

# Appendix 10.1 – Landscape and Visual Impact Assessment



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Member of the Surbana Jurong Group



SMEC INTERNAL REF. 30080.122

Visual Impact Assessment

# AAPowerlink Overhead Transmission Lines

Client Reference No. OHTL  
Prepared for: Australia – Asia PowerLink  
18 November 2022

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# Contents

Executive Summary .....	7
Definitions .....	8
Abbreviations .....	9
<b>1. Introduction.....</b>	<b>1</b>
1.1 Project background .....	1
1.2 Purpose of the Visual Impact Assessment .....	1
1.3 EIS Submissions .....	1
1.4 Summary of EIS Submissions.....	4
1.5 Assumptions and limitations .....	4
1.6 Report structure .....	5
<b>2. Methodology .....</b>	<b>6</b>
2.1 Project and background research .....	6
2.2 Field studies .....	6
2.3 Baseline landscape conditions .....	7
2.4 Visual impact assessment .....	7
<b>3. Project description.....</b>	<b>9</b>
3.1 Project Components.....	9
3.2 Project location .....	9
3.3 OHTL components.....	11
3.3.1 Physical dimensions and arrangement of OHTL.....	11
3.3.2 Summary .....	13
<b>4. Study Area .....</b>	<b>14</b>
4.1 Zones of visual influence .....	15
4.1.1 The impact of speed on visibility .....	15
4.2 Zone of Theoretical Visibility (ZTV) .....	15
<b>5. Legislation and policy.....</b>	<b>17</b>
5.1 Environment Protection Act 2019 (NT) .....	17
5.1.1 Planning Act 1999 (NT).....	17
<b>6. Baseline landscape conditions .....</b>	<b>20</b>
6.1 Regional landscape context .....	20
6.2 Topography .....	20
6.3 Vegetation.....	22
6.4 Hydrology .....	24
6.5 Townships and settlements .....	25
6.6 Parks and reserves .....	25
6.7 Major transport routes .....	26
6.7.1 Road Users.....	26
6.7.2 Railway Users .....	26
6.8 Landscape character zones (LCZs).....	26
6.8.1 LCZ 1 Darwin Coastal .....	27
6.8.2 LCZ 2 Pine Creek .....	27
6.8.3 LCZ 3 Daly Basin.....	28

6.8.4	LCZ 4 Sturt Plateau .....	29
6.8.5	LCZ 5 Tanami .....	30
6.9	Landscape sensitivity.....	31
<b>7.</b>	<b>Visual impact assessment .....</b>	<b>32</b>
7.1	Viewpoint 1 – Gunn Point Campsite .....	32
7.2	Viewpoint 2 – Gunn Point Road #1 .....	34
7.3	Viewpoint 3 – Leaders Creek Boat Ramp Access .....	36
7.4	Viewpoint 4 – Gunn Point Road #2 .....	38
7.5	Viewpoint 5 – Gunn Point Road #3 .....	40
7.6	Viewpoint 6 – Beddington Road, Herbert .....	42
7.7	Viewpoint 7 – Arnhem Highway.....	44
7.8	Viewpoint 8 – Buckley Road, Humpty Doo.....	46
7.9	Viewpoint 9 – Elizabeth Valley Road, Noonamah .....	48
7.10	Viewpoint 10 – Horsnell Road, Noonamah .....	50
7.11	Viewpoint 11 – Stuart Highway #1 .....	52
7.12	Viewpoint 12 – Cox Peninsula Road #1 .....	54
7.13	Viewpoint 13 – Cox Peninsula Road #2 .....	56
7.14	Viewpoint 14 – Stuart Highway #2 .....	58
7.15	Viewpoint 15 – Stuart Highway #3 .....	60
7.16	Viewpoint 16 – Lake Bennett .....	62
7.17	Viewpoint 17 – Batchelor Road, Coomalie Creek.....	64
7.18	Viewpoint 18 – Adelaide River .....	66
7.19	Viewpoint 19 – Stuart Highway #4 .....	68
7.20	Viewpoint 20 – Stuart Highway #5 .....	70
7.21	Viewpoint 21 – Pine Creek #1 .....	72
7.22	Viewpoint 22 – Pine Creek #2 .....	74
7.23	Viewpoint 23 – Stuart Highway #6 .....	76
7.24	Viewpoint 24 – Stuart Highway #7 .....	78
7.25	Viewpoint 25 – Stuart Highway #8 .....	80
7.26	Viewpoint 26 – Florina Road .....	82
7.27	Viewpoint 27 – Victoria Highway .....	84
7.28	Viewpoint 28 – Shadforth Road .....	86
7.29	Summary of visual impact assessment .....	88
7.30	Cumulative impacts.....	89
<b>8.</b>	<b>Mitigation measures.....</b>	<b>90</b>
8.1	Mitigation options.....	90
8.1.1	Vegetation planting .....	90
8.1.2	Avoid sensitive viewing locations.....	90
8.1.3	Road crossings at right angles .....	90
8.1.4	Site facilities in existing clearings .....	91
8.1.5	Collocate linear projects in existing corridors .....	91
8.1.6	Avoid ridgelines and valley bottoms .....	92
8.1.7	Avoid breaking skylines .....	93
8.1.8	Site linear infrastructure along natural lines.....	93
8.1.9	Appropriate use of monopole and lattice towers .....	94
8.1.10	Colour treat transmission towers to reduce contrast .....	95
8.1.11	Maintenance of painted, stained or coated surfaces.....	97

8.1.12	Feather edges of transmission line easements .....	97
8.2	Implications for the OHTL VIA .....	97
<b>9.</b>	<b>Conclusion .....</b>	<b>98</b>
9.1	Magnitude of change .....	98
9.2	Sensitivity to change .....	98
9.3	Summary .....	98
<b>10.</b>	<b>References .....</b>	<b>99</b>

## Appendices

### Appendix A Study area Maps by Viewpoint

### Appendix B Landscape simulations

## Figures

Figure 1–1: Assessment Methodology .....	5
Figure 2–1 Approach to evaluating the significance of change .....	7
Table 2–1 Evaluating the significance of Visual Impacts .....	8
Figure 3–1: Location of OHTL route .....	10
Figure 3–2 OHTL Monopole Structure Designs .....	11
Figure 3–3: OHTL Lattice Structure Designs .....	12
Figure 3–4 Overhead Transmission Line Corridor Configuration .....	12
Table 3–1 Summary of physical description of the proposed OHTL .....	13
Figure 4–1: Typical vertical field of view of the human eye (Image source: Pinero & Zelnik) .....	14
Figure 4–2: Zone of Theoretical Visibility (ZTV) .....	16
Figure 6–1: Topography .....	21
Figure 6–2: View of tall open forest from Gunn Point Road .....	22
Figure 6–3: View of low shrubby vegetation from Stuart Highway near Tennant Creek (Source: Google Maps) .....	23
Figure 6–4: View from Arnhem Highway showing land cleared for orchards (Source: Google Maps) .....	23
Figure 6–5: Katherine River from Zimin Drive (Source: Google Maps) .....	24
Figure 6–6: View south east along the main street of Katherine (Source: Google Maps) .....	25
Figure 6–7: View of LCZ 1 Darwin Coastal (Source: Sun Cable EIS Chapter 5, Terrestrial Ecosystems) .....	27
Figure 6–8: View of LCZ 2 Pine Creek (Source: Google Maps) .....	28
Figure 6–9: View of LCZ 3 Daly Basin (Source: Google Maps) .....	29
Figure 6–10: View of LCZ 4 Sturt Plateau (Source: Google Maps) .....	30
Figure 6–11: View of LCZ 5 Tanami (Source: Google Maps) .....	31
Figure 7–1: Location of Viewpoint 1 .....	32
Figure 7–2: View from Viewpoint 1 toward the Project .....	33
Figure 7–3: Location of Viewpoint 2 .....	34
Figure 7–4: View from Viewpoint 2 toward the Project .....	34
Figure 7–5: Location of Viewpoint 3 .....	36
Figure 7–6: View from Viewpoint 3 toward the Project .....	36
Figure 7–7: Location of Viewpoint 4 .....	38

Figure 7–8: View from Viewpoint 4 toward the Project .....	38
Figure 7–9: Location of Viewpoint 5 .....	40
Figure 7–10: View from Viewpoint 5 toward the Project .....	40
Figure 7–11: Location of Viewpoint 6 .....	42
Figure 7–12: View from Viewpoint 6 toward the Project .....	42
Figure 7–13: Location of Viewpoint 7 .....	44
Figure 7–14: View from Viewpoint 7 toward the Project .....	44
Figure 7–15: Location of Viewpoint 8 .....	46
Figure 7–16: View from Viewpoint 8 toward the Project .....	46
Figure 7–17: Location of Viewpoint 9 .....	48
Figure 7–18: View from Viewpoint 9 toward the Project .....	48
Figure 7–19: Location of Viewpoint 10 .....	50
Figure 7–20: View from Viewpoint 10 toward the Project .....	50
Figure 7–21: Location of Viewpoint 11 .....	52
Figure 7–22: View from Viewpoint 11 toward the Project .....	52
Figure 7–23: Location of Viewpoint 12 .....	54
Figure 7–24: View from Viewpoint 12 toward the Project .....	54
Figure 7–25: Location of Viewpoint 13 .....	56
Figure 7–26: View from Viewpoint 13 toward the Project .....	56
Figure 7–27: Location of Viewpoint 14 .....	58
Figure 7–28: View from Viewpoint 14 toward the Project .....	58
Figure 7–29: Location of Viewpoint 15 .....	60
Figure 7–30: View from Viewpoint 15 toward the Project .....	60
Figure 7–31: Location of Viewpoint 16 .....	62
Figure 7–32: View from Viewpoint 16 toward the Project .....	62
Figure 7–33: Location of Viewpoint 17 .....	64
Figure 7–34: View from Viewpoint 17 toward the Project .....	64
Figure 7–35: Location of Viewpoint 18 .....	66
Figure 7–36: View from Viewpoint 18 toward the Project .....	66
Figure 7–37: Location of Viewpoint 19 .....	68
Figure 7–38: View from Viewpoint 19 toward the Project .....	68
Figure 7–39: Location of Viewpoint 20 .....	70
Figure 7–40: View from Viewpoint 20 toward the Project .....	70
Figure 7–41: Location of Viewpoint 21 .....	72
Figure 7–42: View from Viewpoint 21 toward the Project .....	72
Figure 7–43: Location of Viewpoint 22 .....	74
Figure 7–44: View from Viewpoint 22 toward the Project .....	74
Figure 7–45: Location of Viewpoint 23 .....	76
Figure 7–46: View from Viewpoint 23 toward the Project .....	76
Figure 7–47: Location of Viewpoint 24 .....	78
Figure 7–48: View from Viewpoint 24 toward the Project .....	78
Figure 7–49: Location of Viewpoint 25 .....	80
Figure 7–50: View from Viewpoint 25 toward the Project .....	80
Figure 7–51: Location of Viewpoint 26 .....	82
Figure 7–52: View from Viewpoint 26 toward the Project .....	82
Figure 7–53: Location of Viewpoint 27 .....	84

Figure 7–54: View from Viewpoint 27 toward the Project .....	84
Figure 7–55: Location of Viewpoint 28 .....	86
Figure 7–56: View from Viewpoint 28 toward the Project .....	86
Figure 8–1: Road crossings should be at right angles (Source: Bureau of Land Management, 2013).....	91
Figure 8–2: View showing the effect of a development occurring in a cleared area as compared to a densely forested area (Source: Bureau of Land Management, 2013) .....	91
Figure 8–3: Collocation of transmission lines reduces overall visual impact (Source: Bureau of Land Management, 2013) .....	92
Figure 8–4: View showing how an easement bisects several ridges, creating strong lines for the eye to follow (Source: Bureau of Land Management, 2013).....	92
Figure 8–5: View showing how the bisection of a ridgeline can create a conspicuous linear element in the landscape (Source: Bureau of Land Management, 2013) .....	93
Figure 8–6: View showing how a transmission line located on a ridgeline makes them conspicuously visible against the sky (Source: Bureau of Land Management, 2013).....	93
Figure 8–7: Siting of a transmission line along a natural break in the vegetation (Source: Bureau of Land Management, 2013) .....	94
Figure 8–8: View showing the difference visual prominence of lattice towers versus monopoles (Source: Bureau of Land Management, 2013) .....	95
Figure 8–9: View showing conspicuous reflective transmission line viewed against a mountain backdrop (Source: Bureau of Land Management, 2013).....	95
Figure 8–10: View wires that have not been selected or treated for non-reflectivity. This is to be avoided (Source: Bureau of Land Management, 2013).....	96
Figure 8–11: Views showing various treatments of transmission towers to assist with blending into the environment (Source: Bureau of Land Management, 2013) .....	96
Figure 8–12: feathering the edges of easements would result in a more naturalistic appearance .....	97

## Tables

Table 1–1: EIS submission summary .....	2
Table 4–1: Zones of visual influence applied to the Project .....	15
Table 4–2: Time the OHTL will be visible for travelling at speed .....	15
Table 7–1: Viewpoint 1 information .....	33
Table 7–2: Assessment of visual impact – Viewpoint 1 .....	33
Table 7–3: Viewpoint 2 information .....	35
Table 7–4: Assessment of visual impact – Viewpoint 2 .....	35
Table 7–5: Viewpoint 3 information .....	37
Table 7–6: Assessment of visual impact – Viewpoint 3 .....	37
Table 7–7: Viewpoint 4 information .....	39
Table 7–8: Assessment of visual impact – Viewpoint 4 .....	39
Table 7–9: Viewpoint 5 information .....	41
Table 7–10: Assessment of visual impact – Viewpoint 5 .....	41
Table 7–11: Viewpoint 6 information .....	43
Table 7–12: Assessment of visual impact – Viewpoint 6 .....	43
Table 7–13: Viewpoint 7 information .....	45
Table 7–14: Assessment of visual impact – Viewpoint 7 .....	45
Table 7–15: Viewpoint 8 information .....	47

Table 7–16: Assessment of visual impact – Viewpoint 8 .....	47
Table 7–17: Viewpoint 9 information .....	49
Table 7–18: Assessment of visual impact – Viewpoint 9 .....	49
Table 7–19: Viewpoint 10 information .....	51
Table 7–20: Assessment of visual impact – Viewpoint 10 .....	51
Table 7–21: Viewpoint 11 information .....	53
Table 7–22: Assessment of visual impact – Viewpoint 11 .....	53
Table 7–23: Viewpoint 12 information .....	55
Table 7–24: Assessment of visual impact – Viewpoint 12 .....	55
Table 7–25: Viewpoint information .....	57
Table 7–26: Assessment of visual impact – Viewpoint 13 .....	57
Table 7–27: Viewpoint 14 information .....	59
Table 7–28: Assessment of visual impact – Viewpoint 14 .....	59
Table 7–29: Viewpoint 15 information .....	61
Table 7–30: Assessment of visual impact – Viewpoint 15 .....	61
Table 7–31: Viewpoint 16 information .....	63
Table 7–32: Assessment of visual impact – Viewpoint 16 .....	63
Table 7–33: Viewpoint 17 information .....	65
Table 7–34: Assessment of visual impact – Viewpoint 17 .....	65
Table 7–35: Viewpoint 18 information .....	67
Table 7–36: Assessment of visual impact – Viewpoint 18 .....	67
Table 7–37: Viewpoint 19 information .....	69
Table 7–38: Assessment of visual impact – Viewpoint 19 .....	69
Table 7–39: Viewpoint 20 information .....	71
Table 7–40: Assessment of visual impact – Viewpoint 20 .....	71
Table 7–41: Viewpoint 21 information .....	73
Table 7–42: Assessment of visual impact – Viewpoint 21 .....	73
Table 7–43: Viewpoint 22 information .....	75
Table 7–44: Assessment of visual impact – Viewpoint 22 .....	75
Table 7–45: Viewpoint 23 information .....	77
Table 7–46: Assessment of visual impact – Viewpoint 23 .....	77
Table 7–47: Viewpoint 24 information .....	79
Table 7–48: Assessment of visual impact – Viewpoint 24 .....	79
Table 7–49: Viewpoint 25 information .....	81
Table 7–50: Assessment of visual impact – Viewpoint 25 .....	81
Table 7–51: Viewpoint 26 information .....	83
Table 7–52: Assessment of visual impact – Viewpoint 26 .....	83
Table 7–53: Viewpoint 27 information .....	85
Table 7–54: Assessment of visual impact – Viewpoint 27 .....	85
Table 7–55: Viewpoint 28 information .....	87
Table 7–56: Assessment of visual impact – Viewpoint 28 .....	87
Table 7–57: Summary of visual impact assessment .....	88

## Executive Summary

AAPowerLink Australia Assets Pty Ltd is progressing an Environmental Impact Statement (EIS) for the Australia-Asia PowerLink project (AAPowerLink or the Project) under assessment by the Northern Territory Environment Protection Authority (NT EPA) as per the *Environment Protection Act 2019 (NT)* and obligations under the EPBC Act under a bilateral agreement with the Commonwealth Government. The Draft EIS was on public display between April and 15 July 2022.

On 28 September 2022, Direction to prepare a Supplement to the Draft EIS (SEIS) was provided to the Proponent by the delegate of the NT EPA under Sections 136(1) and 138(2) of the Environment Protection Regulations 2020 (NT), including a request to respond to the matters raised during the public notification period, and those matters that have changed since submission of the Draft EIS.

Several public submissions and service authority submissions raised concerns related to the visual impact of the Overhead Transmission Line (OHTL) component of the Project. These concerns relate to the visual impact of the Project on the outback landscape as well as the amenity of specific localities, particularly those along the northern section of the alignment, close to the populated rural areas of the greater Darwin region.

The EPA's Direction included the requirement to provide detailed information about how community concerns will be addressed to avoid or mitigate potentially significant impacts from visual amenity of the OHTL in relation to road and railway users, residents, and the tourism industry.

This Landscape and Visual Impact Assessment (LVIA) has been prepared in support of the SEIS, to provide the technical assessment and mitigation options to address these concerns. Included within the LVIA was an assessment of 28 viewpoint locations along the proposed OHTL corridor. While the Draft EIS included several proposed deviations to the route, this LVIA has been prepared to align with the preferred route included in the SEIS.

The proposed OHTL connects the Solar Precinct located approximately 70 km southwest of Elliot in the Northern Territory to the Darwin Converter site. From the Solar Precinct, the OHTL Corridor will generally follow the footprint of the Alice Springs to Darwin railway corridor for a total distance of 722 km, before diverting at Livingstone in the north to follow a NT Government designated utilities corridor for approximately 66 km to Gunn Point Peninsula, where the final 19 km of the OHTL corridor connects from the intersection of Gunn Point Road to the Darwin Converter site at Murrumujuk, 60 km northeast of Darwin.

Given that the Project corridor follows the Alice Springs to Darwin railway for a significant portion of its route, this would minimise land clearing and ground disturbance and hence visual impact. This alignment has the added benefit of avoiding populated areas, sensitive environmental landscapes and major tourist destinations as far as practical. While road and railway users may observe the Project at several locations along the alignment, the visual impact is expected to be experienced for a limited period due to traveling at typical highway speeds.

The character of the landscape within the study area is, for the most part flat to gently undulating. Vegetation typically changes very gradually along the length of the alignment. Low, sparse and grassy to shrubby vegetation generally occurs to the south of the Project alignment, whereas taller and denser vegetation generally occurs to the north of the alignment.

Over most of the Project alignment, there is relatively little topographical variation which markedly differentiates one location from another. Where the Project may be visible at one location, a road user is likely to witness a similar view without the Project a short distance away. Where tall, dense vegetation occurs, the Project would likely be visible only at close range due to the mitigating effect of the vegetation from locations further away.

Of the 28 viewpoints that were assessed for visual impact, 6 were assessed as Moderate, 3 were assessed as Minor to moderate, 5 were assessed as Minor, 4 were assessed as Negligible to minor and 10 were assessed as Negligible.

The locations where the Project will have the greatest visual impact are generally those within 1.5 kilometres of the alignment, in areas that have low vegetation and are close to major transport routes, such as the Stuart Highway. Typically, these locations have been assessed as having a moderate visual impact. In other areas, the visual impact of the Project would be mostly Minor to negligible. Where viewpoints have been assessed as moderate, site and context specific mitigation at the detailed siting and design stages may assist to reduce the level of visual impact.

# Definitions

Term	Meaning
Amenity <sup>1</sup>	Amenity, in relation to a locality or building, means any quality, condition or factor that makes or contributes to making the locality or building harmonious, pleasant or enjoyable.
Impact	The effect of a proposed development when measured against an existing condition
Landscape	An area of land as defined by its qualities of landform, vegetation, urban development and infrastructure
Landscape character	The combined qualities developed and natural features which define an area as distinct from neighbouring areas and which gives it its unique sense of place
Landscape character zone	An area of landscape with similar properties or strongly defined spatial qualities, as distinct from adjacent or nearby areas
Magnitude	The measurement of the scale, form and character of a development proposal when compared to the existing condition.
Rating	The assessed level of a criterion, being either sensitivity, magnitude or visual impact
Scenic	Elements of a landscape that makes it pleasing to an observer such as dramatic landforms, natural vegetation, presence of water, buildings in harmony etc
Sensitivity	The sensitivity of a landscape character zone or view and its capacity to absorb visual changes
Shrub	A woody plant which is smaller than a tree and has several main stems arising at or near the ground
Study area	The area under consideration for landscape and visual impact
The Project	The elements of a proposed development being assessed for landscape and visual impact
Topography	Physical surface features of the land such as hills and valleys.
View	The sight of a landscape or scene
Viewshed	A section of land that can be seen from a specific location, as defined by the constraints of landform, intervening vegetation and objects and the curvature of the earth.
Visibility	The degree to which an object may be observed by the naked eye
Visual	That which can be seen, as distinct from other human senses
Visually absorb	The ability of the landscape to naturally mitigate visual impact without introduced mitigation measures

<sup>1</sup> Amenity as defined by the NT Planning Scheme in accordance with the Planning Act 1999 (NT)

# Abbreviations

Abbreviation	Meaning
AHD	Australian Height Datum
EIS	Environmental Impact Statement
km	Kilometre
LCZ	Landscape Character Zone
LVIA	Landscape and Visual Impact Assessment
m	Metres
NT	Northern Territory
OHTL	Overhead Transmission Line
VP	Viewpoint
ZTV	Zone of Theoretical Visibility

# 1. Introduction

## 1.1 Project background

AAPowerLink Australia Assets Pty Ltd is progressing an Environmental Impact Statement (EIS) for the Australia-Asia PowerLink project (AAPowerLink or the Project) under assessment by the Northern Territory Environment Protection Authority (NT EPA) as per the *Environment Protection Act 2019 (NT)* and obligations under the EPBC Act under a bilateral agreement with the Commonwealth Government. The Draft EIS was on public display between April and 15 July 2022.

On 28 September 2022, Direction to prepare a Supplement to the Draft EIS (SEIS) was provided to the Proponent by the delegate of the NT EPA under Sections 136(1) and 138(2) of the Environment Protection Regulations 2020 (NT), including a request to respond to the matters raised during the public notification period, and those matters have that have changed since submission of the Draft EIS.

Several public submissions and service authority submissions raised concerns related to the visual impact of the Overhead Transmission Lines (OHTL). The concerns extended to the impact on the outback as well as the amenity of specific localities, particularly those along the northern alignment, close to the populated rural areas of the greater Darwin region. It was also noted that the OHTL is larger than current transmission lines in use in the Northern Territory.

## 1.2 Purpose of the Visual Impact Assessment

The EPA's Direction included the requirement to provide detailed information about how community concerns will be addressed to avoid or mitigate potentially significant impacts from visual amenity of the power line in relation to road and railway users, residents, and the tourism industry.

This Landscape and Visual Impact Assessment (LVIA) has been prepared in support of the SEIS, to provide the technical assessment and mitigation options to allow the Project to address these concerns.

The LVIA will form part of a suite of supporting documents for the SEIS submission for the components of the Project that are located in the NT, and which primarily consist of:

- The Powell Creek Solar Precinct in the Barkly Region, NT, where electricity will be generated, stored, and transmitted
- Overhead Transmission Line (OHTL) to transmit electricity from the Solar Precinct to Darwin
- Darwin Converter Site including Voltage Source Converters (VSCs), energy storage and network connection to supply electricity to the Darwin region
- Cable Transition Facilities (CTF) at Murrumujuk and Gunn Point Beach to transition power cables between land and sea
- Subsea Cable System extending from the CTF to Singapore via the Commonwealth Marine Area beyond the NT's Coastal Waters.
- The Subsea Cable System will land at the proposed Singapore Converter Station and supply the Singapore electrical network.

## 1.3 EIS Submissions

During the submission period for the draft EIS, a total of 20 submissions were submitted, with eight coming from the various Northern Territory Government Authorities, and 11 submissions coming from members of the public and various organisations. An additional three (3) submissions were received in relation to the referral; however, these were withheld from publication in accordance with Regulation 269 of the Environment Protection Regulations 2020 (NT).

Table 1–1 (below) provides a summary of the all the published submissions and their comments regarding visual impact. This report does not summarise issues not related to visual impact.

Table 1–1: EIS submission summary

Submitting Entity	Comments	Visual Impact Assessment Response
Department of Industry, Tourism, and Trade	The current OHTL route may impact visual amenity for travellers along the Stuart Highway and the users of the Ghan Railway. The size of the poles is substantially larger than standard power poles and due to the size of the Project, have the potential to impact the visual amenity of a large amount of the outback.	Refer to Viewpoint 14 - 25
Anonymous 1	<p>“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 rail way 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!</p> <p>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.</p> <p>How will the visual amenity affect my property value? I am not the only resident concerned by this question.”</p>	Refer to Viewpoints 1 - 12
Anonymous 2	<p>“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.</p> <ul style="list-style-type: none"> <li>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.”</li> </ul>	Refer to Viewpoint 6 - 13
Brigid Robertson	“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.”	Refer to Viewpoints 9 - 13
Matthew Farmer	<p>“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:</p> <ul style="list-style-type: none"> <li>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</li> </ul>	Refer to Viewpoints 9 & 10

Submitting Entity	Comments	Visual Impact Assessment Response
	away from the properties in the Elizabeth Valley and other areas on the proposed route .”	
<b>NT Field and Game Association Inc.</b>	<p>“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 44 m high towers will be an eyesore especially where they pass within 200 m to 300 m 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 4,200 km will be buried in a trench, so it seems entirely feasible to me that undergrounding this 67 km 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.”</p>	Refer to Viewpoints 1 - 15
<b>NT Land Corporation</b>	<p>“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.”</p>	Refer to Viewpoints 1, 2, 3
<b>Sharon Scurr</b>	<p>“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.</p> <p>I believe relevant studies must be undertaken to identify the best route for both overland and undersea cables to mitigate the risks that are posed to our natural environment. Thank you for the opportunity to make a submission. Greater community consultation should be occurring in relation to this project.”</p>	Refer to all Viewpoints

Submitting Entity	Comments	Visual Impact Assessment Response
Unpublished submissions	<p>The basis of all three unpublished submissions related to the visual impact of the OHTL, including:</p> <ul style="list-style-type: none"> <li>Reduction in property value.</li> <li>Suggested undergrounding through the utility corridor in the Noonamah / Hughes locality.</li> <li>General visual amenity.</li> </ul>	<p>Refer to viewpoints 1 to 28, and:</p> <ul style="list-style-type: none"> <li>Viewpoints 9-13</li> <li>Viewpoints 9-10</li> </ul>

## 1.4 Summary of EIS Submissions

The EIS Submissions raised a number of concerns regarding the visual impact of the Project. In general, these concerns were:

- The impact to the current level of visual amenity enjoyed by local residents and tourism operators. This relates to number of locations, including the Murrumujuk beach and foreshore, the existing scenery within the Darwin rural area and the Outback.
- A potential reduction in property values associated with the impact on visual amenity.
- Disturbance of the Outback landscape enjoyed by road users on the Stuart Highway and other roads, and rail users including the Ghan Railway.

This report will conduct an analysis of the visual impact of the OHTL as it relates to residents, road and rail users and tourism operators, and outline potential mitigation measures in response to the EPA's Direction. This report does not seek to address individual submissions or property locations; however, project viewpoints have been selected to coincide with areas of concern raised by submitters to understand the broad context.

## 1.5 Assumptions and limitations

This LVIA has been prepared with the following assumptions and limitations:

- Physical site visits and photography were undertaken under instruction from SMEC by AAPowerlink team members. The balance of the assessment was undertaken through desktop research and GIS analysis.
- Visual impact due to construction activities has not been assessed at this stage due to the lack of availability of final placement / location / siting of infrastructure and final form of infrastructure.
- The assessment has been based on the preliminary project information as described in Section 3. As detailed decision on infrastructure siting, location within the nominated corridor, and potential changes to the Project corridor alignment may occur, the findings of the assessment may need to be revisited at detailed design and approval stages. The applicability of the assessment is therefore the response to the EPA's categorisation of viewers and potential impact minimisation and mitigation as opposed to site specific impact and responses.
- Visual impact assessment has been undertaken from publicly accessible locations only. Visual impact assessment has not been undertaken at residential or private locations due to the lack of availability of final placement location of infrastructure and final form of infrastructure.
- The Zone of Visual Influence has been prepared based on available GIS Data, however no LiDAR or detailed survey of landforms and vegetation was available at the time of production.

## 1.6 Report structure

The report structure has been designed to align with the project methodology. This is graphically illustrated in Figure 1–1.

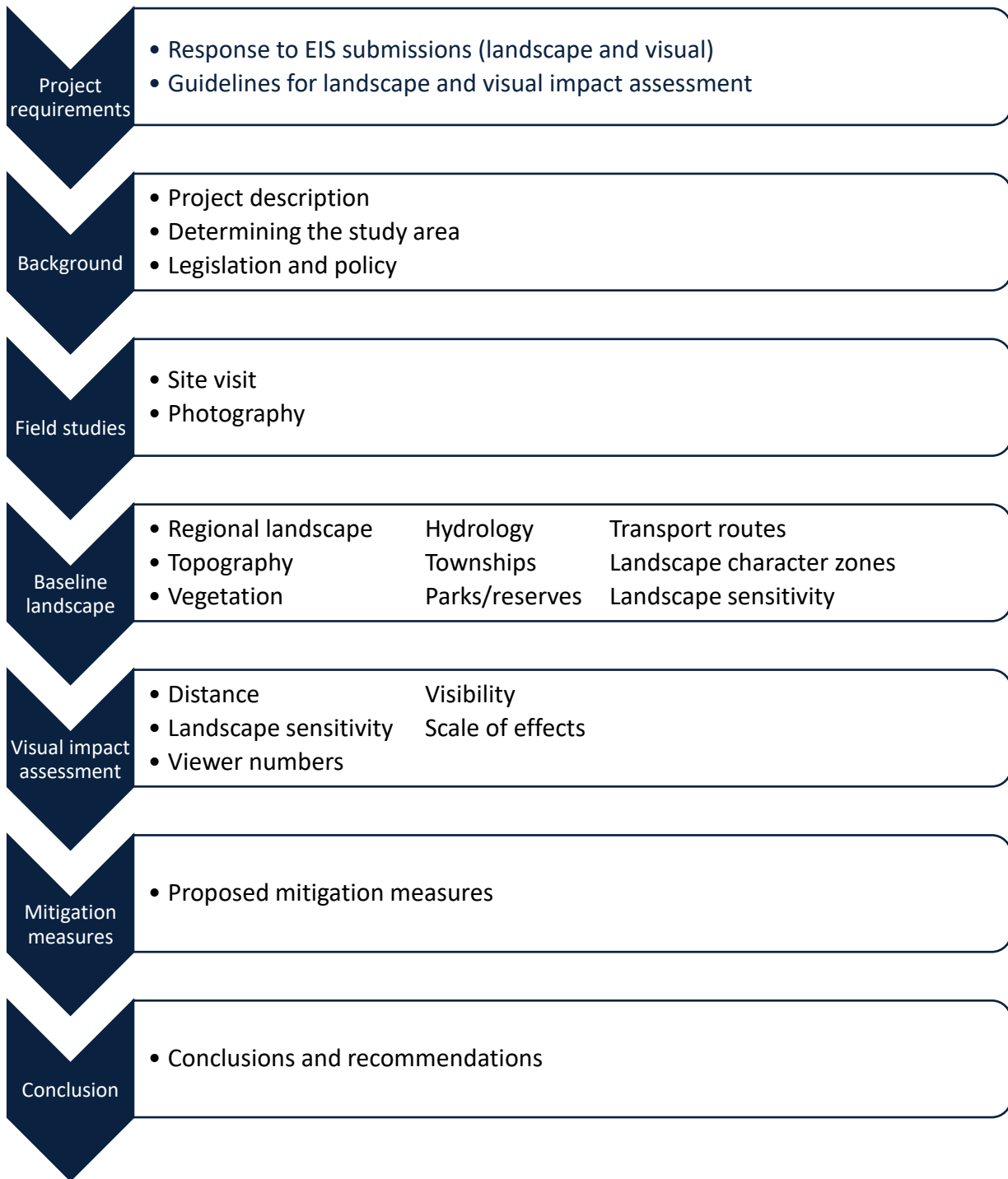


Figure 1–1: Assessment Methodology

## 2. Methodology

The methodology for carrying out this LVIA was drawn from and is generally in accordance with The Landscape Institute and Institute for Environmental Management and Assessment LIIEMA, (2013), Guidelines for Landscape and Visual Impact Assessment, Routledge 3rd Edition (GLVIA). The methodology has been adapted from GLVIA to address the scoping requirements and to relate to the specific issues of this Project.

This guidance is considered best practice nationally. No specific guidelines for LVIA currently apply in the NT.

### 2.1 Project and background research

Background studies were undertaken to inform the site photography and assessment process, including:

#### Project description

The major visually prominent components of the Project that are likely to have an effect on landscape and visual amenity were identified and described.

#### Determining the Study area

The determination of the study area has been based on the limit of discernibility of the most visually prominent project elements. Beyond this limit, the Project is not likely to be discernible therefore the impact is most likely nil or negligible, hence this defines the study area.

#### Legislation and policy within the Study area

A desktop review was undertaken to identify the relevant legislation and policies within the study area limited to those with relevance to landscape and visual amenity. Consideration was given to the meaning of amenity within Northern Territory Government legislation.

### 2.2 Field studies

#### Site visit

Under instruction from the LVIA team, members of the Australia-Asia PowerLink and SMEC teams visited predetermined viewpoint locations to take photos toward the Project and surrounding landscape. This occurred on the following dates:

- 29<sup>th</sup> September 2022
- 3<sup>rd</sup> October 2022
- 12<sup>th</sup> October 2022
- 13<sup>th</sup> October 2022

The observations, notes and photographs from the site visit were be used to inform the assessment and to verify the results of the desktop study.

#### Photography

Photographs were taken from publicly accessible locations. A Canon EOS 6D digital camera was used together with a 50 mm lens which approximates the field of view of the naked eye. The camera was held at eye level, approximately 1.7 m above ground level to take the photographs. GPS coordinates were also recorded on a separate handheld GPS at the locations from which the photographs were taken, allowing these locations to be marked on a digital map and cross referenced in this report.

## 2.3 Baseline landscape conditions

The existing landscape within the study area was analysed. This is an important aspect of the study, as it informs the understanding and capacity to visually absorb the Project. This was undertaken using topographical and aerial imagery data, as well as relevant Project background documents. The following conditions were taken into consideration:

- Regional landscape context
- Topography
- Vegetation
- Hydrology
- Townships and settlements
- Parks and reserves
- Major transport routes
- Landscape character zones (LCZs)
- Landscape sensitivity.

Sections 6.1 to 6.9 provide further details on these considerations.

## 2.4 Visual impact assessment

The assessment of visual impact followed a process of evaluating a range of publicly accessible locations with a potential view of the Project. By assessing a representative range of viewpoints that are at different distances and directions from the Project and from a range of landscapes, one can evaluate the visual impact of the Project on the broader landscape as a whole.

Each viewpoint has been assessed using a process of combining the rating of:

- The sensitivity of the landscape to change
- The sensitivity of the viewer to change
- The magnitude of change in relation to both of the above.

Table 2–1 shows the visual impact assessment rating matrix adopted for this study. As the intent of this study is to address the EPA’s Direction in relation to categories of viewers as outlined in Section 1.2, this rating system was applied to public viewpoints only. A different set of parameters could be considered for private viewpoints, noting that the sensitivity of private viewpoints may vary in relation to public viewpoints. This would be appropriate on a site-by-site basis to determine local mitigation solutions at the project implementation stage.

Professional judgement was applied, based on the rating system and on a case-by-case basis in order to rate the level of visual impact for that viewpoint. Judgements on the degree of visitation to the viewpoints were applied relative to the Project study area and local context, rather than by comparison to national scale population visitation thresholds for similar viewpoints that may apply in more populous states.

Figure 2–1 shows how the process was applied.

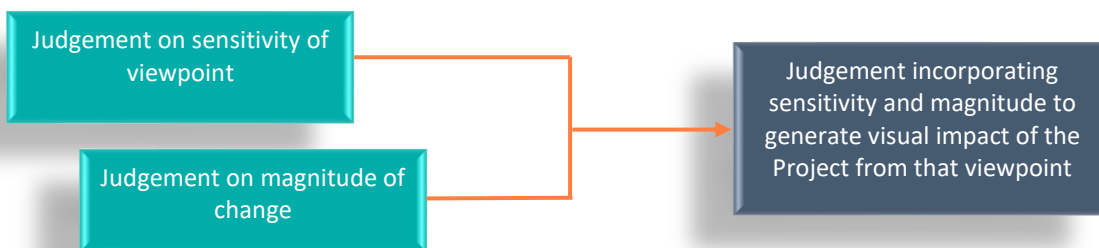


Figure 2–1 Approach to evaluating the significance of change

Table 2–1 Evaluating the significance of Visual Impacts

VISUAL IMPACT ASSESSMENT		Magnitude of change in views caused by development			
		Dominant change	Considerable change	Noticeable change	Barely perceptible change *
		Major changes in view, typically at close distances and/or affecting a substantial part of the view, continuously visible for a long duration, or obstructing a substantial part or important elements of view.	Clearly perceptible changes in views, typically at intermediate distances and/or resulting in either a distinct new element in a significant part of the view, or a wider ranging, less concentrated change across a wider area.	Minor changes in views typically at longer distances or visible for a short duration, and/or are expected to blend in with the existing view to a moderate extent.	Change which is barely visible, typically at a very long distance and/or visible for a very short duration, and/or are expected to blend with the existing view.
Sensitivity of viewpoints to proposal	High	Major	Moderate to Major	Moderate	Negligible to Minor
	Indicator Large numbers of viewers or those with primary interest and prolonged viewing opportunities such as residents and users of attractive and/ or well-kept recreational areas. Views from a regionally important location such as a scenic lookout whose interest is specifically focussed on a scenic landscape.				
	Medium	Moderate to Major	Moderate	Minor to Moderate	Negligible to Minor
	Indicator Medium numbers of residents and moderate numbers of visitors with an interest in their environment e.g. visitors to State Forests, including bush walkers, horse riders, trail bikers. Larger numbers of travellers with an interest in their surroundings.				
Low	Moderate	Minor to Moderate	Minor	Negligible to Minor	
Indicator Small number of visitors with a passing interest in their surroundings e.g., those travelling along principal roads. Viewers whose interest is not specifically focussed on the landscape e.g., workers, commuters. Landscape is highly modified or commonly occurring					
Negligible	Minor to Moderate	Minor	Negligible to Minor	Negligible	
Indicator Very occasional numbers of viewers with a passing interest in their surroundings e.g., those travelling along minor roads e.g., those travelling along minor routes. Highly degraded landscape where the Project would be an unnoticeable addition.					

\* If **no changes** would be perceptible an overall visual impact rating of **Negligible** would apply.

## 3. Project description

The following sections describe the Project in terms of location and components. The purpose of this section is to frame the specific project form at a technical level to inform the VIA process.

### 3.1 Project Components

AAPowerLink comprises multiple components and distinct pieces of infrastructure, including:

- The Solar Precinct
- Darwin Converter Site
- Electrode Sites
- Subsea cable
- Cable transition facilities
- Singapore Converter Station.

While the Project comprises these components, the scope of works for this VIA is to respond to EPA's Direction in relation to the visual impact of the OHTL. The proposed development component for the purpose of the VIA is therefore limited to the OHTL for the balance of this report.

### 3.2 Project location

The proposed OHTL connects the Solar Precinct located approximately 70 km southwest of Elliot in the Northern Territory to the Darwin Converter site. From the Solar Precinct, the OHTL Corridor will follow the footprint of the Alice Springs to Darwin railway corridor for a total distance of 722 km, before diverting at Livingstone in the north to follow a NT Government designated utilities corridor for approximately 66 km to Gunn Point Peninsula, where the final 19 km of the OHTL corridor connects from the intersection of Gunn Point Road to the Darwin Converter site at Murrumujuk, 60 km northeast of Darwin. The location of the proposed OHTL route is shown in Figure 3–1.

The study area along the OHTL corridor includes 28 identified viewpoints to be assessed. The locations of these are outlined in Appendix A. An indicative typical arrangement of the OHTL within the easement is shown in Figure 3–4. The study area is detailed in Section 0.

While the Draft EIS included several proposed deviations to the route, this report has been prepared to align with the preferred route included in the Supplement to the EIS.



Figure 3-1: Location of OHTL route

### 3.3 OHTL components

Key components of the proposed OHTL infrastructure considered in this LVIA:

- Steel monopole tower and pole foundations
- Lattice tower and foundations
- Conductor lines
- Inspection and maintenance access tracks
- Fibre optic cable for communication and monitoring purposes.

#### 3.3.1 Physical dimensions and arrangement of OHTL

The OHTL structure proposed by the proponent and used as the basis of the visual impact assessment is 60m in height and with span between 200-450m depending on chainage. Dimensions for individual monopole structures are provided in Figure 3–2.

#### Monopole Tower Configuration @450m span

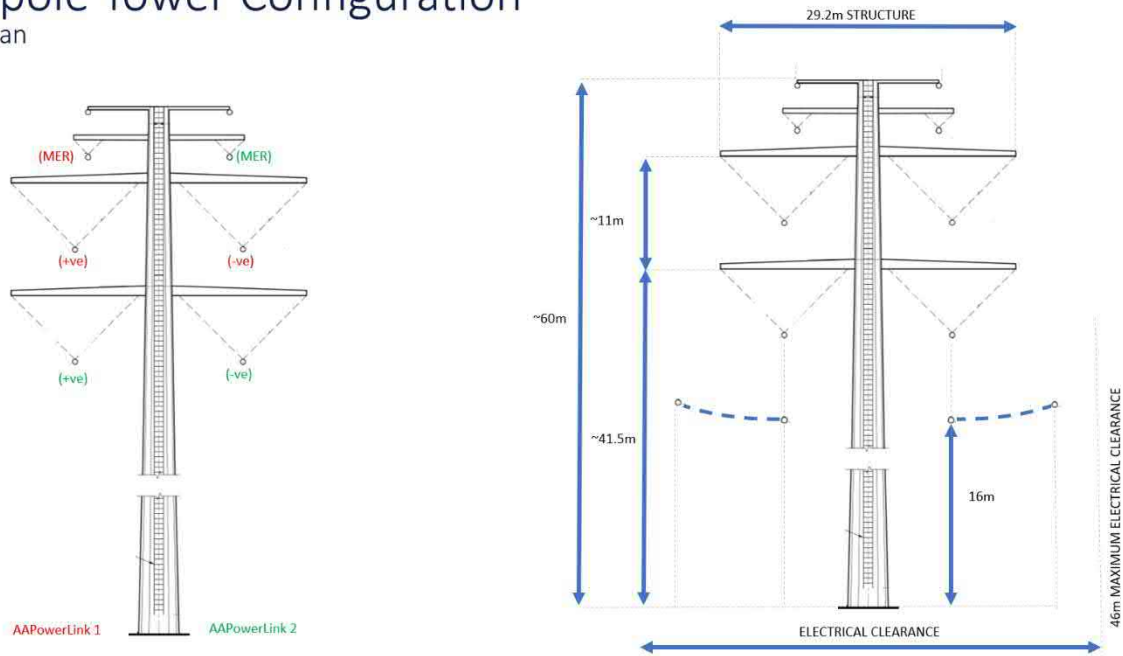


Figure 3–2 OHTL Monopole Structure Designs

While monopole structures will be adopted for most of the route, lattice towers will be required where notable changes in direction of the OHTL route occur. The indicative design of the lattice structures is illustrated in Figure 3–3.

# Lattice Tower Configuration @450m span

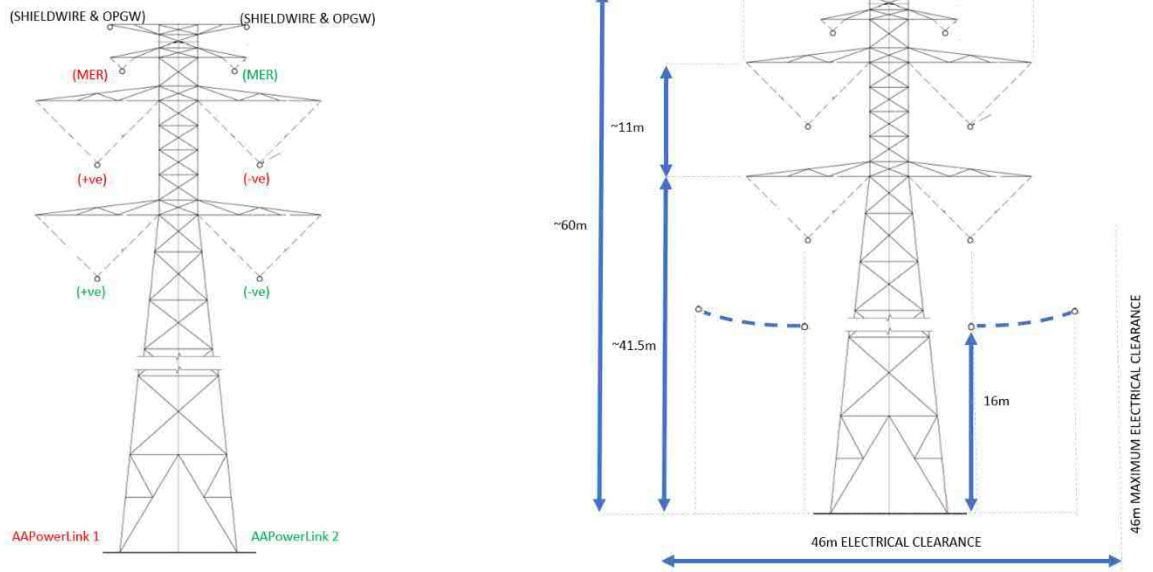


Figure 3-3: OHTL Lattice Structure Designs

Two Electrode sites will be required 8km northeast of the Darwin Converter Site and two near the Solar Precinct to accommodate earthing for the two circuits on the OHTL System. For the purpose of this assessment, only above ground Electrode structures and Electrode lines at Gunn Point Peninsula will be assessed for visual impact.

### 3.3.1.1 Indicative OHTL Layout and configuration

The proposed physical components within the OHTL route corridor are illustrated in Figure 3-4:

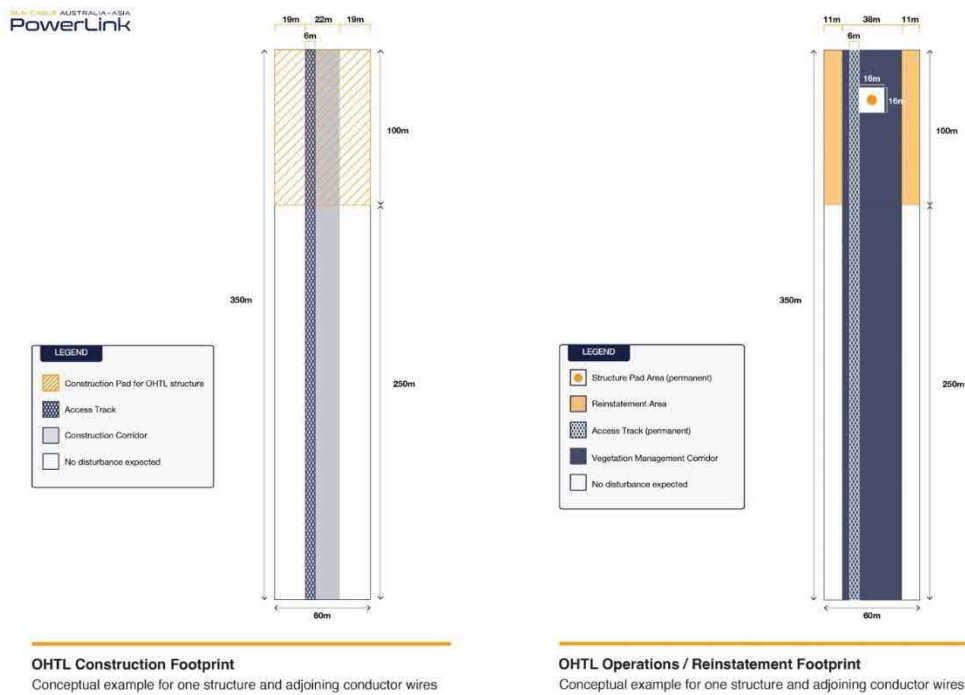


Figure 3-4 Overhead Transmission Line Corridor Configuration

### 3.3.2 Summary

The following table provides a summary of the OHTL components and description

Table 3–1 Summary of physical description of the proposed OHTL

OHTL Key Components	Indicative Dimensions (Concept Design)
Monopole structure	60m in height, 27.2 – 30m in width Pole: 2 m (top) 4m (base) (based on concept design only)
Lattice Tower	60m (height)
Conductor (powerlines)	4-bundled wires and Metallic Earth Return.
Inspection and maintenance access track	4m wide
Fibre optic cable	The length of the OHTL footprint, strung overhead on the OHTL if required
Easement	60m wide
OHTL	Approximate length 783km, 60m wide easement, 22m wide disturbance construction corridor Monopole or lattice towers with 200-450m span spacing
Electrodes	2ha site per Electrode, within a fenced area
HVDC Electrode Line Corridor	Approximately 8km in length from the Converter site, HVDC Electrode Line, including 12m tall poles, and access track, sited within a 30m wide corridro

## 4. Study Area

The study area has been determined through consideration of community and stakeholder comments, and the EPA's Direction. Twenty-five (28) viewpoints were selected to ensure balanced consideration of visual impacts and potential mitigation options that address:

- Community raised visual impact concerns related to both residential amenity.
- Stakeholder raised concerns relating to visual impact considerations.
- A range of locations along the full alignment addressing road users, rail users, residents and the tourism industry.

Viewpoint selection that forms the study area also considers the maximum distance at which the Project would be visible by the naked eye, assuming clear conditions and the absence of intervening terrain and objects. Figure 4–1 is based on a diagram from Human Dimension and Interior Space (Julius Panero & Martin Zelnik, Witney Library of Design, 1979). Similar data can be found in the more recent publication, The Measure of Man and Woman (revised edition, Henry Dreyfuss Associates, John Wiley & Sons, 2012). The figure illustrates the typical vertical field of view of the human eye, broken down into various components as shown.

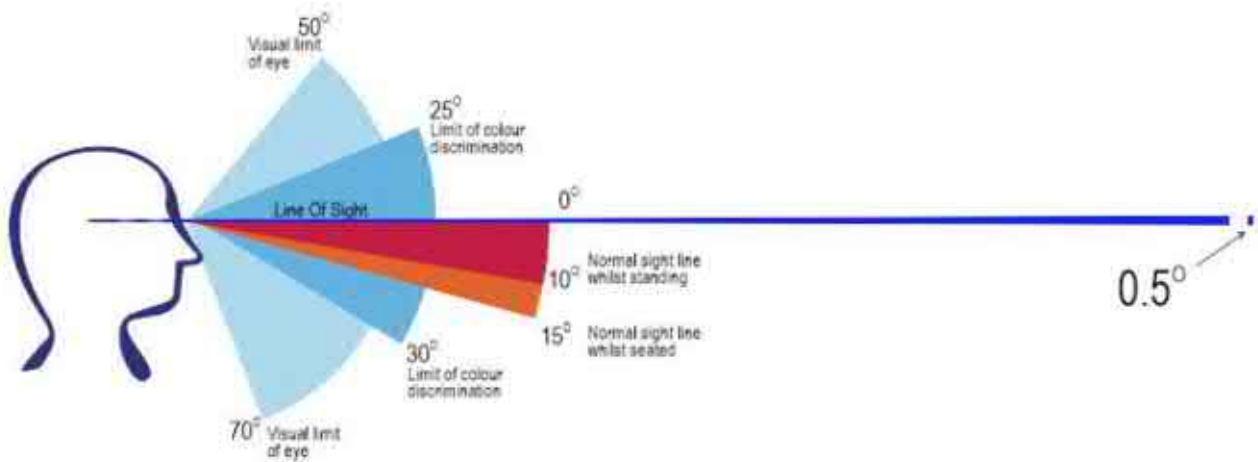


Figure 4–1: Typical vertical field of view of the human eye (Image source: Pinero & Zelnik)

Typically, when standing, the human eye can discern detail within a 10° vertical field of view. Where an object takes up 0.5° it is at the limit of discernibility. Based on a 60 m tall structure, the Project would be at its limit of discernibility from approximately 7 km away where it would take up approximately 0.5° of the vertical field of view. However, due to potential variations in individual perceptions, a more conservative study area has been adopted. This has been defined as the land within a radius of 10 km from the Project corridor.

The viewpoints selected based on the above definition of the study area are mapped and included in Appendix A. Individual viewpoints are assessed in Section 7, and cross referenced to public and stakeholder submissions in Table 1–1.

The study area is further informed by zones of visual influence, and the zone of theoretical visibility, described below.

## 4.1 Zones of visual influence

Different zones of visual influence have been determined based upon distance, considering the vertical field of view the Project would take up at each distance range. These zones have been adopted to assist with considerations of distance when assessing visual impact in section 7. Referred to as visual degradation, this is a key factor in determining the magnitude of change associated with the Project.

Table 4–1 shows the zones of visual influence that have been calculated for this Project. The calculations are conservative, theoretical and assume clear conditions and without the mitigating effect of intervening vegetation or terrain.

Table 4–1: Zones of visual influence applied to the Project

Distance	Value (for visual impact assessment)
0-1.5 km	Close range
1.6 – 3.5 km	Medium range
3.6 – 7 km	Long range
7.1+ km	Negligible

Computer rendered images showing the Project as seen from different distances away and from different landscapes have been prepared by Cambium Group and are included in Appendix B. These images assist to demonstrate the effect of distance on the visual prominence of the Project, taking into consideration the mitigating effects of vegetation. Although these images are useful as a guide, they do not replace firsthand observations of actual transmission towers. The perception of visual prominence may also vary from person to person at the actual site.

### 4.1.1 The impact of speed on visibility

Relevant to road users, the time for which the OHTL will be visible in a forward-looking direction, assuming a maximum visibility of 7km, travelling on the road network is outlined in Table 4-2. This is assuming a clear line of site, noting that undulation, road curvature, landscape features and prevalent vegetation would affect these.

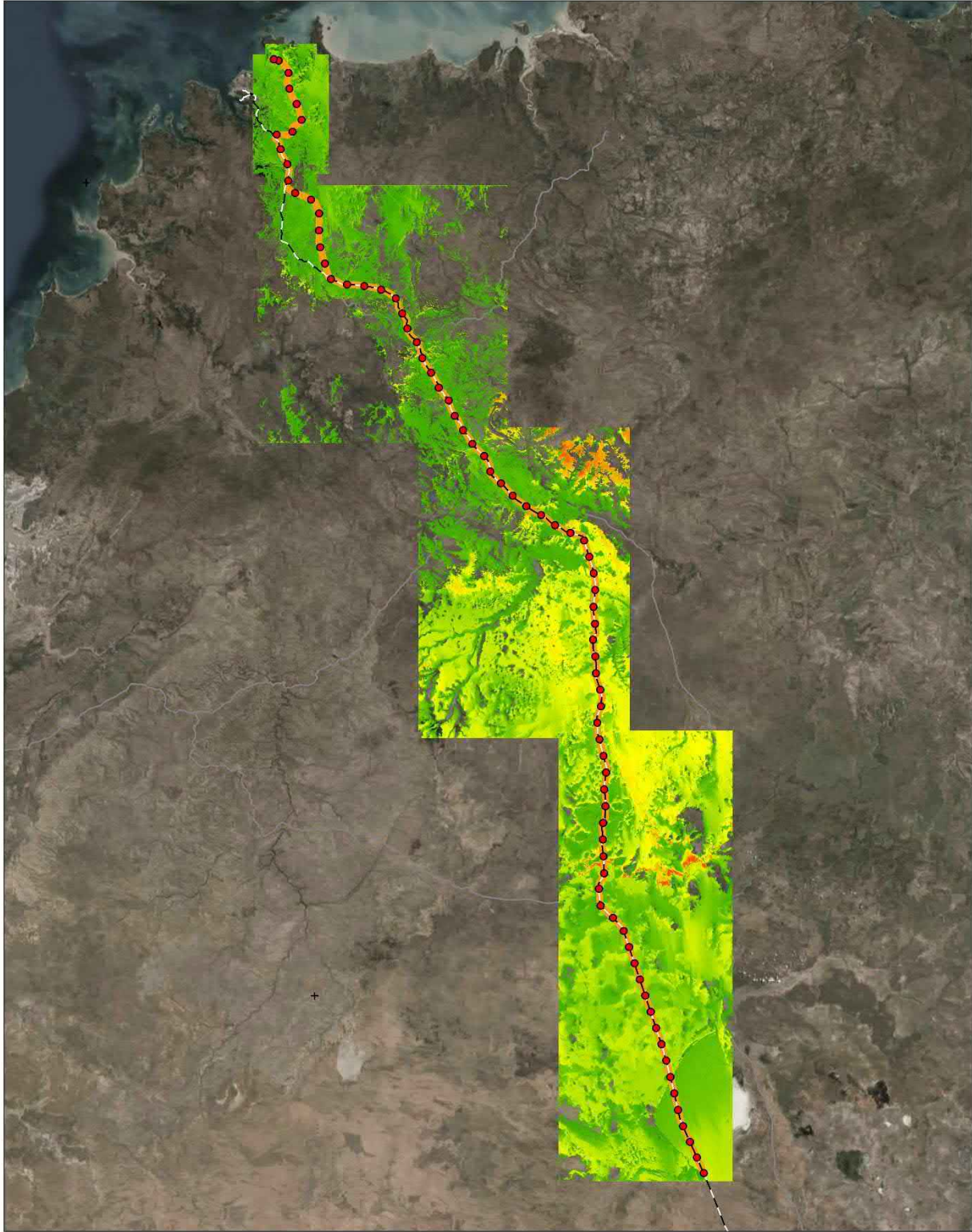
Table 4–2: Time the OHTL will be visible for travelling at speed

Driving Speed (by road classification)	Time the OHTL is visible for
110km/h	3 minutes
100km/h	3 minutes
80km/h	4 minutes
60km/h	6 minutes
50km/h	7 minutes

## 4.2 Zone of Theoretical Visibility (ZTV)

A Zone of Theoretical Visibility (ZTV) map illustrating areas the Project is theoretically visible from, was undertaken using Geographical Information Systems (GIS) software. It shows areas that may have a view toward the Project as a whole or in part, with varying degrees of visibility shown. The ZTV does not take account existing buildings and vegetation that may screen views, so it is therefore a conservative approach. The data that was used for the calculation was terrain data of a 30 m resolution.

Figure 4–2 shows a map of the results of the ZTV analysis.



\*\*Note: Elevation data are based in 1 second data limit of data extents

<b>Legend</b>			<b>Zone of Theoretical Visibility</b>		
<ul style="list-style-type: none"> <li><span style="color: red;">●</span> Tower</li> <li><span style="border-bottom: 2px solid orange; width: 20px; display: inline-block;"></span> OHTL Route</li> <li><span style="border-bottom: 2px solid black; width: 20px; display: inline-block;"></span> Highway</li> <li><span style="border-bottom: 2px solid black; width: 20px; display: inline-block;"></span> Railways</li> </ul>	<p>ZTV</p> <ul style="list-style-type: none"> <li>High-Visibility</li> <li>Low-Visibility</li> </ul>		Project: <b>Australia-Asia PowerLink</b>		
Source: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community		Scale: 1:2,906,600   Datum: GDA2020 Coordinate System: GDA2020		A4	

Figure 4-2: Zone of Theoretical Visibility (ZTV)

## 5. Legislation and policy

The statutory framework relevant to the assessment of AAPowerlink is discussed in Chapter 1, Section 1.6 and Tables 1.1 and 1.2 of the Draft EIS. This framework sets the legislative context within which the EIS is assessed and determined. The VIA is in response to the EPA Direction following statutory exhibition of the Draft EIS, as outlined in Section 1.2, and will be included in the supplement submitted to the EPA.

This section does not seek to summarise legislation, and rather provides guidance relating to statutory and policy considerations informing the LVIA and key concepts to be considered. These concepts and an understanding of relevant legislation and policy informs how the visual impact methodology is applied in the local context.

### 5.1 Environment Protection Act 2019 (NT)

The EP Act is guided by the NT EPA environmental factors, objectives and guidelines (NTEPA 2022). These specify the process of assessing the environmental impacts of a proposed action. The environmental factor relating to visual amenity is *'Community and economy'* which assesses the potential of a proposed action to *'Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians'*.

The Community and Economy factor is discussed in Chapter 3 of the Supplement to the EIS. The concept of "amenity" is best defined by the Planning Act, 1999 (NT), as outlined in Section 5.1.1.1.

Two key objectives of the Environment Protection Act (the EP Act) are to promote ecologically sustainable development so that the wellbeing of the people of the Territory is maintained or improved without adverse impact on the environment of the Territory and to recognise the role of environmental impact assessment and environmental approval in promoting the protection and management of the environment of the Territory.

Noting the meaning of *Environment* in the EP Act, being *'all aspects of the surroundings of humans including physical, biological, economic, cultural and social aspects'* and the meaning of *'environmental harm'* being *'direct or indirect alteration of the environment to its detriment or degradation, of any degree or duration, whether temporary or permanent'* it is clear that in relation to the visual impact assessment, the introduction of the OHTL has the potential to alter the physical, cultural and social environment of the NT. The VIA should therefore consider:

- The extent of change, and whether this is direct or indirect.
- The magnitude of change, and whether this could be considered harm.
- The context within which the change occurs at a local level.

The VIA framework outlined in Section 2.4 and Table 2–1 addresses how this is assessed, while the local context applied to the selection of viewpoints within the study area ensure local context is applied.

#### 5.1.1 Planning Act 1999 (NT)

The *Planning Act 1999 (NT)* (the Planning Act) guides the orderly and efficient development of land and infrastructure across the Northern Territory and provides clear guidance on the meaning of amenity. To achieve this, the Planning Act has several key objectives, most notably it aims to *'maintain the health of the natural environment and ecological processes'*, *'to protect the quality of life of future generations'*, *'to assist the provision of public utilities, infrastructure and facilities for the benefit of the community'*, *'to promote the good design of buildings and other works that respects the amenity of the locality'*, and to *'assist the conservation and enhancement of places, areas, buildings, other works and landforms that are of cultural, aesthetic, architectural or historical value.'*

This clearly links the intent of the Planning Act to the EP Act and highlights the role the Planning Act plays in facilitating infrastructure of this nature. In relation to the VIA:

- The assessment of the OHTL should consider change of the amenity of the landscape through the introduction of the infrastructure.
- The assessment should consider the impact on the study area, in relation to the conservation or enhancement of the urban locality it traverses (where relevant), and the landforms along the alignment.

The VIA framework outlined in Section 2.4 and Table 2–1 addresses how this is assessed, while the local context applied to the selection of viewpoints within the study area ensure local context is applied.

### 5.1.1.1 Definition of Amenity

The Planning Act defines amenity as follows:

“amenity, in relation to a locality or building, means any quality, condition or factor that makes or contributes to making the locality or building harmonious, pleasant or enjoyable.”

The Planning Act and the NT Planning Scheme embed this concept in the assessment of development proposals to consider the change to the local characteristics valued by residents.

The VIA has considered this concept by understanding community and stakeholder concerns raised through submissions in relation to the key aspect they value, including references to the natural environment and landscape, the tourism character / expectation of the outback and sight lines. The framework outlined in Figure 2–1 allows for local context and amenity considerations to be applied to the assessment, while the selection of viewpoints addresses those locations where stakeholders most frequently raised visual impact concern.

### 5.1.1.2 NT Planning Scheme 2020

The NT Planning Scheme 2020 (the NTPS), is the standard set of planning rules and guidelines that facilitates assessment of development applications, including subdivision, in the Northern Territory. While development approval may be required for some or all of the aspects of the OHTL in future, this is not relevant to the current VIA which is delivered under the EP Act. This notwithstanding, a core component of the NTPS is the Strategic Framework, which provides overarching guidance for regional, subregional and local development outcomes. Relevant to the VIA are the following:

#### Darwin Region (including Darwin, Palmerston and Litchfield sub-regions)

##### Darwin Regional Land Use Plan 2015

The Darwin Regional Land Use Plan 2015 (DRLUP) is a high-level strategic framework that identifies key characteristics and needs of the broader Darwin region, including Darwin, Palmerston and Litchfield. The plan presents an overarching land use arrangement for the region for long term land use, growth, natural resource management and foreseeable issues relating the region and incorporated human settlements.

Under the Planning Act, where a more detailed local plan exists within the strategic framework, assessment against the high-level plan is not required. The Litchfield Subregional Plan 2016 therefore in essence supersedes the DRLUP and will be the focus of further assessment to inform the VIA.

##### Litchfield Sub-Regional Land Use Plan 2016, (amended to include Gunn Point in 2022)

The Litchfield Sub-Regional Land Use Plan 2016 (LSLUP) was first introduced in 2016, and subsequently amended in 2022 to incorporate updated planning for Gunn Point, including Murrumujuk.

The LSLUP provides more detailed planning than the DRLUP, with consideration for key planning challenges within the sub-region, including statements of policy and land use concept plans to guide the future preparation of area plans for rural activity centres.

The Project is considerably located within the LSLUP study area, with the most relevant considerations the interface with the rural areas and future urban/peri urban areas through Noonamah / Hughes along the Gunn Point utilities corridor, and the infrastructure to be located in Murrumujuk.

The LSLUP notes the intent to preserve the existing amenity of the rural area outside of rural activity centres, as well as the potential for most of the growth in Litchfield to occur in the urban and peri-urban areas of Holtze, Weddell, Hughes, Murrumujuk, and the Noonamah area. In this regard it is noted that the Lloyd Creek Rural Village proposal (previously known as Noonamah Ridge Estate), was subject to an EIS process that was determined in 2015. The subsequent rezoning application to facilitate development in accordance with the urban and peri urban designation was refused in 2020. The development proposal notes industrial use to the south of the proposed Project alignment, and a vegetated buffer with rural residential to the north. The sensitivity to change will consider the potential amenity impacts on this proposal.

With Glyde Point identified for major strategic industry, Murrumujuk is identified as an urban growth area, and the 2022 revision provide clear guidance on the future urban structure of this area. The plan also acknowledges the utilities infrastructure corridor and associated transport link within the corridor to be utilised by the Project. The intent for the corridor to be used for infrastructure is therefore entrenched in policy and public awareness.

Relevant to the VIA, and the local context to inform the assessment in accordance with Table 2–1 are the following key policy considerations included in the LSLUP:

- Facilitating the development of Murrumujuk and restricting land uses that have the potential to adversely impact on the amenity of future residential areas in Murrumujuk will inform the analysis of sensitivity to change, noting that the concentration of low impact industry is anticipated in Murrumujuk Township.
- Protection of foreshore areas within the public foreshore will inform the sensitivity of this interface to change.
- Consideration of potential destination amenity nodes on the foreshore, and potential mitigation to minimise visual impact on the amenity of this locality.

In view of the above, Viewpoint 1 was selected to specifically address the interface with Murrumujuk.

### **Coomalie Planning Concepts and Land Use Objectives**

This plan is primarily concerned with management of existing land uses, the environment and tourism uses. No specific guidance considered relevant to the VIA assessment, outside of already captured considerations for impact on tourism, residential and rural amenity and the transport network.

## **Katherine Region**

### **Katherine Land Use Plan 2014**

The Katherine Land Use Plan 2014 (KLUP) provides the land use framework to position Katherine for growth in relation to potential mining, tourism and agribusiness projects. It aims to meet the needs of residents and protect valued environmental and productive assets.

The proposed alignment of the Project follows the railway deviation around the town itself through areas earmarked for agriculture, skirting two existing rural residential noting that urban expansion is predominantly anticipated to the east on more flood resilient land. This implies at least a maintenance of the existing level of sensitive receptors that may respond to the potential visual change and aligns with the approach to consideration of visual impact in this locality.

## 6. Baseline landscape conditions

The following sections provide information on the baseline landscape conditions within the study area. This will be discussed in terms of the regional landscape context, topography, vegetation, hydrology, townships and settlements, parks and reserves, major transport routes, landscape character zones, landscape sensitivity and landscape effects. This assessment is limited to landscapes crossed or traversed by the OHTL.

The baseline landscape conditions inform the understanding of the context and the potential change to the landscape that may occur due to the installation of the OHTL, and the consequent ability of the landscape to absorb the impact. This forms part of the assessment outlined in Section 2.4 and Table 2–1.

### 6.1 Regional landscape context

The NT is typically characterised by its vast, open and arid landscapes and sparsely distributed settlements. These landscape characteristics are commonly associated with parts of the Northern Territory and are key drawcards for visitors. The major cities of Darwin and Palmerston, on the northern coast are separated by approximately 988km of the Stuart Highway to Tennant Creek, being the nearest major town to the Solar Precinct. One other major town, Katherine, occurs along this route, while minor locations such as Pine Creek and Adelaide River are encountered.

Notable landscape features within parts of the Territory are rocky escapements and ranges, natural waterholes and rivers, vast savanna woodlands and desert sandplains. These landscapes are most notably within popular tourism destinations such as Litchfield National Park. Section 6.8 classifies the various landscape character zones within this area and their relevance to the LVIA.

### 6.2 Topography

The topography of a site can influence the visual impact of a project. The introduction of a prominent structure within a flat landscape will tend to have a greater degree of visibility from surrounding areas than one which has been introduced into a valley. This is due to the mitigating effect of ridgelines surrounding the valley, by either inhibiting views of the structure or providing a backdrop to it. By contrast, the introduction of a prominent structure on a ridgeline will have a greater degree of visibility than either of these two scenarios. This is because the new element would be clearly seen against the skyline by observers at lower elevations. However, neither of these scenarios take into consideration the mitigating effect of vegetation or other intervening objects.

The topography within the study area ranges from sea level (0 m AHD – Australian Height Datum) at the coastal regions to peaks of approximately 300 m AHD or greater, in areas to the north east of Katherine. At the northern end of the Project corridor, the route is located within low lying and generally flat coastal plains. Where it joins the Stuart Highway, it follows a ridge line which ranges in height between 100 – 150 m, until it joins Adelaide River. Between Adelaide River and Pine Creek, the Project corridor is partially located within a valley with elevations in the range of approximately 30 – 70 m, before rising to a peak at Pine Creek with elevations of greater than 300 m. The Project corridor between Pine Creek and Katherine follows a similar pattern of crossing ridge lines and valleys with a similar range in elevations.

Between Katherine and the southern end of the Project corridor, the route is located on a relatively flat landscape with lower topographical relief as compared with the northern sections. Elevations between Katherine and the southern end of the corridor generally range between 200 to 300 m, over a distance of approximately 440 km. By comparison, elevations between the northern end of the Project corridor and Katherine generally range between 0 to 300 m over a distance of approximately 300 km. Figure 6–1 shows a map of topography within the study area.

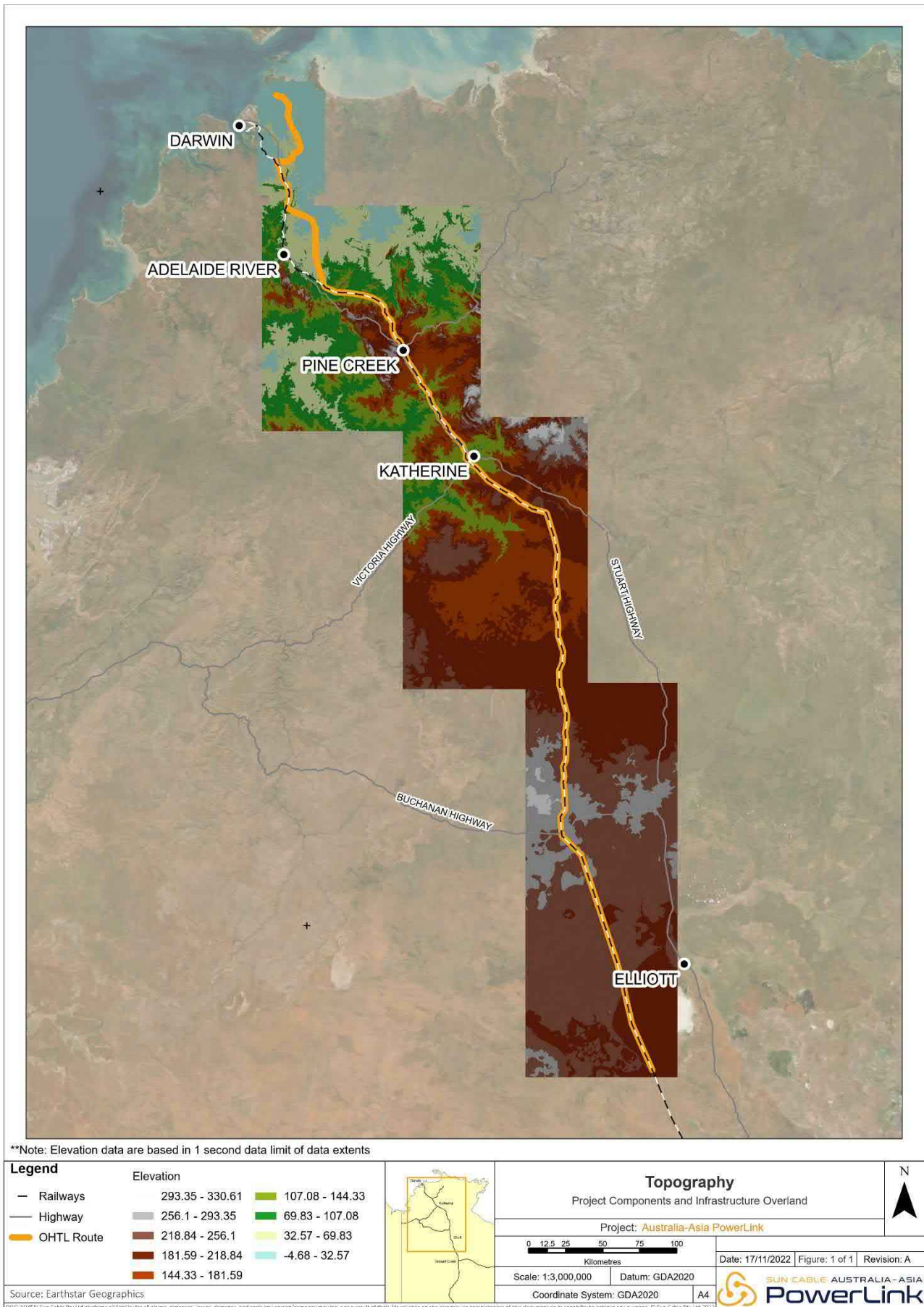


Figure 6-1: Topography

## 6.3 Vegetation

Landscapes with taller and denser vegetation coverage generally has a greater capacity to visually absorb a development than landscapes which are devoid of vegetation, all else being equal. Even if the development is significantly taller than the vegetation, if the vegetation is in the foreground, it has the potential to filter or screen views of larger elements that are further away. Vegetation clearance on the other hand may itself give rise to visual impact, however it is a separate consideration. Computer rendered images showing the Project as seen from different distances away and from different landscapes has been prepared by Cambium Group and are included in Appendix A. These also show the screening effect of vegetation on taller objects that are further away.

Naturally occurring vegetation along the coastal areas near Darwin consist mainly of tall open forest dominated by *Eucalyptus tetradonta* and *Eucalyptus miniata*. By contrast, vegetation toward the southern end of the project corridor consists mainly of low spinifex grassland with asparse tree and shrub overstorey of corkwoods, desert bloodwoods, acacias, and grevilleas. Vegetation coverage along the project corridor generally ranges between these two conditions, with taller and denser vegetation occurring towards the coast. Vegetation coverage around towns and settlements typically comprise a mix of native and exotic trees with areas cleared for agriculture and urban development being a common occurrence.

Figure 6–2 shows a view from Gunn Point Road, showing tall vegetation associated with coastal areas at the northern end of the Project corridor. Figure 6–3 shows a view from Stuart Highway, at the southern end of the Project corridor, showing low shrubby vegetation. Figure 6–4 shows a view from Arnhem Highway, Lambells Lagoon, showing land cleared for orchards.



Figure 6–2: View of tall open forest from Gunn Point Road



Figure 6-3: View of low shrubby vegetation from Stuart Highway near Tennant Creek (Source: Google Maps)



Figure 6-4: View from Arnhem Highway showing land cleared for orchards (Source: Google Maps)

## 6.4 Hydrology

Landscapes which contain lakes, rivers, creeks and other water bodies typically have a high visual amenity and recreational value. This however is dependent on whether the water body appears natural with little evidence of human modification. Generally, the more natural it appears, the higher the degree of sensitivity to visual changes, notwithstanding that these changes do occur to enhance recreation.

The revised Project OHTL Corridor crosses a total of 128 watercourses and drainage lines, the vast majority of these being minor drainage lines and intermittent streams. The major watercourses are the Katherine River, Edith River, Fergusson River and Adelaide River, all of which are generally wide, defined channels with significant riparian vegetation. These rivers are important resources for industry and agriculture, support significant biodiversity and are also used recreationally for activities such as fishing, swimming and tourism (Draft EIS, Chapter 6 – Hydrological processes, Sun Cable, March 2022).

Lake Woods is one of the largest temporary freshwater lakes in the NT. It is located south of Elliott and west of the Stuart Highway. The lake is ephemeral, filling with water following rain events. During flooding and consistent heavy rainfall, the lake can expand to occupy an area of over 1,300 km<sup>2</sup> and can retain water for 12 consecutive months. The site has international significance due to seasonal presence of large groups of waterbirds and presence of important wetland habitat (Chapter 6 – Hydrological processes, Sun Cable, March 2022).

The frequency and permanency of watercourses generally decreases from north to south of the project corridor as the climate changes from humid to arid. In the north there is a combination of ephemeral and perennial watercourses whilst in the south, watercourses are typically ephemeral. The northern most 20 km of the project corridor is located proximate to the Shoal Bay Coastal Reserve and Tree Point Conservation Area.

Figure 6–5 shows a view north east along Katherine River from Zimin Drive, which is approximately 2.2 km north east of the Project corridor.



Figure 6–5: Katherine River from Zimin Drive (Source: Google Maps)

## 6.5 Townships and settlements

Townships and settlements comprise areas with a relatively high number of viewers who are typically sensitive to visual changes in their surroundings. This is due the sense of attachment one typically feels toward your place of residence and your community, your town and its landscape setting. However, this sensitivity can be reduced by the lack of vegetation, the scale of urban development and the prominence of vehicular traffic, roads and other infrastructure. Figure 6–6 shows a view along the main street of Katherine.



Figure 6–6: View south east along the main street of Katherine (Source: Google Maps)

## 6.6 Parks and reserves

Parks and reserves are often utilised for passive and active recreation, where the scenic quality of the landscape is an important consideration. However, some parks and reserves or sections of them are set aside mainly for conservation purposes or are inaccessible by the general public. This LVIA only considers those reserves that are publicly accessible.

Gunn Point Beach is located at the northern end of the Project corridor and is a popular beach recreation and camping area. The land to the south of Gunn Point Beach is part of the Tree Point Conservation Reserve. The Project also runs for approximately 15km along the edge of the Manton Dam Recreation Area, which is located approximately 60 km south-east of Darwin. This area is used for boating, fishing, and water sports. In addition, the Project corridor is located approximately 400m to the easternmost edge of Litchfield National Park and within approximately 2 km of Kintore Caves Conservation Reserve. Furthermore, the Project corridor intersects with Black Jungle Conservation Reserve for 2.6 km and is also located just inside the eastern boundary of the Shoal Bay Coastal Reserve for 5.1 km (Draft EIS Chapter 5 – Terrestrial ecosystems, Sun Cable, March 2022).

In addition to these parks and recreation areas, the Project corridor intersects with a number of Sites of Conservation Significance (SOCS), which have a high ecological value. These include Shoal Bay SOCS, Howard sand plains SOCS and Adelaide River coastal floodplain SOCS.

## 6.7 Major transport routes

The following sections describe the major transport routes within the study area. Roads and passenger railways are locations from which changes in the landscape are readily noticed by the general population. There may also be an expectation placed on the scenic quality of the landscape depending on the type of route. Tourist drives for instance, are generally associated with the experience of travelling through a high-quality landscape as compared with a typical commuter national highway.

### 6.7.1 Road Users

Road users in the Northern Territory comprise a combination of freight and heavy vehicles, ordinary local traffic as well as tourism traffic in the form of private vehicles including vehicles with Caravans, motorhomes and camper trailers of various description. This diversity of road user influences the speed at which people travel, which in turn impacts on the way people view and interact with the landscape. People seeking an outback experience will frequently traverse both major sealed and minor unsealed roads throughout the study area. The following key roads are noted:

#### Stuart Highway

Stuart Highway is a major national highway which runs from Darwin, in the Northern Territory through to Alice Springs in the Northern Territory, to Port Augusta in South Australia, a distance of approximately 2 700 km. Apart from sparsely distributed towns, there are also petrol stations located at intervals of around 200 km with more frequent rest stops. Some of the rest stops are located at scenic points with information boards and amenities, while others contain a simple picnic table and a rubbish bin offering a safe place to break up long commutes. The trip between Darwin and Adelaide along the Stuart Highway is reputed to offer travellers an outback experience through a characteristically vast and arid Australian landscape.

While some parts of the proposed OHTL alignment deviate from the Stuart Highway, there are sections of the alignment where the OHTL will be visible from the Stuart Highway, including:

- Some areas between Katherine and Pine Creek
- Three points where the alignment crosses over the Stuart Highway
- A relatively close alignment between Adelaide River and the Noonamah / Hughes locality where the site deviates from the railway corridor and into the Utilities Corridor.

#### Other Roads

The proposed OHTL alignment crosses over Victoria Highway, Kakadu Highway and Arnhem Highway, as well as other minor sealed and unsealed roads.

### 6.7.2 Railway Users

The Adelaide to Darwin Railway line is owned and operated by Aurizon (formerly One-Rail Australia) and is predominantly a freight rail service connecting Adelaide to Darwin Port.

Outside of freight users, one passenger rail service is operated, being The Ghan. The Ghan is marketed as a world-renowned passenger train service, operating between Darwin and Adelaide. It was named after Afghan cameleers who traversed the route before the train line was built. The Ghan publicity material states that it offers passengers access to parts of Australia that are not easily accessible by other means. Relatively uninterrupted views of the central Australian landscape are also a key offering of the experience. Scheduled services run twice a week in both directions from June until September and once a week at all other times. The journey of three days spans approximately 2 800 km between the two capital cities, with stops at Alice Springs and Katherine for sightseeing excursions.

## 6.8 Landscape character zones (LCZs)

Landscape character zones (LCZs) are areas sharing similar qualities such as topography, vegetation, hydrology, land use and settlement, built form, cultural and recreational values. Given that a site visit was not undertaken by the author, LCZs were not able to be mapped using the traditional methods of firsthand observation and photographic

records. The landscape character zones adopted for this study have therefore been mostly formulated from the bioregions identified in Draft EIS Chapter 5 – Terrestrial Ecosystems, Sun Cable, March 2022.

*“Bioregions are relatively large land areas characterised by broad, landscape-scale natural features and environmental processes that influence the functions of entire ecosystems. They capture the large-scale geophysical patterns across Australia. These patterns in the landscape are linked to fauna and flora assemblages and processes at the ecosystem scale, thus providing a useful means for simplifying and reporting on more complex patterns of biodiversity (NPWS 2003).”*

The following five LCZs have been identified within the study area, as adapted from the bioregions and based on the main characteristics of landform and vegetation:

- LCZ 1: Darwin Coastal
- LCZ 2: Pine Creek
- LCZ 3: Daly Basin
- LCZ 4: Sturt Plateau
- LCZ 5: Tanami

### 6.8.1 LCZ 1 Darwin Coastal

LCZ 1 is characterised by gently undulating plains on sandstones and siltstones. It is an extensive and diverse floodplain associated with the lower reaches of the many large river systems. The dominant inland vegetation type is *Eucalyptus tetradonta* and *Eucalyptus miniata* dominated tall open forest. There are substantial areas of mangroves, rainforest and other riparian vegetation fringing the rivers. Figure 6–7 shows views of LCZ 1.



Figure 6–7: View of LCZ 1 Darwin Coastal (Source: Sun Cable EIS Chapter 5, Terrestrial Ecosystems)

### 6.8.2 LCZ 2 Pine Creek

LCZ 2 Pine Creek is characterised by hilly to rugged ridges with undulating plains on igneous granite and metamorphic gneiss. Vegetation comprises mostly open mixed *Eucalyptus* woodlands or tall forest dominated by *Eucalyptus tetradonta* and *Eucalyptus miniata*, with patches of monsoon rainforests, *Melaleuca* woodlands, riparian vegetation and tussock grasslands. Figure 6–8 shows a view of LCZ 2 from Stuart Highway, Tortilla Flats (approximately 20 km north of Adelaide River).



Figure 6–8: View of LCZ 2 Pine Creek (Source: Google Maps)

### 6.8.3 LCZ 3 Daly Basin

LCZ 3 Daly Basin is characterised by gently undulating plains and scattered low plateaus, loamy and sandy red earths on sandstones, siltstones, and limestones. Vegetation comprises mostly *Eucalyptus tetradonta* and *Eucalyptus miniata* dominated open forest with perennial and annual grassy understorey. Figure 6–9 shows a view of LCZ 3 from Victoria Highway, approximately 8 km south-west of Katherine.



Figure 6–9: View of LCZ 3 Daly Basin (Source: Google Maps)

#### 6.8.4 LCZ 4 Sturt Plateau

LCZ 4 Sturt Plateau is characterised by flat to gently undulating plains with mainly lateritic soils. Deep sands occur in the south and cracking clays in the southeast. Vegetation comprises predominantly Eucalypt woodlands or tall shrublands and woodlands of bullwaddy and lancewood. Perennial grasses dominate in more open areas. Figure 6–10 shows a view of LCZ 4 from Stuart Highway, approximately 30 km north of Birdum.



Figure 6–10: View of LCZ 4 Sturt Plateau (Source: Google Maps)

### 6.8.5 LCZ 5 Tanami

LCZ 5 Tanami is characterised by mainly red sandplains with small areas of alluvial plains, low ridges, and stony rises. Vegetation comprises predominantly spinifex hummock grassland with a tall sparse shrub overstorey of *Hakea subarea*, desert bloodwoods, acacias, and grevilleas. This LCZ is also host to pastoralism with a low stock carrying capacity, given the presence of spinifex as the primary fodder. Fires are also a common occurrence within this LCZ. Figure 6–11 shows a view of LCZ 5 from Stuart Highway, Pamayu.



Figure 6–11: View of LCZ 5 Tanami (Source: Google Maps)

## 6.9 Landscape sensitivity

Given the scale, complexity and localised variability of the LCZs described in the preceding section, the sensitivity of the LCZ will be assessed on a case-by-case basis in Section 7.

## 7. Visual impact assessment

The following sections provide an assessment of the visual impact of the Project from a range of publicly accessible locations. This has been undertaken to evaluate the overall visual impact of the Project.

### 7.1 Viewpoint 1 – Gunn Point Campsite

Figure 7–1 shows the viewpoint location and Figure 7–2 shows a view toward the Project. The location description is provided in Table 7-1 and the assessment is provided in Table 7–2.

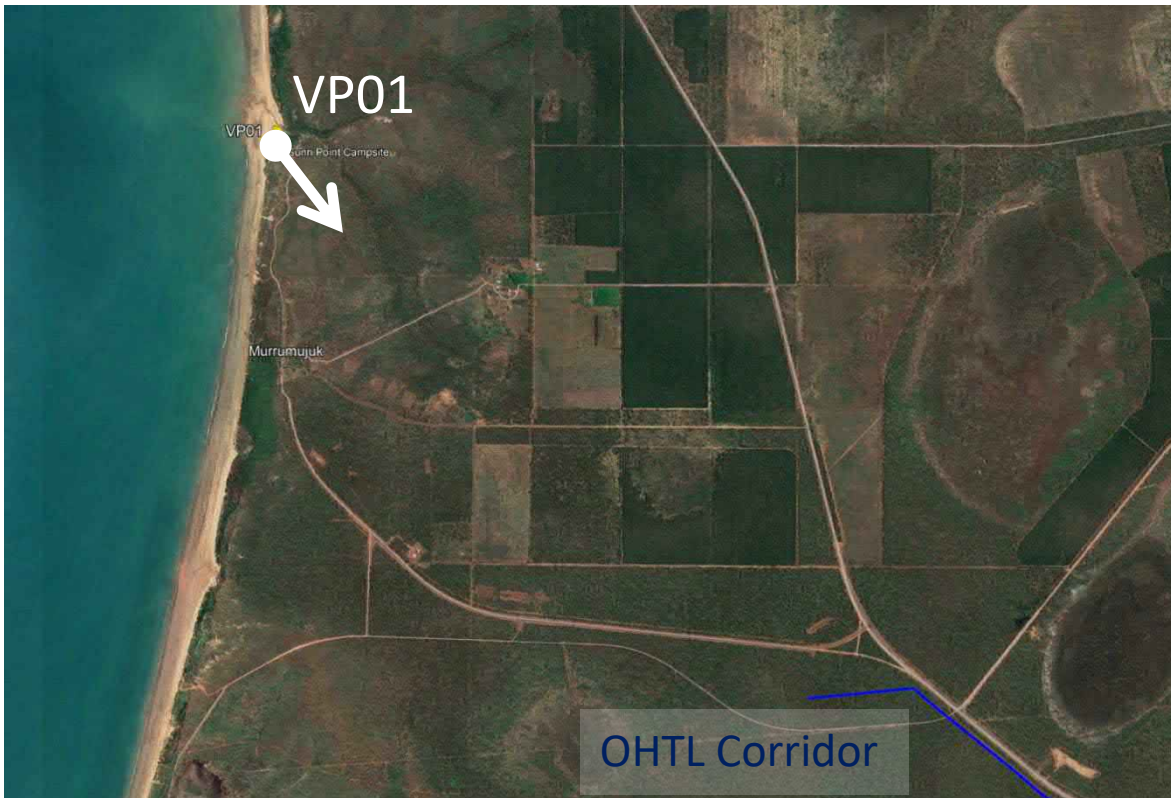


Figure 7–1: Location of Viewpoint 1



Figure 7–2: View from Viewpoint 1 toward the Project

Table 7–1: Viewpoint 1 information

Viewpoint information	
Location description	Gunn Point Campsite at the end of Murrumujuk Drive, approximately 4.5 km from OHTL structures.
Coordinates	12° 14'34"S 131° 01'48"E
View direction	South-east
Existing conditions	Gunn Point Campsite is located at the western sandy shoreline of Gunn Point Peninsula. Views toward the OHTL are of a flat vegetated landscape with scattered trees and scrubs with predominantly grassland understorey.
Expected visual change	The view is considered representative of recreational users at the campsite and the beach view towards OHTL corridor to the southeast.

Table 7–2: Assessment of visual impact – Viewpoint 1

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	Gunn Point Campsite is a locally important recreation area with a moderate number of visitors.
Magnitude of change	Barely perceptible change	The Project is not expected to be visible, if at all. If it were visible, it would be barely noticeable.
Overall visual impact	<b>Negligible to Minor</b>	Given that the Project would be barely discernible.

## 7.2 Viewpoint 2 – Gunn Point Road #1

The following section provides an assessment of visual impact from Viewpoint 2 – Gunn Point Road #1. Figure 7–3 shows the viewpoint location and Figure 7–4 shows a view toward the Project. The location description is provided in Table 7–3 and the assessment is provided in Table 7–4.

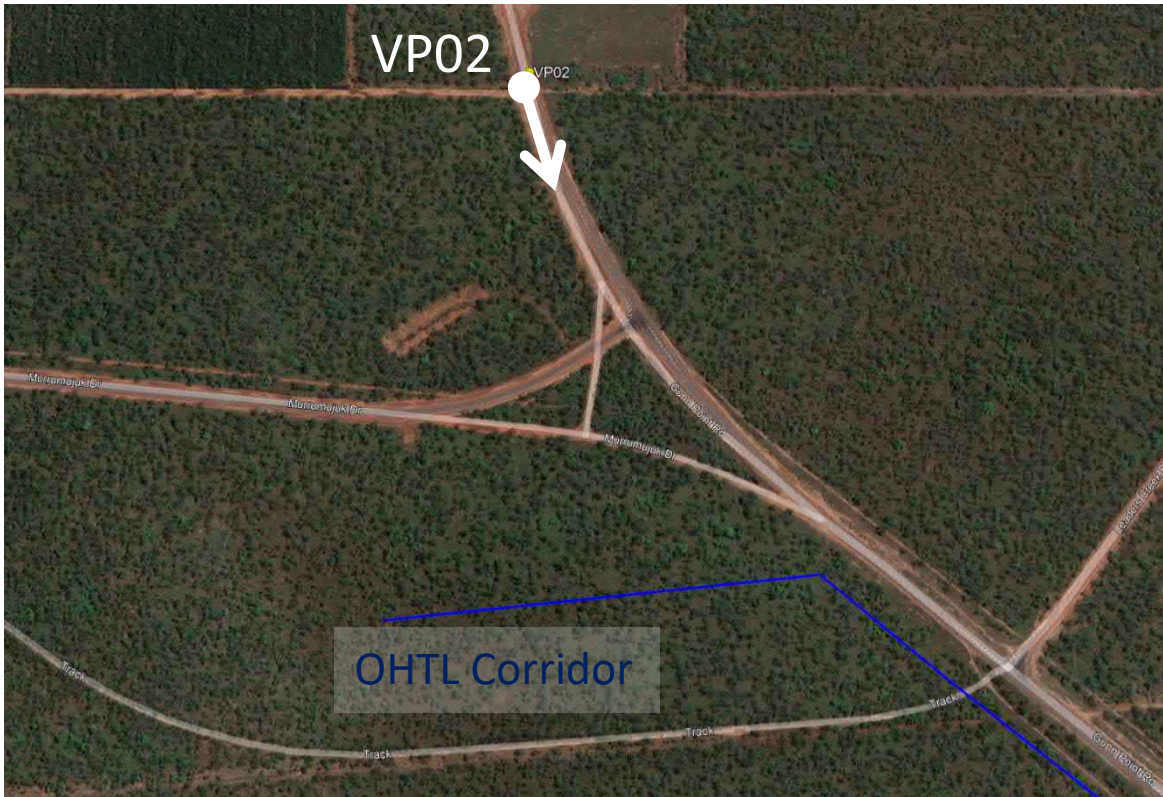


Figure 7–3: Location of Viewpoint 2



Figure 7–4: View from Viewpoint 2 toward the Project

Table 7-3: Viewpoint 2 information

Viewpoint information	
Location description	View south from Gunn Point Road, approximately 400 m from the intersection of Murrumujuk Drive and approximately 800m from OHTL route corridor.
Coordinates	12° 15'54"S 131° 03'40"E
View direction	South-east
Existing conditions	A characteristic feature of this view is the existing vegetation that lines both sides of the Gunn Point Road, limiting long distance views out across the landscape. Other notable elements in the view include road signs and overhead powerlines.
Expected visual change	The Project may be partially visible above the vegetation in the centre of the view.

Table 7-4: Assessment of visual impact – Viewpoint 2

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Low	Gunn Point Road has a low number of visitors with a passing interest in their surroundings. The characteristics of this view are similar to many other locations along this road.
Magnitude of change	Noticeable change	The Project is expected to blend in with the existing view to a moderate extent as it would be partially screened by the existing vegetation.
Overall visual impact	<b>Minor</b>	Given that the Project would be partially if not mostly screened from view from this location and the low viewpoint sensitivity.

### 7.3 Viewpoint 3 – Leaders Creek Boat Ramp Access

The following section provides an assessment of visual impact from Viewpoint 3 – Leaders Creek Boat Ramp Access. Figure 7-5 shows the viewpoint location and Figure 7-6 shows a view toward the Project. The location description is provided in Table 7-5 and the assessment is provided in Table 7-6.

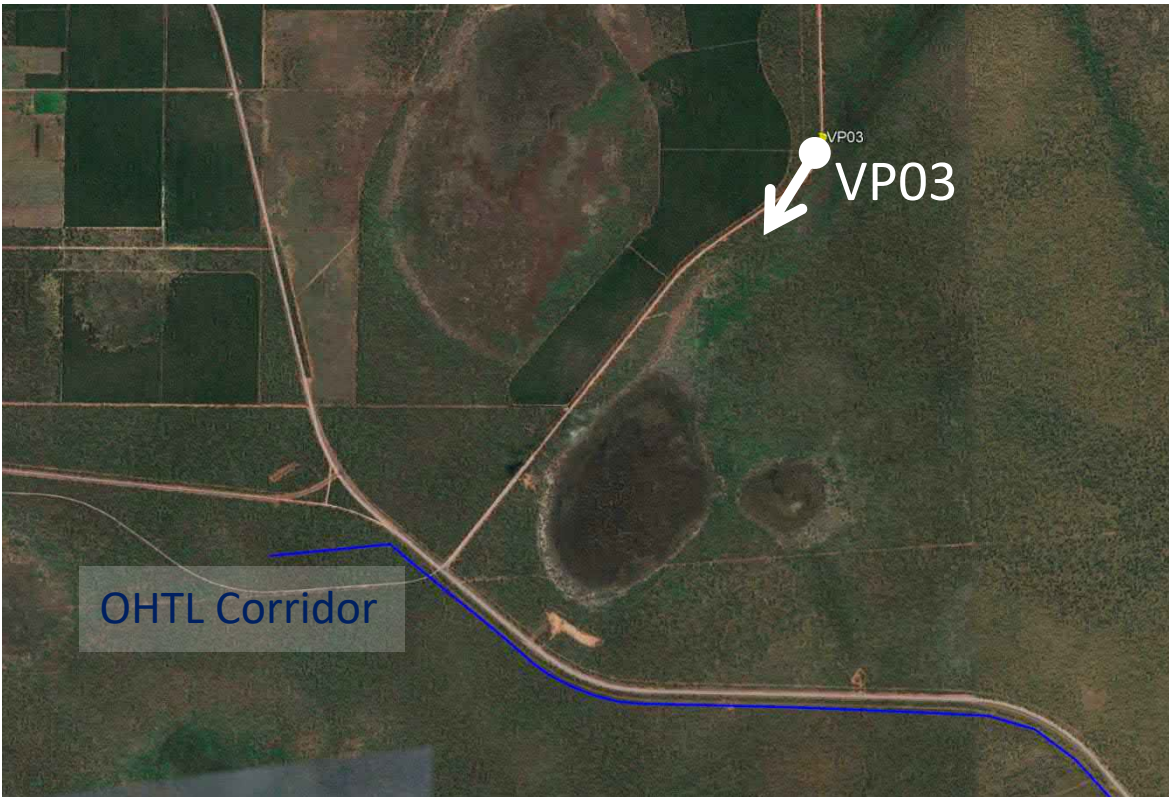


Figure 7-5: Location of Viewpoint 3



Figure 7-6: View from Viewpoint 3 toward the Project

Table 7-5: Viewpoint 3 information

Viewpoint information	
Location description	At Leaders Creek Boat Ramp Access Road, 3km northeast of Gunn Point Road.
Coordinates	12° 15'12"S 131° 05'08"E
View direction	South-west
Existing conditions	This location is at a gravel access road to Leaders Creek Fishing Base. The view from this location is characterised by dense vegetation along both sides of the road. It is typical of the view that travellers along this road would have enroute to the recreational fishing grounds at the end of the road.
Expected visual change	Elements of the Project that would be visible from this location include the electrode conductors and poles leading to the Electrode Site. The OHTL is not likely to be visible from this location.

Table 7-6: Assessment of visual impact – Viewpoint 3

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Low	Leaders Creek Boat Ramp Access Road has a low number of visitors with a passing interest in their surroundings. The characteristics of this view are similar to many other locations along this road.
Magnitude of change	Noticeable change	The Project is expected to blend in with the existing view to a moderate extent as it would be partially screened by the existing vegetation.
Overall visual impact	<b>Minor</b>	Given that the Project would be partially screened from view from this location and the low viewpoint sensitivity.

## 7.4 Viewpoint 4 – Gunn Point Road #2

The following section provides an assessment of visual impact from Viewpoint 4 – Gunn Point Road #2. Figure 7–7 shows the viewpoint location and Figure 7–8 shows a view toward the Project. The location description is provided in Table 7–7 and the assessment is provided in Table 7–8.



Figure 7–7: Location of Viewpoint 4



Figure 7–8: View from Viewpoint 4 toward the Project

Table 7–7: Viewpoint 4 information

Viewpoint information	
Location description	Gunn Point Road, approximately 300m from OHTL corridor.
Coordinates	12° 21'19"S 131° 08'24"E
View direction	South
Existing conditions	Gunn Point Road is used as the main access road to Gunn Point Peninsula. The Project would run parallel to the road to the right in this view, within the vegetated area. The main characteristic feature of this view is the established vegetation that lines both sides of the road. Human made modifications consist of the earthen road clearance, overhead powerlines and bollards.
Expected visual change	The Project would be partially visible behind the vegetation to the right of this view.

Table 7–8: Assessment of visual impact – Viewpoint 4

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	Gunn Point Road currently has a low number of visitors with a passing interest in their surroundings. The characteristics of this view is similar to many other locations along this road.
Magnitude of change	Considerable change	Although the Project would be partially mitigated by existing vegetation, the remainder of the structures would represent a considerable new element in the landscape. As the Project corridor runs parallel to the road, a number of towers would be visible within the frame of view.
Overall visual impact	<b>Minor to Moderate</b>	Given that the Project would represent a considerable change to the view, however, given the low sensitivity, the overall visual impact would be Minor to Moderate.

## 7.5 Viewpoint 5 – Gunn Point Road #3

The following section provides an assessment of visual impact from Viewpoint 5 – Gunn Point Road #3. Figure 7–9 shows the viewpoint location and Figure 7–10 shows a view toward the Project. The location description is provided in Table 7–9 and the assessment is provided in Table 7–10.

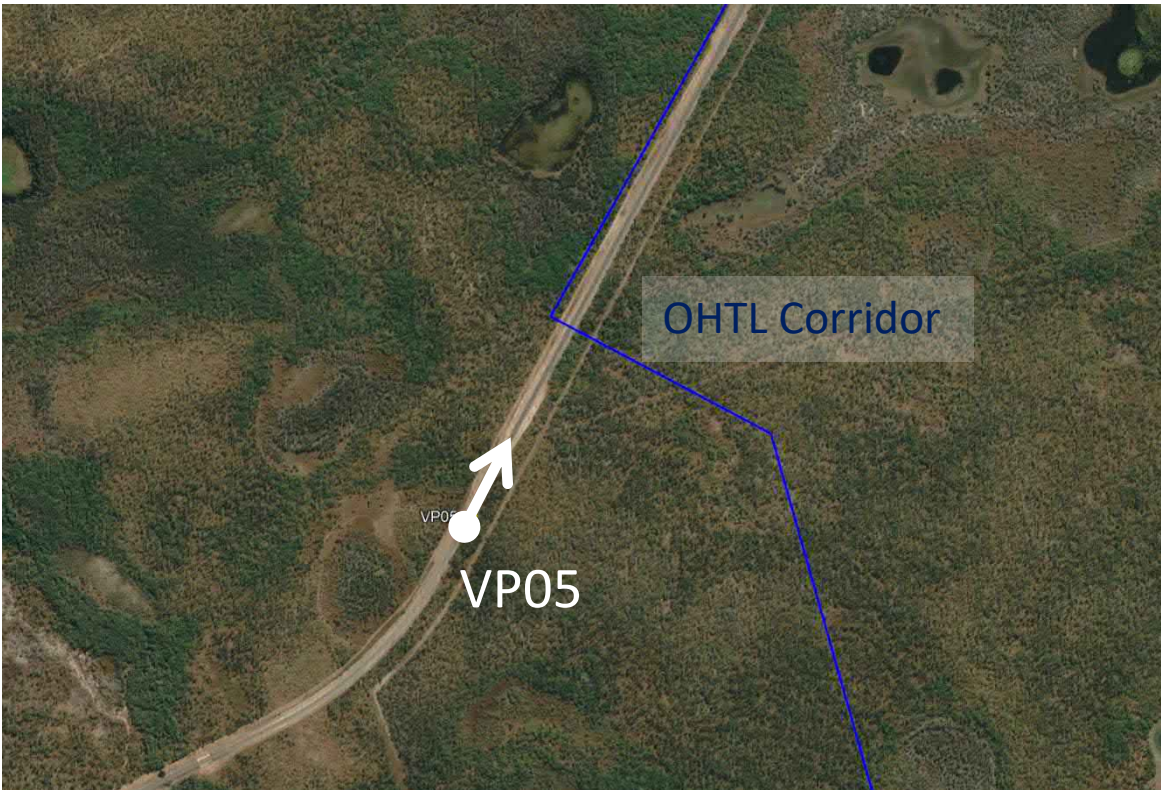


Figure 7–9: Location of Viewpoint 5



Figure 7–10: View from Viewpoint 5 toward the Project

Table 7–9: Viewpoint 5 information

Viewpoint information	
Location description	Gunn Point Road, approximately 7 km north of the intersection of Hunting Reserve Access Track and approximately 600 m south-east from the Project. Gunn Point Road is a main access road to Gunn Point Peninsula.
Coordinates	12° 23'50"S 131° 07'32"E
View direction	North-east
Existing conditions	The main characteristic feature of this view is the established vegetation that lines both sides of the road. Human made modifications consist of the earthen road clearance, overhead powerlines and bollards.
Expected visual change	The Project would cross the road in the middle distance in this view. The Project corridor would also run parallel to the road, leading away from this viewpoint, on the left-hand side of the view. Vegetation clearance associated with the corridor may also be noticed from this location.

Table 7–10: Assessment of visual impact – Viewpoint 5

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Low	Gunn Point Road currently has a low number of visitors with a passing interest in their surroundings. The characteristics of this view are similar to many other locations along this road.
Magnitude of change	Noticeable change	Although the Project would be partially mitigated by existing vegetation, the remainder of the structures would represent a noticeable new element in the landscape. As the Project corridor runs parallel to the road, a number of structures would be visible within the frame of view, however this would be at a moderate distance away, and influenced by speed of travel.
Overall visual impact	<b>Minor</b>	Given that the Project would represent a noticeable change to the view, however, given the low sensitivity, the overall visual impact would be minor.

## 7.6 Viewpoint 6 – Beddington Road, Herbert

The following section provides an assessment of visual impact from Viewpoint 6 – Beddington Road, Herbert. Figure 7–11 shows the viewpoint location and Figure 7–12 shows a view toward the Project. The location description is provided in Table 7–11 and the assessment is provided in Table 7–12.



Figure 7–11: Location of Viewpoint 6



Figure 7–12: View from Viewpoint 6 toward the Project

Table 7–11: Viewpoint 6 information

Viewpoint information	
Location description	This viewpoint is located at the corner of Beddington Road and Oakley Road, Herbert, which are both local residential streets. The Project would be approximately 2 km north-east of this location
Coordinates	12° 31'49"S 131° 10'17"E
View direction	East
Existing conditions	A key characteristic of this view is the visual dominance of vegetation. From a review of aerial photographs, it appears that there are detached residential dwellings at this location, however they generally concealed from view. Human made elements within this view include gravel nature strips, overhead powerlines, fences, drainage culverts and bollards.
Expected visual change	The Project is not likely to be visible from this location given that it is approximately 2 km away and likely to concealed from view behind existing vegetation due to the combination of distance from observer and vegetation.

Table 7–12: Assessment of visual impact – Viewpoint 6

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This road would experience low visitation as it is a residential street accessed by people travelling to and from their properties.
Magnitude of change	Barely perceptible change	The Project is not likely to be visible if at all
Overall visual impact	<b>Negligible to low</b>	Given that the Project is not likely to be visible, the overall visual impact is negligible to low.

## 7.7 Viewpoint 7 – Arnhem Highway

The following section provides an assessment of visual impact from Viewpoint 7 – Arnhem Highway. Figure 7–13 shows the viewpoint location and Figure 7–14 shows a view toward the Project. The location description is provided in Table 7–13 and the assessment is provided in Table 7–14.

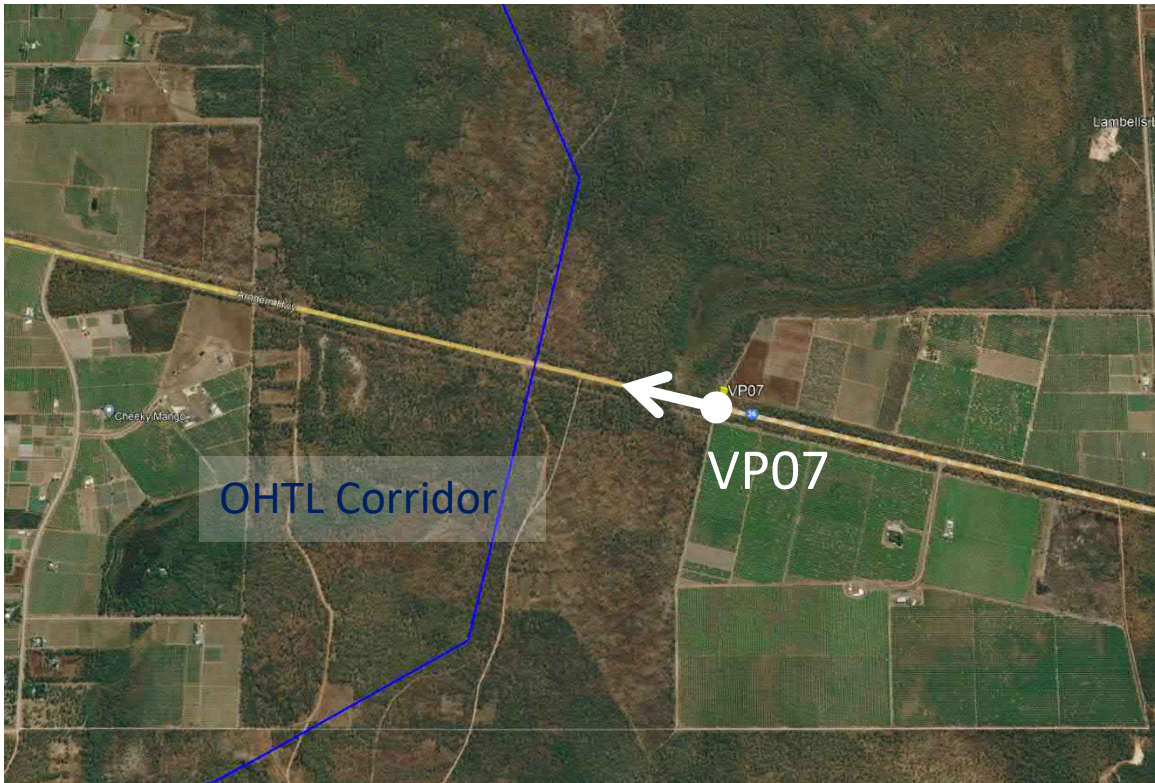


Figure 7–13: Location of Viewpoint 7



Figure 7–14: View from Viewpoint 7 toward the Project

Table 7–13: Viewpoint 7 information

Viewpoint information	
Location description	Arnhem Highway, approximately 1 km south east of the Project. Arnhem Highway is the main access route to Kakadu National Park and Arnhem Land from Stuart Highway.
Coordinates	12° 35'54"S 131° 12'57"E
View direction	North west
Existing conditions	The view north west from this location is characterised by dense stands of vegetation on both sides of Arnhem Highway. Human made modifications visible include an existing power line, road signage and bollards.
Expected visual change	The Project would be visible in the far distance crossing Arnhem Highway at 90 degrees. It is expected that a small segment of the transmission line would be visible at the crossing point. The remaining portions of the OHTL would most likely be concealed from view behind established vegetation.

Table 7–14: Assessment of visual impact – Viewpoint 7

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	The sensitivity of this viewpoint would be medium given that there would be a moderate number of travellers with an interest in their environment. This may include residents and travellers accessing Kakadu National Park and Arnhem Land.
Magnitude of change	Noticeable change	The Project would be visible crossing the Arnhem Highway, however it would represent a minor change in the view.
Overall visual impact	<b>Minor to moderate</b>	The visual impact is most likely to be minor however a minor to moderate range provides a conservative estimate of visual impact.

## 7.8 Viewpoint 8 – Buckley Road, Humpty Doo

The following section provides an assessment of visual impact from Viewpoint 8 – Buckley Road, Humpty Doo. Figure 7–15 shows the viewpoint location and Figure 7–16 shows a view toward the Project. The location description is provided in Table 7–15 and the assessment is provided in Table 7–16.

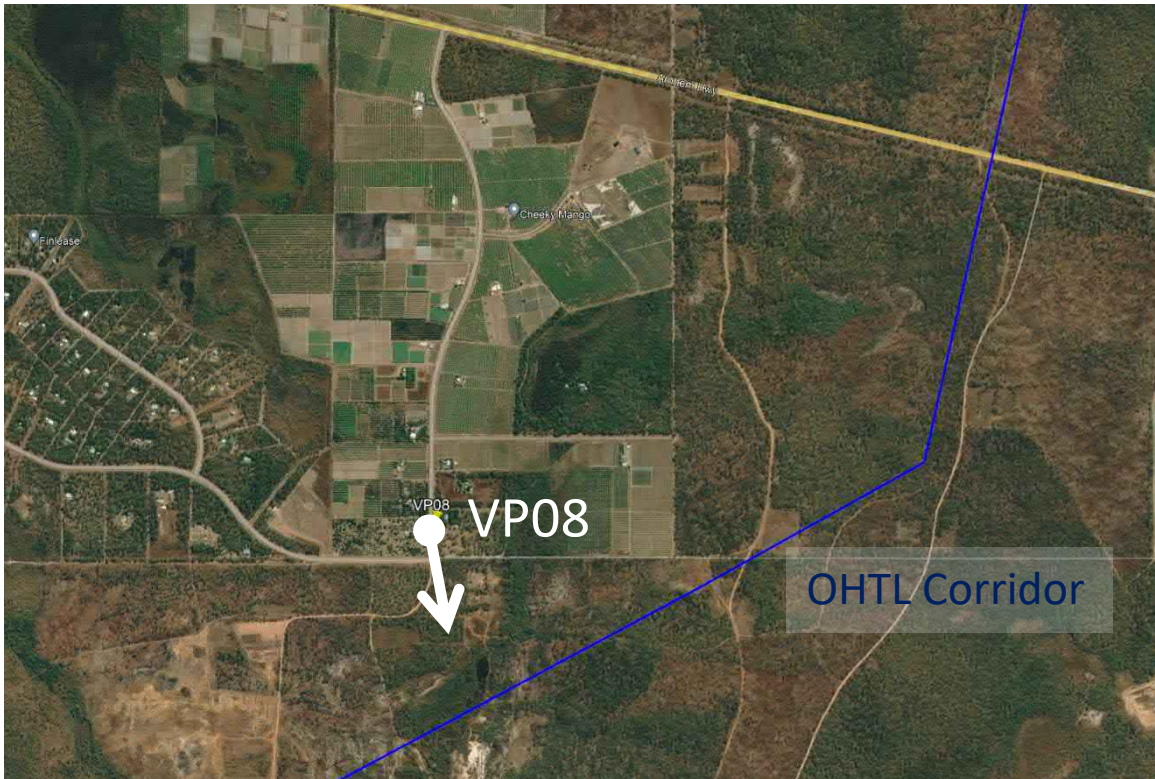


Figure 7–15: Location of Viewpoint 8



Figure 7–16: View from Viewpoint 8 toward the Project

Table 7–15: Viewpoint 8 information

Viewpoint information	
Location description	This viewpoint is located at Buckley Road, approximately 120 m north from the intersection of Goode Road. Buckley Road serves as a local access road to semi-rural residential and agricultural areas of Humpty Doo. The Project would be located approximately 800 m to the south east from this location.
Coordinates	12° 36'44"S 131° 10'57"E
View direction	South
Existing conditions	A key characteristic of this view is the visual dominance of vegetation. From a review of aerial photographs, it appears that there are detached residential dwellings and rural lots at this location, however they partially or mostly concealed from view due to the vegetation. Human made elements within this view include a gravel road verge, an overhead powerline, a fence, road signage and bollards.
Expected visual change	The Project is expected to be mostly concealed from view due to existing vegetation in the foreground.

Table 7–16: Assessment of visual impact – Viewpoint 8

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Low / Medium	This road would experience low visitation as it is a residential street accessed by people travelling to and from their properties.
Magnitude of change	Barely perceptible change	The Project is not likely to be visible if at all
Overall visual impact	<b>Negligible</b>	Given that the Project is not likely to be visible, the overall visual impact is negligible.

## 7.9 Viewpoint 9 – Elizabeth Valley Road, Noonamah

The following section provides an assessment of visual impact from Viewpoint 9 – Elizabeth Valley Road, Noonamah. Figure 7–17 shows the viewpoint location and Figure 7–18 shows a view toward the Project. The location description is provided in Table 7–17 and the assessment is provided in Table 7–18.

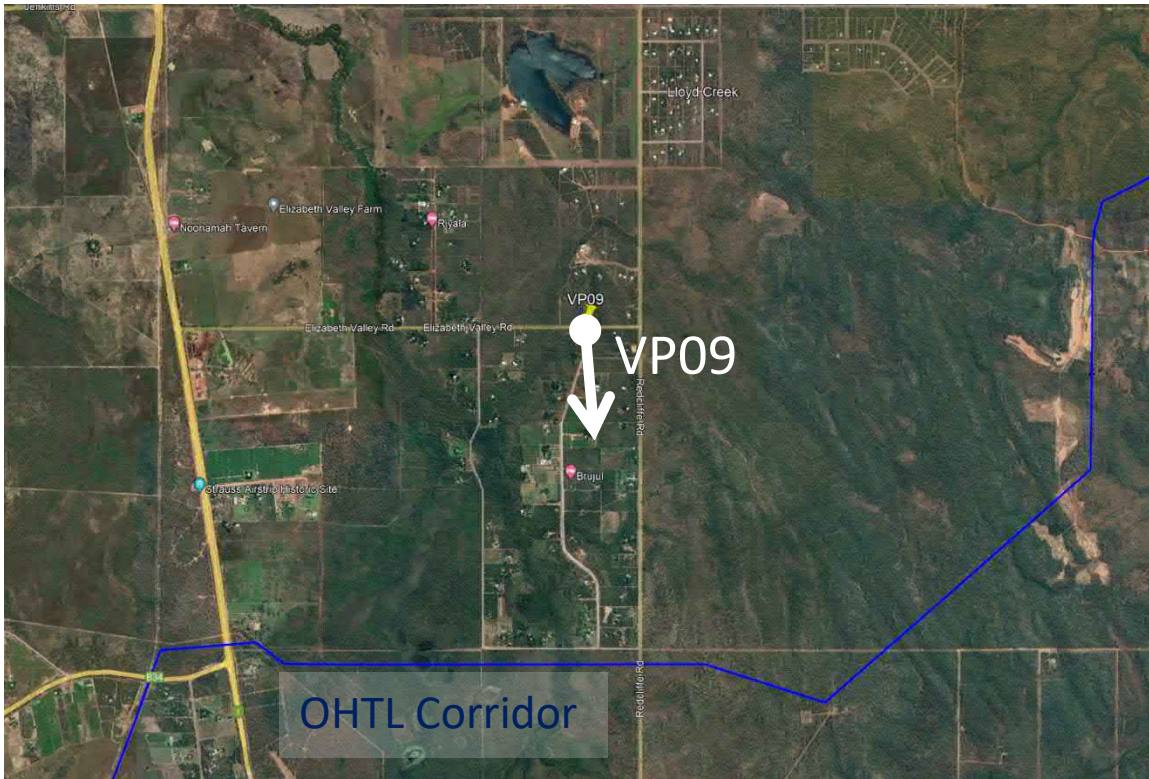


Figure 7–17: Location of Viewpoint 9



Figure 7–18: View from Viewpoint 9 toward the Project

Table 7–17: Viewpoint 9 information

Viewpoint information	
Location description	This Viewpoint is located along Elizabeth Valley Road at the intersection of Horsnell Road. These roads serve as local access roads to semi-rural and residential areas of Noonamah. At its nearest point, the Project would be located approximately 3.4 km to the south of this location.
Coordinates	12° 38'34"S 131° 06'48"E
View direction	South
Existing conditions	There are established areas of shrubby vegetation in the foreground and middle ground in this view. From a review of aerial photographs, it appears that there are detached residential dwellings and rural lots at this location, however they partially or mostly concealed from view due to the vegetation. Human made elements within this view include gravel road verges, drainage culverts, overhead powerlines, road signage, fences and bollards.
Expected visual change	The Project is most likely to be concealed from view behind existing vegetation in the foreground and middle distance.

Table 7–18: Assessment of visual impact – Viewpoint 9

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Low to Medium	This road would experience low visitation as it is a residential street accessed by people travelling to and from their properties.
Magnitude of change	Barely perceptible change	The Project is not likely to be visible if at all
Overall visual impact	<b>Negligible</b>	Given that the Project is not likely to be visible, the overall visual impact is negligible.

## 7.10 Viewpoint 10 – Horsnell Road, Noonamah

The following section provides an assessment of visual impact from Viewpoint 10 – Horsnell Road, Noonamah. Figure 7–19 shows the viewpoint location and Figure 7–20 shows a view toward the Project. The location description is provided in Table 7–19 and the assessment is provided in Table 7–20.



Figure 7–19: Location of Viewpoint 10



Figure 7–20: View from Viewpoint 10 toward the Project

Table 7–19: Viewpoint 10 information

Viewpoint information	
Location description	This Viewpoint is located along Horsnell Road, Noonamah, approximately 600 m north of the intersection of Alvery Road. The Project would be located approximately 750 m to the south of this location, oriented at right angles to the view direction.
Coordinates	12° 39'59"S 131° 06'52"E
View direction	South
Existing conditions	There are established areas of shrubby vegetation in the foreground and middle ground in this view. From a review of aerial photographs, it appears that there are detached residential dwellings and farm lots at this location, however they partially or mostly concealed from view due to the vegetation. Human made elements within this view include gravel road verges, an overhead powerline, road signage, fences and bollards.
Expected visual change	The Project may be visible in the middle distance however is likely to be partially concealed by existing shrubby vegetation.

Table 7–20: Assessment of visual impact – Viewpoint 10

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Low to Medium	This road would experience low visitation as it is a residential street accessed by people travelling to and from their properties.
Magnitude of change	Noticeable change	The Project would be visible but is likely to be partially concealed by shrubby vegetation.
Overall visual impact	<b>Minor</b>	Given the viewpoint sensitivity and mitigating effect of vegetation.

## 7.11 Viewpoint 11 – Stuart Highway #1

The following section provides an assessment of visual impact from Viewpoint 11 – Stuart Highway #1. Figure 7–21 shows the viewpoint location and Figure 7–22 shows a view toward the Project. The location description is provided in Table 7–21 and the assessment is provided in Figure 7–22.

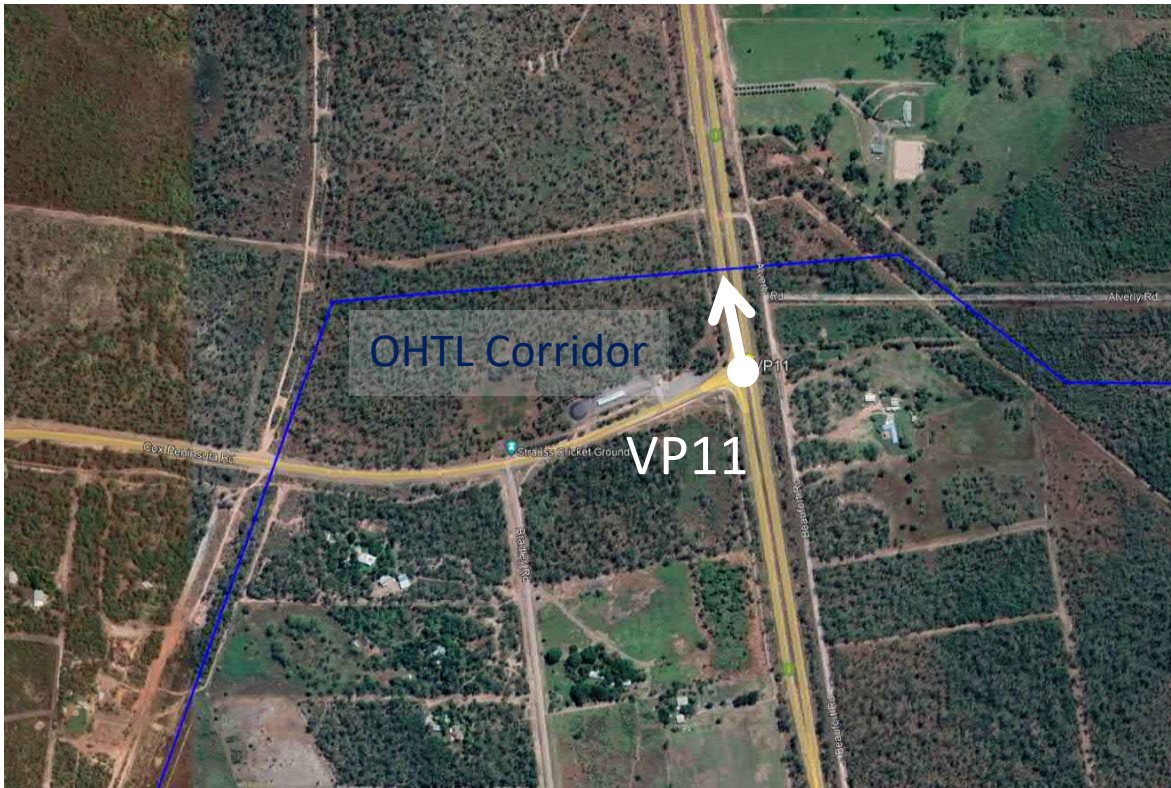


Figure 7–21: Location of Viewpoint 11



Figure 7–22: View from Viewpoint 11 toward the Project

Table 7–21: Viewpoint 11 information

Viewpoint information	
Location description	This viewpoint is located on the corner of Stuart Highway and Cox Peninsula Road, Noonamah. The Project would be located approximately 180m to the north of this location.
Coordinates	12° 40'24"S 131° 04'48"E
View direction	North
Existing conditions	Stuart Highway is a major national highway between Darwin and Adelaide. The view north west from this location is characterised by dense stands of vegetation on the western side of the highway and shrubby vegetation with scattered trees on the eastern side of the highway. Human made modifications visible include the road and road verges, light poles, road signage and bollards.
Expected visual change	The Project would be a visually dominant element and would cross the road at right angles in the middle distance in this view.

Table 7–22: Assessment of visual impact – Viewpoint 11

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, it is not a regionally important destination in its own right.
Magnitude of change	Considerable change	The Project would constitute a clearly perceptible change in the view, but it would be experienced for a short duration. It would not be obstructing any scenic features of significance.
Overall visual impact	<b>Moderate</b>	Given the medium level of significance and considerable change to the view.

## 7.12 Viewpoint 12 – Cox Peninsula Road #1

The following section provides an assessment of visual impact from Viewpoint 12 – Cox Peninsula Road #1. Figure 7–23 shows the viewpoint location and Figure 7–24 shows a view toward the Project. The location description is provided in Table 7–23 and the assessment is provided in Figure 7–24.

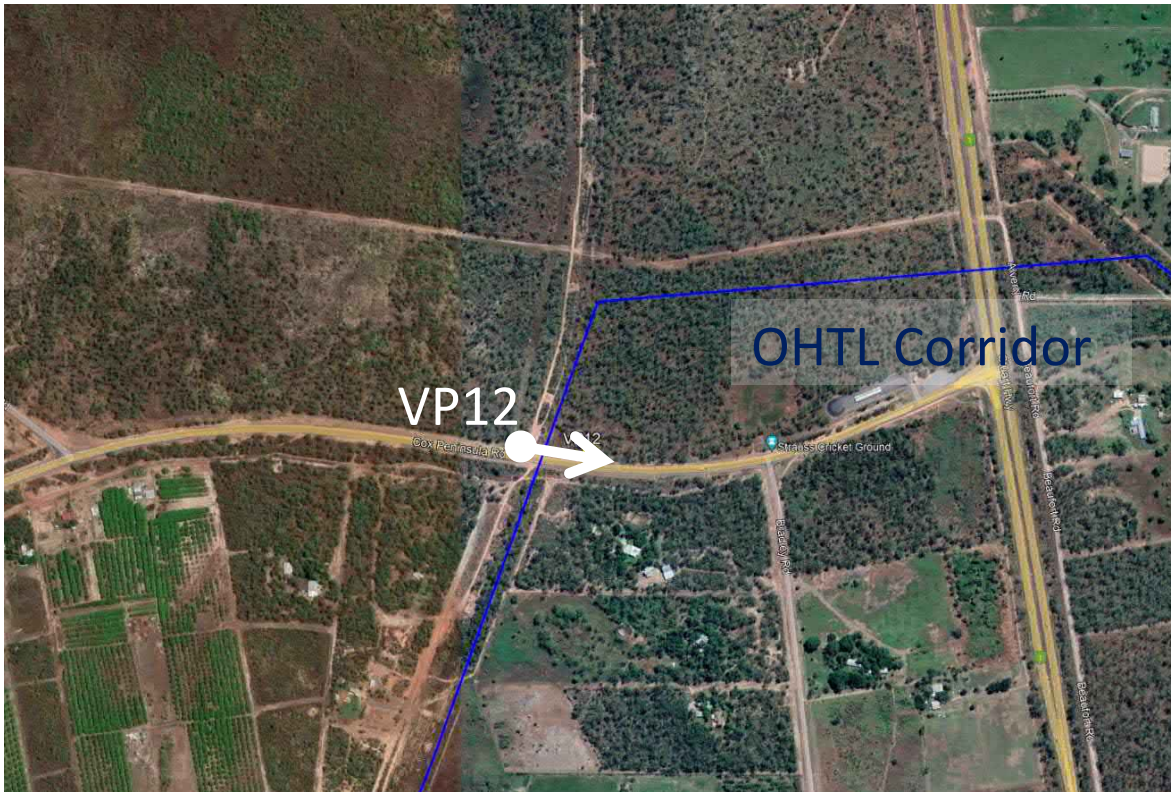


Figure 7–23: Location of Viewpoint 12



Figure 7–24: View from Viewpoint 12 toward the Project

Table 7–23: Viewpoint 12 information

Viewpoint information	
Location description	This viewpoint is located along Cox Peninsula Road, Noonamah, approximately 850 m from the intersection of Cox Peninsula Road and Stuart Highway. The Project would be located approximately 25 m to the east of this location. Cox Peninsula Road provides access to the farming and rural residential communities of Berry Springs, Tumbling Waters and Cox Peninsula.
Coordinates	12° 40'28"S 131° 04'21"E
View direction	East
Existing conditions	The view East from this location is characterised by dense stands of vegetation on both sides of Cox Peninsula Road. A gravel road is visible in the foreground. Other visible human made modifications include the road and road verges, an overhead transmission line, road signage and bollards.
Expected visual change	Components of the Project that may be visible include the base of a transmission tower located within or close to the gravel road.

Table 7–24: Assessment of visual impact – Viewpoint 12

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, it is not a regionally important destination in its own right.
Magnitude of change	Considerable change	The Project would constitute a clearly perceptible change in the view, but it would be experienced for a short duration. It would not be obstructing any scenic features of significance.
Overall visual impact	<b>Moderate</b>	Given the medium level of significance and considerable change to the view.

### 7.13 Viewpoint 13 – Cox Peninsula Road #2

The following section provides an assessment of visual impact from Viewpoint 13 – Cox Peninsula Road #2. Figure 7–25 shows the viewpoint location and Figure 7–26 shows a view toward the Project. The location description is provided in Table 7–25 and the assessment is provided in Figure 7–26.



Figure 7–25: Location of Viewpoint 13

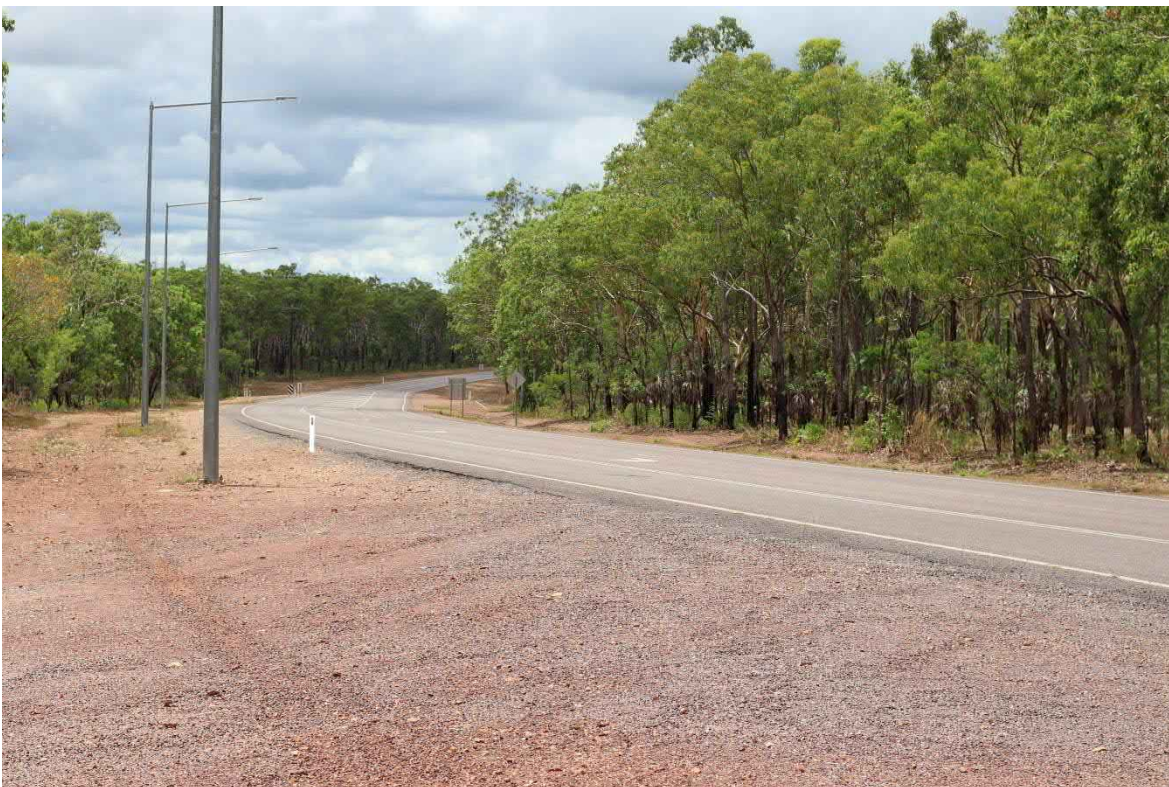


Figure 7–26: View from Viewpoint 13 toward the Project

Table 7–25: Viewpoint information

Viewpoint information	
Location description	This viewpoint is located along Cox Peninsula Road, Noonamah, at the intersection of Middle Arms Road. The Project would be located approximately 850 m to the east of this location. Cox Peninsula Road provides access to the rural and rural residential communities of Berry Springs, Tumbling Waters and Cox Peninsula, as well as the tourism and fishing area of Dundee Beach.
Coordinates	12° 40'28"S 131° 03'54"E
View direction	East
Existing conditions	The view East from this location is characterised by dense stands of vegetation on both sides of Cox Peninsula Road. Human made modifications include the road and road verges, light poles, road signage and bollards.
Expected visual change	The Project would be visible in the far distance crossing Cox Peninsula Road. It is expected that a small segment of the OHTL may be partially visible above the tree line in the centre of the view. The remaining portions of the OHTL, particularly to the right in the image, would most likely be concealed from view behind established vegetation.

Table 7–26: Assessment of visual impact – Viewpoint 13

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Low to medium	This road would experience a relatively small number of travellers with a passing interest in their surroundings.
Magnitude of change	Noticeable change	The Project would be visible but is likely to be partially concealed by vegetation.
Overall visual impact	<b>Minor</b>	Given the low viewpoint sensitivity and mitigating effect of vegetation.

## 7.14 Viewpoint 14 – Stuart Highway #2

The following section provides an assessment of visual impact from Viewpoint 14 – Stuart Highway #2. Figure 7–27 shows the viewpoint location and Figure 7–28 shows a view toward the Project. The location description is provided in Table 7–27 and the assessment is provided in Figure 7–28.



Figure 7–27: Location of Viewpoint 14



Figure 7–28: View from Viewpoint 14 toward the Project

Table 7–27: Viewpoint 14 information

Viewpoint information	
Location description	This viewpoint is located on the corner of Stuart Highway and Livingstone Road, Acacia Hills. The Project would be located approximately 50 m to the west of this location. Livingstone Road provides access to the farming and rural residential communities of Livingstone and Berry Springs.
Coordinates	12° 43'51"S 131° 05'21"E
View direction	North
Existing conditions	Stuart Highway is a major national highway between Darwin and Adelaide. The view north from this location is characterised by dense stands of shrubby vegetation on both sides of the road. Human made modifications visible include the road and road verges, road signage and bollards.
Expected visual change	The Project would run parallel to Stuart Highway. Although the base of the OHTL structures would be partially concealed by existing vegetation, the Project would nevertheless be a prominent visual element in the view.

Table 7–28: Assessment of visual impact – Viewpoint 14

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, it is not a regionally important destination in its own right.
Magnitude of change	Considerable change	The Project would constitute a clearly perceptible change in the view; however, it would not be obstructing any scenic features of significance.
Overall visual impact	<b>Moderate</b>	Given the medium level of significance and considerable change to the view.

## 7.15 Viewpoint 15 – Stuart Highway #3

The following section provides an assessment of visual impact from Viewpoint 15 – Stuart Highway #3. Figure 7–29 shows the viewpoint location and Figure 7–30 shows a view toward the Project. The location description is provided in Table 7–29 and the assessment is provided in Figure 7–30.

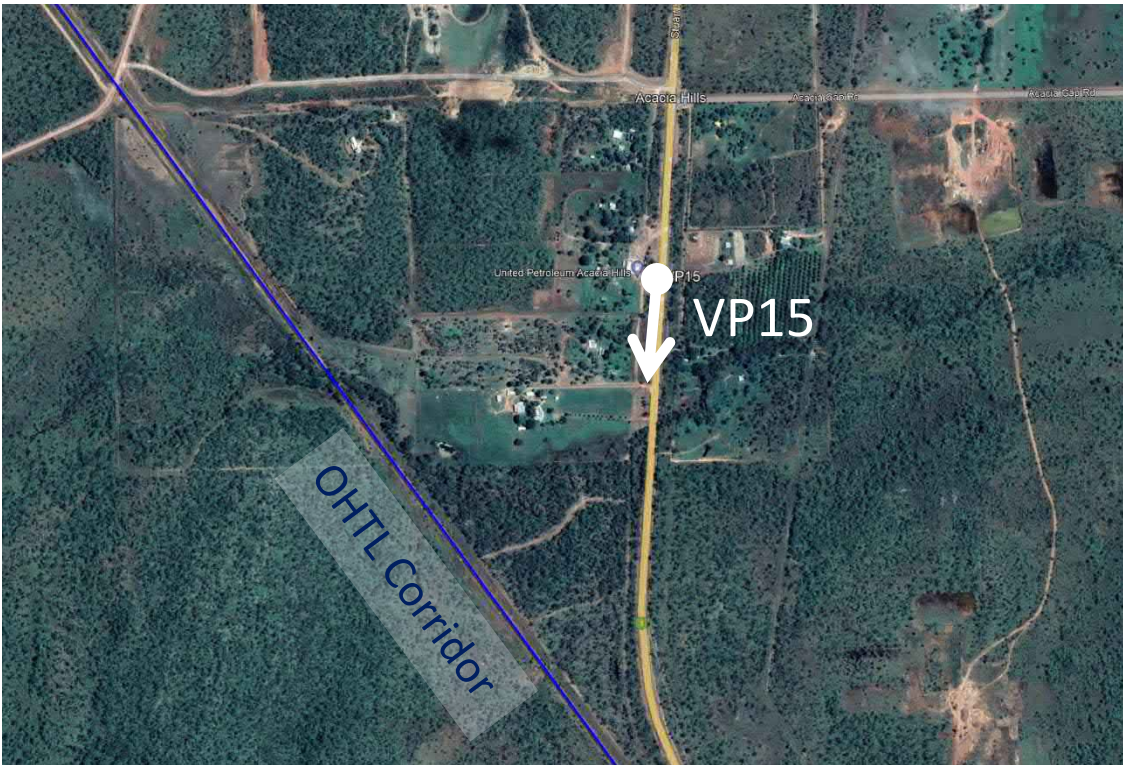


Figure 7–29: Location of Viewpoint 15



Figure 7–30: View from Viewpoint 15 toward the Project

Table 7–29: Viewpoint 15 information

Viewpoint information	
Location description	This viewpoint is located along Stuart Highway, at the entry driveway of United Petroleum, Acacia Hills. At its nearest point, the Project would be located approximately 700 m to the south west of this location.
Coordinates	12° 47'58"S 131° 07'21"E
View direction	South
Existing conditions	Stuart Highway is a major national highway between Darwin and Adelaide. The view south from this location is characterised by dense stands of shrubby vegetation on both sides of the road. Human made modifications visible include the road and road verges, an overhead transmission line, a drainage culvert, road signage and bollards.
Expected visual change	Within the view south, the Project would be located approximately 1 km away. The OHTL would be a moderately dominant element within the view but would be partially concealed by vegetation.

Table 7–30: Assessment of visual impact – Viewpoint 15

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, it is not a regionally important location.
Magnitude of change	Noticeable change	The Project would constitute a noticeable change in the view; however, it would be partially concealed by vegetation.
Overall visual impact	<b>Minor to moderate</b>	Given the medium level of significance and noticeable change to the view.

## 7.16 Viewpoint 16 – Lake Bennett

The following section provides an assessment of visual impact from Viewpoint 16 – Lake Bennett. Figure 7–31 shows the viewpoint location and Figure 7–32 shows a view toward the Project. The location description is provided in Table 7–31 and the assessment is provided in Table 7–32.

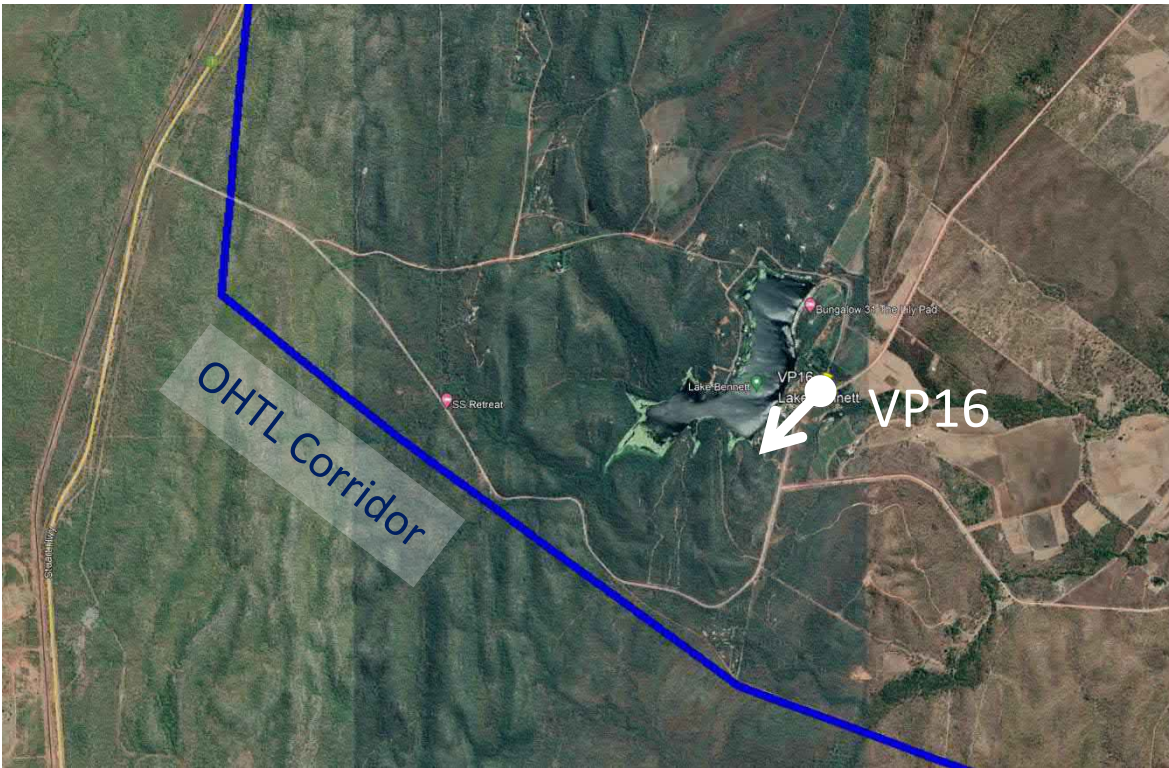


Figure 7–31: Location of Viewpoint 16



Figure 7–32: View from Viewpoint 16 toward the Project

Table 7–31: Viewpoint 16 information

Viewpoint information	
Location description	This viewpoint is located at the junction of Chinner Road and Heathers Lagoon Road, Lake Bennett. At its nearest point, the Project would be located approximately 2 km to the south west of this location.
Coordinates	12° 57'37"S 131° 10'09"E
View direction	South west
Existing conditions	Lake Bennett is located approximately 4.5 km south east of the Stuart Highway and is used by holiday makers for recreational purposes. The view south west from this location is characterised by dense stands of vegetation along the banks and immediate areas surrounding the lake. There is an overhead transmission line, signage and a fence also visible within the view.
Expected visual change	The Project is not expected to be visible from this location due to its distance away and the presence of intervening topography and vegetation.

Table 7–32: Assessment of visual impact – Viewpoint 16

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	High	This viewpoint would be experienced by a large number of holiday makers with an interest in their surroundings on their way to the lake proper.
Magnitude of change	Barely perceptible change	The Project is not likely to be visible.
Overall visual impact	<b>Negligible</b>	Given that the Project is not likely to be visible, the overall visual impact is negligible.

## 7.17 Viewpoint 17 – Batchelor Road, Coomalie Creek

The following section provides an assessment of visual impact from Viewpoint 17 – Batchelor Road, Coomalie Creek. Figure 7–33 shows the viewpoint location and Figure 7–34 shows a view toward the Project. The location description is provided in Table 7–33 and the assessment is provided in Table 7–34.

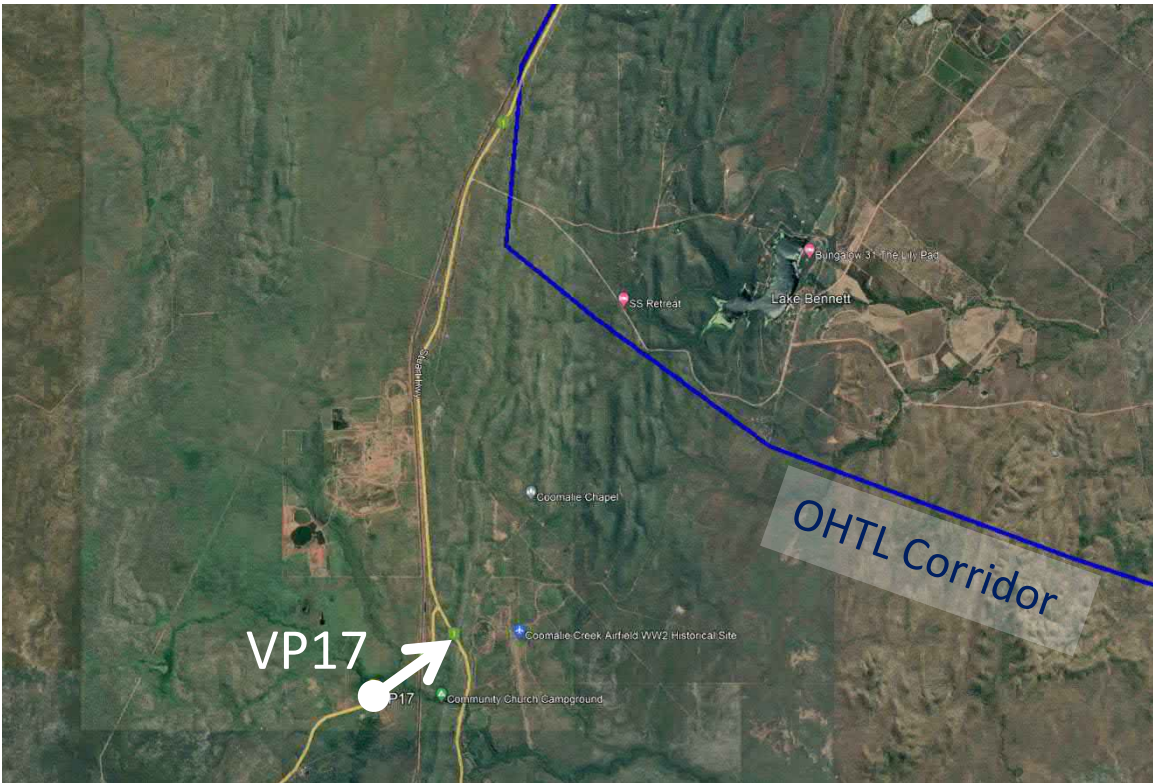


Figure 7–33: Location of Viewpoint 17



Figure 7–34: View from Viewpoint 17 toward the Project

Table 7–33: Viewpoint 17 information

Viewpoint information	
Location description	Batchelor Road is accessed by travellers heading to the town of Batchelor and further west to Litchfield Park. This viewpoint is located approximately 1.6 km west from Stuart Highway. The Project would be located approximately 6.5 km to the north east from this location.
Coordinates	13° 00'48"S 131° 06'35"E
View direction	North east
Existing conditions	The view north east of this location is characterised by dense stands of vegetation on both sides of the road. There is a ridgeline visible in the centre of the view in the far distance. There is also an existing overhead transmission line which visually absorbed by the vegetation to a degree. Fences are also visible along property boundaries.
Expected visual change	The Project would not be visible from this location given its distance away and the presence of intervening vegetation and terrain.

Table 7–34: Assessment of visual impact – Viewpoint 17

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This road would experience a relatively high number of visitors with an interest in their environment as the road is used to access Litchfield National Park.
Magnitude of change	Barely perceptible change	The Project would not be visible.
Overall visual impact	<b>Negligible</b>	Given that the Project would not be visible, the overall visual impact is negligible.

## 7.18 Viewpoint 18 – Adelaide River

The following section provides an assessment of visual impact from Viewpoint 18 – Adelaide River. Figure 7–35 shows the viewpoint location and Figure 7–36 shows a view toward the Project. The location description is provided in Table 7–35 and the assessment is provided in Table 7–36.

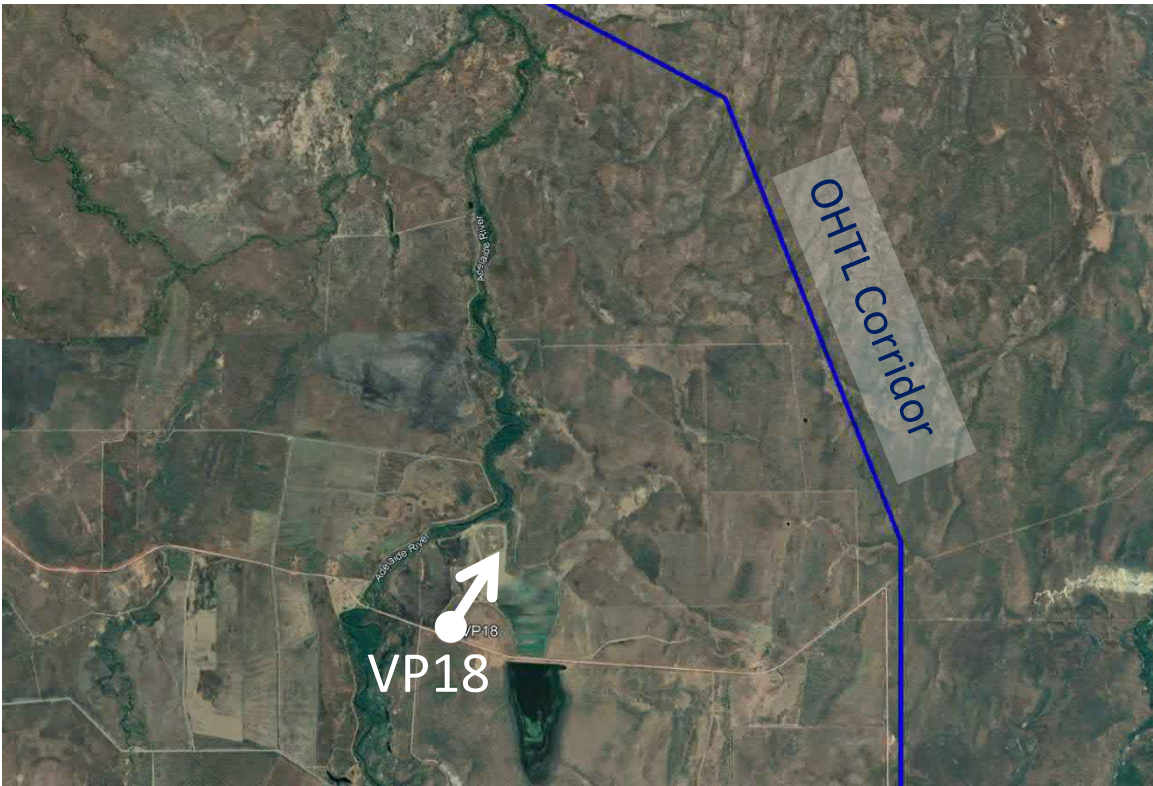


Figure 7–35: Location of Viewpoint 18



Figure 7–36: View from Viewpoint 18 toward the Project

Table 7–35: Viewpoint 18 information

Viewpoint information	
Location description	This viewpoint is located along Ringwood Road, approximately 1.1 km east from where it crosses over Adelaide River. The Project, at its nearest distance, would be located approximately 6.2 km to the north east of this location.
Coordinates	13° 05'41"S 131° 14'24"E
View direction	North east
Existing conditions	The view north west of this location is characterised by shrubby vegetation on the northern side of the road, interspersed with rural properties. Apart from the fence line denoting a property boundary, there are few signs of human made modifications to the landscape.
Expected visual change	The Project would not be visible from this location given its distance away and the presence of intervening vegetation and terrain.

Table 7–36: Assessment of visual impact – Viewpoint 18

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Negligible	This road would experience a very occasional number of viewers with a passing interest in their surroundings.
Magnitude of change	Barely perceptible change	The Project would not be visible.
Overall visual impact	<b>Negligible</b>	Given that the Project would not be visible, the overall visual impact is negligible.

## 7.19 Viewpoint 19 – Stuart Highway #4

The following section provides an assessment of visual impact from Viewpoint 19 – Stuart Highway #4. Figure 7–37 shows the viewpoint location and Figure 7–38 shows a view toward the Project. The location description is provided in Table 7–37 and the assessment is provided in Table 7–38.

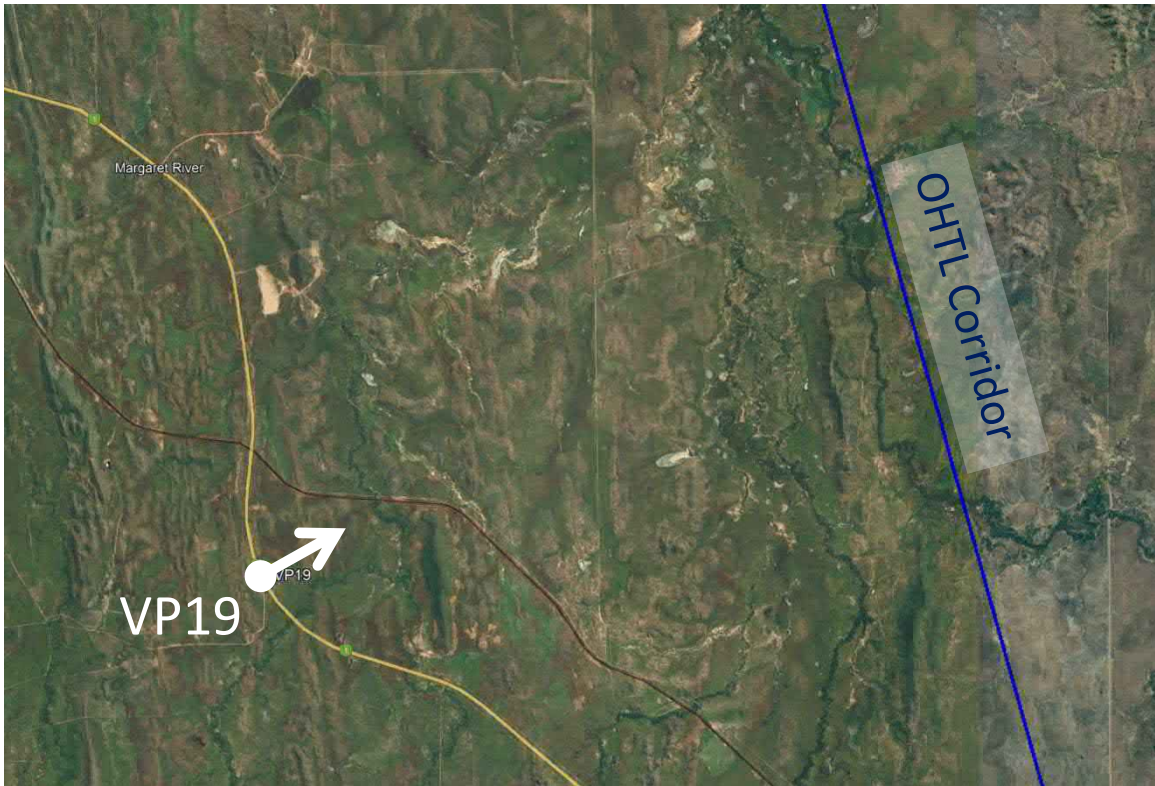


Figure 7–37: Location of Viewpoint 19



Figure 7–38: View from Viewpoint 19 toward the Project

Table 7–37: Viewpoint 19 information

Viewpoint information	
Location description	This viewpoint is located at the corner of Stuart Highway and a private access road which appears to service a rural property. From a review of aerial maps, the surrounding area appears to be sparsely populated with occasional house accompanying rural lots. The Project would be located approximately 12 km to the north east of this location.
Coordinates	13° 21'42"S 131° 12'51"E
View direction	North east
Existing conditions	This section of the Stuart Highway is characterised by dense stands of shrubby vegetation on both sides of the road.
Expected visual change	The Project would not be visible from this location given its distance away and the presence of intervening vegetation and terrain.

Table 7–38: Assessment of visual impact – Viewpoint 19

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, it is not a regionally important location.
Magnitude of change	Barely perceptible change	The Project would not be visible.
Overall visual impact	<b>Negligible</b>	Given that the Project would not be visible, the overall visual impact is negligible.

## 7.20 Viewpoint 20 – Stuart Highway #5

The following section provides an assessment of visual impact from Viewpoint 20 – Stuart Highway #5. Figure 7–39 shows the viewpoint location and Figure 7–40 shows a view toward the Project. The location description is provided in Table 7–39 and the assessment is provided in Table 7–40.

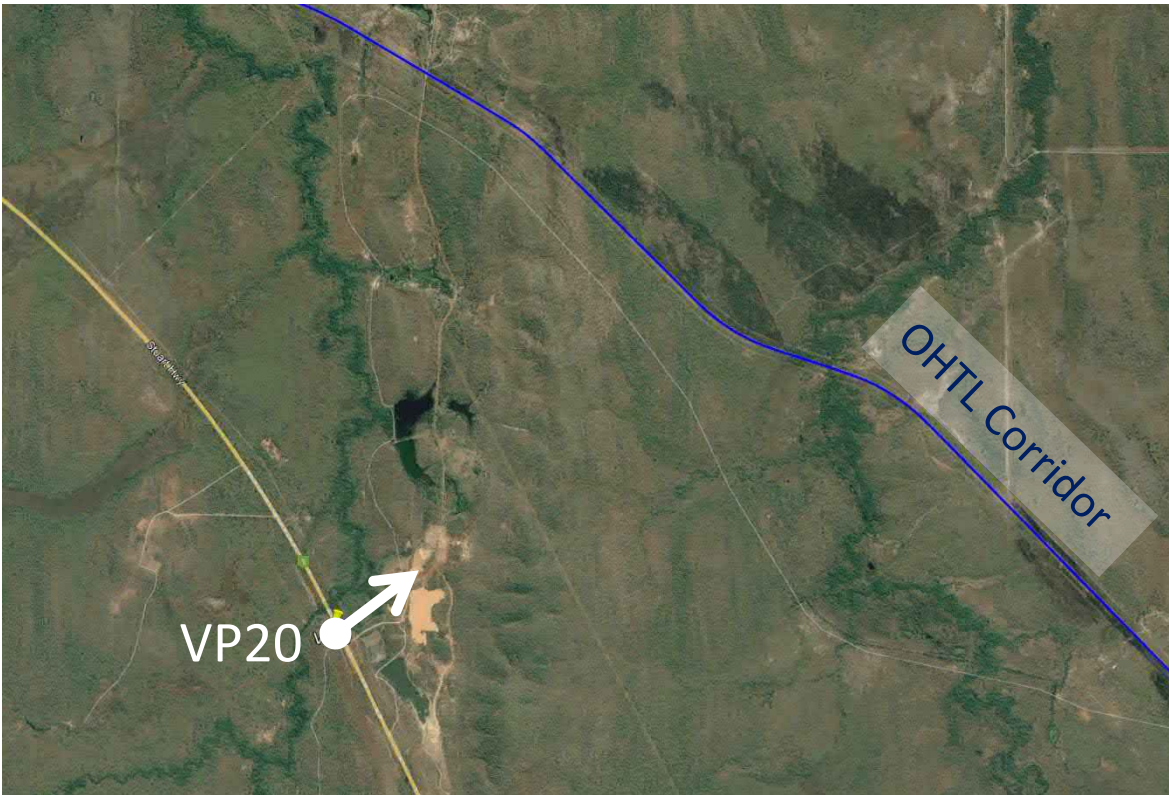


Figure 7–39: Location of Viewpoint 20



Figure 7–40: View from Viewpoint 20 toward the Project

Table 7–39: Viewpoint 20 information

Viewpoint information	
Location description	This viewpoint is located at the corner of Stuart Highway and a private access road which appears to service a rural property. Bridge Creek Rest Area is located approximately 100 m north west of this location. From a review of aerial maps, the surrounding area appears to be sparsely populated with occasional house accompanying rural lots. The Project would be orientated roughly parallel to Stuart Highway at a distance of approximately 3 km to the north east at its nearest.
Coordinates	13° 26'16"S 131° 18'51"E
View direction	North-east
Existing conditions	The view toward the Project from this location is characterised by dense shrubby vegetation with an understorey of grasses. A gravel driveway leads to a private property which is secured by a gate. Signage on the gate indicates that it is a mine site. Human made modifications include the gravel road, road signs and the entry gate.
Expected visual change	The Project is not expected to be visible from this location given its distance away and the presence of intervening vegetation.

Table 7–40: Assessment of visual impact – Viewpoint 20

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, it is not a regionally important location.
Magnitude of change	Barely perceptible change	The Project is not likely to be visible.
Overall visual impact	<b>Negligible</b>	Given that the Project is not likely to be visible, the overall visual impact is negligible.

## 7.21 Viewpoint 21 – Pine Creek #1

The following section provides an assessment of visual impact from Viewpoint 21 – Pine Creek #1 . Figure 7–41 shows the viewpoint location and Figure 7–42 shows a view toward the Project. The location description is provided in Table 7–41 and the assessment is provided in Table 7–42.

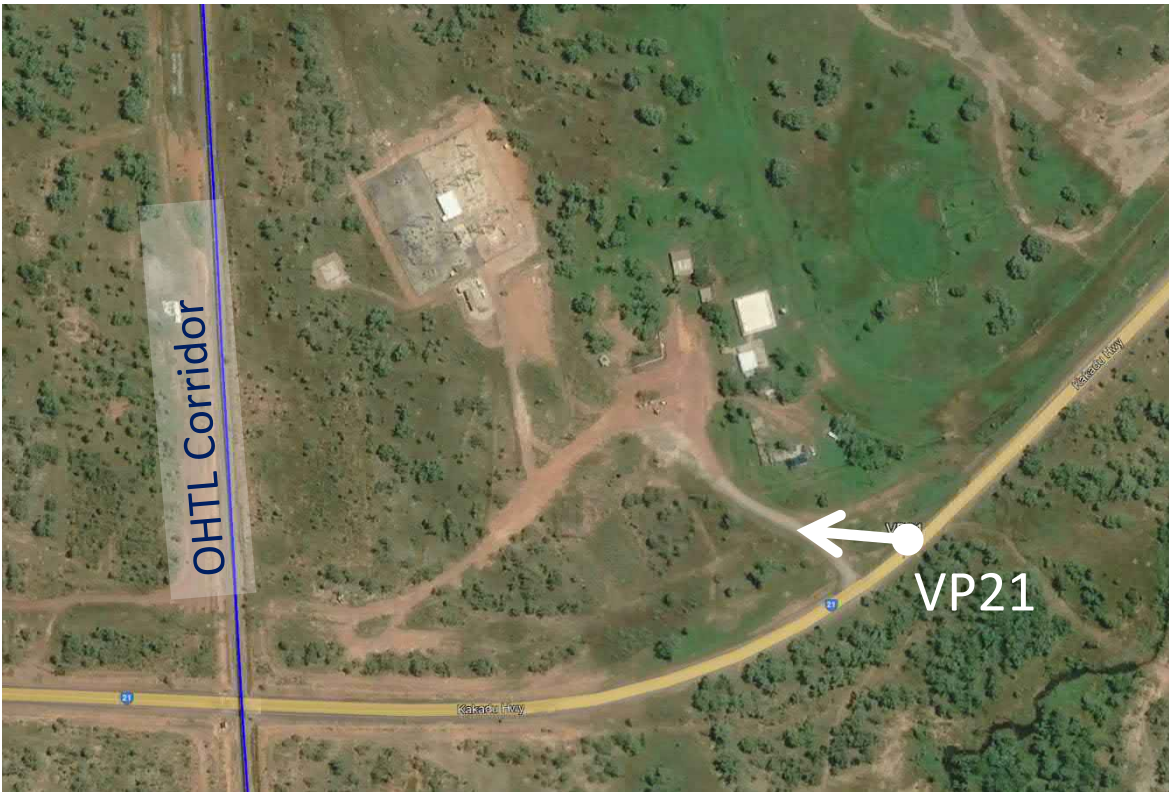


Figure 7–41: Location of Viewpoint 21



Figure 7–42: View from Viewpoint 21 toward the Project

Table 7–41: Viewpoint 21 information

Viewpoint information	
Location description	This viewpoint is located along Kakadu Highway, approximately 1.1 km east of the intersection of Stuart Highway and approximately 400 m east of the Project corridor. Kakadu Highway is used for access to Kakadu National Park. There is also a camp ground and golf course adjacent to this viewpoint.
Coordinates	13° 48'31"S 131° 50'23"E
View direction	West
Existing conditions	The view toward the Project from this location is characterised by low shrubs and a grassy understorey. There are also numerous signs of human made modifications to the landscape including transmission lines, signage and there is also an electrical substation just off to the right of the view. It can be seen in the aerial photograph as a rectangular cleared area.
Expected visual change	The Project is likely to be visible in the background, but it will not appear dissimilar to the numerous transmission towers that are already visible at this location.

Table 7–42: Assessment of visual impact – Viewpoint 21

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Negligible	This viewpoint has a number of infrastructure elements already present. The Project would not appear dissimilar to the many transmission towers and other similar elements already present in the view.
Magnitude of change	Barely perceptible change	The Project is not likely to be readily noticeable against the backdrop of the numerous structures already present.
Overall visual impact	<b>Negligible</b>	Given that the low sensitivity of the viewpoint and low level of change to the existing view.

## 7.22 Viewpoint 22 – Pine Creek #2

The following section provides an assessment of visual impact from Viewpoint 22 – Pine Creek #2. Figure 7–43 shows the viewpoint location and Figure 7–44 shows a view toward the Project. The location description is provided in Table 7–43 and the assessment is provided in Table 7–44.



Figure 7–43: Location of Viewpoint 22



Figure 7–44: View from Viewpoint 22 toward the Project

Table 7-43: Viewpoint 22 information

Viewpoint information	
Location description	This viewpoint is located at the intersection of Ward Street and Railway Terrace, within the township of Pine Creek. The town serves as a stopping point for travellers on their way north to Darwin along Stuart Highway, as well as those diverting north east towards Kakadu National Park along Kakadu Highway. The Project would be located approximately 800 m to the north east from this location.
Coordinates	13° 49'19"S 131° 50'06"E
View direction	North-east
Existing conditions	The view north-east from this location looks out over a built-up environment containing numerous human made modifications such as overhead transmission lines, signage and fences. Vegetation is confined to singular specimen trees and small groups within private properties. There are also heavy vehicles parked on the street.
Expected visual change	The Project may be visible through a gap in the vegetation at the centre of the view. However, its appearance would not be dissimilar to the numerous transmission towers that are already visible at this location.

Table 7-44: Assessment of visual impact – Viewpoint 22

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, it is a highly modified with many elements similar in scale and form to that which is being proposed.
Magnitude of change	Barely perceptible change	The Project is not likely to be readily noticeable against the backdrop of the numerous structures already present.
Overall visual impact	<b>Negligible to minor</b>	Given the low level of change and highly modified nature of the existing view.

## 7.23 Viewpoint 23 – Stuart Highway #6

The following section provides an assessment of visual impact from Viewpoint 23 – Stuart Highway #6. Figure 7–45 shows the viewpoint location and Figure 7–46 shows a view toward the Project. The location description is provided in Table 7–45 and the assessment is provided in Table 7–46.

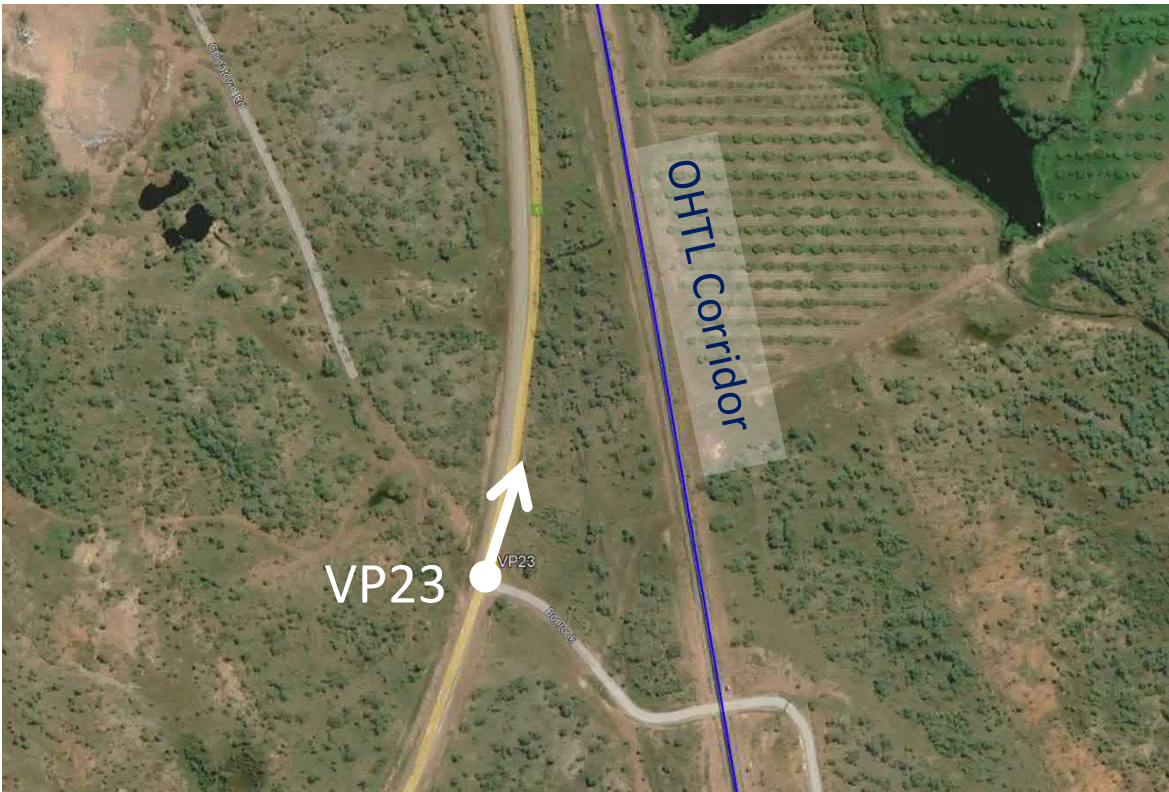


Figure 7–45: Location of Viewpoint 23



Figure 7–46: View from Viewpoint 23 toward the Project

Table 7-45: Viewpoint 23 information

Viewpoint information	
Location description	This viewpoint is located along Stuart Highway and Old Stuart Highway, approximately 2 km south of the township of Pine Creek. The Project would be orientated roughly parallel to Stuart Highway and be located approximately 150 m away.
Coordinates	13° 50'28"S 131° 50'42"E
View direction	North-east
Existing conditions	This section of the Stuart Highway is characterised by dense stands of shrubby vegetation on both sides of the road. Human made modifications include the road and grassy / gravel verge, an overhead transmission line and bollards.
Expected visual change	The Project would introduce a dominant visual element into the view which be visible for a length of time as one travels along the Stuart Highway.

Table 7-46: Assessment of visual impact – Viewpoint 23

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, it is not a regionally important location.
Magnitude of change	Considerable change	The Project would represent a considerable change to the view however it would not be affecting any key visual resources as this view is typical of many similar views along the Stuart Highway.
Overall visual impact	<b>Moderate</b>	Given the medium level of sensitivity and considerable change in the view.

## 7.24 Viewpoint 24 – Stuart Highway #7

The following section provides an assessment of visual impact from Viewpoint 24 – Stuart Highway #7. Figure 7–47 shows the viewpoint location and Figure 7–48 shows a view toward the Project. The location description is provided in Table 7–47 and the assessment is provided in Table 7–48.



Figure 7–47: Location of Viewpoint 24



Figure 7–48: View from Viewpoint 24 toward the Project

Table 7–47: Viewpoint 24 information

Viewpoint information	
Location description	This viewpoint is located at the junction of Stuart Highway and Edith Falls Road. Edith Falls Road provides access to Nitmiluk National Park and Edith Falls. The Project would be orientated roughly parallel to Stuart Highway and be located approximately 270 m to the north east. The railway crossing can be seen at the centre of the view in the middle distance. This is approximately where the Project would also cross Edith Falls Road.
Coordinates	14° 11'10"S 131° 02'09"E
View direction	North east
Existing conditions	The view north east along Edith Falls Road is characterised by established shrubby vegetation on both sides of the road. The section of land between the Project corridor and Stuart Highway is more sparsely vegetated than the section to the east of the Project corridor. There are numerous signs of human made modifications including a railway corridor, the road and gravel verge, an overhead transmission line, road signage, a utilities compartment and bollards.
Expected visual change	The Project would introduce a visually dominant element into the view. This is likely to be for a brief period however as one crosses the Project corridor and heads further east.

Table 7–48: Assessment of visual impact – Viewpoint 24

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, it is not close to any landscapes of regional significance.
Magnitude of change	Considerable change	The Project would represent a considerable change to the view however it would not be affecting any key visual resources as this view is typical of many similar views along the Stuart Highway.
Overall visual impact	<b>Moderate</b>	Given the medium level of sensitivity and considerable change in the view.

## 7.25 Viewpoint 25 – Stuart Highway #8

The following section provides an assessment of visual impact from Viewpoint 25 – Stuart Highway #8. Figure 7–49 shows the viewpoint location and Figure 7–50 shows a view toward the Project. The location description is provided in Table 7–49 and the assessment is provided in Table 7–50.



Figure 7–49: Location of Viewpoint 25



Figure 7–50: View from Viewpoint 25 toward the Project

Table 7–49: Viewpoint 25 information

Viewpoint information	
Location description	This viewpoint is located at the junction of Stuart Highway and Edith Farms Road, Nitmiluk. From a review of aerial maps, the surrounding area appears to be sparsely populated with occasional homes accompanying rural lots. The Project would be orientated roughly parallel to Stuart Highway, and it would be located approximately 1.6 km away at its closest point to the south-east.
Coordinates	14° 18'04"S 132° 05'26"E
View direction	South-east
Existing conditions	The view south east from this location is characterised by dense vegetation on both sides of Stuart Highway. Vegetation consists of trees occurring as isolated specimens or in small groups with a dense shrubby understorey. There are numerous signs of human made modifications to the landscape including the road and gravel verge, road signs, bollards and light poles. The light poles in particular are a visually dominant element in this view.
Expected visual change	The Project is not likely to be visible given its distance away and the presence of intervening vegetation. If any part of the Project were visible it is not likely to be easily discernible.

Table 7–50: Assessment of visual impact – Viewpoint 25

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, it is not a regionally important location.
Magnitude of change	Barely perceptible change	The Project is not likely to be visible.
Overall visual impact	<b>Negligible</b>	Given that the Project is not likely to be visible, the overall visual impact is negligible.

## 7.26 Viewpoint 26 – Florina Road

The following section provides an assessment of visual impact from Viewpoint 26 – Florina Road. Figure 7–51 shows the viewpoint location and Figure 7–52 shows a view toward the Project. The location description is provided in Table 7–51 and the assessment is provided in Table 7–52.



Figure 7–51: Location of Viewpoint 26



Figure 7–52: View from Viewpoint 26 toward the Project

Table 7–51: Viewpoint 26 information

Viewpoint information	
Location description	This viewpoint is located adjacent to the intersection of Florina Road and Tokmakoff Road, Katherine. From a review of aerial maps, the surrounding area appears to be mostly occupied by scattered residential lots interspersed with rural properties and vegetated areas. The Project would be orientated roughly perpendicular to Florina Road and would be located approximately 590 m away at its closest point to the south-west.
Coordinates	14° 28'57"S 132° 13'25"E
View direction	South-west
Existing conditions	The view south-west from this location is characterised by dense stands of vegetation on both sides of Florina Road. Vegetation consists of trees occurring as isolated specimens or in small groups with a dense shrubby understorey. There are numerous signs of human made modifications to the landscape including the road and grassed verge, road signs, bollards, fences and an overhead transmission line. The existing overhead transmission line in particular is a visually dominant element in this view.
Expected visual change	The Project would be visible in the middle distance occupying an area beyond the yellow railway crossing sign adjacent to the road. The existing railway line, which approximates the Project corridor, can be seen below the tree line at the centre of the view. The Project would represent a considerable change to the view, however it is not expected to be more visually dominant than the existing transmission line in the view.

Table 7–52: Assessment of visual impact – Viewpoint 26

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, it is a highly modified with many elements similar in scale and form to that which is being proposed.
Magnitude of change	Considerable change	The Project would represent a considerable change to the view however it would not be affecting any key visual resources. The Project would not be more visually dominant than the existing transmission line within the view
Overall visual impact	<b>Moderate</b>	Given the medium level of sensitivity and considerable change in the view.

## 7.27 Viewpoint 27 – Victoria Highway

The following section provides an assessment of visual impact from Viewpoint 27 – Victoria Highway. Figure 7–53 shows the viewpoint location and Figure 7–54 shows a view toward the Project. The location description is provided in Table 7–53 and the assessment is provided in Table 7–54.

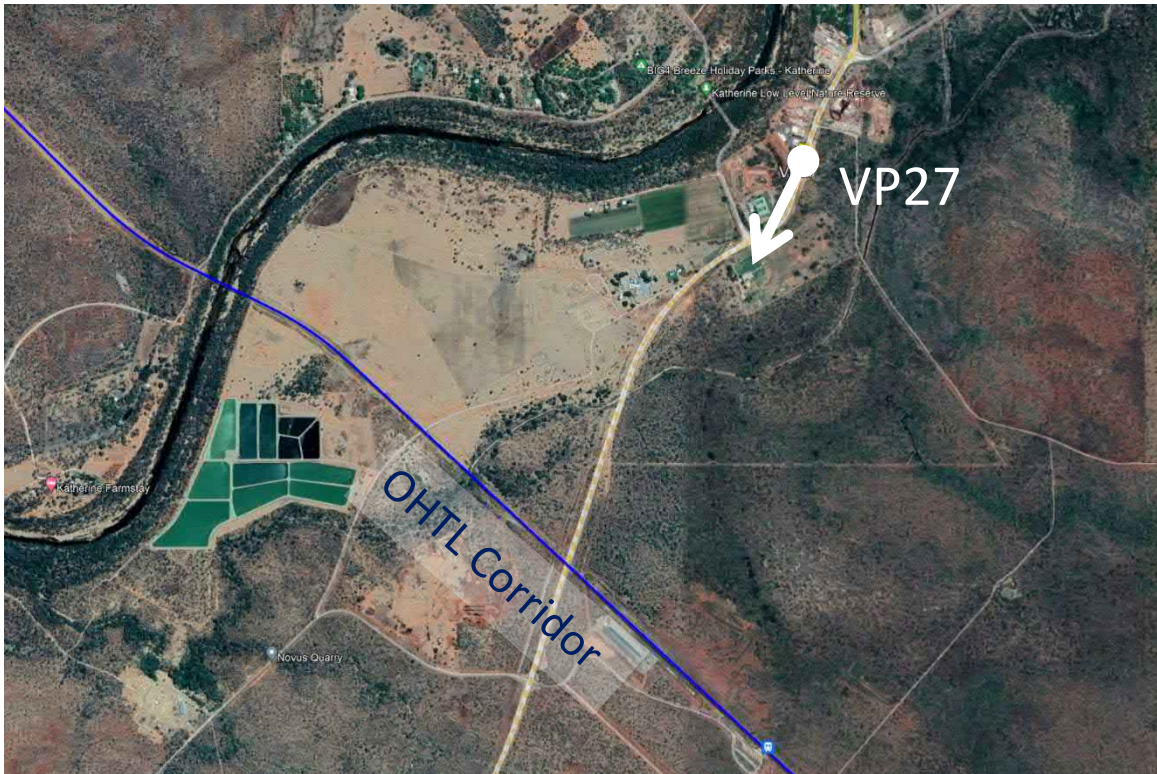


Figure 7–53: Location of Viewpoint 27



Figure 7–54: View from Viewpoint 27 toward the Project

Table 7–53: Viewpoint 27 information

Viewpoint information	
Location description	This viewpoint is located adjacent to Victoria Highway, Katherine. From a review of aerial maps, the surrounding area appears to be mostly occupied by industrial and agricultural allotments and tourist accommodation facilities, interspersed with vegetated areas and nature reserves. Katherine River is located approximately 450 m to the north west of this location. The Project would be orientated roughly perpendicular to Victoria Highway and would be located approximately 1.9 km away at its closest point to the south-west.
Coordinates	14° 29'32"S 132° 15'18"E
View direction	South-west
Existing conditions	The view south-west from this location is characterised by vegetation occurring on both sides of Victoria Highway, occurring as singular specimens or in small groups, typically with a dense shrubby understorey. There are numerous signs of human made modifications to the landscape including the road and gravel verge, road signs (including an illuminated road sign), bollards, fences, light poles and an overhead transmission line.
Expected visual change	The Project is not likely to be a visually dominant element given its distance away and the presence of intervening vegetation. If any part of the Project were visible it is not likely to be readily noticeable.

Table 7–54: Assessment of visual impact – Viewpoint 27

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, this section of Victoria Highway contains numerous modifications to the natural environment which would be similar in scale to the Project.
Magnitude of change	Barely perceptible change	The Project is not likely to be easily discernible visible through the existing foreground vegetation.
Overall visual impact	<b>Negligible to minor</b>	Given the low level of change and modified nature of the existing landscape.

## 7.28 Viewpoint 28 – Shadforth Road

The following section provides an assessment of visual impact from Viewpoint 28 – Shadforth Road. Figure 7–55 shows the viewpoint location and Figure 7–56 shows a view toward the Project. The location description is provided in Table 7–55 and the assessment is provided in Table 7–56.

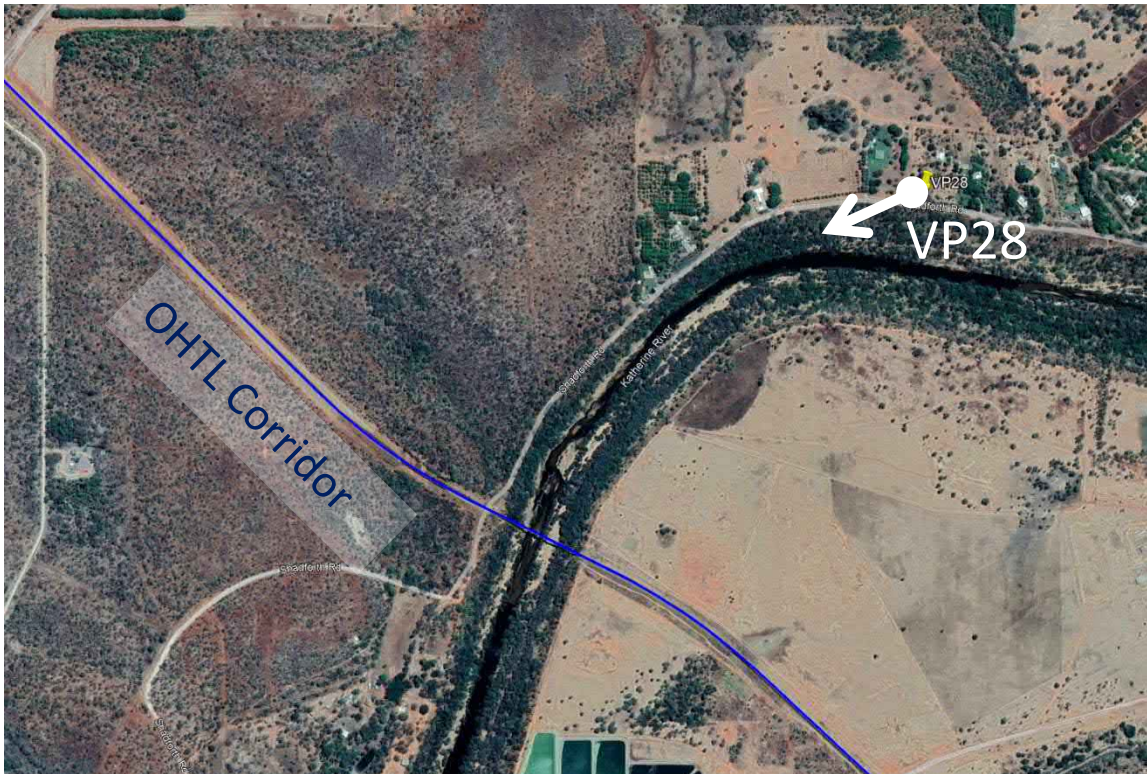


Figure 7–55: Location of Viewpoint 28



Figure 7–56: View from Viewpoint 28 toward the Project

Table 7–55: Viewpoint 28 information

Viewpoint information	
Location description	This viewpoint is located along Shadforth Road, approximately 1.1 km south west of the intersection of Zimin Drive, Katherine. From a review of aerial maps, the surrounding area appears to be mostly occupied by scattered residential allotments interspersed with rural properties and vegetated areas. Katherine River is located approximately 150 m to the south of this location. The Project would be orientated roughly perpendicular to Shadforth Road and would be located approximately 1.3 km away at its closest point to the south-west.
Coordinates	14° 29'22"S 132° 14'27"E
View direction	South-west
Existing conditions	The view south west from this location is characterised by dense stands of vegetation which borders Katherine River, on the southern side of Shadforth Road. The northern side of Shadforth Road is primarily occupied by orchards, scattered residential dwellings and rural allotments. There are numerous signs of human made modifications to the landscape including the road and gravel verge, fences, private dwellings and an overhead transmission line. The overhead transmission line is a moderately dominant element in this view.
Expected visual change	The Project is not likely to be visible given its distance away and the presence of intervening vegetation. If any part of the Project were visible it is not likely to be readily noticeable.

Table 7–56: Assessment of visual impact – Viewpoint 28

Assessment criteria	Value	Supporting comments
Viewpoint sensitivity	Medium	This viewpoint would be experienced by a large number of travellers with an interest in their surroundings. However, this section of Shadforth Road contains numerous modifications to the natural environment which would be similar in appearance to the Project.
Magnitude of change	Barely perceptible change	The Project is not likely to be easily discernible visible beyond the foreground vegetation.
Overall visual impact	<b>Negligible to minor</b>	Given the low level of change and modified nature of the existing landscape.

## 7.29 Summary of visual impact assessment

Table 7–57 provides a summary of visual impact from the assessed viewpoints.

Table 7–57: Summary of visual impact assessment

Viewpoint	Overall visual impact
Viewpoint 1 – Gunn Point Campsite	Negligible to Minor
Viewpoint 2 – Gunn Point Road #1	Minor
Viewpoint 3 – Leaders Creek Boat Ramp Access	Minor
Viewpoint 4 – Gunn Point Road #2	Minor to Moderate
Viewpoint 5 – Gunn Point Road #3	Minor
Viewpoint 6 – Beddington Road, Herbert	Negligible
Viewpoint 7 – Arnhem Highway	Minor to moderate
Viewpoint 8 – Buckley Road, Humpty Doo	Negligible
Viewpoint 9 – Elizabeth Valley Road, Noonamah	Negligible
Viewpoint 10 – Horsnell Road, Noonamah	Minor
Viewpoint 11 – Stuart Highway #1	Moderate
Viewpoint 12 – Cox Peninsula Road #1	Moderate
Viewpoint 13 – Cox Peninsula Road #2	Minor
Viewpoint 14 – Stuart Highway #2	Moderate
Viewpoint 15 – Stuart Highway #3	Minor to moderate
Viewpoint 16 – Lake Bennett	Negligible
Viewpoint 17 – Batchelor Road, Coomalie Creek	Negligible
Viewpoint 18 – Adelaide River	Negligible
Viewpoint 19 – Stuart Highway #4	Negligible
Viewpoint 20 – Stuart Highway #5	Negligible
Viewpoint 21 – Pine Creek #1	Negligible
Viewpoint 22 – Pine Creek #2	Negligible to minor
Viewpoint 23 – Stuart Highway #6	Moderate
Viewpoint 24 – Stuart Highway #7	Moderate
Viewpoint 25 – Stuart Highway #8	Negligible
Viewpoint 26 – Florina Road	Moderate
Viewpoint 27 – Victoria Highway	Negligible to minor
Viewpoint 28 – Shadforth Road	Negligible to minor

## 7.30 Cumulative impacts

Cumulative impacts are those that consider the impacts of other developments or infrastructure within the Project area that may affect the findings of this assessment. It is possible that future renewable energy projects such as solar and wind requiring overhead transmission lines may be developed within proximity to the Project which may result in increased visual impacts. Similarly, other significant projects including utilities, particularly through the Hughes area could add to visual impact accumulation over time. The cumulative visual impacts related to the future developments are unknown at this point, however, would be assessed with each project approval in future, taking the OHTL into account at time of assessment.

The cumulative impacts of existing developments within the study area (such as existing transmission lines) provide visual mitigation of the development of the Project infrastructure where the visual sensitivity of the landscape is decreased due to existing infrastructure, however noting the difference in scale, particularly height, this was not considered to have a notable impact on the Project's visual impact.

## 8. Mitigation measures

Whilst it is noted that the visual impact of the Project from most viewpoint locations is low, minor, or minor to moderate, the following recommendations for mitigation may apply to further reduce visual impact at localised areas of concern, or on a site-specific basis at project implementation stage.

These mitigation measures have mostly been adopted from United States Department of the Interior, Bureau of Land Management, (2013), Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands.

### 8.1 Mitigation options

A key mitigation measure is related to the routing of the alignment away from areas that are visually sensitive, for example towns, tourism areas, rural residential areas and key transport routes to ensure that these areas are, where possible, located either at the periphery, or outside of the Zone of Theoretical Visibility (ZTV) outlined in Section 4.2.

We note that the route selected falls within an existing designated corridor, which in some cases is already disturbed. This is mainly the Adelaide to Darwin railway corridor and the Gunn Point utilities corridor. In many cases this alignment already minimises the location relevant to the ZTV, in part driving the VIA outcomes. As there is limited flexibility in further routing considerations, alternate mitigation options have been considered as detailed below. The applicability of these will be dependent on local context and viewsheds.

#### 8.1.1 Vegetation planting

Vegetation planting may assist to visually integrate the Project or filter views of the Project at specific locations. Although the Project would be considerably taller than vegetation, foreground vegetation has the ability to screen or filter views of much taller objects that are further away. This may be particularly relevant on private properties that would have a view toward the Project. In such cases, vegetation planting would need to be undertaken in consultation with the landholder. Where possible, vegetation species should be appropriately selected and consistent with local council guidelines and be of a locally endemic species as far as practical. This would also help support local biodiversity values, weed management, fire management regimes and biting insect control.

#### 8.1.2 Avoid sensitive viewing locations

The Project should be sited away from locations with limited visual absorption capacity and/or high scenic integrity. Where screening by vegetation is not possible, siting should take advantage of partial screening opportunities such as vegetation or terrain. Visually complex landscape backdrops often provide opportunity for visual concealment. Special consideration should be given for locations within view of regionally or nationally important geographical features or cultural landmarks. Where the Project must be sited within view of sensitive areas, it should be located as far away as possible as visual impact of structures generally diminishes with distance. Landscapes with low scenic integrity or high visual absorption capability are generally preferred as siting locations.

#### 8.1.3 Road crossings at right angles

The road crossing point of the Project should be carefully selected to avoid the most sensitive viewing locations. For example, siting the road crossing point at a low-lying area rather than a crest would reduce the visual prominence of the transmission line for motorists. Crossings should be at right angles where possible to reduce the amount of time that the Project would be visible for whilst travelling along the road. Figure 8–1 demonstrates this concept.

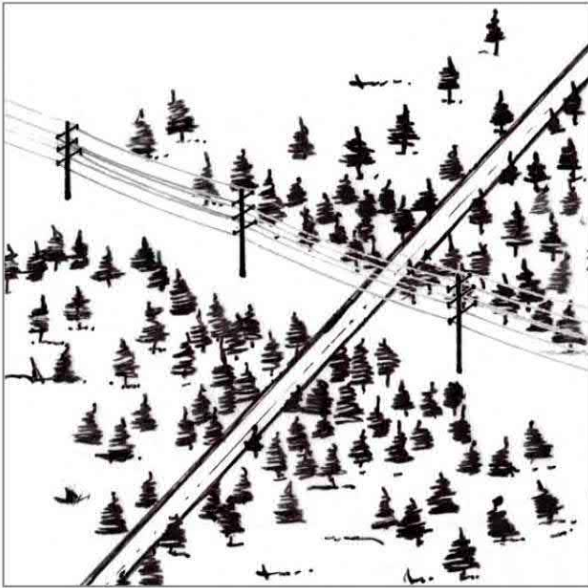


Figure 8-1: Road crossings should be at right angles (Source: Bureau of Land Management, 2013)

### 8.1.4 Site facilities in existing clearings

In areas with significant existing bushland, the siting of the Project should be within cleared areas as far as practical to minimise additional clearing of native vegetation. This would minimise visual impacts as well as impacts to biodiversity values. Figure 8-2 shows the effect of a development occurring in a cleared area as compared to a densely forested area. The development in the densely forested area has a higher degree of visual impact as compared to the development in the cleared area.



Figure 8-2: View showing the effect of a development occurring in a cleared area as compared to a densely forested area (Source: Bureau of Land Management, 2013)

### 8.1.5 Collocate linear projects in existing corridors

Where possible, proposed linear infrastructure should be collocated within existing corridors to minimise overall visual impact. Existing linear corridors may include existing access tracks and roads, railways, transmission lines, pipelines and other existing rights of way. This will assist to minimise vegetation clearing and further development. Where there are multiple linear corridors, these should be located on the same side of the road, potentially preserving open views of landscapes on the opposing side, where these exist. Figure 8-3 shows the effect of collocation in minimising visual impact as a whole.



Figure 8–3: Collocation of transmission lines reduces overall visual impact (Source: Bureau of Land Management, 2013)

### 8.1.6 Avoid ridgelines and valley bottoms

The human eye tends to follow strong natural linear features in the landscape, and these tend to draw one’s attention toward them. For this reason, linear infrastructure should avoid being sited close to these strong natural linear features such as valley bottoms and ridgelines. Ridgetop bisection, which is where the linear infrastructure crosses over the top of a ridgeline, should also be avoided. Figure 8–4 and Figure 8–5 demonstrate the effect of bisection of ridgelines and the effect this has on visual impact.



Figure 8–4: View showing how an easement bisects several ridges, creating strong lines for the eye to follow (Source: Bureau of Land Management, 2013)



Figure 8–5: View showing how the bisection of a ridgeline can create a conspicuous linear element in the landscape (Source: Bureau of Land Management, 2013)

### 8.1.7 Avoid breaking skylines

Transmission lines should not be located along the tops of ridgelines, summits or other locations where they would be silhouetted against the sky. This draws attention toward them and greatly increases visual contrast and visual impact. Siting should take advantage of opportunities to use terrain as a backdrop to the proposed transmission line which negates this effect. Figure 8–6 shows the negative effect of locating transmission towers on a ridgeline.



Figure 8–6: View showing how a transmission line located on a ridgeline makes them conspicuously visible against the sky (Source: Bureau of Land Management, 2013)

### 8.1.8 Site linear infrastructure along natural lines

The siting of transmission lines along natural linear features such as natural breaks in the landscape, edges of clearings or transitions in vegetation assist to visually absorb the linear infrastructure into the landscape. This reduces the visual impact of the transmission line by reducing the apparent contrast of the new

element with the receiving landscape. Figure 8–7 shows how the siting of a transmission line along a natural break in the vegetation reduces its apparent contrast with the landscape.

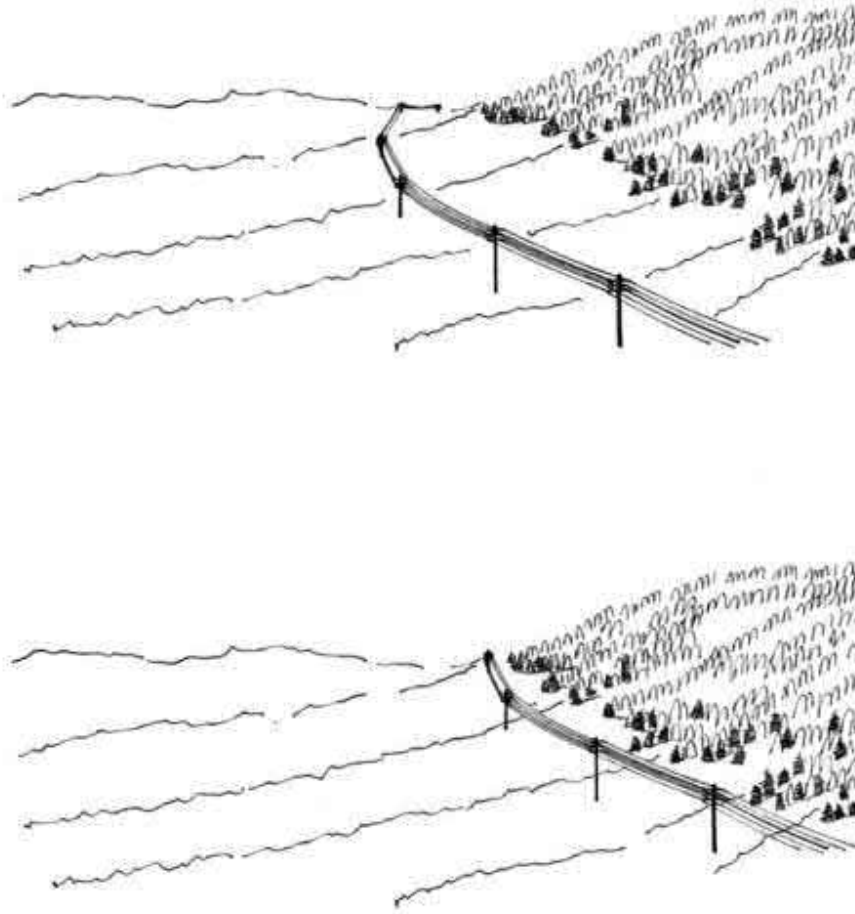


Figure 8–7: Siting of a transmission line along a natural break in the vegetation (Source: Bureau of Land Management, 2013)

### 8.1.9 Appropriate use of monopole and lattice towers

Consideration should be given for the use of monopoles versus lattice towers in a given landscape setting. Lattice towers are generally less visually obtrusive when seen from a distance, typically greater than 800 m. This is because they tend to be more transparent against natural background textures and colours. Monopoles are often more appropriate for built up or partially built-up environments where they are typically seen from close range. In this environment they tend to be less visually ‘noisy’. Also, at distances of less than 800 metres, monopoles would occupy a smaller field of view as compared with lattice towers. Figure 8–8 shows the difference in visual prominence of lattice towers versus monopoles.



Figure 8-8: View showing the difference visual prominence of lattice towers versus monopoles (Source: Bureau of Land Management, 2013)

### 8.1.10 Colour treat transmission towers to reduce contrast

The use of materials, coatings or paints that have little or no reflectivity should be used. The application of non-reflective or low-reflectivity surface treatments can greatly reduce the occurrence of glint or glare and visual prominence of the transmission line. Monopole towers should also be treated with the most appropriate colour depending on their context. The use of untreated galvanised monopoles or white monopoles should be avoided in all circumstances. Lattice towers should receive a non-reflective treatment, typically a darkened grey colour. Figure 8-9 and Figure 8-10 show the visual prominence of transmission towers and wires that have not been selected for or treated with a non-reflective surface. This is to be avoided.



Figure 8-9: View showing conspicuous reflective transmission line viewed against a mountain backdrop (Source: Bureau of Land Management, 2013)



Figure 8–10: View wires that have not been selected or treated for non-reflectivity. This is to be avoided (Source: Bureau of Land Management, 2013)

Figure 8–11 shows examples of various colour treatments of transmission towers that can assist in blending them in with the landscape.



Weathered lattice tower and white monopole. An additional lattice tower is visible in the background to the left of the large lattice tower. (Credit: Robert Sullivan, Argonne National Laboratory.)



The color-treated lattice tower to the upper left of the untreated tower blends in very well with the surrounding landscape, and could easily be missed by a casual viewer. (Credit: John McCarty, BLM.)



COR-TEN monopole in a high-relief landscape with minimal vegetation, and where the predominant natural color is red. (Credit: John McCarty, BLM.)



Color-treated monopole towers blend in well with the surrounding landscape, resulting in substantially lower visual contrast. (Credit: BLM.)

Figure 8–11: Views showing various treatments of transmission towers to assist with blending into the environment (Source: Bureau of Land Management, 2013)

### 8.1.11 Maintenance of painted, stained or coated surfaces

Painted, stained, or coated surfaces should be kept in good repair and the surface treatment should be reapplied when necessary, as the surface colour fades or the coating flakes or otherwise deteriorates.

The effectiveness of surface treatments depends on the condition of the surface treatment. If the surface colour fades too much, colour contrast may increase. If the surface coating flakes, the underlying structure's surface may be exposed, potentially increasing contrast and causing glinting or glare. Damaged surface coatings may also make the structure look unkempt or poorly maintained.

### 8.1.12 Feather edges of transmission line easements

Straight cuts through forested areas can result in a linear element that would be visible from long distances away. Where feasible, locating the transmission line easement in partially cleared areas or feathering (i.e., selective thinning of trees) the edge of the easement would result in a less visually prominent and more natural looking easement. Locating the easement in a cleared or partially cleared area reduces the need for vegetation clearance. Figure 8–12 shows the effect of feathering.

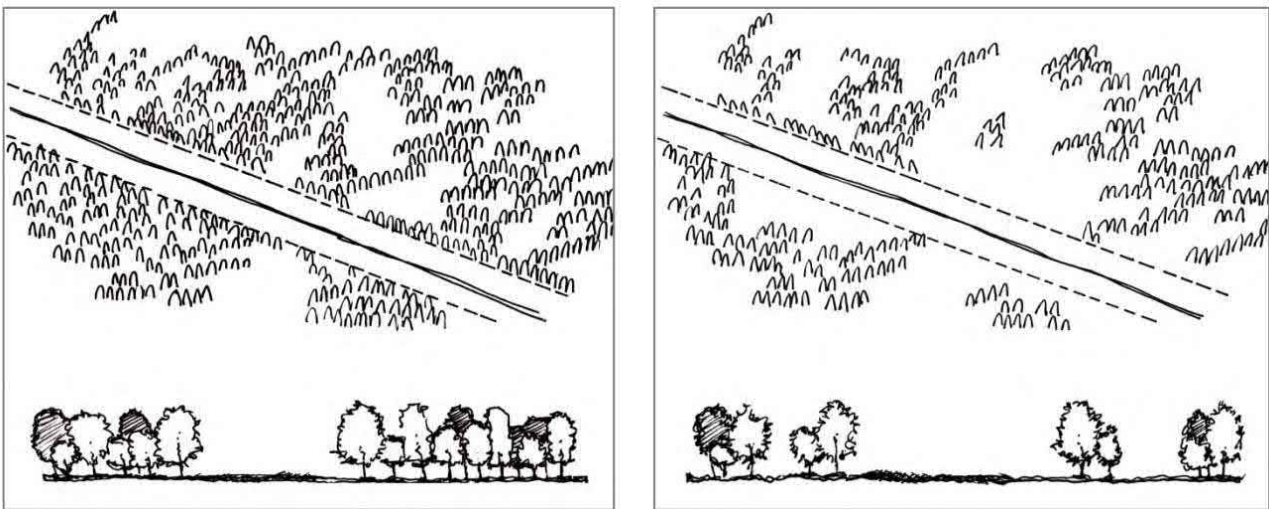


Figure 8–12: feathering the edges of easements would result in a more naturalistic appearance

## 8.2 Implications for the OHTL VIA

The range of mitigation measures outlined above. Refinement of the project alignment and particularly the siting of individual transmission poles will allow detailed consideration of the most appropriate mitigation option to apply, with the following high-level guidance:

- Road and rail crossings should avoid 90-degree crossings and should be designed to transect the road at an appropriate angle to minimise impacts
- Final alignment within the identified corridor should aim to avoid breaking the skyline, ridgelines and avoid valleys, it should also follow the natural landscape rather than transecting features
- Local vegetation should be considered, including placement of the infrastructure in a way that allows significant established vegetation to buffer the view from sensitive receptors
- Monopoles should be considered where the poles will be visible to sensitive receptors closer than 800m, and lattice poles for those further than 800 m to allow for visual dispersal into the landscape
- Context specific colour use could be applied, however the need to maintain these to an appropriate standard should be offset against the effectiveness of this as a mitigation measure
- Identify appropriate locations for structure siting and other significant infrastructure, including already cleared sites to minimise removal of natural vegetation.

## 9. Conclusion

The intent of the LVIA has not been to determine whether or not the infrastructure will be visible, but rather to consider and evaluate both the magnitude of visual change associated with the Project on the landscape and the sensitivity of the receiving environment and sensitive receptors to these changes.

Consideration was given to the impact of these changes on the amenity of distinct localities along the alignment in response to stakeholder commentary and concerns, while potential mitigation to limit the change associated with this visual impact to acceptable levels was identified. It is important to note the limitations outlined in Section 1.5, and the potential to undertake more detailed LVIA of sensitive receptors and sites at detailed design stage.

Based on the EPA's Direction, consideration was given to road and railway users, residents, and the tourism industry. Based on this analysis and the data available, the following conclusions have been made.

### 9.1 Magnitude of change

The Zone of Theoretical Visibility (ZTV) analysis has demonstrated that the placement of up to 60m structures on the landscape will result in a low visibility for most locations within the study area. Those areas mapped as having higher visibility are generally located a sufficient distance from the infrastructure, resulting in a visual change which is barely noticeable, or not discernible at all.

As demonstrated by the renders contained in Appendix A, distance is a key factor in determining the magnitude of change. In this case, the majority of sensitive receptors, with some localised receptors, are a sufficient distance from the Project to consider this magnitude low to negligible. Where the magnitude of change is higher due to closer proximity to receptors, localised or context specific mitigation can be implemented to reduce or eliminate visual impact.

### 9.2 Sensitivity to change

The ability of the landscape to visually absorb the Project and the sensitivity of receptors such as residents, tourists, road and railway users was considered in the application of the assessment matrix to determine the extent of visual impact.

### 9.3 Summary

Given that the Project corridor follows the Alice Springs to Darwin railway for a significant portion of its route, this would minimise land clearing and ground disturbance and hence visual impact. This alignment has the added benefit of avoiding populated areas, sensitive environmental landscapes and major tourist destinations as far as practical. While road and railway users may observe the Project at several locations along the alignment, the visual impact is expected to be experienced for a limited period due to traveling at typical highway speeds.

The character of the landscape within the study area is, for the most part flat to gently undulating. Vegetation typically changes very gradually along the length of the alignment. Low, sparse and grassy to shrubby vegetation generally occurs to the south of the Project alignment, whereas taller and denser vegetation generally occurs to the north of the alignment.

Over most of the Project alignment, there is relatively little topographical variation which markedly differentiates one location from another. Where the Project may be visible at one location, a road user is likely to witness a similar view without the Project a short distance away. Where tall, dense vegetation occurs, the Project would likely be visible only at close range due to the mitigating effect of the vegetation from locations further away.

Of the 28 viewpoints that were assessed for visual impact, 6 were assessed as Moderate, 3 were assessed as Minor to moderate, 5 were assessed as Minor, 4 were assessed as Negligible to minor and 10 were assessed as Negligible.

The locations where the Project will have the greatest visual impact are generally those within 1.5 kilometres of the alignment, in areas that have low vegetation and are close to major transport routes, such as the Stuart Highway. Typically, these locations have been assessed as having a moderate visual impact. In other areas, the visual impact of the Project would be mostly Minor to negligible. Where viewpoints have been assessed as moderate, site and context specific mitigation at the detailed siting and design stages may assist to reduce the level of visual impact.

## 10. References

[https://en.wikipedia.org/wiki/Northern\\_Territory](https://en.wikipedia.org/wiki/Northern_Territory)

<https://www.australiantraveller.com/nt/darwin/litchfield-national-park-northern-territory/>

[https://en.wikipedia.org/wiki/Stuart\\_Highway](https://en.wikipedia.org/wiki/Stuart_Highway)

<https://northernterritory.com/plan/getting-here-and-around/train>

[https://en.wikipedia.org/wiki/The\\_Ghan](https://en.wikipedia.org/wiki/The_Ghan)

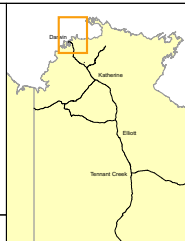
[https://blmwyomingvisual.anl.gov/docs/BLM\\_RenewableEnergyVisualBMPs\\_LowRes.pdf](https://blmwyomingvisual.anl.gov/docs/BLM_RenewableEnergyVisualBMPs_LowRes.pdf)

Appendix A

# Study area Maps by Viewpoint

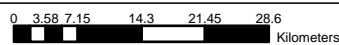


- Viewpoints
- ViewPoints Figure Grid
- Highway



### Viewpoints

Project: **Australia-Asia PowerLink**



Scale: 1:849,000

Datum: GDA2020

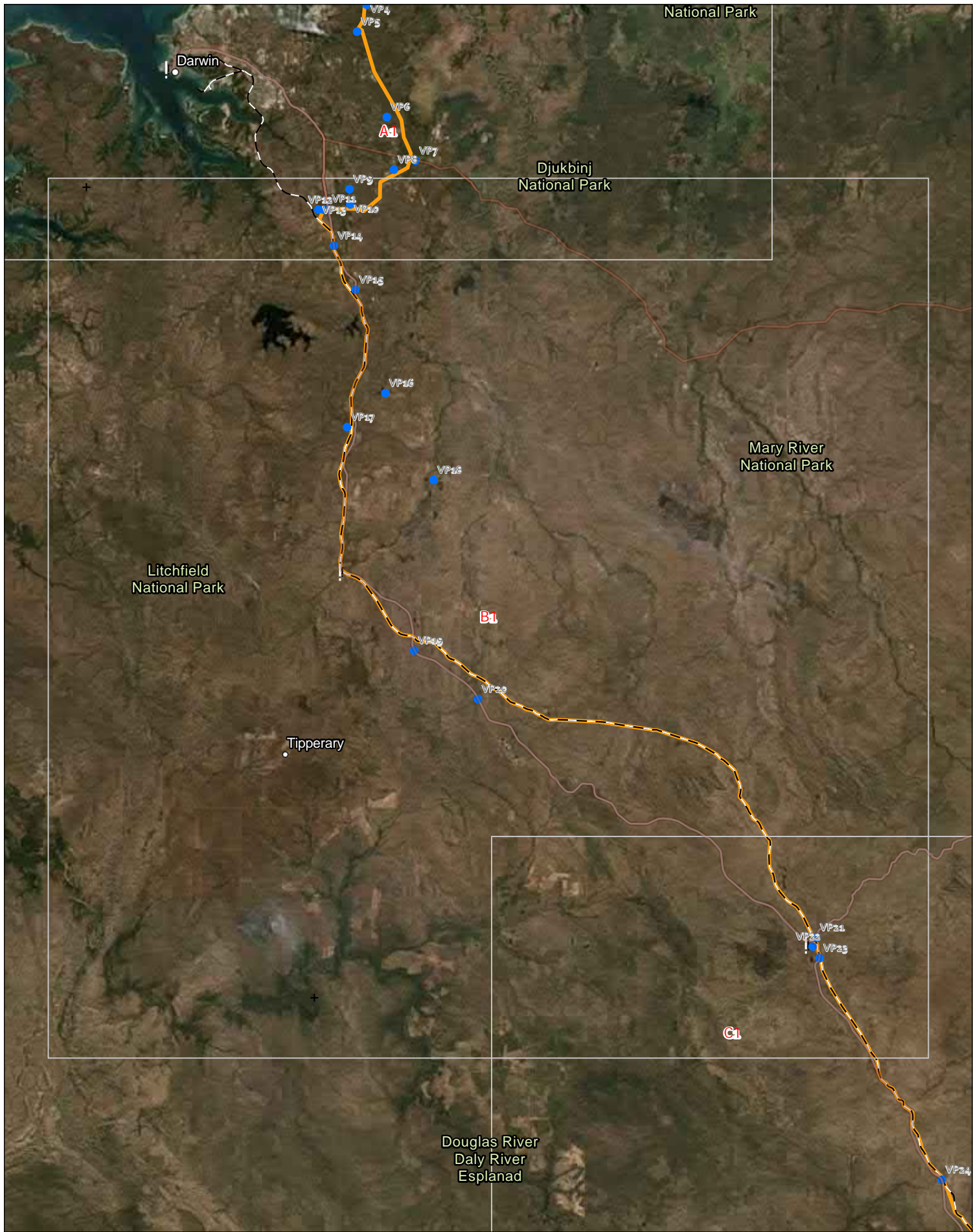
Date: 20/10/2022 | Figure: 1 of 1 | Revision: A



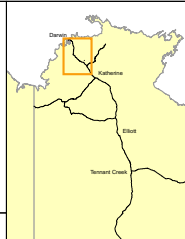
A4

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

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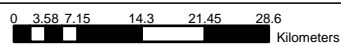


- Viewpoints
- ViewPoints Figure Grid
- Highway



### Viewpoints

Project: **Australia-Asia PowerLink**



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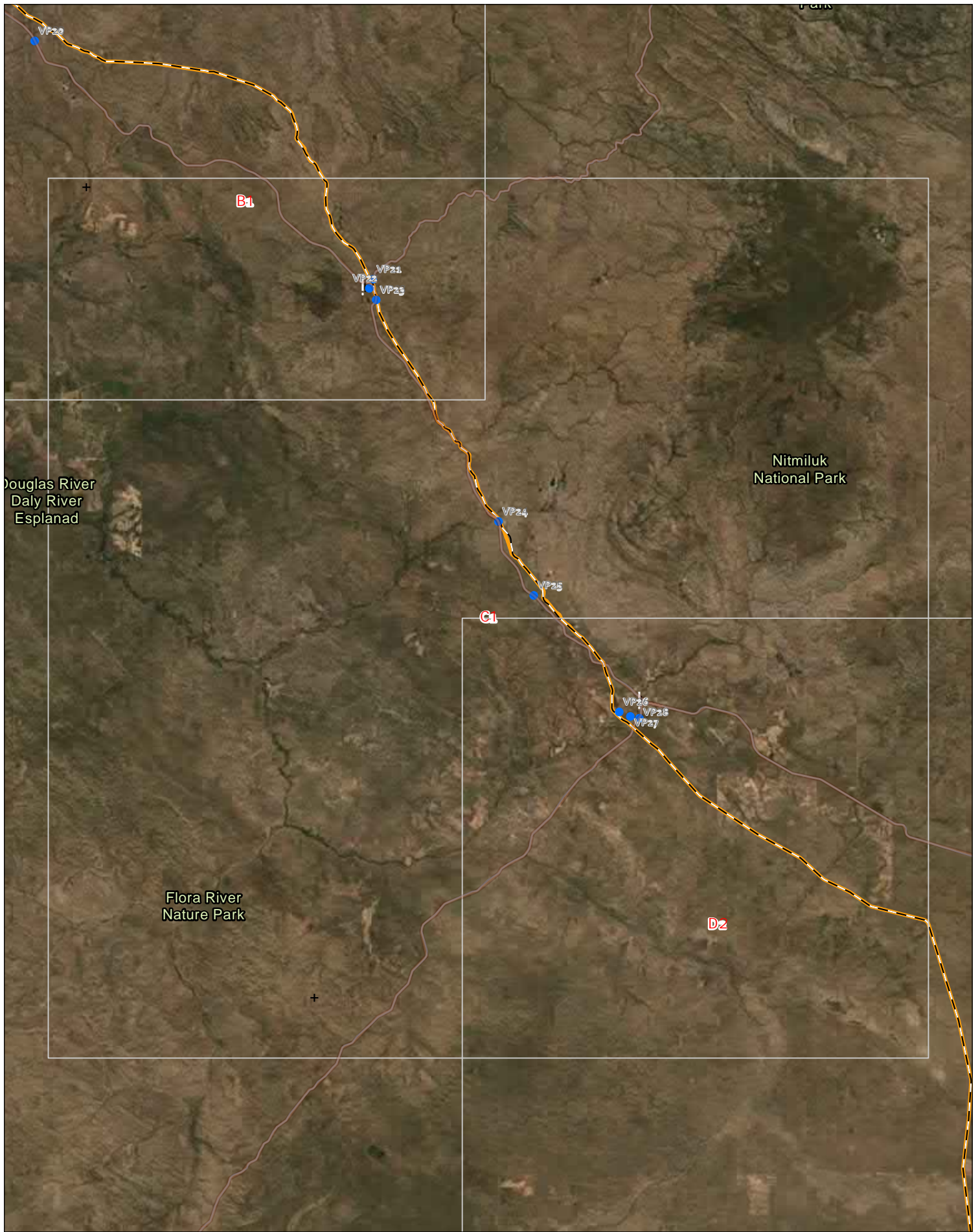
Datum: GDA2020

Date: 20/10/2022 | Figure: 1 of 1 | Revision: A



A4

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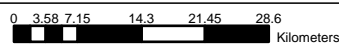


- Viewpoints
- ViewPoints Figure Grid
- Highway



### Viewpoints

Project: **Australia-Asia PowerLink**



Scale: 1:849,000

Datum: GDA2020

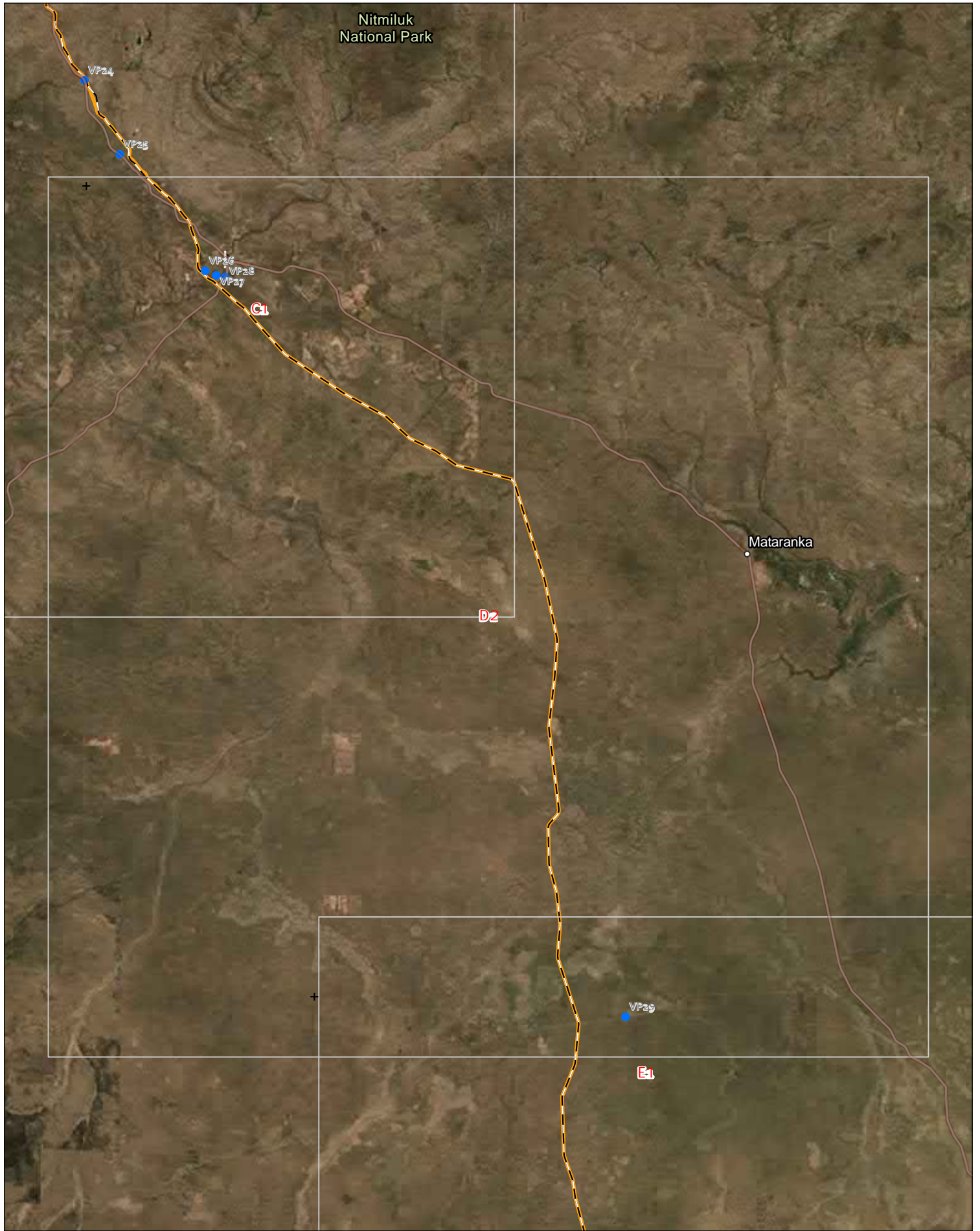
Date: 20/10/2022 | Figure: 1 of 1 | Revision: A



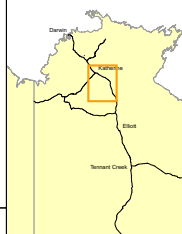
A4

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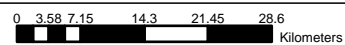


- Viewpoints
- ViewPoints Figure Grid
- Highway



### Viewpoints

Project: **Australia-Asia PowerLink**



Scale: 1:849,000

Datum: GDA2020

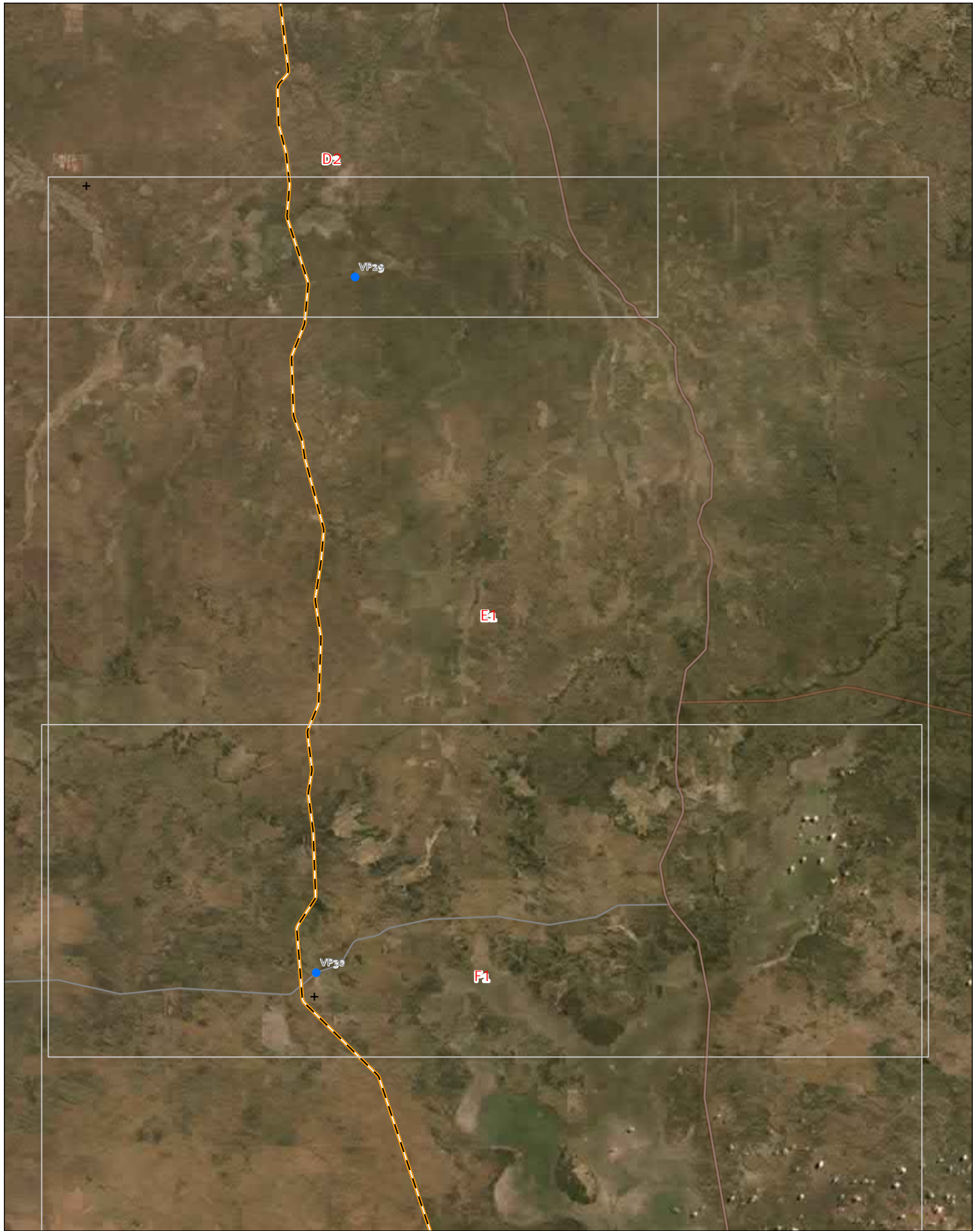
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A4

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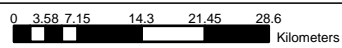


- Viewpoints
- ViewPoints Figure Grid
- Highway



### Viewpoints

Project: **Australia-Asia PowerLink**



Scale: 1:849,000

Datum: GDA2020

Date: 20/10/2022 | Figure: 1 of 1 | Revision: A



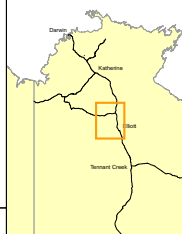
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Source: NTG data- Parks and reserves; Australian Government data- Railway, roads, coastal waters and marine parks

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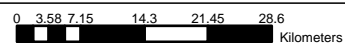


- Viewpoints
- ViewPoints Figure Grid
- Highway



### Viewpoints

Project: **Australia-Asia PowerLink**



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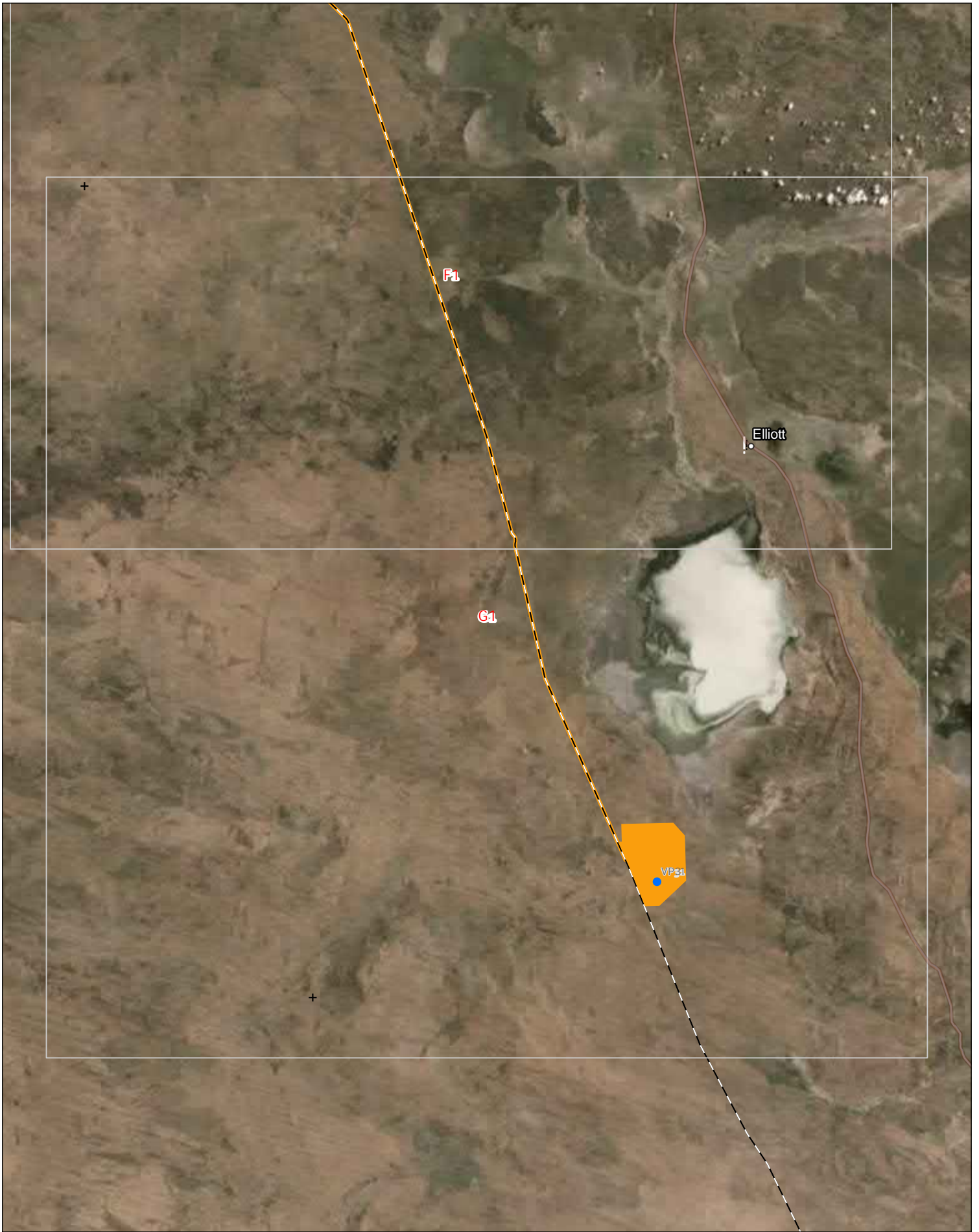
Date: 20/10/2022 Figure: 1 of 1 Revision: A



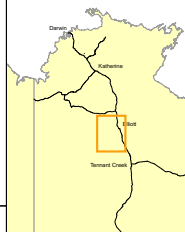
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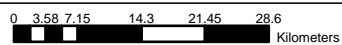


- Viewpoints
- ViewPoints Figure Grid
- Highway



### Viewpoints

Project: **Australia-Asia PowerLink**



Scale: 1:849,000

Datum: GDA2020

Date: 20/10/2022 | Figure: 1 of 1 | Revision: A



A4

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Appendix B

# Landscape simulations

# OVERHEAD TRANSMISSION LINE DESERT + SAVANNAH LANDSCAPE SIMULATIONS

 Prepared for Sun Cable 01 August 2022 | Version 01

# Contents

## DESERT LANDSCAPE SIMULATION

View from within the overhead transmission line easement	3
250m from the overhead transmission line (analytical view)	4
250m from the overhead transmission line	5
500m from the overhead transmission line (analytical view)	6
500m from the overhead transmission line	7
1km from the overhead transmission line (analytical view)	8
1km from the overhead transmission line	9
2km from the overhead transmission line (analytical view)	10
2km from the overhead transmission line	11
3km from the overhead transmission line (analytical view)	12
3km from the overhead transmission line	13

## SAVANNAH LANDSCAPE SIMULATION

View from within the overhead transmission line easement	14
250m from the overhead transmission line (analytical view)	15
250m from the overhead transmission line	16
500m from the overhead transmission line (analytical view)	17
500m from the overhead transmission line	18
1km from the overhead transmission line (analytical view)	19
2km from the overhead transmission line (analytical view)	20
3km from the overhead transmission line (analytical view)	21

Pole height	Pole span
56m	450m

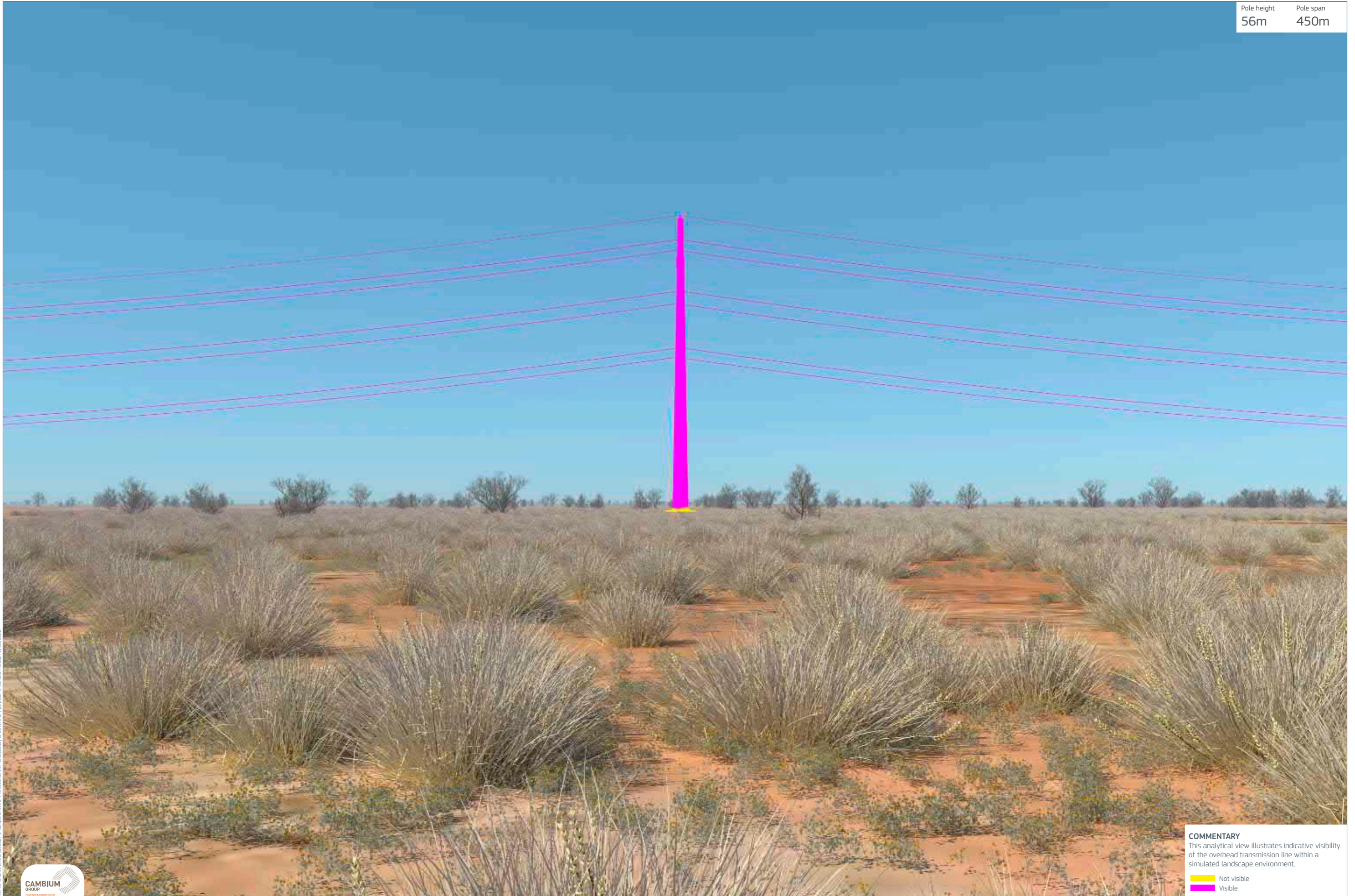


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Source: Sun Cable (2022).

Pole height	Pole span
56m	450m



**COMMENTARY**  
This analytical view illustrates indicative visibility of the overhead transmission line within a simulated landscape environment.

■ Not visible  
■ Visible

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Pole height	Pole span
56m	450m

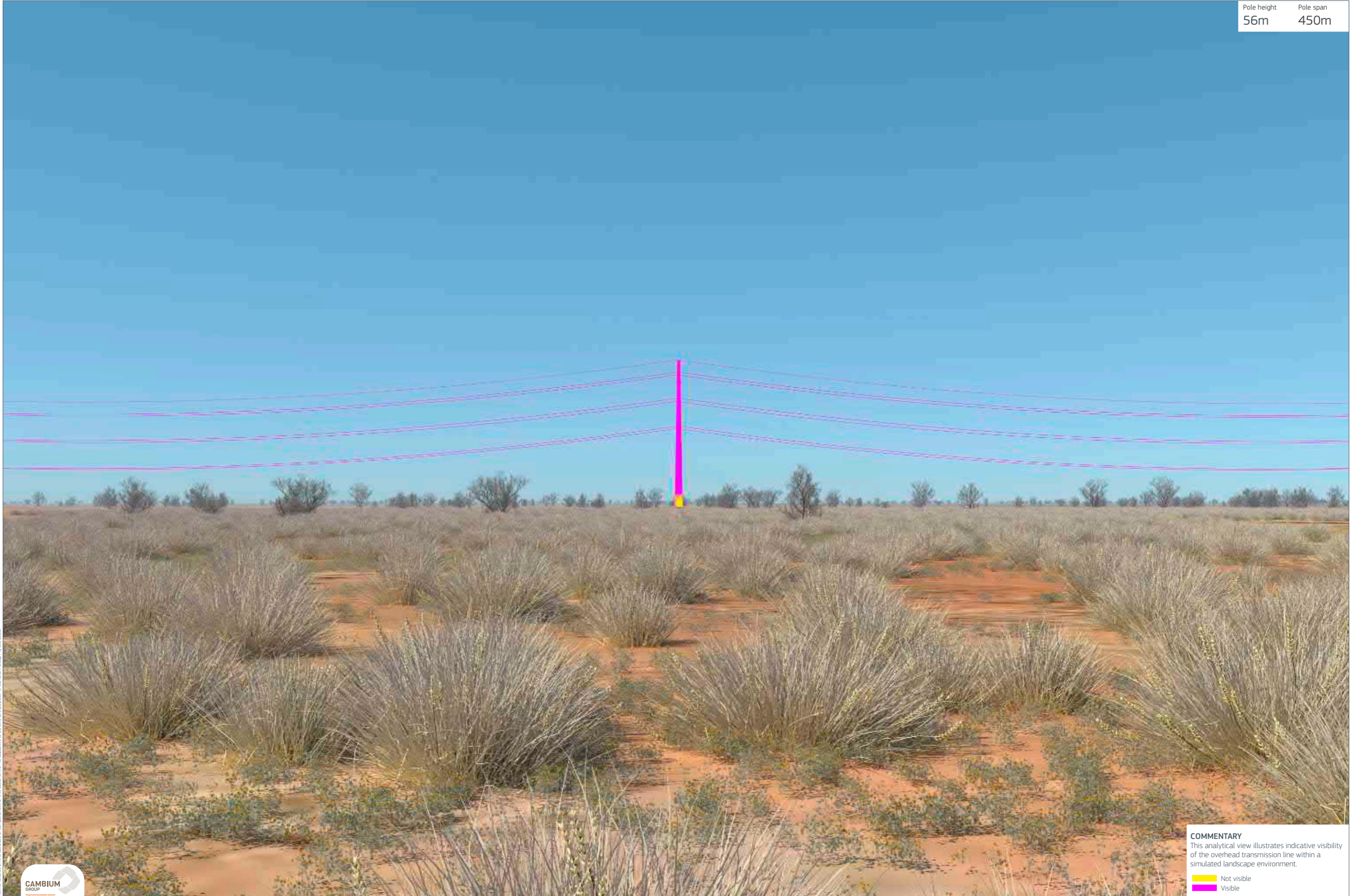


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Source: Sun Cable (2022).

Pole height	Pole span
56m	450m



**COMMENTARY**  
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Yellow	Not visible
Pink	Visible

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Source: Sun Cable (2022).

Pole height	Pole span
56m	450m

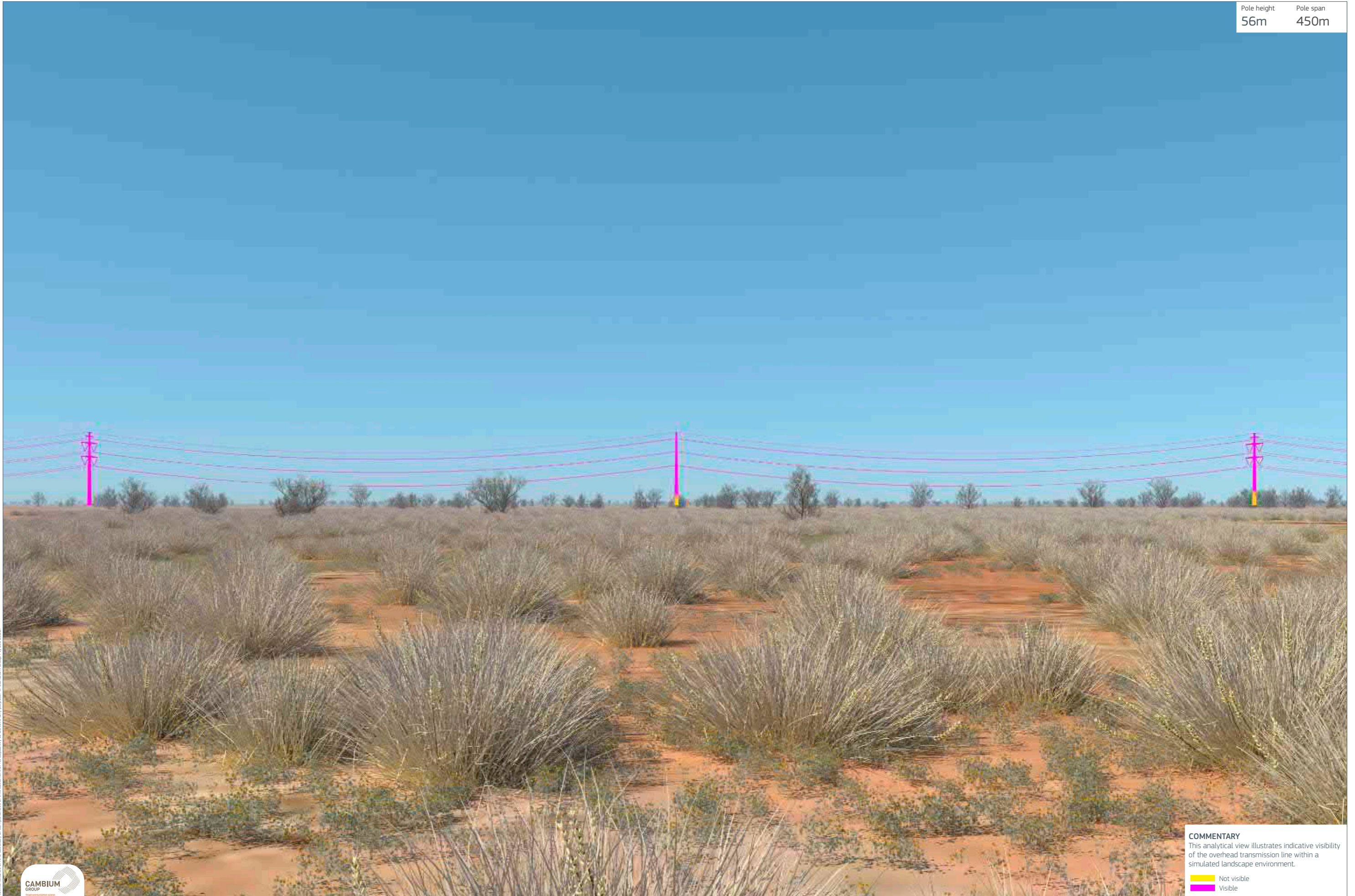


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Source: Sun Cable (2022).

Pole height	Pole span
56m	450m



**COMMENTARY**  
This analytical view illustrates indicative visibility of the overhead transmission line within a simulated landscape environment.

Not visible  
Visible

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Pole height	Pole span
56m	450m



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Source: Sun Cable (2022).

Pole height	Pole span
56m	450m



**COMMENTARY**  
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Yellow	Not visible
Pink	Visible

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Source: Sun Cable (2022).

Pole height	Pole span
56m	450m



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Source: Sun Cable (2022).

Pole height	Pole span
56m	450m



**COMMENTARY**  
This analytical view illustrates indicative visibility of the overhead transmission line within a simulated landscape environment.

Yellow	Not visible
Purple	Visible

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Pole height	Pole span
56m	450m

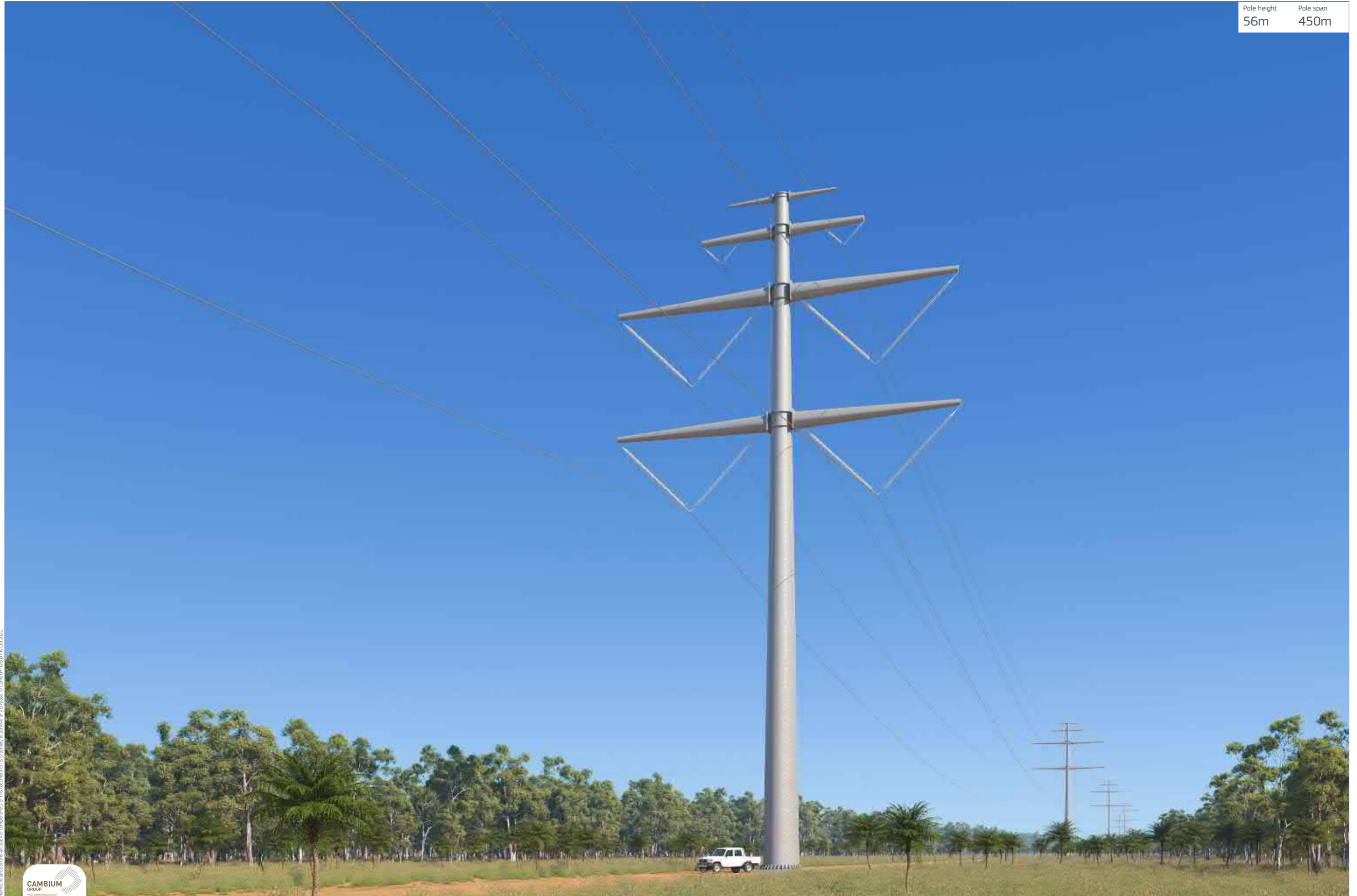


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Pole height	Pole span
56m	450m



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Source: Sun Cable (2022).

Pole height	Pole span
56m	450m



**COMMENTARY**  
This analytical view illustrates indicative visibility of the overhead transmission line within a simulated landscape environment.

Yellow	Not visible
Magenta	Visible

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Pole height	Pole span
56m	450m



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Source: Sun Cable (2022).

Pole height	Pole span
56m	450m



**COMMENTARY**  
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Yellow	Not visible
Purple	Visible

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Pole height	Pole span
56m	450m



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Pole height 56m  
Pole span 450m



**COMMENTARY**  
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■ Not visible  
■ Visible

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Source: Sun Cable (2022).

Pole height 56m  
Pole span 450m



**COMMENTARY**  
This analytical view illustrates indicative visibility of the overhead transmission line within a simulated landscape environment.

Yellow Not visible  
Purple Visible

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Pole height 56m  
Pole span 450m

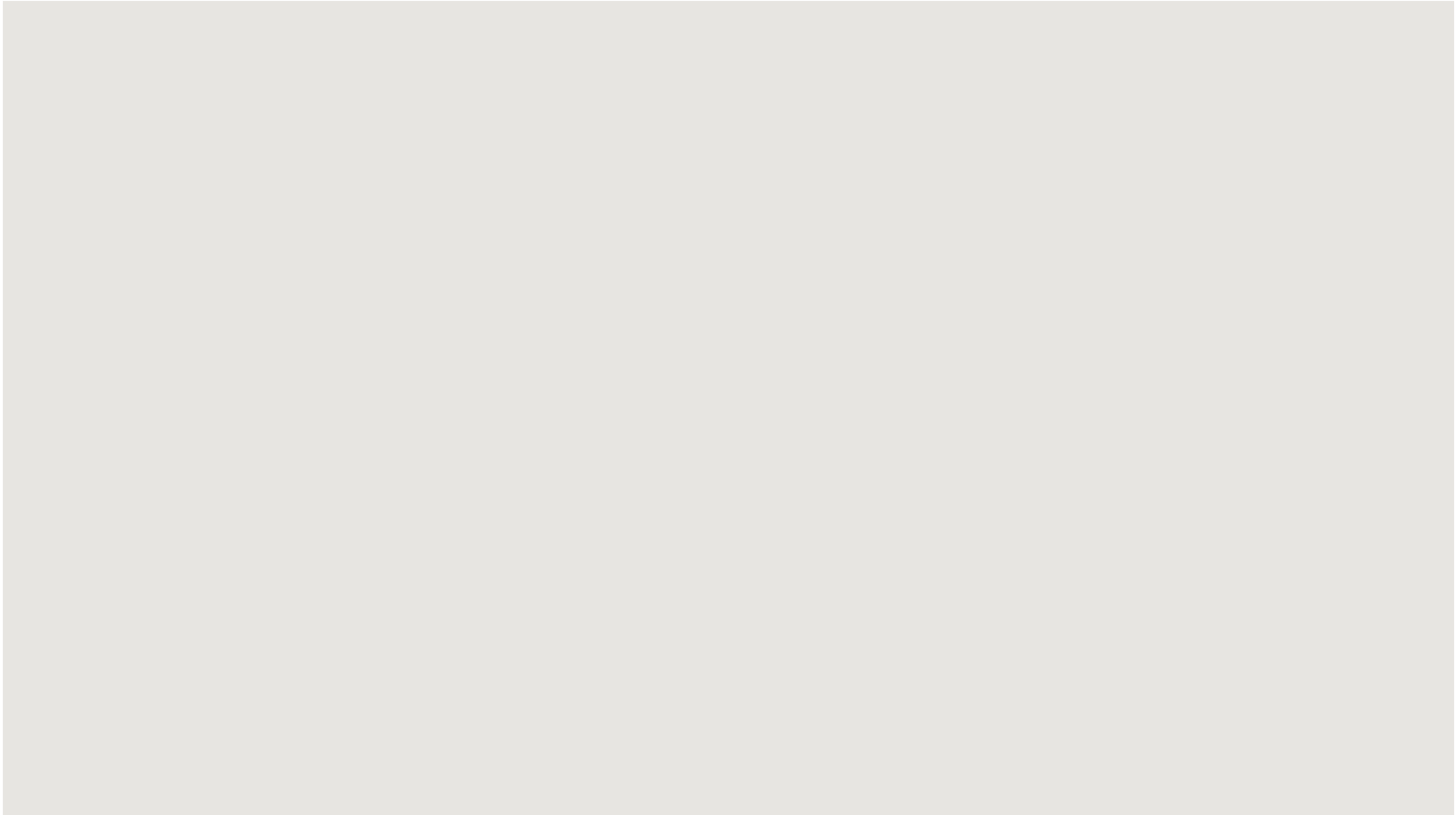


**COMMENTARY**  
This analytical view illustrates indicative visibility of the overhead transmission line within a simulated landscape environment.

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■ Visible

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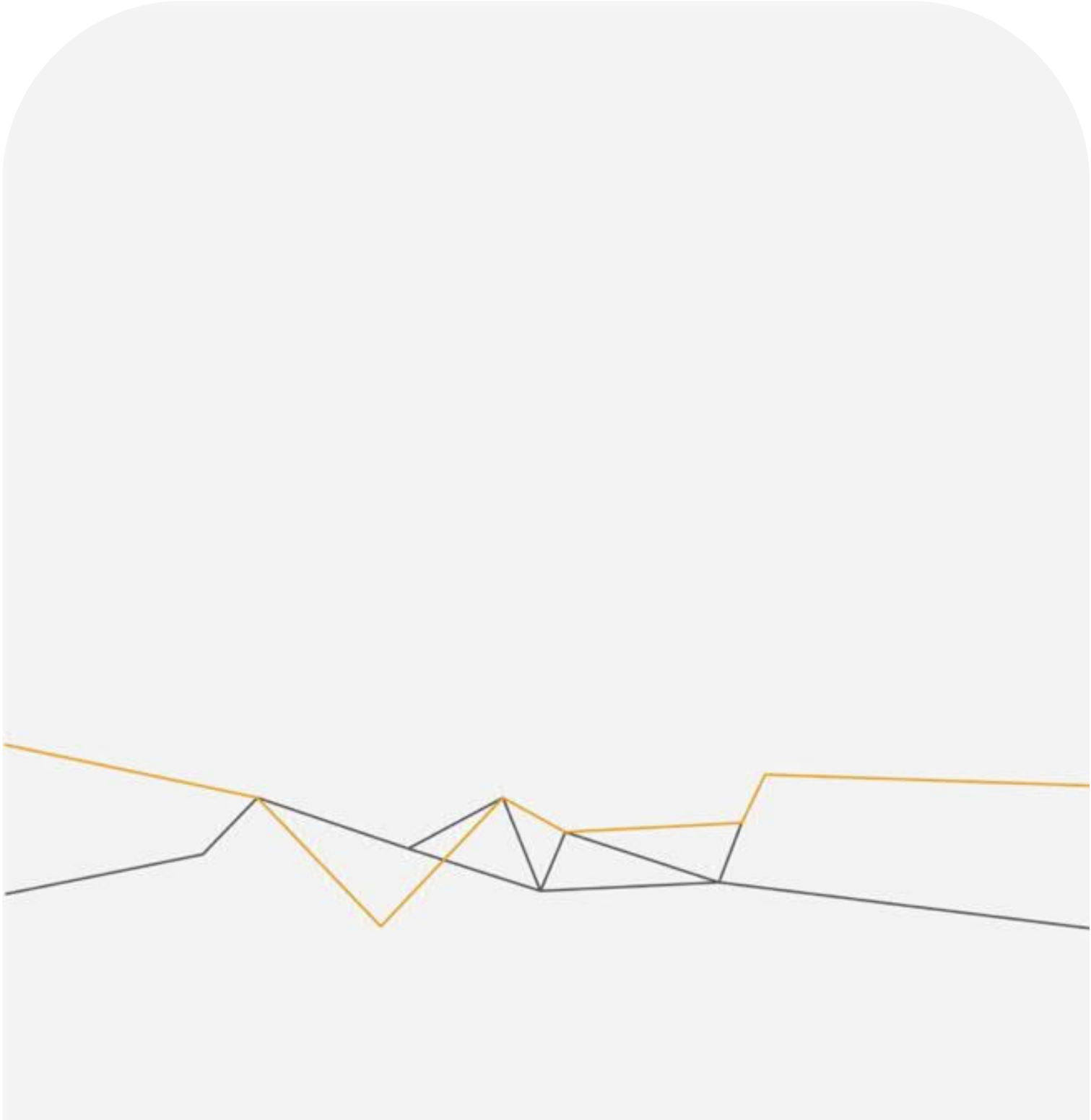
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