Executive Summary

AAP01-000-GEG-GGEN-00002

Approved Rev	Approver Position	Signature	Date
00	Mark Branson Chief Development Officer		24 Nov 2022
	Jonathan Kent Program Development Manager		24 Nov 2022

Document revision history and tracking

Document Preparation

Rev	Status	Date	Prepared by	Position	Reviewed by	Position
A	For Review	21 Nov 2022	Charlotte Baker	Environmental Scientist	Jonathan Kent	Program Development Manager
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B	For Approval	21 Nov 2022	Charlotte Baker	Environmental Scientist	Joe Sheridan	Development Manager
					Jonathan Kent	Program Development Manager
00	For Use	24 Nov 2022	Charlotte Baker	Environmental Scientist	Mark Branson	Chief Development Officer
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Revision history tracking record (Use after Rev 00)

Rev	Date	Description	Prepared by	Approved by

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ES1.1 Background

AAPowerLink Assets Australia Pty Ltd (the Proponent) submitted a Draft EIS to gain environmental approval under the *Environmental Protection Act 2019* (NT) and the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) for the components of Australia-Asia PowerLink Project (the Project) which will be located within the Northern Territory (NT) and the Commonwealth Marine Area beyond the NT's Coastal Waters. The Draft EIS was placed on public exhibition between 20 April and 15 July 2022. On 28 September 2022, the NT EPA provided a Direction to include additional information in a Supplement to the Draft EIS. This Supplement to the EIS (SEIS) has been prepared in response to the NT EPA Direction, issues raised during stakeholder consultation and project refinements since the original Draft EIS was submitted.

In preparing this SEIS, we acknowledge the traditional custodians throughout Australia and pay respect to their elders past and present. The Proponent is committed to ongoing engagement with stakeholders including Aboriginal groups and representative agencies, land holders, NT government regulators and the broader community to maximise the Project's positive impact on communities and people in the NT. The Proponent has worked with stakeholders to ensure that impacts to environmental, social and cultural values are avoided or minimised. Stakeholder engagement undertaken to inform the Draft EIS, the SEIS, Stakeholder Consultation Report (refer to Appendix 3.1), and Social Impact Management Plan (SIMP) (refer to Appendix 3.2) is detailed within Chapter 3 Stakeholder and Community Engagement. This includes details of how continual engagement over the life of the Project will be carried out. Where relevant, this SEIS contains details to address stakeholder feedback from engagement activities carried out to date, which is also summarised in Appendix 3.1.

The Proponent will continue to develop its relationship with the Northern Land Council (NLC) and Central Land Council (CLC) and negotiate voluntary Indigenous Land Use Agreements (ILUAs) to seek consent from Traditional Owners (TOs). In 2020, the Proponent entered an agreement with the NLC for the purpose of such negotiations. We have also entered into a costs agreement for the purpose of supporting the NLC to conduct consultation and engagement to seek consent for the Project.

ES1.2 Structure of document

The structure of this SEIS largely follows the structure of the Draft EIS but has been modified to address the specific content of the NT EPA's Direction. The following changes to the document structure have been made for efficiency:

- Chapter 2 – Project Refinements describes the changes to the Project since the submission of the Draft EIS, why the changes were necessary and how these changes have been assessed
- Stakeholder engagement, public consultation and potential social impacts are described in Chapter 3 – Stakeholder and Community Engagement, with the other related impacts under the Stakeholders and Communities environmental factor described in Chapter 10 – Amenity, Chapter 12 – Land Use and Transport and Chapter 14 – Human Health
- The Air Quality environmental factor is described in both Chapter 10 – Amenity and Chapter 14 – Human Health.

ES1.3 Project Refinements

Table 1 describes the updates to the Project description since the submission of the Draft EIS. These updates were made in response to an increased understanding of the physical environment, engineering, and design requirements and both spatial and environmental constraints. Where the project refinements have resulted in potential new or altered environmental risks, these have been reassessed in the relevant chapters. The vast majority of new or altered environmental risks were found to have a residual risk rating of 'minor.' Several remaining residual risks have a rating of 'moderate,' although these largely relate isolated components or stages of the Project, and do not change the Project's overall residual risk rating trend of minor.

Table 1: Summary of Project Refinements

Project Component	Draft EIS	Supplement to the Draft EIS	Rationale
Powell Creek Solar Precinct and Ancillary Infrastructure	Ancillary Infrastructure is located within the Solar Precinct footprint (12 000 ha) except for the Aerodrome and associated infrastructure as well as two Access Roads (244.5 ha). Estimated water demand: • Construction: approximately 1 500 ML/year • Operations: approximately 10 ML/year.	Ancillary Infrastructure (total of 134 ha at peak construction) will be located outside the 12 000 ha Solar Precinct area. The majority (124 ha) is temporary infrastructure required for construction only and 10 ha is permanent infrastructure. Minor amendments to the alignment of Access Roads and off shoot roads to Ancillary Infrastructure locations included. Estimated water demand: • Construction: up to approximately 1 860 ML/year (for a total of 8 040 ML over 4 to 4.5 years) • Operations: approximately 11.4 ML/year (increase of 1.4 ML/year for a total of 798 ML).	Space constraints have necessitated this change. A review of solar panel technology indicates full area of the Solar Precinct may be required for panel installation and associated electrical infrastructure. Ancillary Infrastructure required to move outside the Solar Precinct boundary during the construction period. Access Road alignment amendments have been optimized to avoid sensitive areas and landscape features. Increase in water demand estimates driven by improved understanding of project requirements during construction/operational phases.
Overhead Transmission Line (OHTL) Corridor	OHTL Corridor deviation options at Katherine, Pine Creek and Adelaide River. OHTL easement width of 60 m. Cleared pad area of 12 m x 6 m around each pole structure during the operational phase. Micro-siting approach proposed to address uncertainties in site conditions and demonstrate commitment to mitigating impacts once detailed design available. The Draft EIS noted that the height of vegetation within the corridor would be	OHTL Corridor alternatives assessment undertaken with preferred option identified for each alternative. The preferred OHTL Route footprint is now referred to in this SEIS as the OHTL Corridor. Variable corridor (easement) widths between 30-60 m have been identified in certain sections (see Appendix 2.2 for detailed OHTL mapping). Cleared Structure Pad Area of 16 m x 16 m under each structure for foundations will be retained during the operational phase.	Ongoing route refinement, environmental and technical interaction studies and constraints mapping has informed the preferred and more optimal OHTL Corridor footprint. The increase in structure pad area retained during the operational phase is related to the potential increase in the height of OHTL structures.

Project Component	Draft EIS	Supplement to the Draft EIS	Rationale
	based on the potential for interference with the conductors.	Micro-siting approach to structure placement has been developed into a more comprehensive Constraints Planning and Field Development Procedure (see Appendix 4.1). Vegetation management to maintain low vegetation cover (below approximately 6 m in height) within an approximate 38 m wide corridor (or appropriate to OHTL sizing) will support optimal electrical safety clearances during the operational phase (see Appendix 5.4).	
OHTL structures	Steel monopole structures between 44 – 56 m tall inclusive of Metallic Earth Return (MER). Steel lattice structures of similar dimensions contemplated where tensioning is required to account for directional changes. Approximately 2 500 structures.	OHTL structures (inclusive of steel monopoles and steel lattice structures) up to 60 m tall. Approximately 2 785 structures.	Increased understanding of topography, route features and system design indicates structures heights up to 60 m may be required to achieve optimal spans. Curvature of the revised OHTL Corridor requires an increase in number of structures. MER retained for optionality despite preference for Electrodes. Span distance remains at 200 m to 450 m, as described in the Draft EIS.
OHTL fibre optic cable	Trenched fibre optic cable within temporary disturbance footprint to a depth of approximately 1.2 m for the entire OHTL Corridor. Alternative option to string fibre optic cable on OHTL structures.	Trenching of fibre optic cable along the OHTL Corridor is no longer proposed. Fibre optic cable to be strung on OHTL structures, if required.	Optionality retained for fibre optic cable strung along OHTL structures for increased transmission system control, subject to detailed design.
Electrodes	The Project may install up to two Electrodes connected to the Voltage Source Converter (VSC) via an overhead connection line (spatial requirements not provided).	A preferred 2 ha site has been identified within both original areas of interest. The High Voltage Direct Current (HVDC) Electrode Line requires a corridor of approximately 30 m wide. An estimated	Based on further engineering and environmental studies, approximate locations for each Electrode and HVDC Electrode Line have been refined.

Project Component	Draft EIS	Supplement to the Draft EIS	Rationale
	Extensive areas of interest identified for the electrode locations approximately 8 km away from the VSCs at both the Powell Creek Solar Precinct and the Darwin Converter Site (DCS). Each site will have a footprint of approximately 2 ha each selected within the areas of interest.	10 m wide disturbance footprint will be required to construct the HVDC Electrode Line. The height of these structures is approximately 12 m. The DCS Electrode will prioritise an alignment adjacent to the existing road to minimise disturbance. An Access Track will be situated inside the Powell Creek Electrode Line corridor where the existing pastoral Access Track does not suffice, subject to the application of the Constraints Planning and Field Development Procedure (Appendix 4.1).	
Cable Transition Facilities – Underground Cable Corridor	Total Underground Cable Corridor width approximately 70 m based on two cable systems. Lateral spacing between underground cables in the Underground Cable Corridor approximately 2 m apart, with indicative total trench width of 9.5 m.	Total Underground Cable Corridor width has been reduced to approximately 63 m for two cable systems. Lateral spacing between underground cables in the Underground Cable Corridor will increase to approximately 4 m apart, within an approximate trench width of 13.5 m.	Refined understanding of construction and operational requirements has increased trench width but reduced total corridor width.
Subsea Cable System - Route	Two route options (A and B) under consideration.	Further investigations have identified route B (southern route) as the preferred Subsea Cable System alignment. Minor re-alignment of route B has occurred based on further marine and engineering studies.	Route B realignment allows for increased spacing of bends where the cable system will cross existing infrastructure (pipelines). A marine survey was completed from Gunn Point beach along Route B for ~60 km to where Route B adjoins the original cable system route.

Project Component	Draft EIS	Supplement to the Draft EIS	Rationale
Subsea Cable System – Sediment removal during construction/operations.	Pre-sweeping is described in the Draft EIS and notes the potential use of a Mass Flow Excavator (MFE) or cutter-suction dredger. The potential for spoil disposal at sea of sand waves (marine sediment) removed during cable installation activities was identified however, no additional information provided to enable assessment. Information on maintenance activities during operations phase not provided at the time of the Draft EIS.	For the construction phase, marine sediment disposal at sea will be required. During the operational phase, minor sediment removal may be required to be undertaken to rectify faults in the cable. However, the quantities of sediment and methods of sediment removal and placement which would be required during operations are unlikely to trigger consideration of the NAGD or the Guidelines for the Environmental Assessment of Marine Dredging in the Northern Territory (NT EPA, 2013). Four potential spoil disposal grounds have been identified for the disposal of approximately 200 000 m3 of marine sediment material	Marine geotechnical/geophysical side-scan sonar studies carried out since the Draft EIS have confirmed the need to remove areas with elevated sandwaves to enable safe installation of the cable to a design depth of 0 to 3 m below seabed. Additional information on the locations and volumes of marine sediment being removed and disposed during construction is now available for assessment. The material has been characterized as non-deleterious and appropriate for disposal.
Subsea Cable System – Fibre optic cable	Not provided.	Fibre optic cable will be bundled within each cable within Australian waters (no visual or additional physical impact).	Inclusion of fibre optic cable will improve nearshore fault detection and monitoring of Subsea Cable System performance and fault detection.

ES1.4 Consultation

In 2021, consultants True North Strategic Communication, prepared a Stakeholder Engagement Strategy and scoping study for the Project outlining consultation methods and key stakeholders likely to be impacted by, and/or interested in, the Project. This strategy informed the planning and roll-out of a Social Impact Assessment (SIA) and engagement schedule that laid the foundation for the development of a preliminary SIMP and Stakeholder Consultation Report. These reports were submitted to the NT EPA in April 2022 as part of the Draft EIS. The Stakeholder Engagement Strategy has been operationalised via public consultation and direct engagement with key stakeholders. To support engagement activities, partnerships with peak industry groups such as the NT Chamber of Commerce and the Northern Territory Indigenous Business Network were also established to leverage off existing networks across the project footprint.

In early 2022, utilising the baseline SIA, the Stakeholder Consultation Report and the preliminary SIMP as a foundational platform, the Proponent launched an extensive Draft EIS consultation campaign. The program included proactive stakeholder mapping in the project footprint and careful consideration of how to effectively engage with each stakeholder group. Communication materials were developed to support stakeholder engagement and education which considered the needs of culturally and linguistically diverse communities.

Leading up to, and during, the NT EPA's statutory exhibition period, the Proponent proactively engaged with stakeholders to deliver updates and field questions about the Draft EIS. A robust EIS consultation program was rolled out in the social areas of influence via targeted engagement. As part of ongoing engagement across the NT, the Proponent also met regularly with the Northern Land Council and Aboriginal Affairs and Protection Agency, the Aboriginal groups they represent and other Aboriginal stakeholders to prioritise information briefings in select areas across the project footprint. The Stakeholder Engagement Strategy will continue to evolve and focus on establishing deeper connections with the communities and stakeholder groups that may be impacted by project activities during both the construction and operational phases.

ES1.5 Impacts and risk profile

The Proponent has undertaken a number of environmental studies to further deepen the understanding of the environment. The updated studies and community engagement identified new environmental values and concerns. These, along with updated understanding of project activities detailed in Chapter 2 Project Refinement, have informed an updated impact assessment for each environmental factor. The key changes to each environmental factor are summarised in Table 2.

Table 2: Environmental Factor Updates since Draft EIS submitted

Environmental Factor	Updated Environmental Values & Reports	Community Concerns	Additional Impacts identified (including from Project Refinements)	Additional Mitigation Measures
Stakeholders and Communities Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians.	• Updated Stakeholder Consultation Report (Appendix 3.1) • Updated Social Impact Management Plan (Appendix 3.2)	Recreational value of Shoal Bay. Impacts from accommodation of workforce on availability of tourism accommodation in region. Lack of community consultation on the Project. Considerations to be included in the Social Impact Management Plan and Territory Benefit Plan. Impacts on recreational fishers.	• Reduced amenity from congestion on the roads and delays with project traffic. • Deaths, injuries, or disruptions to recreational traffic on the harbour during trenching of cables. • Reduced social, cultural, recreational, and ecological values of Darwin Harbour due to large-scale changes to land and sea use.	Development of a Stakeholder Engagement Strategy. Updated Social Impact Management Plan (Appendix 3.2) Local Workforce Strategy (under development) Regional Aboriginal Legacy Strategy (under development)
Terrestrial Environmental Quality Protect the quality and integrity of land and soils so that environmental values are supported and maintained.	Identification of Per and Poly-fluoroalkyl substances (PFAS) contamination surrounding Katherine/Tindal RAAF base.	None raised.	Spread of contaminated PFAS soil or sediment outside of PFAS Management Area during site preparation and earthwork construction activities. Soil drying during the limited operational periods of the Electrode.	Avoidance of areas with PFAS contamination where possible. PFAS management measures to be included in the Erosion and Sediment Control Plan. Monitoring of soil moisture content at electrode sites to inform adaptive management.
Terrestrial Ecosystems Protect terrestrial habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.	• Supplementary Ecology Report - Part 1 - Threatened Species (Appendix 5.1)	Impacts to threatened species, completeness of desktop mapping and survey data and degree of remaining uncertainty. Fauna mortality from collisions with OHTL	The impacts identified are the same as assessed in the Draft EIS, however, additional threatened flora and fauna were assessed (as identified in the NT EPA direction and identified	Develop and implement a Flora and Fauna Management Plan with a specific section to address any risk to Avian species and Greater Bilby which will include: • species specific mitigation measures

Environmental Factor	Updated Environmental Values & Reports	Community Concerns	Additional Impacts identified (including from Project Refinements)	Additional Mitigation Measures
	• Supplementary Ecology Report - Part 2 (Appendix 5.2) • Weed Management Plan (Revised) (Appendix 5.3) • OHTL Vegetation Management Framework (Appendix 5.4) • Memorandum: Riparian Vegetation Assessment (Appendix 5.5)	Impacts of light spill on fauna behaviour Potential for the lake effect due to proximity to Lake Woods Considerations for management plans including offsetting Potential to attract pest species or increase weed populations. Indirect impacts to Groundwater Dependent Ecosystems.	in Appendix 5.1 and 5.2 of the SEIS).	• site inductions, • reduced vehicle speeds • restrictions on vehicle movements at night • clearance and reinstatement plans • compliance with light pollution guidelines
Hydrology Protect the hydrological regimes of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.	Groundwater assessment of the Solar Precinct (Appendix 6.1) Identification of PFAS contamination surrounding Katherine/Tindal RAAF base.	Whether flood modelling has taken into consideration climate change increasing frequency of extreme weather events. Potential impacts on the swamp south-west of the DCS. Potential for groundwater extraction at the Solar Precinct to impact on adjacent groundwater users.	Increased PFAS contamination from run off or use of contaminated surface or groundwaters.	Erosion and Sediment Control Plans in accordance with International Erosion Control Association (IECA) standards. Monitoring of reinstatement areas with rectification actions as required. Groundwater investigation and management plan for Solar Precinct.
Aquatic Ecosystems Protect aquatic habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.	Groundwater assessment of the Solar Precinct (Appendix 6.1) Supplementary Ecology Report (Appendix 5.1 and Appendix 5.2) Riparian Vegetation Assessment (Appendix 5.4)	Potential impacts on groundwater dependent ecosystems. Accounting for current rate of erosion especially near coastal locations.	No additional impacts identified.	Hazardous Substances Management Plan in accordance with Australian Standards. Monitoring for leak and spill detection. Culverts installed in accordance with Austroads Standards.

Environmental Factor	Updated Environmental Values & Reports	Community Concerns	Additional Impacts identified (including from Project Refinements)	Additional Mitigation Measures
				No waste stored within 200 m of drainage lines. Span Katherine and Tindal Creek to avoid disturbing PFAS contaminated sediments.
Marine Environmental Quality Protect the quality and productivity of water, sediment and biota so that environmental values are maintained.	• Marine Cable Burial Risk Assessment (CONFIDENTIAL) (Appendix 8.1) • Guardian Geomatics Interim Report (CONFIDENTIAL) (Appendix 8.2) • Sediment Sampling and Analysis Plan Implementation Report (Appendix 8.3) • Sediment Sampling and Analysis Plan (CONFIDENTIAL) (Appendix 8.4) • Memorandum – Benthic Video Footage Analysis (Appendix 9.1) • Draft EIS Appendix Z – Cable Route Survey (CONFIDENTIAL) • Chapter 3 of Sun Cable Influence Study: The interaction of the	Selection of a single Subsea Cable System route (noting route A coincides with a potential, long term, dredged material disposal grounds). Risk of cable burial in tidal areas. Available information on marine sediments. Use of turbidity as a proxy for total suspended solids in the Draft EIS. Completeness of geomorphic features mapping. Source of sampling and survey data. Impact of scheduled disturbance and tidal influence on marine species.	• Re-suspension of contaminated sediments via dredging • Contamination of Potential Spoil Grounds.	Development of the Marine Environment Management Plan which details adaptive management approach and align with all relevant guidelines and standards. Ensure no contaminated sediments are disturbed during dredging.

Environmental Factor	Updated Environmental Values & Reports	Community Concerns	Additional Impacts identified (including from Project Refinements)	Additional Mitigation Measures
	AAPowerLink HVDC cable systems with the surrounding environment has been assessed (CONFIDENTIAL).			
Marine Ecosystems Protect marine habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.	• Memorandum – Benthic Video Footage Analysis (Appendix 9.1) • (Marine Sediment) Sampling Analysis Plan Implementation Report (Appendix 8.3) • Potential Dredging and Offshore Spoil Disposal – Draft Sediment Sampling and Analysis Plan CONFIDENTIAL (Appendix 8.5) • Sun Cable Influence Study: The interaction of the AAPowerLink HVDC cable systems with the surrounding environment has been assessed – CONFIDENTIAL.	Require an assessment for whole of environment impacts within the Commonwealth Marine Area. Status of the Marine Environment Management Plan Impacts on marine species and ecosystems: • Pygmy blue whale • Whale shark • Flatback turtle • Australian snubfin dolphin • Indo-Pacific bottlenose dolphin • Indo-Pacific humpback dolphin • Hawksbill turtle • Shoal bay ecosystem • Winghead shark Potential impacts on Key Ecological Features of the Ocean Shoals Marine Park.	• Mortality or impaired function to benthos and fish due to smothering as a result of increased sedimentation • Changes to benthic communities due to increase of temperature within the sediments. • Gradual change in habitat/benthic community as a result of disposal sediment dredged that is of a different sediment type to potential spoil disposal ground (i.e., muddy sand onto a fine sand or gravelly sand areas) • Changes to marine fauna behaviour due to noise and light disturbance during sandwave removal and spoil disposal	Development of the Marine Environment Management Plan which details adaptive management approach and align with all relevant guidelines and standards. Ensure no contaminated sediments are disturbed during dredging. Selection of route B to avoid potential spoil disposal grounds. North Marine Parks Network Management Plan and National Light Pollution Guidelines for Wildlife will be adhered to during construction of the Subsea Cable System. During dredging and deposition, a fauna spotter will be utilised to minimise any harm to fauna and to conduct visual inspections of the works aiming to limit environmental impact. Sandwaves proposed to be dredged and potential spoil disposal grounds are of similar grainsize where possible.

Environmental Factor	Updated Environmental Values & Reports	Community Concerns	Additional Impacts identified (including from Project Refinements)	Additional Mitigation Measures
		Fauna strike & process for management of fauna death Electromagnetic and thermal radiation from Subsea Cable System. Definition of high value habitat and benthic habitat. Secondary impacts from loss of primary producers as a result of turbidity from cable laying. Timing of Subsea Cable System burial Supporting data for impact assessment.		The Subsea Cable System will be buried 0.5 – 3 m below the seabed, decreasing the effects of EMF and surface temperature of maximum 25ºC.
Amenity Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians. Protect air quality and minimise emissions and their impact so that environmental values are maintained.	• Landscape and Visual Amenity Impact Assessment (Appendix 10.1).	Visual amenity impacts on specific receptors: • Murrumujuk foreshore • Lambell's Lagoon • Elizabeth Valley Road, Noonamah • Averly Road, Noonamah • Herbert • Noonamah Ridge Development • Murrumujuk township and foreshore	• Decreased visual amenity to existing residences and tourism operations from OHTL post construction • Property devaluation resulting from a result of visual amenity impacts from OHTL post construction • Increased noise emissions reducing the amenity to residences and existing sensitive land uses	Avoid siting of infrastructure in sensitive areas. Siting of OHTL alongside existing linear infrastructure. Consultation with project stakeholders and development of a Grievance and Complaints Policy. Development of a Trigger, Action Response Plan (TARP) for air quality to detail adaptive management triggers and techniques.

Environmental Factor	Updated Environmental Values & Reports	Community Concerns	Additional Impacts identified (including from Project Refinements)	Additional Mitigation Measures
		• Tourism operators (including the Ghan Railway). Property devaluation as a result of reduced visual amenity. Desire for OHTL to be undergrounded to reduce visual impacts. Visual impact of lighting on OHTL structures. Noise impacts on other marine users from subsea cable laying. Low level buzzing noise from OHTL.	• Increased noise levels from Subsea Cable System installation activities impacting on other marine users.	Subsea Cable System avoid busy marine areas such as Darwin Harbour. Cable laying activities to process at average speed of 500 m per hour to limit duration of noise impacts in a given area.
Atmospheric Processes Minimise greenhouse gas emissions so as to contribute to the NT Government's target of achieving net zero greenhouse gas (GHG) emissions by 2050.	• No material changes (consistent with Draft EIS).	Potential for project energy to be provided to fossil fuel power generators. Use of life of project GHG reduction to offset initial GHG emissions during construction. Climate change adaptation.	Although additional disturbance footprint has been identified, there are no material changes (consistent with Draft EIS).	No material changes (consistent with Draft EIS).
Land Use and Transport Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians.	• Landscape and Visual Amenity Impact Assessment (Appendix 10.1) • Identification of future land uses (Noonamah Ridge Residential Development,	Impacts on future land uses (including residential developments along OHTL). Potential impacts from marine transport on recreational and commercial fishing.	• Potential impacts of the project on future land uses. • Impacts from Electrodes on existing and proposed infrastructure. • Interference with aviation/flight paths and	Refer to amenity and human health chapters for risks relating to land use compatibility. Electrode design to comply with CIGRE guidelines.

Environmental Factor	Updated Environmental Values & Reports	Community Concerns	Additional Impacts identified (including from Project Refinements)	Additional Mitigation Measures
	Litchfield Sub-Regional Land Use Plan).		shipping channels (current and planned). • Reduced amenity from congestion on the roads and delays with project traffic.	Development of Traffic Management Plans (aviation and marine transport).
Culture and Heritage Protect Sacred Sites, culture and heritage.	• Desktop Cultural Heritage Survey (Appendix 13.1). • Updated Stakeholder Consultation Report (Appendix 3.1). • Updated Social Impact Management Plan (Appendix 3.2).	Impacts of vibration archaeological and cultural heritage sites. Considerations to be included in Cultural Heritage Management Plan. Impacts on subsea heritage. Scope of existing AAPA certificate applications. Potential impacts to heritage artefacts around Lake Woods.	There are no additional impacts (impacts from Draft EIS have been assessed over additional footprint).	Development of a Cultural Heritage Management Plan in consultation with Traditional Owners and the NT Heritage Branch. Development of an Unexpected Archaeological or Heritage Finds Procedure. Development of a Discovery of Human Remains Procedure.
Human Health Protect the health of the Northern Territory population	• No material changes (consistent with Draft EIS).	Potential impacts as a result of: • Electromagnetic fields (EMF) • Electromagnetic Interference (EMI) preventing effective communications for emergency services • Increased demand on local emergency services • OHTL posing a physical barrier to aircraft	• Elevated NO2 and PM10 dust above assessment criteria levels outside the project footprint • EMF impacting human health including to children, elderly and vulnerable groups • Impacts on emergency services from EMI with UHF and other telecommunications	Development of a Trigger, Action Response Plan for air quality to detail adaptive management triggers and techniques. Vertical and horizontal separation distances of OHTL from receptors to prevent impacts from EMI and EMF. Memorandum of Understanding to be developed with local emergency services regarding medical evacuation.

Environmental Factor	Updated Environmental Values & Reports	Community Concerns	Additional Impacts identified (including from Project Refinements)	Additional Mitigation Measures
		• Increasing incident of lightning strike (as well as potential for igniting bushfires) • Health impacts as a result of noise from OHTL operation • Health impacts due to dust from traffic.	• Impacts on emergency services from increased demand on services • OHTL posing physical barriers to aircraft including emergency services aircraft and those responding to bushfire • Increased risk of bushfires because of OHTL structures increasing lightning strike • Cyclones damaging or knocking down OHTL structures and creating a public safety risk • Low level humming or buzzing noise • Electrical current from electrodes passing through body.	Compliance with Civil Aviation Safety Authority (CASA) requirements for tall structures. Design to Australian Standards, including lightening and wind (cyclone) requirements. Design to International Electrotechnical Commission (IEC) standards and all applicable guidelines for electrical safety.
Matters of National Environmental Significance Matters protected under the *Environmental Protection Biodiversity and Conservation Act 1999*	• Additional studies have been undertaken including aerial and ground surveys for listed threatened species including greater bilby, yellow-spotted monitor, Gouldian finch, Grey Falcon and Darwin cycad.	Whether the MNES assessment took into consideration the project amendments.	The SEIS assessed impacts on all EPBC listed species identified in chapters 5, 7 and 9 as well as the whole of the Commonwealth Marine Environment.	Refer to Chapter 5, 7 and Chapter 9.

Environmental Factor	Updated Environmental Values & Reports	Community Concerns	Additional Impacts identified (including from Project Refinements)	Additional Mitigation Measures
	• Refer to reports attached to chapters 5, 7, and 9			

ES1.6 Conclusion

Table 3 identifies potential impacts with a residual risk ranking above 'minor' for individual stages and/or components of the Project due to the proposed project refinements as assessed within this SEIS. All other potential project risks assessed within this SEIS have objectively resulted in a 'minor' residual risk rating.

All of these individual project refinement risks identified in Table 3 were assessed conservatively in order to arrive at a residual risk ranking of 'moderate.' It is important to note that no residual risks were allocated a 'high' risk rating throughout this SEIS assessment.

Some of the 'moderate' residual risk ratings identified in Table 3 may be re-allocated to 'minor' in the future as detailed design of the Project continues. However, it is not foreseen that such future detailed design would elevate the status of these residual risks: i.e., they would not become 'high.'

Many of these 'moderate' level risks identified in Table 3 also relate to the construction stage of the Project, and so the reach of their impact will therefore be limited within the Project's overall life cycle. Residual risks related to both the Project's construction and operation may also be subject to further mitigation actions resulting in a lowering of the rating.

Table 3: Residual Risk above minor

Impact	**Residual Risk Ranking and Project Component**
Construction	
Terrestrial ecosystems **Introduction and spread of weeds and pests**	**Moderate** All land components
Terrestrial ecosystems **Loss of vegetation and habitat**	**Moderate** Solar Precinct and Ancillary Infrastructure and OHTL preferred Route at Adelaide River
Hydrological processes **Alteration to surface water flows in watercourses and wetlands caused by land development**	**Moderate** Solar Precinct and Ancillary Infrastructure
Hydrological processes **Changes to groundwater levels associated with extraction from the Montejinni Limestone aquifer**	**Moderate** Solar Precinct and Ancillary Infrastructure
Hydrological processes **Changes to groundwater levels associated with recharge of the Montejinni Limestone aquifer**	**Moderate** Solar Precinct and Ancillary Infrastructure
Culture and heritage **Direct impact to heritage features**	**Moderate** OHTL Corridor
Marine environmental quality	**Moderate** Subsea Cable System

Impact	Residual Risk Ranking and Project Component
Sediment re-suspension in the water column caused by cable burial via mass flow-excavator and dredging (i.e., increased turbidity)	
Marine ecosystems **Habitat degradation due to elevated turbidity in marine waters as a result of increased suspended sediment concentrations during sandwave removal and spoil disposal**	**Moderate** Subsea Cable System
Marine ecosystems **Changes to marine fauna behaviour due to noise and light disturbance during sandwave removal and spoil disposal**	**Moderate** Subsea Cable System
Operation	
Terrestrial ecosystems **Introduction and spread of weeds and pests**	**Moderate** All land components
Terrestrial environmental quality **Soil drying from electro-osmosis resulting from electrode operation**	**Moderate** Powell Creek Electrode and DCS Electrode
Hydrological processes **Changes to groundwater levels associated with extraction from the Montejinni Limestone aquifer**	**Moderate** Solar Precinct and Ancillary Infrastructure
Hydrological processes **Changes to groundwater levels associated with recharge of the Montejinni Limestone aquifer**	**Moderate** Solar Precinct and Ancillary Infrastructure
Community and economy **Visual Impacts of the OHTL structures**	**Moderate** OHTL Corridor
Community and economy **Impacts from Electrodes on existing and proposed infrastructure**	**Minor - Moderate** DCS Electrode
Cultural Heritage **Direct or indirect impact to heritage features associated with operations and maintenance activities**	**Moderate** DCS Electrode
Human health **OHTL posing physical barriers to aircraft including emergency services aircraft and those responding to bushfire**	**Moderate** OHTL Corridor
Human health **Cyclones damaging or knocking down OHTL towers and creating a public safety risk**	**Moderate** OHTL Corridor
Human health **Electrical current from electrodes passing through body**	**Moderate** Powell Creek Electrode and DCS Electrode

Table 4 summarises the environmental objectives potentially impacted by the Project (identified in both the Draft EIS and SEIS) and the residual risk ratings according to NT EPA Environmental Objectives after all impacts and mitigation are considered with respect to the whole of the Project (i.e., as considered both within the Draft EIS and this SEIS). A full summary of the impact assessment for the whole Project can be found in Appendix 16.1 and Appendix 16.2.

The vast majority of these risk allocations by Environmental Objective are considered to be 'minor,' while three were conservatively assessed as having a 'moderate' residual risk. No residual risks were allocated a 'high' risk rating.

Once again, it is important to note that residual 'moderate' risks related to the Project may be subject to further mitigation actions and detailed design, potentially resulting in a lowering of the overall risk rating for each environmental objective.

Table 4: Summary of Whole of Project Residual Risk to Environmental Objectives

Environmental Objective	Minor	Moderate	High
Community and Economy Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians.	✓		
Terrestrial Environmental Quality Protect the quality and integrity of land and soils so that environmental values are supported and maintained.	✓		
Terrestrial Ecosystems Protect terrestrial habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.		✓	
Hydrology Protect the hydrological regimes of groundwater and surface water so that environmental values including ecological health, land uses and the welfare and amenity of people are maintained.	✓		
Aquatic Ecosystems Protect aquatic habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.	✓		
Marine Environmental Quality Protect the quality and productivity of water, sediment and biota so that environmental values are maintained.		✓	
Marine Ecosystems Protect marine habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning.	✓		
Air Quality Protect air quality and minimise emissions and their impact so that environmental values are maintained.	✓		
Atmospheric Processes Minimise greenhouse gas emissions so as to contribute to the NT Government's target of achieving net zero greenhouse gas emissions by 2050.	✓		

Environmental Objective	Minor	Moderate	High
Culture and Heritage Protect sacred sites, culture and heritage.	✓		
Human Health Protect the health of the Northern Territory population	✓		
Matters of National Environmental Significance Matters protected under the *Environmental Protection Biodiversity and Conservation Act 1999*		✓	

All residual impacts have mitigation measures implemented to reduce impacts to as low as reasonably practicable. Where uncertainty remains, monitoring and other management measures are proposed to better define the impact and allow for adaptive management.

In conclusion, it is considered that the 'moderate' residual risks presented in Table 3 and Table 4 do not change the project refinements' overall residual risk rating trend of 'minor,' (as assessed in this SEIS). Nor do they change the Project's overall residual risk rating trend of 'minor' (as assessed both within the Draft EIS and this SEIS) Overall, the Project can reduce impacts to as low as reasonably practicable and is able to meet the Environmental Objectives prescribed by the NT EPA.

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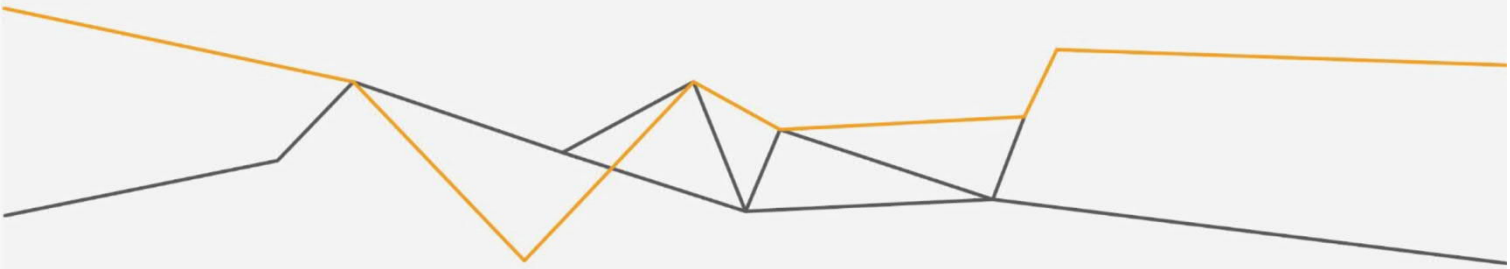

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