---|
| **NT EPA objective:** Protect the health of the Northern Territory population. | |
| Environmental values | Describe the sensitive human populations in proximity to the proposal area. Provide maps to support descriptions as appropriate. |
| Potential impacts and risks | Describe potential impacts to the NT EPA's environmental objective associated with the proposed construction and operation activities and development, including:<br>• human exposure to EMF<br>• biting insects, ticks and mites.<br>The assessment should be based on outcomes of investigations and/or other relevant information and quantify the significance of impacts against relevant guideline thresholds.<br>The assessment of each aspect should consider cumulative impacts and the reversibility of potential impacts. |
| Avoidance, mitigation and management | Outline the measures for avoiding, mitigating, or offsetting impacts identified above. These should address at a minimum:<br>• facility design and layout<br>• construction/installation methods<br>• facility operations and maintenance.<br>All mitigation measures should be substantiated and in accordance with best practice, including advice from relevant NTG advisory agencies. |
| Monitoring and reporting | Outline proposed monitoring and reporting activities related to potential impacts and risks to human health, and mitigation and management measures, for all phases of the proposal.<br>All monitoring activities should be substantiated and in accordance with best practice advice from relevant NTG advisory agencies. |
| Residual impact | Assess the significance of any residual impact or risk of the proposal human health. |
| Offsets | Where a significant residual impact may remain after applying the environmental decision-making hierarchy, identify offsets and describe how any proposed offset is consistent with the NT Offset Framework (as published) and EPBC Act environmental offsets policy. |

# 4. Other requirements

## 4.1. Other environmental factors or matters

### 4.1.1. Matters of national environmental significance

The proposal is a controlled action under the EPBC Act and is being assessed in accordance with an accredited assessment between the NT EPA and the Commonwealth in accordance with the EPBC Act.

It is expected that the following MNES that are protected under Part 3 of the EPBC Act will need to be addressed:

- Listed threatened species and communities (section 18 and 18A)
- Listed marine and/or migratory species (sections 20 and 20A)
- Commonwealth marine environment (sections 23 and 24A), for the proposal component that extends from the edge of territorial waters (3 nautical miles) to the edge of the exclusive economic zone (EEZ).

The draft EIS should address all relevant MNES, and explain how they have adequately regarded the conservation advices of each EPBC listed species that is likely to impacted, that the project is not inconsistent with any Threat Abatement Plans, Bioregional Plans or Recovery Plans.

These include but are not limited to:

- Marine Bioregional Plans for the North and North-West Marine Regions
- EPBC Act Policy Statement 3.21 - Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species
- Conservation advices for:
    - Ghost Bat http://www.environment.gov.au/biodiversity/threatened/species/pubs/174-conservation-advice-05052016.pdf
    - Greater Bilby http://www.environment.gov.au/biodiversity/threatened/species/pubs/282-conservation-advice-15072016.pdf
    - Stylidium ensatum http://www.environment.gov.au/biodiversity/threatened/species/pubs/86366-conservation-advice-05052016.pdf
    - Green Sawfish, Dindagubba, Narrowsnout Sawfish http://www.environment.gov.au/biodiversity/threatened/species/pubs/68442-conservation-advice.pdf
- Recovery Plans for:
    - Northern Quoll http://www.environment.gov.au/resource/national-recovery-plan-northern-quoll-dasyurus-hallucatus
- Threat Abatement Plans for:
    - Predation by feral cats http://www.environment.gov.au/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats
    - predation by European red fox http://www.environment.gov.au/biodiversity/threatened/publications/tap/predation-european-red-fox
    - Competition and land degradation by rabbits http://www.environment.gov.au/biodiversity/threatened/publications/tap/competition-and-land-degradation-rabbits-2016

### 4.1.2. Whole of environment considerations

Provide a holistic assessment of the impacts of the proposal on the whole of the environment, including a description of the connections and interactions between the environmental factors, and cumulative impacts. Succinctly discuss predicted outcomes in relation to the principles of environment protection and management (as set out in Part 2 of the EP Act) and the NT EPA's environmental objectives.

### 4.1.3. Offsets

Provide details of an overall offset strategy for the residual impacts on the terrestrial and marine environments. If a requirement for offsets is identified in the draft EIS, details of a draft implementation plan for the offset/s may be required as part of the Supplement to the EIS. Offsets may be required as a condition of any approval under the EPBC Act.

## 4.2. Stakeholder engagement and consultation

Proponents have a general duty under section 43 of the EP Act to provide communities that may be affected by a proposal with an opportunity for consultation to assist community understanding of the proposed action and its potential impacts and benefits.

The Proponent must engage and consult with stakeholders[4] who are affected by and interested in the Proposal. The Proponent must document the following in the EIS:

- identified stakeholders
- the stakeholder consultation undertaken and the outcomes, including decision-making and any adjustments to the proposal as a result of consultation
- future engagement activities intended during the assessment process and post-approval, including during construction and operation of the proposal.

## 4.3. Public consultation requirements

The public consultation requirements for the EIS are outlined in Part 5 Division 6 of the Environment Protection Regulations 2020. Additional specific details are provided below.

### 4.3.1. Submission period

The NT EPA proposes a period (usually between 30 and 60 business days) for consultation on the draft EIS. The duration of the period will be confirmed during the draft EIS pre-lodgement phase.

### 4.3.2. Public consultation locations

The draft EIS should be provided to and be made available for public consultation at:

- Adelaide River Post Office Store, 1 Stuart Highway, Adelaide River

[4] As defined in the NT EPA's Stakeholder Engagement and Consultation – Environmental impact assessment guidance for proponents (NT EPA 2020)

- Barkly Regional Council Office, 41 Peko Road Tennant Creek NT
- Elliott Post Office, Elliott
- Environment Centre Northern Territory, Unit 3, 98 Woods Street, Darwin
- Katherine Public Library, Level 1, Randazzo Centre, Katherine Terrace, Katherine
- Northern Land Council, 45 Mitchell Street, Darwin
- Northern Territory Library, Parliament House, Darwin
- NT EPA, Level 1, Arnhemica House, 16 Parap Road, Parap
- Victoria Daly Regional Council – Pine Creek Office, 55 Moule Street, Pine Creek

# Appendix A – List of relevant guidance material

The following guidance material is considered relevant to the TOR. This list is not exhaustive, but captures key guidance used in the preparation of these TOR and to inform the preparation of the EIS. The Proponent must draw on further relevant industry and best practice guidance as part of developing the EIS.

- Commonwealth of Australia, 2013. Significant Impact Guidelines 1.1 – Matters of National Environmental Significance.
- DENR, 2019. Land clearing guidelines. Department of Environment and Natural Resources, Darwin.
- DENR, 2020. Northern Territory Climate Change Response: Towards 2050. Department of Environment and Natural Resources, Darwin.
- NT EPA, 2013a. Guidelines for Assessment of Impacts on Terrestrial Biodiversity. Northern Territory Environment Protection Authority.
- NT EPA, 2013b. Guidelines for the Preparation of an Economic and Social Impact Assessment. Northern Territory Environment Protection Authority.
- NT EPA, 2013c. Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the NT. Northern Territory Environment Protection Authority.
- NT EPA, 2014. A Stormwater Strategy for the Darwin Harbour Region. Northern Territory Environment Protection Authority.
- NT EPA, 2015. Waste Management Strategy for the Northern Territory 2015-2022. Northern Territory Environment Protection Authority.
- NT EPA, 2020a. Environmental impact assessment guidance for proponents: Preparing a proponent initiated EIS referral (draft). Northern Territory Environment Protection Authority, Darwin.
- NT EPA, 2020b. Environmental impact assessment guidance for proponents: Preparing an environmental impact statement (draft). Northern Territory Environment Protection Authority, Darwin.
- NT EPA, 2020c. Environmental impact assessment guidance for proponents: Stakeholder Engagement and Consultation (draft). Northern Territory Environment Protection Authority, Darwin.
- NT EPA, 2020d. Environmental impact assessment guidance: NT EPA Environmental Factors and Objectives. Northern Territory Environment Protection Authority.
- Significant impact guidelines 1.2: Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies: http://www.environment.gov.au/system/files/resources/a0af2153-29dc-453c-8f04-3de35bca5264/files/commonwealth-guidelines_1.pdf
- Policy 2.1 Interactions between Offshore Seismic Exploration and Whales
- Marine Bioregional Plans for the North Marine Areas: http://environment.gov.au/coasts/marineplans/north/index.html
- *EPBC Act Policy Statement 3.21 - Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species"* [http://www.environment.gov.au/epbc/publications/shorebirds-guidelines]
- Threatened Species Scientific Committee (2016). *Conservation Advice* Stylidium ensatum. Canberra: Department of the Environment. Available

from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/86366-conservation-advice-05052016.pdf.

- Hill, B.M. & S.J. Ward (2010). *National Recovery Plan for the Northern Quoll* Dasyurus hallucatus. Department of Natural Resources, Environment, The Arts and Sport, Darwin. Available from: http://www.environment.gov.au/resource/national-recovery-plan-northern-quoll-dasyurus-hallucatus
- Department of the Environment (2015). *Sawfish and River Sharks Multispecies Recovery Plan*. Canberra, ACT: Commonwealth of Australia. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/recovery/sawfish-river-sharks-multispecies-recovery-plan
- Department of the Environment (2015). *Threat abatement plan for predation by feral cats* *http://www.environment.gov.au/biodiversity/threatened/publications/tap/threat-abatement-plan-feral-cats*
- Department of Sustainability, the Environment, Water, Population and Communities (2012) *Threat abatement plan to reduce the impacts on northern Australia's biodiversity by the five listed grasses*, Canberra, ACT. http://www.environment.gov.au/system/files/resources/ff24e078-fbb9-4ebd-855d-db09cb4db1f8/files/five-listed-grasses-tap.pdf
- Department of the Environment, Water, Heritage and the Arts (DEWHA) (2008). *Threat abatement plan for predation by the European red fox*. http://www.environment.gov.au/biodiversity/threatened/publications/tap/predation-european-red-fox
- Australian Guidelines for Whale and Dolphin Watching (Commonwealth of Australia, 2017)
- Guidelines for preventing mosquito breeding associated with mine sites - https://digitallibrary.health.nt.gov.au/prodjspui/bitstream/10137/2683/1/Guidelines%20Mine%20Site.pdf
- NESP Earth Systems and Climate Change Hub (2020). Climate change in the Northern Territory: state of the science and climate change impacts. NESP ESCC Hub, Melbourne.