



Chapter 10 - Amenity

AAP01-000-GEG-GGEN-00002

Approved Rev	Approver Position	Signature	Date
00	Mark Branson Chief Development Officer		21 Nov 2022
	Jonathan Kent Program Development Manager		21 Nov 2022



Document revision history and tracking

Document Preparation

Rev	Status	Date	Prepared by	Position	Reviewed by	Position
A	For Review	01 Nov 2022	Charlotte Baker	Environmental Scientist	Jessica Miller	SEIS Coordinator
					Joe Sheridan	Development Manager
B	For Approval	10 Nov 2022	Charlotte Baker	Environmental Scientist	Luke Palfreeman	Chief Technical Principal, Environment
					Joe Sheridan	Development Manager
00	For Use	21 Nov 2022	Charlotte Baker	Environmental Scientist	Mark Branson	Chief Development Officer
					Jonathan Kent	Program Development Manager

Revision history tracking record (Use after Rev 00)

Rev	Date	Description	Prepared by	Approved by

Contents

10 Amenity	10-1
10.1 Introduction.....	10-1
10.2 Information Sources.....	10-1
10.3 Project Amendments since Draft EIS.....	10-1
10.4 Existing Environment and Values.....	10-1
10.5 Potential Impacts.....	10-2
10.5.1 Potential Impacts - Visual Amenity.....	10-2
10.5.2 Potential Impacts - Property Values.....	10-3
10.5.3 Potential Impacts - Air Quality.....	10-3
10.5.4 Potential Impacts - Noise.....	10-5
10.5.5 Noise from Subsea Cable System Installation Impacts on Marine users..	10-6
10.6 Avoidance, Mitigation and Monitoring.....	10-6
10.7 Residual Impact.....	10-11
10.8 Cumulative Impact Assessment.....	10-18
10.9 Conclusion.....	10-18
10.10 Submission Response.....	10-18
10.10.1 NT Land Corporation Submission.....	10-19
10.10.1.1 Future Usability of NT Portion 2626.....	10-19
10.10.1.2 Response.....	10-19
10.10.2 Department of Industry, Tourism and Trade Submission.....	10-19
10.10.2.1 Visual Amenity.....	10-19
10.10.2.2 Response.....	10-20
10.10.3 Department of Infrastructure, Planning and Logistics.....	10-20
10.10.3.1 Response.....	10-20
10.10.4 NT Field and Game Submission.....	10-20
10.10.4.1 Response.....	10-21
10.10.5 Bobby Flanagan Submission.....	10-21
10.10.5.1 Response.....	10-21
10.10.6 Brigid Robertson Submission.....	10-21
10.10.6.1 Response.....	10-21
10.10.7 Matthew James Farmer Submission.....	10-21
10.10.7.1 Response.....	10-22
10.10.8 Sharon Scurr Submission.....	10-22
10.10.8.1 Response.....	10-22
10.10.9 Anonymous Submissions.....	10-23
10.10.9.1 OHTL Undergrounding, Visual Amenity and Property Values ..	10-23
10.10.9.2 Response.....	10-24
10.10.9.3 Noise.....	10-24
10.10.9.4 Response.....	10-24
10.11 NT EPA Direction Responses.....	10-25
10.11.1 Dust Emissions at Solar Precinct - Comment 29.....	10-25
10.11.2 Information required in the Supplement.....	10-25
10.11.3 Response.....	10-25
10.11.4 Dust Emissions along Alternative Routes - Comment 30.....	10-26
10.11.5 Information required in the Supplement.....	10-26
10.11.6 Response.....	10-26
10.11.7 Air Quality at DCS – Comment 31.....	10-26
10.11.8 Information required in the Supplement.....	10-27
10.11.9 Response.....	10-27
10.11.10 Visual Amenity – Comment 32.....	10-27
10.11.11 Information required in the Supplement.....	10-27
10.11.12 Response.....	10-27

Tables

Table 10-1: Additional amenity receptors identified 10-2

Table 10-2: Zones of visual influence..... 10-3

Table 10-3: Air Quality zone of influence (updates to Draft EIS in italics) 10-4

Table 10-4: Noise construction and operational screening distances 10-5

Table 10-5: Amenity - Commitments 10-8

Table 10-6: Summary of EIA results - Amenity - Construction..... 10-12

Table 10-7: Summary of EIA results - Amenity - Operation 10-16

Figures

Figure 10-1: Adelaide River Preferred OHTL Corridor - noise screening distance..... 10-7

10 Amenity

10.1 Introduction

The NT EPA's objectives that relate to Amenity include:

Protect air quality and minimise emissions and their impact so that environmental values are maintained.

Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians.

This chapter assesses the potential impacts to the amenity of Territorians resulting from visual impacts, air quality, noise and vibration, light spill and glint associated with the project refinements or identified by stakeholders as requiring further assessment. The potential impacts considered in this chapter were identified with reference to the EIS TOR issued by the NT EPA, issues raised by stakeholders (Appendix 1.3) and professional judgement of the SEIS team (Appendix 1.5) based on their knowledge and understanding of the Project's components and activities described in Chapter 2 Project Refinement. Potential impacts were then assessed using the EIA methods described in Chapter 3 Impact Assessment of the Draft EIS and summarised in Chapter 1 of this SEIS. This chapter presents the findings of the EIA process undertaken for amenity (a combination of the Air Quality and Community and Economy chapters in the Draft EIS).

10.2 Information Sources

Since the Draft EIS was lodged, the following reports were prepared which deal with potential amenity impacts:

- Landscape and Visual Impact Assessment (LVIA) (Appendix 10.1)
- Constraints Planning and Field Development Procedure (Appendix 4.1)
- Environmental Design Criteria and Standards (Appendix 2.1).

10.3 Project Amendments since Draft EIS

Project Refinements are described in Chapter 2. The below list summarises the key project refinements with the potential to impact amenity:

- Increased footprint at Powell Creek Solar Precinct for Ancillary Infrastructure and Electrodes at both Powell Creek Solar Precinct and the DCS
- Temporary increased construction footprint at Murrumujuk and Gunn Point due to the DCS Electrode and associated HVDC Electrode Line Corridor
- OHTL structures increase in maximum height from 56 m to 60 m
- Definition of the OHTL Corridor at Katherine, Pine Creek, and Adelaide River.

10.4 Existing Environment and Values

Since the Draft EIS was submitted, the LVIA (Appendix 10.1) was undertaken to define the current visual amenity levels along the Project's footprint (up to the Cable Transition Facilities) and potential change in visual landscape post construction. Table 10-1 lists the additional sensitive receptors identified during the consultation period.

Table 10-1: Additional amenity receptors identified

Receptor Location	Existing / Future	Viewpoint (Appendix 10.1)
Lambell's Lagoon	Existing	7 – Arnhem Highway
Elizabeth Valley Road, Noonamah	Existing	9 – Elizabeth Valley Road, Noonamah
Alverly Road, Noonamah	Existing	10 – Horsnell Road, Noonamah
Herbert	Existing	6 – Beddington Road, Herbert
Noonamah Ridge Development/Lloyd Creek Rural Village	Future (Environmental Approval granted)	10 – Horsnell Road, Noonamah
Murrumujuk township and foreshore	Future (Litchfield Sub-Regional Land Use Plan)	1 – Gunn Point Campsite 2 – Gun Point Road #1 3 – Leaders Creek Boat Ramp Access 4 – Gunn Point Road #2 5 – Gunn Point Road #3
Tourism operators (including the Ghan Railway)	Existing	Multiple

Concerns were also raised regarding whether OHTL structures would include lighting (thus providing negative visual impacts at night and light spill concerns) and potential amenity impacts of low-level noise (humming or buzzing) from the OHTL.

10.5 Potential Impacts

The following potential impacts were identified by stakeholders during the exhibition period:

- Decreased visual amenity to existing residences and tourism operations from OHTL post construction
- Property devaluation resulting from a result of visual amenity impacts from OHTL post construction
- Dust emissions during construction decreasing the visual amenity
- Increased noise emissions reducing the amenity to residences and existing sensitive land uses
- Increased noise levels from Subsea Cable System installation activities impacting on other marine users.

Potential impacts to future land uses, including amenity impacts, are addressed in Chapter 12 Land Use and Transport.

10.5.1 Potential Impacts - Visual Amenity

The Landscape and Visual Amenity Impact Assessment Report (Appendix 10.1) has identified four zones of visual influence, outlined in Table 10-2, which rate the potential impact from the OHTL based on the approximate distance from surrounding landscape features. For example, within the first 1.5 km the infrastructure will appear to dominate the landscape. However, at 3.6 – 7 km the infrastructure will blend into the background due to the visual size in comparison to the surrounding landscape.

Table 10-2: Zones of visual influence

Distance	Value for visual impact assessment purposes
0 – 1.5 km	High
1.6 – 3.5 km	Medium
3.6 – 7 km	Low
7.1 km or greater	Negligible

The other key factor within the area of influence is the topography of the landscape which can obscure the OHTL structures or increase the perceived distance from the viewpoint (for example if looking down from a hill). The zone of theoretical visibility is based on topography and is shown in Figure 4-2 of Appendix 10.1.

The visual values of the landscape vary widely across the project footprint as does the change in the landscape resulting from result of the project infrastructure. The LVIA (Appendix 10.1) concluded the impacts along the OHTL varied from negligible (including locations where receptors are unable to view the Project) to a moderate level of impact. A more detailed LVIA will be undertaken for certain sections of the OHTL, particularly the NTG utilities corridor where secondary approval documentation is required. This will involve consultation with landowners to better understand the landscape characteristics and most effective mitigation measures. Potential mitigation measures to be considered have been included in Table 10-5.

10.5.2 Potential Impacts - Property Values

Literature reviews of the impact of comparable high voltage OHTLs have mixed information on whether property values are impacted by the construction. There are also instances of increase in property values associated with the 'green space' within the OHTL Corridor providing positive amenity impacts. The OHTL is aligned with the rail corridor and the NT utilities corridor, as these areas already contain, or are planned to contain, linear infrastructure with potential to devalue property. Measures which may reduce the potential for amenity impacts are also considered in Section 10.6.

Should a landowner identify the potential for a negative impact on their property value from nearby OHTL infrastructure, the Proponent will develop a grievance procedure to resolve the issue with the impacted landowner. The grievance procedure is contemplated in the SIMP at Appendix 3.2. This procedure will involve direct negotiation with the landowner and consider whether advice from an independent third party, such as a Property Valuer, is required.

10.5.3 Potential Impacts - Air Quality

There is no material change in the construction or operation methodology which would change the screening distances for air quality (PM₁₀ or NO₂). Figure 14-1 and Figure 14-2 show the screening distances where there is potential for air quality impacts for all new and refined footprint layers. These separation distances are outlined in the Draft EIS and Table 10-3. Project refinements, as outlined in Chapter 2, are indicated in italics in Table 10-3 to show which separation distances are applied based on the types of activity required for construction. These separation distances reflect the worst-case scenario for equipment onsite, climatic conditions and do not include any potential mitigation measures (including topography, vegetation which provide natural dust abatement). Proposed mitigation measures in Section 10.6 will reduce this further.

Table 10-3: Air Quality zone of influence (updates to Draft EIS in italics)

Location/Activity	Buffer limiting pollutant	Separation distance required based on incremental impact (m)	Separation distance required based on cumulative impact (m)
Solar Farm near Elliott Including Ancillary Infrastructure and Electrode Site	Maximum 24-hour average PM ₁₀	501	1,079
Road construction sites on Solar Precinct with no ground disturbance (vehicle emissions only)	Maximum 1-hour average NO ₂	51	80
Rail construction sites on Solar Precinct with no ground disturbance (vehicle emissions only)	Maximum 1-hour average NO ₂	43	71
OHTL near Elliott Including HVDC Electrode Line Corridor	Maximum 1-hour average NO ₂	444	486
OHTL near Murrumujuk Including HVDC Electrode Line Corridor	Maximum 1-hour average NO ₂	307	327
Trenching works associated with Cable Transition Facilities near Murrumujuk Including electrode site	Maximum 1-hour average NO ₂	370	397

As the project refinements will not alter the construction methodology or types of activities occurring, the air quality screening distance used in the Draft EIS is still considered applicable to the project refinements. Figure 14-2 shows the air quality screening distance surrounding the Ancillary Infrastructure outside the Solar Precinct and the Powell Creek Electrode. No sensitive receptors have been identified within the screening distance. Figure 14-1 shows the air quality screening distance surrounding the OHTL Corridor at Adelaide River which has materially changed since the Draft EIS was submitted. Only one sensitive receptor has been identified in the preferred OHTL Corridor at Adelaide River. The impact on this receptor has been significantly decreased compared to when the OHTL was located in the rail corridor as presented in the Draft EIS. The Electrode and associated HVDC Electrode Line Corridor at Murrumujuk is on the opposite side of the DCS to the sensitive receptors and will not increase dust levels at the sensitive receptors above what would be experienced from the DCS construction.

The Constraints Planning Framework and Field Development Procedure (Appendix 4.1) identifies high risk areas for dust generation and prescribes a Trigger and Response Plan (TARP) to be developed to manage dust at these locations. The TARP will be developed prior to construction and set out a plan for monitoring of climatic conditions and adaptive management techniques to be applied to construction, the highest risk for dust emissions. Examples of adaptive management techniques include:

- Dust suppression using water
- Vehicle speed restrictions

- All trucks containing road base or other high dust generating materials will be covered
- Stockpiles will be covered or wetted down where practical
- Dust screens (vegetation or cloth)
- Reducing or ceasing high risk dust generation work
- Progressively rehabilitate construction areas as soon as no longer required.

10.5.4 Potential Impacts - Noise

Screening distances where noise limits may not be achieved during construction and operation were identified in Appendix L to the Draft EIS (Noise Technical Memo) and summarised in Table 10-4, below. As with air quality the screening distance is based on a worst-case scenario assuming all equipment operating at once and worst-case climatic conditions. Actual noise levels will likely be well below these values especially after mitigation measures are applied.

Table 10-4: Noise construction and operational screening distances

Location	Land Use	Construction Screening Distance (m)	Operational Screening Distance (m)
Solar Precinct	Residential	1,815	3,390
	Passive Recreational	48	1,583
OHTL	Residential	620	101
	Industrial	5	0
	Passive Recreational	116	0
	Active Recreational	55	0
Darwin Converter Site	Residential	1,930	350
	Industrial	0	0
Cable Transition Facilities	Passive Recreational	92	-

Low frequency humming noise is generally associated with the Corona Effect (electrical discharge occurring from high voltage power lines, which on HVDC lines occurs during fair weather (HVAC lines this impact occurs during wet weather). This low frequency noise is generally only an issue when it is louder or more prominent than other higher frequency noise that would otherwise 'mask' the low frequency noise e.g., evenings, and overnight. The degree to which people can hear, and are affected by, low level noise will be determined by several factors including:

- Hearing sensitivity
- Presence of tones
- Fluctuating noise level
- Frequency modulation
- Rattle or vibration associated with noise (not applicable in this situation)
- Proximity to other noise sources.

The potential impacts from noise are consistent with the Draft EIS excepting the changes to project footprint (highlighted in Chapter 2 Project Refinements). For the purpose of the SEIS, all additional project footprints underwent an initial noise screening. This screening involved applying the noise screening distances around each additional piece of infrastructure (as shown in Table 10-4) and assessed to determine whether any receptors occurred within this buffer;

- Solar Precinct Ancillary Infrastructure and Powell Creek Electrode – No receptors have been identified within the screening distance for the updated footprint.

Adelaide River Preferred OHTL corridor – there is no designed land use zoning for the Adelaide River area, location of residential receptors have been identified in Figure 10-1.

- Darwin Converter Site Electrode and associated HVDC Electrode Power Line Corridor.

Based on the above project refinements 3 receptors may potentially be impacted by construction noise that were not previously from the Adelaide River preferred OHTL corridor route. However, the OHTL corridor presented in the Draft EIS had the entire Adelaide River township within the construction noise screening distance and thus the preferred route significantly decreases the potential noise impacts. However, it should be noted that the screening distance is based on worst case scenario (e.g., all equipment operating at same time during construction, worst case climatic scenarios). Where residences occur within the separation distances, additional mitigation measures will be undertaken in accordance with the Constraints Planning Framework and Field Development Procedure (Appendix 4.1).

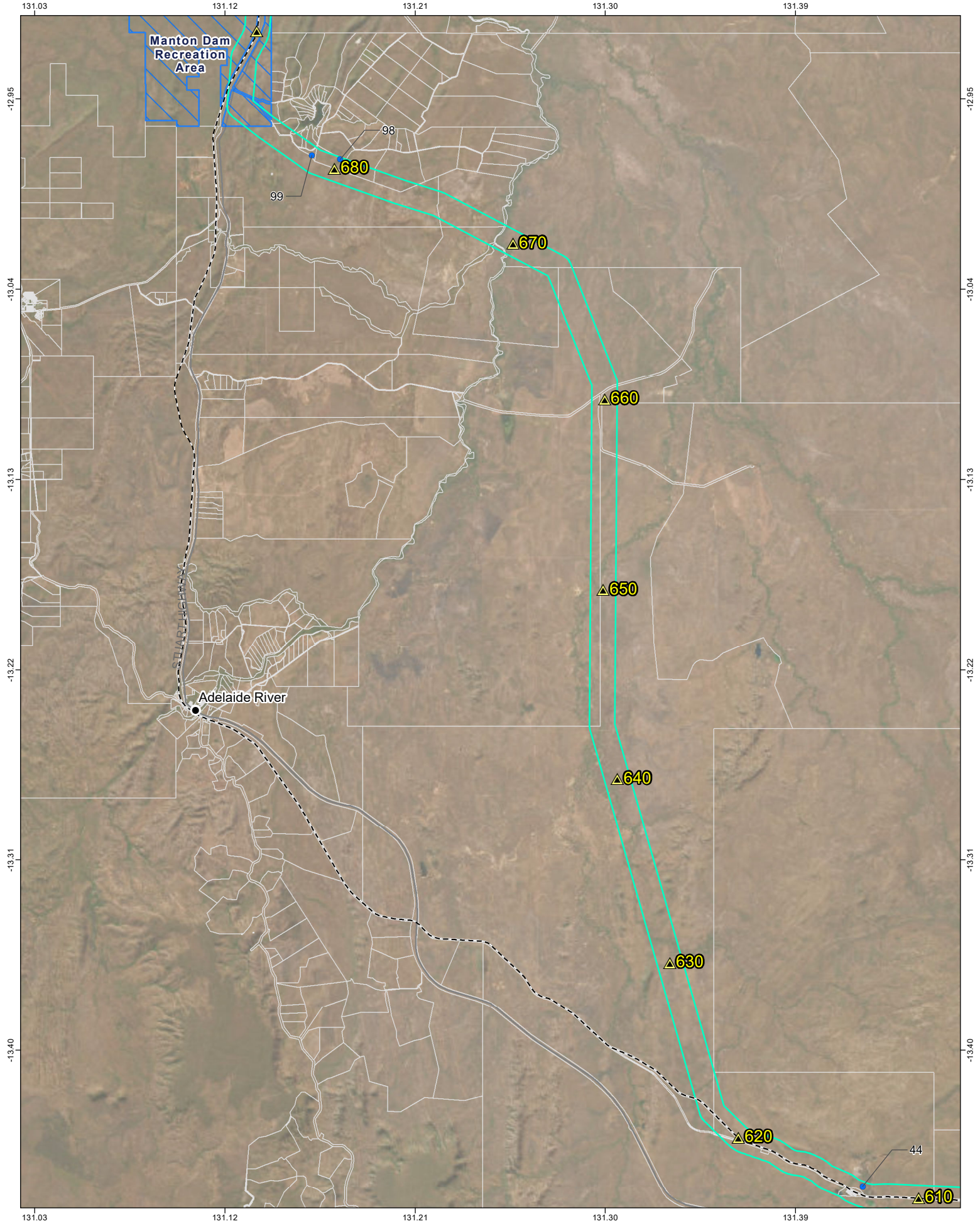
10.5.5 Noise from Subsea Cable System Installation Impacts on Marine users

Chapter 10 of the Draft EIS identifies the potential impacts of noise from cable laying on marine fauna. Based on previous studies of marine vessels and jetting technology, noise levels are likely to be between 180dB re 1µPa (frequency range of 0.5 kHz to 50 kHz), which is similar to that generated by large commercial ships that frequent Darwin Harbour. Marine users that are proximate to cable installation activities will be on vessels with similar noise outputs and thus the noise from their own vessel will drown out project noise. This noise would be a temporary impact associated with the initial construction with the boat travelling at an average speed of 500 m per hour (12 km per day). Any marine users would only be impacted for a short period of time and the impact would be minor as the noise of the Cable Laying Vessels would be similar to their own noise emissions.

10.6 Avoidance, Mitigation and Monitoring

Impact mitigation was undertaken in accordance with the environmental decision-making hierarchy consistent with Section 26 of the *EP Act*. The following decision-making hierarchy sets the following priorities when addressing impacts which have been considered in developing Table 10-5:

1. Avoid – ensure that actions are designed to avoid adverse impacts on the environment
2. Mitigate – identify management options to mitigate adverse impacts on the environment to the greatest extent practicable
3. Offset – if appropriate, provide for environmental offsets for residual adverse impacts on the environment that cannot be avoided or mitigated.



Legend

- Kilometre Points
- Roads
- Existing Railway Line
- Cadastre
- OHTL Construction Noise Screening Distance - Residential (620m)

Source: NTG data - Parks and reserves. Australian Government data - Railway, roads, coastal waters and marine parks

Sensitive Receptors

- Dwelling (inside the noise screening distance)
- Protected Areas

Darwin
Adelaide River
Pine Creek
Katherine

Figure 10-1: Adelaide River Preferred OHTL Corridor - Noise Screening Distance

Project: **Australia-Asia PowerLink**

Scale: 1:250,000 Datum: GDA2020

Coordinate System: GDA2020 A4

Reference #: AAPL_GNR_CTA_GEN_MAP_0452

Date: 18/11/2022 Figure: 1 of 1 Revision: A

SUN CABLE AUSTRALIA-ASIA PowerLink

DISCLAIMER: Sun Cable Pty Ltd disclaims all liability for all claims, expenses, losses, damages, and costs any person/company may incur as a result of their /its reliance on the accuracy or completeness of this document or its capability to achieve any purpose. © Sun Cable Pty Ltd 2022.

Table 10-5: Amenity - Commitments

Impact	Avoidance	Mitigation	Monitoring
Visual amenity impacts	<p>Avoid siting project infrastructure in sensitive areas.</p> <p>Preferred OHTL route at Adelaide River involves a significant relocation to increase separation distances to sensitive receptors.</p>	<p>Micro siting of OHTL in areas with lower visual impact such as within existing clearings, alongside existing linear infrastructure, and natural linear boundaries.</p> <p>Consideration of style of OHTL structures (monopoles or lattice towers) to consider the visual impact of each, as well as construction materials to reduce reflective surfaces.</p> <p>Consultation with project stakeholders and consideration of vegetation planting to achieve a level of visual screening for project infrastructure.</p>	N/A
Property devaluation because of amenity impacts from the Project	<p>Establish appropriate separation distance from existing properties to project infrastructure locations that are a distance.</p> <p>Preferred OHTL route at Adelaide River involves a significant relocation to increase separation distances to sensitive receptors.</p>	<p>Siting of infrastructure on land where existing or planned linear infrastructure will be located e.g., the rail corridor and NTG utilities corridor.</p> <p>Should a landowner identify the potential for a negative impact on their property value from nearby OHTL infrastructure, the Proponent will develop a grievance procedure to resolve the issue with the impacted landowner.</p>	N/A

Impact	Avoidance	Mitigation	Monitoring
Elevated PM₁₀ dust and NO₂ pollutants above assessment criteria levels outside the Project's footprint	Maintain separation distances to sensitive receptors.	<p>Develop a TARP prior to construction that demonstrates monitoring and adaptive management techniques that will be applied should monitoring criteria be met. Examples of adaptive management techniques include:</p> <ul style="list-style-type: none"> • Dust suppression using water • Vehicle speed restrictions • All trucks containing road base or other high dust generating materials will be covered • Stockpiles will be covered or wetted down where practical • Dust screens (vegetation or cloth) • Reducing or ceasing high risk dust generation work • Progressively rehabilitate construction areas as soon as no longer required. 	<p>Visible dust monitoring for adaptive management techniques.</p> <p>Climatic Conditions (hot, dry, and windy conditions leading to a higher risk)</p> <p>TSP or PM₁₀ monitoring for high-risk areas (adjacent to communities where separation distances to receptors may not be met).</p>
Noise levels above NT EPA guidance values	Maintain separation distances to residences where possible.	Where not possible (especially for construction noise which has a larger screening distance) additional noise measures may be implemented including day operating hours only, assessment of noise impacts including consideration of topography and natural screening barriers or other noise abatement methods. Refer to Constraints Planning Framework and Field Development Procedure (Appendix 4.1).	If noise complaints are unable to be resolved following adaptive management and adoption of additional mitigation measures, noise monitoring may be undertaken to demonstrate achievement of the NT EPA Noise Management Framework Guideline 2018.

Impact	Avoidance	Mitigation	Monitoring
Noise from Subsea Cable System installation impacts on marine users	<p>Subsea Cable System avoids busy marine areas such as Darwin Harbour.</p> <p>Cable laying activities average speed is 500 m per hour (12 km per day) to limit duration of noise emissions in a given area.</p>	Marine vessels selected have similar noise emissions to other commercial vessels used in the area.	N/A

10.7 Residual Impact

All amenity impacts from the Project have a residual risk of minor, except for the visual amenity impact of the OHTL structures which has the potential to remain as moderate. The visual amenity impact assessment is conservative; the moderate impacts would only be experienced a limited distance from the OHTL while the regional impacts (up to 7 km) would be minor to negligible.

Table 10-6: Summary of EIA results - Amenity - Construction

Impact	Location	Likelihood	Scale	Duration	Magnitude	Value rating	Certainty	Residual Impact
Visual impacts because of construction of the Project.	Entire Project	Likely Construction will involve vegetation clearance and soil disturbance and earthworks over a large footprint.	Limited The 7 km area of theoretical visibility is associated with the OHTL structures which are not present during construction and thus impacts are limited to close proximity.	Short Term Short duration of project construction period in each location particularly the OHTL which is a highly mobile work front. The total approximate forecast is that construction as a whole will last four years.	Minor The moderate impacts in the LVIA (Appendix 10.1) are associated with OHTL structures. During construction these structures will not be present and so only small construction locations would be visible and likely only at one to two locations at a time.	Medium There are residences and buildings present in the zone of theoretical visibility.	High LVIA undertaken for operations, risks and control strategies are well understood.	Minor

Impact	Location	Likelihood	Scale	Duration	Magnitude	Value rating	Certainty	Residual Impact
Elevated NO₂ and PM₁₀ dust above assessment criteria levels outside the project footprint.	Solar Precinct	Likely Construction will involve movement of large amounts of soil and earthworks as well as clearing of vegetation and soil crusts which would otherwise stabilise soil and reduce dust.	Localised No change to distance at which dust is expected to dissipate below regulated levels.	Medium Term Construction may last for a period of four years.	Minor Emissions are likely to exceed natural variability albeit with mitigation are expected to be below limits and due to the short period of time are unlikely to have significant impact.	Low No sensitive receptors present in areas where air quality criteria are predicted to be exceeded.	High Air quality modelling undertaken in Draft EIS, risk is well understood as are control strategies.	Minor
	OHTL	Likely Construction will involve movement of large amounts of soil and earthworks as well as destruction of vegetation and soil crusts which would otherwise stabilise soil and reduce dust.	Localised No change to distance at which dust is expected to dissipate below regulated levels.	Short Term While construction as a whole will last approximately four years each construction site will only be under construction for a short period of time.	Minor Emissions are likely to exceed natural variability albeit with mitigation are expected to be below limits and due to the short period of time are unlikely to have significant impact.	Medium There are residences and buildings present in the areas where air quality criteria are predicted to be exceeded.	High Air quality modelling undertaken in Draft EIS, risk is well understood as are control strategies.	Minor
	DCS	Likely Construction will involve movement of large amounts of	Localised No change to distance at which dust is expected to	Medium Term Construction may last for a period of four years.	Minor Emissions are likely to exceed natural variability albeit with	Low No sensitive receptors present in areas where air quality	High Air quality modelling undertaken in Draft EIS, risk	Minor

Impact	Location	Likelihood	Scale	Duration	Magnitude	Value rating	Certainty	Residual Impact
		soil and earthworks as well as destruction of vegetation and soil crusts which would otherwise stabilise soil and reduce dust.	dissipate below regulated levels.		mitigation are expected to be below limits and due to the short period of time are unlikely to have significant impact.	criteria are predicted to be exceeded.	is well understood as are control strategies.	
Noise levels about EPA noise guideline values at nearest sensitive receptors.	Entire Project	Likely Noise modelling in Draft EIS identified sensitive receptors that may be exposed to noise above the noise limits.	Localised Noise modelling has identified impacts may occur up to 2 km for night-time construction noise.	Short Term Construction may last for a period of four years however, all receptors within the screening distance occur within the OHTL Corridor where each construction site is only likely to be active for a short period within the four years.	Minor Noise levels are likely to exceed natural variability within the screening area. However, with mitigation are expected to be lower than reported and for a short period of time.	Medium There are residences and buildings present in the areas where air quality criteria are predicted to be exceeded.	High Noise modelling undertaken (Appendix L, Draft EIS), risk and control strategies are well understood.	Minor

Impact	Location	Likelihood	Scale	Duration	Magnitude	Value rating	Certainty	Residual Impact
Noise from Subsea Cable System installation impacts on marine users.	Subsea Cable System	Possible Cable laying vessels and techniques will produce noise emissions.	Localised Noise emissions are predicted to have a localised impact (Chapter 10, Draft EIS)	Short Term Cable laying proceeds at a rate of 500 m/hour and so any marine users would only be exposed for a short period of time.	Minor Background noise including the ocean and noise generated from the other marine users' engines will be equivalent to emissions from cable laying.	Low There is the potential for receptors to come into proximity to the CLVs. However, no receptors are permanently stationed along the route.	High Literature indicates cable laying has minimal noise impacts (Chapter 10, Draft EIS).	Minor
Low level buzzing or humming noise generated by corona effect along OHTL.	N/A – no source during construction							

Table 10-7: Summary of EIA results - Amenity - Operation

Impact	Location	Likelihood	Scale	Duration	Magnitude	Value rating	Certainty	Residual Impact
Visual Impacts of the OHTL structures.	OHTL	Likely The OHTL structures will be visible from the surrounding landscape which could present a negative visual impact.	Regional The OHTL has the potential to be visible to approximately 7 km from activities.	Long Term Impacts are associated with permanent infrastructure.	Moderate The visual impacts vary widely along the OHTL, as a conservative approach the highest impact identified in the LVIA (Appendix 10.1) has been adopted for the residual risk assessment.	Medium While the OHTL Corridor has been located to reduce impacts to receptors it does traverse populated areas which already exhibit landscape changes resulting from human occupation.	High Impacts and mitigations of OHTL are well known. The Proponent has commissioned an LVIA to assess impacts (refer to Chapter 10.1).	Moderate
Property devaluation resulting from visual amenity impacts.	OHTL	Possible There is conflicting evidence on whether this impact occurs.	Limited Likely limited to where amenity impacts are the highest (visual <1.5 km, noise, 100 m)	Long Term Infrastructure present for the life of the project.	Minor OHTL aligned with other linear infrastructure or land reserved for linear infrastructure and thus impacts attributed to the OHTL itself would be minor.	Low Several receptors exist along the OHTL.	Low Although studies have been undertaken of this impact the results have provided contradictory evidence that this impact occurs.	Minor

Impact	Location	Likelihood	Scale	Duration	Magnitude	Value rating	Certainty	Residual Impact
Elevated PM₁₀ dust and NO₂ pollutants above assessment criteria levels outside the project footprint.	Entire Project	Possible Primary sources of air emissions during operations are from vehicle movements and minor ground disturbance activities.	Limited Consistent with Draft EIS assessment.	Short Term Consistent with Draft EIS assessment.	Negligible Consistent with Draft EIS assessment.	Low – Medium Consistent with Draft EIS assessment.	High Consistent with Draft EIS assessment.	Minor
Low level buzzing or humming noise generated by corona effect along OHTL.	OHTL	Likely This impact is commonly associated with OHTL under certain climatic conditions.	Limited Noise will only be heard within a limited distance of the OHTL.	Long Term Noise will be heard periodically during operations.	Minor Noise is perceptible at a close proximity. However, within all guidance and recommended noise levels.	Medium Receptors will exist within close proximity to the OHTL along sections. However, they have some resilience to change.	High Impacts and mitigations are well known and documented.	Minor

10.8 Cumulative Impact Assessment

As all residual risks have been identified as minor except for visual amenity, impacts during operations will not be a cumulative impact with surrounding projects. The LVIA (Appendix 10.1) has also reviewed all existing and planned projects in the surrounding region and determined there are no potential cumulative impacts. A more detailed LVIA will be undertaken for certain sections of the OHTL, particularly the NTG utilities corridor where approval under the *Planning Act 1999* (NT) is required. This will involve consultation with landowners to better understand the landscape characteristics and most effective mitigation measures.

10.9 Conclusion

This chapter assesses the potential amenity impacts of the Project. Potential impacts on the health and safety of the public are assessed in Chapter 14 Human Health and other impacts on the social and economic environment are addressed in Chapter 3 Stakeholder and Community Engagement. After implementing mitigation measures, all the air quality impacts have been reduced to minor to achieve the objective to protect air quality and minimise emissions and their impact so that environmental values are maintained. The only residual risk above minor is the potential visual impacts from the OHTL structures. This residual risk of 'moderate' is a conservative estimate and mitigation measures will reduce it to ALARP. Further mitigation measures such as burying the cables underground present significant increase in the risk to terrestrial flora and fauna and disturbance of soils including PASS and PFAS contaminated soils (see Chapter 2 - Project Refinement for further discussion on why undergrounding the OHTL is not proposed and Chapter 4 - Terrestrial Environmental Quality and Chapter 6 - Hydrology for discussion on PASS and PFAS impacts).

10.10 Submission Response

During the Draft EIS Public Exhibition period, the following government comments were received regarding community and economy matters:

- DCCEEW
- DEPWS
- DIPL
- NT Land Corporation
- Department of the Chief Minister and Cabinet
- Department of Industry, Tourism and Trade
- CCGC.

The ECNT and NT Field and Game also provided comments, as did several community submitters, including anonymous submitters.

These comments relate to the key themes of recreation, future land use, transport, visual and acoustic impacts, the EIS consultation process to date, Territory benefits and property values.

The Proponent's responses to the submissions received are provided in Section 10.10.1 to Section 10.10.9.

10.10.1 NT Land Corporation Submission

10.10.1.1 Future Usability of NT Portion 2626

The Corporation holds NT Portion 2626 for the purpose of ensuring the long term strategic benefits of the land are maintained. The Corporation currently views the Environmental Impact Statement as inadequate because it does not examine if the project will impact on the future usability of NT Portion 2626.

The Litchfield Subregional Land Use Plan, contained within the NT Planning Scheme 2020, outlines opportunities for the future use of NT Portion 2626. This includes urban development at Murrumujuk, strategic industry uses at Glyde Point, and grazing and agriculture uses to the east of NT Portion 2626.

Of particular concern to the Corporation is:

- The impact that an Electrode may have on the future usability of land surrounding it (the Corporation understands that an Electrode is proposed for the eastern part of NT Portion 2626)*
- Noise and amenity impacts from the Darwin Converter Site – Figure 15-4 within Chapter 15 indicates that there will be offsite noise impacts, which may reduce the future useability of land within the noise contours*
- Amenity impacts on the foreshore at Murrumujuk as a result of the Land Sea Joint Station – the infrastructure set within the 1.5 hectare site may impact on the visual amenity of the foreshore and beach.*

Therefore, the Corporation seeks that the proponent examine if the project will impact on the future useability of NT Portion 2626, as envisaged by the Litchfield Subregional Land Use Plan. Until this matter is given consideration by the proponent, the Corporation will view this Statement as not satisfactory.

10.10.1.2 Response

Potential impacts of the Project on future land uses (including amenity issues) are addressed in Chapter 12 Land Use and Transport. Potential noise impacts are discussed above in Section 10.5.4. Impacts from operational noise are not expected to be above 45 dB at the boundary of the proposed residential land use based on a worst-case scenario. This level is acceptable for daytime noise and construction of fences and other residential infrastructure will likely mitigate the noise levels further. Viewpoint 1 of the Landscape and Visual Amenity Impact Assessment (Appendix 10.1) is the Gunn Point Campsite, being representative of the Murrumujuk foreshore and beach where the DCS and Cable Transition Facilities are proposed. The potential impacts from the DCS Electrode are also discussed in Chapters 2, 12 and in Appendix 12.1. The assessment concluded that the visual impact from this location is negligible based on the distance to infrastructure, flat topography of the area and density of vegetation in the landscape. NT Land Corporation was consulted during the EIS Consultation Campaign. Refer to Stakeholder Consultation Report (Appendix 3.1).

10.10.2 Department of Industry, Tourism and Trade Submission

10.10.2.1 Visual Amenity

The Overhead Transmission Line from the solar precinct to the Darwin Converter Site (788 kms) may present a visual amenity issue for visitors travelling along the highway in the sections where the OHTL is near the highway or travellers using the railway on the Ghan. The size of the transmission line poles is substantially larger than regular power poles meaning the poles may be highly visible to travellers. Given the extensive length of the OHTL it has potential to impact the visual amenity of a large expanse of outback.

It was stated in the stakeholder consultation report at p. 47 that: “Stakeholders generally accepted the explanation that it was more expensive and disruptive to the environment to underground the cables and that underground cables also lose more energy than over headlines” however, there was no further information provided in the EIS to expand on this explanation.

10.10.2.2 Response

The LVIA (Appendix 10.1) assessed potential visual impacts from the OHTL on tourism industries and concluded that while road and rail users will engage with the infrastructure at varying points along the OHTL Corridor the impact is likely to be for short periods of time due to the speed of travel. Alternatively, the OHTL and Solar Precinct could be considered a point of interest and enhance the experience.

Analysis of options for the Project (including the selection of overhead cables rather than underground) is covered in Chapter 2 Project Refinement.

10.10.3 Department of Infrastructure, Planning and Logistics

The section outlines that ‘Cable laying can progress at speeds of up to around 500m per hour and will be performed on a 24-hour basis to ensure minimal navigational impact on other users and to maximise efficient use of applicable weather conditions and vessel and equipment time’.

Noise impacts to marine users resulting from 24-hour works in the Subsea Cable System relating to marine users has not been assessed in the risk assessment (Appendix E). Provide a summary in the risk assessment to show risks have been adequately considered and mitigated appropriately.

10.10.3.1 Response

Chapter 10 of the Draft EIS identifies the potential impacts of noise from cable laying on marine fauna. Based on previous studies of marine vessels and jetting technology, noise levels are likely to be between 180dB re 1µPa (frequency range of 0.5 to 50 kHz) which is similar to that generated by large commercial ships that frequent Darwin Harbour. Marine users that are out far enough to be impacted by cable laying will be on vessels with similar noise outputs and thus the noise from their own vessel will drown out the noise of cable laying. This noise would be a temporary impact associated with the initial construction with the boat travelling at an average speed of 500 m per hour (12 km per day). Any marine users would only be impacted for a short period of time and the impact would be minor as the noise of the cable laying vessels would be similar to their own noise emissions. Residual risk of this impact was assessed as minor (Table 10-6).

10.10.4 NT Field and Game Submission

NT Field and Game has taken a keen interest in this project from the time the final stage of its route was diverted from Livingstone to Gunn Point beach as much of this area is magpie goose and waterfowl habitat. Field and Game members are concerned that the overhead transmission lines (OHTL) will pose fatal bird strike consequences for birds with large wingspans like magpie geese, brolga and jabiru, especially where it intersects Black Jungle Reserve and traditional flight paths from Quambi Lagoon and Melacca Swamp to the coastal floodplain of Shoal Bay Coastal Hunting reserve. We have contended that the variation from Litchfield to Gunn Point should be undergrounded creating a utilities pipeline that would become a future asset that could also include water, power, communications infrastructure that the township of Murrumujuk could utilise in years to come. The 44m high towers will be an eyesore especially where they pass within 200m to 300m of Lambell’s Lagoon. The sway of these cables can be quite extensive. This is what causes the major threat to our large birds as do wind turbines on brolgas in western Victoria. I am unsure if this sway has been mitigated by a reduction in the spans between towers as the corridor clearance seems to have been drastically reduced since our last meeting. I believe the undergrounding could also reduce the need to keep the corridor cleared for the next 70 years too. This ongoing disturbance will surely distribute weeds like gamba. This would reduce the ongoing costs of maintenance and the threat of cyclone damage to the OHTLs and towers. It appears that the subsea cable stretching from Gunn

Point to Singapore, a distance of 4200 km will be buried in a trench, so it seems entirely feasible to me that undergrounding this 67km from Livingstone to Gunn Point is not too much of an ask by our government to save our large birds, visual amenity and prevent weed intrusion.

10.10.4.1 Response

Viewpoint 7 of the Landscape and Visual Amenity Impact Assessment (Appendix 10.1) is taken adjacent to Lambell's Lagoon and representative of the impacts to this location. The assessment concluded that the visual impact from this location is minor-moderate as the vegetation will mostly screen the infrastructure. A revised Weed Management Plan is also at Appendix 5.3.

Further discussion on why undergrounding the OHTL is not considered feasible is contained in Chapter 2. Potential for bird strike along the OHTL is addressed in Chapter 5 – Terrestrial Ecology.

10.10.5 Bobby Flanagan Submission

Change the route of the proposed Sun Cable or to have it installed underground minimizing the impact to us as residents and the local flora and fauna. The consultation with the residents on this project has been nil, it was not until our local member brought this to our attention via social media that I was communicated about the proposal, as originally was still under the impression it was going to Middle Arm. I speak for myself and behalf on the residents when I say we are not against development in the NT or the project as a whole, however are strongly against the cable being installed above ground and request it be installed underground from when it leaves the Stuart Highway until it is out of any residential properties, including rural properties proximity.

10.10.5.1 Response

Analysis of options for the Project (including the selection of overhead cables rather than underground) is covered in Chapter 2 Project Refinement. Details regarding the consultation process and stakeholder mapping have been included in Chapter 3 Stakeholder and Community Engagement and Appendix 3.1 Stakeholder Consultation Report.

10.10.6 Brigid Robertson Submission

I object to overhead powerlines going past my property. If you must use Alverly Rd, put them underground. It will devalue my property and be an eyesore as well as noisy and potential health problems.

10.10.6.1 Response

Viewpoint 10 of the Landscape and Visual Amenity Impact Assessment (Appendix 10.1) is Horsnell Road, Noonamah, which is representative of the impacts along Alverly Road, Noonamah. The assessment concluded there would be a minor visual impact at this location, as the OHTL would be partially visible above the vegetation. Mitigation measures which may reduce the visual impact of the OHTL have been listed in Section 10.6. Further discussion on why undergrounding the OHTL is not considered feasible is contained in Chapter 2. The movement of the project infrastructure from Middle Arm to Murrumujuk was detailed in the significant variation to the project, dated January 2021. The potential for property values to decrease resulting from the construction of the OHTL has been addressed in Section 10.5.2.

10.10.7 Matthew James Farmer Submission

The consultation with the residents on this project has been nil, with regard to other projects in the area such as the mango road upgrade, residents were personally visited and well communicated on the works, pamphlets and project information was attached to residents properties and community briefings were held. I work away a fair bit, and have been isolated with COVID in QLD, it was not until our local member brought this to our attention via social media that I was communicated about the proposal, as originally was still under the impression it was going to Middle Arm. I speak for myself and behalf on the residents when I say we are not against development in the NT or the

project as a whole, however are strongly against the cable being installed above ground and request it be installed underground from when it leaves the Stuart Highway until it is out of any residential properties, including rural properties proximity. Please arrange a meeting with residents and all stakeholders to discuss and derive an agreement.

Negative impact on property values due to the large above ground towers supporting the cable being an eye sore and taking the beauty of nature away from the properties in the Elizabeth Valley and other areas on the proposed route.

Increased noise pollution due to high winds through the cables and towers disrupting the peaceful environment that we as residents all moved out to the rural to enjoy and make part of our lives.

10.10.7.1 Response

Analysis of options for the Project (including the selection of overhead cables rather than underground) is covered in Chapter 2 Project Refinement. Details regarding the consultation process and stakeholder identification have been included in Chapter 3 Stakeholder and Community Engagement, and Appendix 3.1 Stakeholder Consultation Report. Further discussion on why undergrounding the OHTL is not considered feasible is contained in Chapter 2. The movement of the project infrastructure from Middle Arm to Murrumbidgee was detailed in the significant variation to the project, dated January 2021. The potential for property values to decrease resulting from the construction of the OHTL has been addressed in Section 10.5.2.

Viewpoint 9 of the Landscape and Visual Amenity Impact Assessment (Appendix 10.1) is Elizabeth Valley Road, Noonamah and representative of the Elizabeth Valley region. The visual impact was assessed to be negligible based on the mitigating effect of vegetation and distance to the Project.

10.10.8 Sharon Scurr Submission

I support the Australia-Asia Powerlink Project in principle but have concerns about the impact of the HV powerlines and submarine cable on our pristine environment. Cutting a swathe through the Northern Territory for overhead powerlines has the potential to create an ugly scar on the landscape. The easement/corridor will affect local residents and their peaceful amenity. The need for weed management will be critical. Tourism operators will be impacted, taking tourists to the outback and all they can see is hundreds of kilometres of ugly powerlines. I believe consideration should be given to laying underground HV cables.

10.10.8.1 Response

The LVIA (Appendix 10.1) assessed potential visual impacts from the OHTL on tourism industries and concluded that while road and rail users will engage with the infrastructure at varying points along the OHTL Corridor, the impact is likely to be for short periods of time due to the speed of travel. Alternatively, the OHTL and Solar Precinct could be considered a point of interest and enhance the experience. Further discussion on why undergrounding the OHTL is not considered feasible is contained in Chapter 2. The movement of the project infrastructure from Middle Arm to Murrumbidgee was detailed in the significant variation to the project, dated January 2021. The potential for property values to decrease resulting from the construction of the OHTL has been addressed in Section 10.5.2. A revised Weed Management Plan is also at Appendix 5.3.

Details regarding the consultation process and stakeholder identification have been included in Chapter 3 Stakeholder and Community Engagement and Appendix 3.1 Stakeholder Consultation Report. Engagement targeting the Darwin rural area has been undertaken during October and is also planned for November 2022 including an information stall at Coolalinga Central Shopping Centre, Fred's Pass Markets and Berry Springs Markets to share information on the Project and respond to questions or feedback.

10.10.9 Anonymous Submissions

10.10.9.1 OHTL Undergrounding, Visual Amenity and Property Values

The following anonymous submissions were also received regarding potential OHTL impacts on visual amenity and resulting property values:

- *As a resident of Herbert I feel that land valuation will decrease substantially with overhead powerlines in close proximity to residential areas. The lines should be placed underground or well out of residential areas.*
- *I object to electrical pylons going past my property. Put them underground or somewhere else. They are an eyesore, will devalue my property.*
- *I believe I will be negatively impacted by the construction and associated activities of the OHTL, and for the 70 year expected duration I will no doubt see the top portion of several pylons during the day, which no doubt will be illuminated at night. Standing well over 40m high, they will tower over the native savannah woodland I currently enjoy views of from my veranda, and may have the potential to spoil the night sky views too. How will the visual amenity affect my property value? I am not the only resident concerned by this question.*
- *The proposed sun cable project being run above ground poses multiple significant impacts on the residents, flora and fauna who are in proximity to its suggested route. These impacts include but are not limited to:*
 - *Negative impact on property values due to the large above ground towers supporting the cable being an eye sore and taking the beauty of nature away from the properties in the Elizabeth Valley and other areas on the proposed route.*
- *The reserved NTG Utilities corridor that has been earmarked for this project under the variation forced by NTG in diverting the converter site away from Middle Arm to Murrumujuk/Gunn Point, has been my greatest concern and focus for my submission as an affected resident in Lloyd Creek. The proposed OHTL follows the railway to Livingstone, where it bears to the East across the Stuart Highway, following the NTG Utilities corridor reserved in the Litchfield Subregional Land Use Plan (LSLUP). According to the maps, it is proposed that the OHTL will pass by my property approximately just 1000m (1km) away – which sounds like a lot but is a stones-throw for rural residents, who have driveways longer than this!*
- *In considering the Australia-Asia Powerlink EIS, Chapter 13 “Community and Economy” p4 figure 13-2 Key dimensions of social impacts (Munday 2020) the chart references the living environment – specifically the “amenity issues, noise, dust, pollution, aesthetics of landscape”. We believe that the towers will have a catastrophic effect on the living environment over the property, with a continuous low-level noise, visual pollution and diminished visual appeal of the surrounding landscape.*
- *We also refer to the Australia-Asia Powerlink EIS, chapter 2 “Project Description”, p4 and pp49-50 that the tower structures will be positioned every 300-400 meters along the utility corridor. We have a 3-kilometre corridor that will have around ten giant towers built on. The highest point on our property is 83m above sea level. With the towers reaching up to 60 meters in height these enormous towers will be visible across the whole ridge and will create a negative aesthetic quality in what is currently a naturally beautiful rural landscape.*
- *We note that high voltage cables have been buried underground in both the urban and peri-urban developments of The Heights Durack and Lee Point and from a health perspective, we believe this should remain as the status quo. We would implore that the Australia-Asia Powerlink consider burying their extremely high voltage power lines underground for any proposed new developments, thereby mitigating any potential significant environmental impacts.*

10.10.9.2 Response

The above submissions raise three key themes regarding visual amenity; negative visual impacts from the OHTL, potential for property devaluation as a result of amenity impacts and requests for the cable to be run underground rather than overhead.

The Proponent has commissioned a Landscape and Visual Amenity Impact Assessment (Appendix 10.1) to better understand and quantify the potential for visual impacts on the landscape. OHTL structures will only have night time lighting where required for safety reasons, i.e. surrounding airports in accordance with CASA requirements (CASA, 2019).

A noise study was attached to the Draft EIS (Appendix L), updates associated with project refinements have been addressed in Section 10.5.4. The assessment of potential amenity impacts from the Project is outlined in Section 10.5.

The potential for property values to decrease resulting from the construction of the OHTL has been addressed in Section 10.5.2. Assessment of potential impacts of the Project on future land uses (including the Lloyd Creek Rural Village/Noonamah Ridge development and the Litchfield Sub-Regional Land Use Plan) is included in Chapter 12 Land Use and Transport. Analysis of options for the Project (including the selection of overhead cables rather than underground) is covered in Chapter 2 Project Refinement. Assessment of potential impacts to human health, including consideration of EMF is covered in Chapter 14 Human Health. The movement of the project infrastructure from Middle Arm to Murrumujuk was detailed in the significant variation to the project, dated January 2021.

10.10.9.3 Noise

Anonymous community submissions were received regarding potential noise impacts, which are summarised as follows:

- *Concerned about amenity and noise impacts during construction which will be less than one km away*
- *Comments on increased noise pollution due to high winds through OHTL cables and poles disrupting peaceful environment and impact on rural residents' lifestyle.*

The following anonymous submission was also received regarding potential noise impacts:

- *As above, what noise impact will I have during construction of the OHTL pylons in the vicinity of my home, just 1 km away. Will this be weekdays, weekends, night times? I am not sure what this might mean for my home amenity.*
- *Increased noise pollution due to high winds through the cables and towers disrupting the peaceful environment that we as residents all moved out to the rural to enjoy and make part of our lives.*

10.10.9.4 Response

Noise amenity impacts are discussed in Section 10.5, above. A noise study was attached to the Draft EIS (Appendix L), updates associated with project refinements have been addressed in Section 10.5.4.

10.11 NT EPA Direction Responses

10.11.1 Dust Emissions at Solar Precinct - Comment 29

Dust will be generated during clearing, construction, and operation with the area of influence for each component of the proposal footprint modelled in the draft EIS as described in the Air Quality Impact Assessment (Appendix U).

The draft EIS indicates the locations likely to experience greatest impacts are the Darwin Converter Site during 30 month to 4 year construction phase and the Solar Precinct during construction and operation.

The draft EIS describes avoidance measures (locating site access roads, laydown areas and stationary equipment (e.g., generators) as far away as possible from sensitive receivers).

Mitigation measures to minimise and manage impacts to air quality are described in Chapter 17 Environmental Management, summarised in Section 11.5 and largely rely on water suppression and other suppressants if water is ineffective for all components and vegetation management at the Solar Precinct.

The draft EIS states that vegetation management will be used to control dust at the Solar Precinct as detailed in Chapter 2 Proposal Description. However, the vegetation management described in Chapter 2 relates only to vegetation management as an ongoing operations activity within the Solar Precinct to prevent shading of the panels and/or fire risk.

10.11.2 Information required in the Supplement

Provide further information relating to dust management including, but not limited to detail about:

- Dust management measures, including their expected efficiency and an assessment of the residual impact on air quality for the Darwin Converter Site and Solar Precinct during construction phase*
- Land clearing program/staging at the solar precinct including maximum cleared area at any time*
- Vegetation management as it relates to dust management at the solar precinct including timing, water requirements and success criteria*
- Monitoring and management measures at sensitive receptors, particularly in the vicinity of the Darwin Converter Site.*

10.11.3 Response

As proposed in Section 10.6, above, adaptive management techniques will be used to manage dust including the creation of a TARP, as detailed in the Constraints Planning Framework and Field Development Procedure (Appendix 4.1) during the construction phase. The TARP will include several proactive/predictive monitoring metrics including climatic conditions and visible dust.

A review of best practice dust management strategies at solar farms in Australia during operational phases (including arid zones) has indicated dust is predominantly managed via vegetation growth beneath solar panels with temporary use of water and dust suppressant polymers. The Proponent will develop a CEMP based on best practice guidance to be submitted with the application for secondary approvals and will consider:

- Staged clearing of vegetation at the Solar Precinct to reduce the disturbed area likely to generate dust at any time.
- Vegetation management strategies to encourage regrowth of vegetation beneath solar panels to reduce dust (considering height restrictions surrounding solar panels).
- Vegetation Management Plan (to be developed and in addition to Appendix 5.4 OHTL Vegetation Management Framework) will include details about timing of seeding (immediately following construction of a section) and water requirements (to be provided for initial establishment. Vegetation selected for the area will be appropriate for the low water nature of the area).
- Use of water carts and other dust suppressants (such as dust suppressant polymers) for use on high traffic areas and those where vegetation cannot be established.
- Restricting vehicle speed limits along unsealed roads.
- Monitoring of climatic conditions and dust generated to inform adaptive management.
- Monitoring of effectiveness of dust management strategies including revegetation beneath solar panels and/or soil crusts which will bind the soil surface and reduce or prevent dust generation. Success criteria likely to include % vegetation or soil crust cover, signs of erosion, vegetation health.

10.11.4 Dust Emissions along Alternative Routes - Comment 30

There is potential for dust emissions caused by wind erosion of exposed surfaces and traffic movements on unsealed roads/tracks during construction.

The draft EIS notes that some of the sensitive receptors presented in Chapter 11 will be avoided by the alternative routes near Katherine, Pine Creek and Adelaide River. However, any new sensitive receptors likely to be impacted and proposed avoidance and mitigation measures in the alternative routes are not presented in the proponent's draft EIS.

10.11.5 Information required in the Supplement

Provide information and additional assessment of impacts from dust emissions, if necessary, about the proposed alternative location of the OHTL where it deviates from the railway corridor, as required by the previous item above.

10.11.6 Response

The impacts of the OHTL Corridor have been assessed in Section 10.5. This assessment is for the preferred OHTL Corridor, rather than the rail corridor that was assessed in the Draft EIS.

10.11.7 Air Quality at DCS – Comment 31

Construction will occur over 30 months to four years. The draft EIS provides modelling results of emissions at the Darwin Converter Site showing that PM_{2.5} and NO₂ pollutants could be elevated above assessment criteria inside the construction site boundary but decrease rapidly and are unlikely to be at levels that cause health effects outside of the site. The assessment criterion for PM₁₀ is predicted to be exceeded up to 2 km (annual) and 3.5 km (daily) from the site boundary, with greater impacts during the dry season when background concentrations are elevated.

At the Cable transition facilities modelling shows that emissions could exceed air quality assessment criteria up to approximately 370 m from construction activities. The pollutant that is likely to affect the largest area is NO₂. PM_{2.5} and PM₁₀ are predicted to meet the assessment criteria within 48 m and 175 m from the construction activities.

During operation facilities at the Solar Precinct and Darwin Converter Site will be powered by the solar electricity that is generated, with no requirement for on-site diesel power generation.

The draft EIS states adverse impacts will be managed by engaging with people in specific project areas prior to construction, carrying out visual observations and adaptive management measures to mitigate fugitive dust events (as feasible), and providing a complaints process to track and respond to any stakeholder, Aboriginal and community concerns.

10.11.8 Information required in the Supplement

Provide further detail about emissions at the Darwin Converter Site and Cable Transition Facilities in accordance with TOR requirements including, but not limited to:

- *Avoidance, mitigation and management measures to not exceed criteria at the site boundary*
- *Monitoring and reporting of emissions during construction and operation phases.*

10.11.9 Response

Details of avoidance, mitigation, management, and monitoring of dust emissions are outlined in Section 10.6. The Proponent has committed to developing a TARP for high-risk dust sites to monitor climatic conditions and visible dust in order to allow for adaptive management. If there is potential for human health impacts resulting from dust emissions (e.g., sensitive receptors within the air quality screening distance) monitoring of dust (PM₁₀) will be undertaken as required.

10.11.10 Visual Amenity – Comment 32

Public consultation comments identified that the OHTL would present a visual amenity problem for residents in the Litchfield municipality. Government authority comments from DITT identified that the OHTL (788 km) may also present a visual amenity issue for visitors travelling along the Stuart Highway or using the railway on the Ghan.

The size of the transmission line poles is substantially larger than regular power poles.

Given the extensive length of the OHTL it has potential to impact the visual amenity of a large expanse of outback.

The draft EIS provides limited information about visual amenity concerns in its stakeholder engagement.

10.11.11 Information required in the Supplement

Provide more detailed information about how community concerns would be addressed and any alternatives to the proposed design to avoid or mitigate potentially significant impacts from visual amenity of the power line from road and railway users, residents and the tourism industry.

10.11.12 Response

A LVIA report has been prepared and attached as Appendix 10.1 which contains visual impact assessments for key points along the OHTL aligning with stakeholder submissions and known tourism locations as well as potential mitigation measures that could reduce the visual impact. The visual impact has been summarised in Section 10.5.1.



Singapore

61 Robinson Road
#09-04
Singapore 068893

Jakarta

The South Quarter Building, Tower C,
Mezzanine Level, Jl RA Kartini Kav 8,
Cilandak, Jakarta Selatan 12430

Darwin

Suite 3, Level 17
19 The Mall
Darwin NT 0800

Sydney

Level 31,
85 Castlereagh Street
Sydney NSW 2000

Brisbane

Level 3,
900 Ann Street
Fortitude Valley QLD 4006