Australis Energy Ltd

WA Offshore Windfarm Project

Environmental Scoping Document

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ARUP

Contents

Environmental Scoping Document

Proposal name:	WA Offshore Windfarm Project
Proponent:	WA Offshore Windfarm Pty Ltd
Assessment number:	CMS 17976
Location:	5.5 km off the coast of Myalup, Western Australia
Local Government Area:	Shire of Harvey and State waters
Public review period:	Environmental Review Document – 6 weeks
EPBC reference no:	2021/8961

1 Introduction

The Environmental Protection Authority (EPA) has determined that the above proposal is to be assessed under Part IV of the *Environmental Protection Act 1986* (EP Act).

The purpose of the Environmental Scoping Document (ESD) is to define the form, content,timing and procedure of the environmental review, required by s. 40(3) of the EP Act.

WA Offshore Windfarm Pty Ltd (the proponent) has prepared this draft ESD according to the procedures in the EPA's *Procedures Manual*.

1.1 Form

The EPA requires that the form of the report on the environmental review required under s. 40 (Environmental Review Document, ERD) is according to the *Environmental ReviewDocument template*.

1.2 Content

The EPA requires that the environmental review include the content outlined in sections 2 to 6 of this ESD.

1.3 Timing

Table 1 sets out the timeline for the assessment of the proposal agreed between the EPAand the proponent.

Table 1 Assessment Timeline

Key assessment milestones	Completion Date
EPA approves Environmental Scoping Document	November 2021
Proponent submits first draft Environmental Review Document	1 February 2023
EPA and DAWE provide comment on first draft Environmental Review Document *(6 weeks from receipt of ERD)*	March 2023
Proponent submits revised draft Environmental Review Document *(6 weeks from receipt of EPA comments)*	April 2023
EPA authorises release of Environmental Review Document for public review *(2 weeks from EPA approval of ERD)*	May 2023
Proponent releases Environmental Review Document for public review	May 2023
Close of public review period (6 weeks)	June 2023
EPA provides Summary of Submissions, including submissions from DAWE *(3 weeks from close of public review period)*	July 2023
Proponent provides Response to Submissions *(6 weeks from receipt of EPA Summary of Submissions)*	August 2023
EPA and DAWE review the Response to Submissions *(4 weeks from receipt of Response to Submissions)*	September 2023
EPA prepares draft assessment report and completes assessment *(6 weeks from EPA accepting Response to Submissions)*	October 2023
EPA finalises Assessment Report (including two weeks consultationon draft conditions) and gives report to Minister. On its completion, the Assessment Report will be provided to the DAWE and the EPBC Act approval/refusal process will commence. *(6 weeks from completion of assessment)*	December 2023

1.4 Procedure

The EPA requires the proponent to undertake the environmental review according to the procedures in the *Administrative Procedures* and the *Procedures Manual*.

1.5 Assessment under the Bilateral Agreement (or accredited process)

The proposal has been referred to the Commonwealth government under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). A delegate of the Minster for the Environment determined the referral was a controlled action under the EPBC Act on 9 July 2021. The controlling provisions relevant to the proposed action are:

- Listed threated species and communities (sections 18 and 18A of the EPBC Act)
- Listed migratory species (sections 20 and 20A)
- Ramsar wetlands (sections 16 and 17B)
- Commonwealth marine areas (sections 23 and 24A).

Assessment of the relevant impacts of the proposed action for each controlling provision will be required to meet the requirements of the EPBC Act. This includes consideration of the relevant recover plans, conservation advice and conservation plan, and threat abatement plans.

The proposal is being assessed under the Bilateral Agreement between the Commonwealth of Australia and the State of Western Australia made under section 45 of the EPBC Act.

This ESD includes work required to be carried out and reported on in the ERD in relation to both offshore and onshore matters of national environmental significance (MNES). The ERD will also address the matters in Schedule 4 of the *Environment Protection and Biodiversity Conservation Regulations 2000*. MNES that may be impacted by the proposal (both directly within the development envelope, as well as consideration of the broader area) will be identified and the potential impacts on these matters addressed within each relevant preliminary environmental factor identified inTable 2. Proposed offsets to address significant residual impacts on MNES will also be discussed in the ERD.

Impacts on relevant state environmental values will also be considered in the ERD.

2 The Proposal

The subject of this ESD is the proposal by WA Offshore Windfarm Pty Ltd, a wholly owned subsidiary of UK based Australis Energy Ltd to develop the WA Offshore Windfarm Project ('the proposal'). The proposal will comprise up to 37 offshore wind turbine generators (WTGs) with a generation capacity of up to 300 MW, enough to power approximately 200,000 Western Australian homes. The size of individual WTGs is yet to be determined, with an anticipated capacity ranging between 8 MW (37 turbines) and 15 MW (20 turbines).

Key offshore proposed infrastructure assets (e.g. WTGs, inter-array cables, offshore substation) would be in Western Australian coastal waters only. However as seen in Figure 1, the development envelopment extends into Commonwealth waters. This is to account for (a) navigational aids that may be installed in Commonwealth waters (subject to further feasibility study), (b) ancillary construction equipment and vessels that may traverse into Commonwealth waters on occasion and (c) to identify broader environmental values of the area to inform impact assessments. As the proposal progresses, the siting of key infrastructure and ancillary equipment will be refined within the development envelope.

The onshore infrastructure includes the shore crossing, transmission pit, transmission lines, and onshore substation. The existing Western Power substation, at Kemerton (330 kV) has been investigated as the preferred connection point to the South West Interconnector System (SWIS).

The regional location of the proposal is shown in Figure 1 and the development envelope and indicative footprint of the proposal is delineated in Figure 2.

The key characteristics of the proposal are set out in Tables 2 and 3. The key proposal characteristics may change as a result of the findings of studies and investigations conducted and the application of the mitigation hierarchy by the proponent.

Table 2 Summary of the proposal

Proposal title	WA Offshore Windfarm Project
Proponent name	WA Offshore Windfarm Pty Ltd
Short description	The proposal will comprise up to 37 offshore wind turbine generators (WTGs) with supporting offshore and onshore electrical assets to transfer energy generated by the windfarm to the existing electricity network.

The EPA Referral (April 2021) referenced both an 8 MW and 15 MW array, but only provided an indicative footprint of 302 ha (194.3 ha offshore and 107.3 ha onshore) for the 15 MW array. However, the referral to the Department of Agriculture, Water and the Environment (DAWE) (May 2021) provided estimates for both the 15 MW and 8 MW arrays, as per Table 3.

These footprints are still indicative and will be updated during future stages as the design is refined. Once the footprint has been refined, a formal change to proposal (under section 43A of the EP Act) will be submitted.

Table 3 Location and proposed extent of physical and operational elements

Element	Location	Proposed extent (dependent on array size and subject to project design development)*
Physical elements		
Offshore wind turbine generators (WTGs) 8 MW array = 37 WTGs 15 MW array = 20 WTGs	Within offshore Development Envelope (Figure 2)	8 MW array = Approx. 10 ha 15 MW array = Approx. 4 ha
Offshore substation	Within offshore Development Envelope (Figure 2)	8 MW array = Approx. 6 ha 15 MW array = Approx. 2 ha
Offshore Inter-array cables	Within offshore Development Envelope (Figure 2)	8 MW array = Approx. 190 ha 15 MW array = Approx. 122 ha
Offshore Export cable(s)	Within offshore Development Envelope (Figure 2)	8 MW array = Approx. 90 ha 15 MW array = Approx. 74 ha
Transmission line corridor (includes transition pit)	Within onshore Development Envelope (Figure 2)	106 ha
Onshore substation	Within transmission line corridor (Figure 2)	7.5 ha
Operational elements		
Navigational aids for shipping and monitoring devices for wave, weather and environmental monitoring	Within offshore Development Envelope (Figure 2)	Navigational aides will traverse the Development Envelope during construction operation and maintenance with limited seabed disturbance.
Operations and maintenance vessels include: Crew transfer vessels (CTVs) Service operation vessels (SOVs)	Within offshore Development Envelope (Figure 2)	Various vessels will traverse the Development Envelope during construction, operations and maintenance, with no seabed disturbance.

* Proposed extents have been provided for both array options for consistency and completeness. The proposed extents listed in this table are indicative only and may change depending on future design phases of the proposal.

For the 8 MW array, the indicative footprint for the project is approximately 402 ha, consisting of 296 ha offshore and 106 ha onshore.

The onshore development envelope allows for a construction corridor, to enable construction vehicles to install transmission lines and other onshore infrastructure. Once construction is complete, the operation envelope would reduce significantly as the transmissions lines themselves are proposed to be overhead.

The key features of the proposal are expected to include:

Offshore components:

- WTGs - Up to 37 offshore WTGs, supported by monopile (or similar) foundations. The size of individual WTGs is yet to be determined, with an anticipated capacity ranging between 8 MW (37 turbines) and 15 MW (20 turbines).
- Inter-array cables - a network of buried or mechanically protected cables connecting the WTGs together and connecting the strings of WTGs to the offshore substation.
- An offshore substation – a structure supported by monopile (or similar) foundations to collect and transform the output to a higher voltage.
- Export cable(s) buried or mechanically protected transmitting electricity generated from the windfarm to the onshore substation.

Coastal and onshore assets:

- Shore crossing and transmission pit - connecting the marine cable(s) from the offshore substation to the onshore cable(s) that will run to the onshore substation.
- Onshore substation - which may include further transformers.
- Transmission line - supplying energy generated from windfarm to the South West Interconnected System (SWIS), with additional equipment as required, which may include battery storage for fast frequency response to provide stability to the grid.
- Temporary construction areas and access roads.

The ERD will outline all details of the proposal inclusive of operation, maintenance and decommissioning elements including but not limited to:

- The design and operational life of the proposed action
- Operation and maintenance of offshore infrastructure and facilities
- The use of ports and harbour facilities by maintenance vessels
- Use and maintenance of onshore buildings and plants, transmission infrastructure and access routes
- Ongoing environmental management and monitoring

Distance of turbines offshore and reasoning

Two options for WTGs are currently under consideration: a single row of twenty 15MW turbines to be located 5.5km from the shoreline, or a twin row array of thirty-seven 8MW turbines. The outer row located 5.5km from the shoreline and the inner row 2km inboard, located approximately 3.5km from shore. The current placement of the turbines is indicative and will be refined during the environmental review.

Several factors have been taken into consideration in the proposed placement of turbines related to distance, including appropriate water depth for construction and operations, maintenance and inspection, visual impact from the shoreline, multiple other environmental factors, and efficient cable connection distance to shore.

For the larger turbine array (15MW), the proposed water depths of 9-16m at the indicative locations, represents an effective water depth for the proposed construction methods. Further inboard the water depths are shallow for large vessels, making construction more difficult, whilst further outboard from shore the water is deeper, and construction costs will be higher and less efficient leading to higher electricity costs from the project. The proposed distance from shore is also manageable for operations and maintenance activities, with regular inspection and maintenance presenting a significant aspect of offshore windfarm development.

The proposed 5.5km distance from shore reduces visual impact from land and reduces impact on recreational activities (fishing and water sports), which are more prevalent near shore. It also creates an efficient distance for cable connections within the turbine array and to the shore crossing, and grid connection, again keeping generated electricity costs low. Similar distances to shore for early offshore windfarm turbines prevailed in north west Europe as the industry developed supply chains, again allowing electricity prices to be as competitive as possible. Distance between the turbines is a function of wake effects created by wind interference between the turbines. At present a five times rotor diameter has been applied as an indicative spacing. For the larger turbine the spacing is 1100m (representing 5 x 220m rotor diameter).

For the smaller 8MW turbine, more WTGs are required, and two rows are proposed in the array with the inner row located 2km inboard of the outer row, related to wake effects. These will be studied in detail during the environmental assessment, before a final recommendation of turbine size and location is determined, following stakeholder engagement and consultation.

Exclusion zones around turbines

Whilst standard dimensions of 500m (the maximum permissible under international law) during construction, major maintenance, possible extension and decommissioning are considered likely to be requested, all applications will be assessed on a case-by-case basis taking into account site specific conditions. For example, in the UK, regulations also provide for safety zones of 50m during the operational phase of an offshore windfarm's life. However, in practice, very few applicants in the UK have to date sought 'operational' safety zones. It is

anticipated that the WA project will be guided by the above approach which has been successfully employed in UK waters.

Site selection analysis and potential alternatives

The Site Selection methodology adopted for this project comprised a two phased approach:

- Phase 1 comprised of a multi criteria analysis (MCA) of the West Australian coastline using large scale data sets appropriate for state-wide analysis to determine the most favourable site
- Phase 2 comprised of a detailed assessment of the site selected using site specific data sets to address the sensitivities of the site

The following favourable characteristics should be noted for the selected site:

- Good wind resources associated with the site with mean wind speeds between 8.5 and 9.0 m/s at 150m elevation
- Water depths < 40m along most of the coastline
- Access to the electricity network, the South West Interconnector System (SWIS) at the Kemerton sub-station (330kV)
- Low population density within the surrounding area to mitigate the visual impact, together with a minimised impact on other environmental factors taken into consideration

Two alternative sites were selected for detailed review in combination with the chosen site located between Preston Beach and Binningup:

- Alternate Site 1 is located a few kilometres north of the preferred site to the north of Preston Beach. Although this area scored highly, shallow water depths close to and traversing the onshore electricity network connection through onshore environmentally sensitive receptors (including Lake Yalgorup and Lake Clifton) makes this site significantly less attractive for development
- Alternate Site 2 is located approximately 5km south of Yanchep. Although this area scores highly, the proximity to densely populated areas and shallow reef structures contributes towards this site being less attractive for an offshore windfarm development

Consultation with local residents on amenity

We will assess the potential impacts on landscape character and visual amenity associated with the construction and operation of the windfarm. We will consult with local landowners, community and Indigenous groups, as well as relevant Government authorities to understand and respond to their feedback and concerns regarding potential visual impacts.

As detailed above, the precise number and location of the turbines will be influenced by geotechnical and environmental matters and will also consider the

feedback received through a robust consultation process with stakeholders, including affected landowners and residents in the South West region.

This consultation process will include forming a Community Reference Group that will improve our understanding of the community's concerns and environmental priorities. The Community Reference Group will advise the project team on specific issues important to the community. This will help us to shape the project's design, policies and activities and ensure that we respond to stakeholder feedback in the right way, as well as consider how we can enhance project outcomes.

We will consult directly with landowners and residents on visual landscape impacts through a variety of channels including mail-outs, in-person meetings, community information sessions and online interactive tools. We will also seek to use visualisation tools such rendered videos and photomontages to 'bring the project to life' and show affected landowners the reality of the project's visual effect.

Maintenance requirements of turbines

Maintenance and service activities ensure the ongoing operational integrity of the wind turbines. It includes blade inspection and repair, main component refurbishment, replacement and repair, and foundation inspection and repair (where required). Balance of plant maintenance and service will also be required and will focus on ensuring the operational integrity and reliability of all windfarm assets other than the wind turbines, including the substation(s), foundations, array cables, export cables, scour protection and corrosion protection systems. It is anticipated that daily inspection and maintenance offshore will be required undertaken from small vessels and Remotely Operated Vehicles (when necessary). Blade inspection will likely be carried out by remotely operated drone technology.

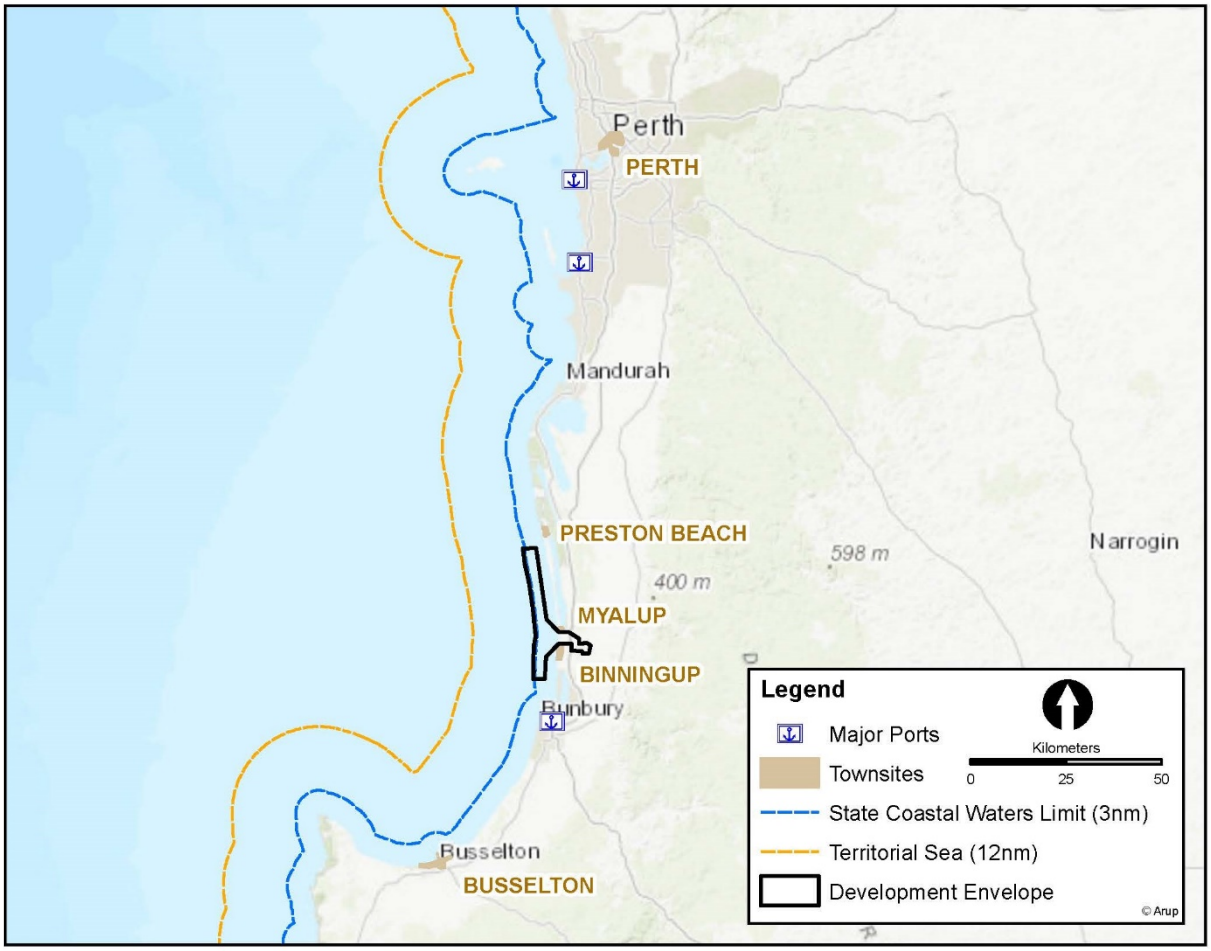

Figure 1 Regional Context

PRESTON BEACH

Preston Beach

Landwehr
330kV

Forrest Hwy

131 m

108 m

Lake
Preston

Myalup

Forestry Rd

Uduc

MYALUP

Binningup

BINNINGUP

Kemerton
330kV

Wellesley

Leschenault
Peninsula
Cons
Park

Leschenault

Leschenault
Estuary

Brunswick

BRUNSWICK JUNCTION

Australind

AUSTRALIND

ROELANDS

Bunbury
Golf
Course

Millbridge

Burekup

BUREKUP

BUNBURY

Bunbury

BUNBURY

EATON

Eaton

20

Location Map

Perth

Map Area

Legend

- State Coastal Waters Limit (3nm)
- Territorial Sea (12nm)
- Development Envelope
- Offshore infrastructure including wind turbine generators (WTG), inter-array cables and offshore substation
- Onshore infrastructure including transmission line corridor and pit, and substation

Public Data

- Substation
- Electricity Transmission Line
- Coastline
- Townsites

Please note, the current Development Envelope represents an indicative area for the purposes of defining the likely extents of the Project and identifying environmental risks. While the area extends into Commonwealth Marine Areas, key Project infrastructure will be located within State waters only.

Client
WA Offshore Windfarm Pty Ltd

Job Title
WA Offshore Windfarm Project

Figure Title
Indicative Footprint of Project Infrastructure

Kilometers
0 2.5 5

Issue	Date	By	Chkd	Appd
A	21/07/2021	FK	DS	DS

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Scale at A3	Figure Status
1:150,000	Issued

Coordinate System
GDA 1994 MGA Zone 50

Job No	Figure No
278441-00	Figure 2

3 Preliminary key environmental factors and required work

The preliminary key environmental factors for the environmental review are:

1. Benthic Communities and Habitat
2. Marine Environmental Quality
3. Marine Fauna (includes marine and migratory birds)
4. Flora and Vegetation
5. Subterranean Fauna
6. Terrestrial Fauna
7. Inland Waters
8. Social Surroundings

Table 4 outlines the work required for each key environmental factor andcontains the following elements for each factor:

- EPA factor and EPA objective for that factor.
- Relevant activities – the proposal activities that may have a significant impact onthat factor.
- Potential impacts and risks to that factor.
- Required work for that factor.
- Relevant policy and guidance – EPA (and other) guidance and policy relevant to the assessment, including EPBC Act policy and guidance.

Benthic Communities and Habitats	
EPA objective	To protect benthic communities and habitat so that biological diversity and ecological integrity are maintained. To avoid mitigate or offset significant impacts on related MNES including on threatened species, migratory species and the ecological character of the Peel Yalgorup Ramsar site.
Relevant activities	• Installation and operation of marine infrastructure, including: • Offshore wind turbines. • A network of inter-array cables. • An offshore substation (inter-array cables). • An export cable connecting the offshore substation to the onshore substation. • Decommissioning of marine infrastructure.
Potential impacts and risks	• Direct removal of benthic communities and habitats during construction and installation of turbines and cables. • Indirect impacts to benthic communities and habitats due to short-term changes to water quality and turbidity during construction activities. • Indirect impacts to benthic communities and habitats due to altered local hydrodynamic processes. • Marine infrastructure result in localised changes to sedimentary processes resulting in scouring and sediment deposition. • The direct or indirect impacts of the above on benthic communities and habitat values related to MNES. • Ongoing impacts to water quality related to potential release of contaminants from maintenance activities.
Required work	1. Provide a detailed description of the activities or infrastructure that may potentially impact on benthic communities and habitat. 2. Assess the values and significance of the benthic communities and habitats within and adjacent to the proposal area at a local and regional scale 3. Assess the most appropriate alignment or positioning of infrastructure that best minimises direct disturbance of benthic communities and habitat. 4. Assess the most appropriate disposal of dredge or disturbance material and the impact of that disposal on benthic communities and habitat. 5. Produce comprehensive mapping (at an appropriate scale) of the benthic communities and habitats within an appropriate Local Assessment Unit (s), overlain with the disturbance envelope and predicted disturbance footprint for physical elements of the proposal (including indirect impacts, if relevant), to quantify the loss of benthic communities and habitats to occur as a result of the proposal. The mapping will be undertaken at an appropriate scale to differentiate each benthic community type. 6. Present findings of hydrodynamic and wave modelling to assess indirect impacts of the proposal on any benthic communities and habitats present within the development envelope because of turbid plumes, sedimentation or scouring. 7. Predict the likely intensity, duration and extent of any effects on marine water and sediment quality caused by installation of marine infrastructure and any resultant potential impact on benthic communities and habitats. The assessment is to be undertaken using the framework outlined in the EPA's Technical Guidance – Environmental Impact Assessment of Marine Dredging Proposals (EPA, 2016). This is to be informed by modelling of

	suspended sediment plumes if construction requires significant disturbance of marine sediments. 8. The assessment of impacts is to identify any reversible and irreversible losses or serious damage to benthic communities and habitat for each local assessment unit and assess in the context of the EPA's Technical Guideline – Protection of Benthic Communities and Habitats (2016), including potential consequences of loss es on biological diversity and ecological integrity. This should include an assessment of any cumulative impacts to benthic communities and habitats. Describe the proposed impact avoidance, management and mitigation measures to be implemented (where impacts are not avoidable), including an assessment of their effectiveness and monitoring during and after construction and during operations, to demonstrate that all reasonable and practicable avoidance and mitigation measures will be taken to ensure residual impacts and risks are acceptable. 9. Demonstrate that all reasonable and practicable avoidance and mitigation measures will be taken to ensure residual impacts and risks to Benthic Communities and Habitats are acceptable. 10. Identify the residual impacts and environmental outcomes that will be achieved during construction, operation and closure of the proposal and describe the proposed monitoring, management actions and/or mitigation measures, including an assessment of their effectiveness, that will be undertaken to achieve the environmental outcomes. If management plans are required to demonstrate how the environmental outcomes will be achieved, they are to be presented in accordance with the EPAs Instructions on how to prepare EP Act Part IV Environmental Management Plans (EPA 2020a). 11. Identify and assess any critical linkages between important marine fauna (including marine and migratory birds, and fauna important to recreational and commercial fisheries) and key BCH that are likely to be impacted. 12. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the WA Environmental Offsets Guidelines (GoWA 2014), and the Commonwealth Environmental Offsets Policy (DSEWPaC 2012) and related guide. 13. Where significant residual impacts remain, propose an appropriate offsets package that is consistent with the WA Environmental Offsets Policy and Guidelines and Commonwealth Policy where the impact is for MNES. Spatial data defining the area of significant residual impacts should also be provided. 14. An assessment of any proposed offsets against the six offsets principles in the WA Environmental Offsets Policy (GoWA 2014). 15. Demonstrate and document in the ERD how the EPA's objective for this factor can be met. 16. Demonstrate and document in the ERD information sufficient to allow the Commonwealth Minister to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the project for the purposes of each controlling provision.
Relevant policy and guidance	*EPA Policy and guidance* • Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2020b) • Instructions on how to prepare an Environmental Review Document (EPA 2020c) • Instructions on how to prepare Environmental Protection Act Part IV Environmental Management Plans (EPA 2020a)

	• Statement of Environmental Principles, Factors and Objectives (EPA 2020d) • Environmental Factor Guideline: Benthic Communities and Habitats (EPA 2016a) • Technical Guidance – Protection of Benthic Communities and Habitats (EPA 2016b) • Technical Guidance – Protecting the Quality of Western Australia's Marine Environment (EPA 2016c) • Technical Guidance – Environmental Impact Assessment of Marine Dredging Proposals (EPA, 2016). *Other policy and guidance* • Western Australian Marine Science Institute Dredging Science Node Reports https://www.wamsi.org.au/dredging-science-node/dsn-reports • WA Environmental Offsets Policy (GoWA 2011) • WA Environmental Offsets Guidelines (GoWA 2014) • Commonwealth Environmental Offsets Policy (DSEWPaC 2012).
Marine Environmental Quality	
EPA objective	To maintain the quality of water, sediment and biota so that environmental values are protected. To avoid mitigate or offset significant impacts on related MNES including on threatened species, migratory species and the ecological character of the Peel Yalgorup Ramsar site.
Relevant activities	Installation and ongoing operation and maintenance of marine infrastructure, including: • Offshore wind turbines. • A network of inter-array cables. • An offshore substation. • An export cable connecting the offshore substation to the onshore substation. • Decommissioning of marine infrastructure. • Storage and handling of potentially hazardous chemicals.
Potential impacts and risks	• Disturbance of seabed during marine infrastructure installation and decommissioning activities. • Localised elevation in water column turbidity during installation of marine infrastructure, particularly cable lay. • Release of sediment contaminants, including potential for disturbance of acid sulfate soils. • Unplanned release of chemicals and waste generation from infrastructure or vessels. • Contamination from deterioration of subsea cables. • Heat transmission from operation of subsea cables.
Required work	17. Present the findings of a desktop review of baseline data (sediment and marine water) to document background marine environmental quality (including spatial and temporal variation) within the receiving marine environment.

	18. Characterise the physical and chemical properties of the material to be disturbed during installation of infrastructure. The characterisation is to be informed by an assessment of threats and pressures to marine environmental values. The characterisation is to inform the environmental quality monitoring and management plans. Where necessary, modelling of suspended sediment plumes will be used to predict potential impacts. 19. Identify elements, activities and potential inputs of the proposal which may potentially affect marine environmental quality for both construction and operation. The marine system and the cause and effect pathways of each element, activity or input from the proposal on marine environmental quality should be described. 20. Determine the volume of marine sediments to be placed and consider appropriate disposal locations, using the National Assessment Guidelines for Dredging hierarchy (Commonwealth Government, 2009). 21. Provide an Environmental Quality Plan (EQP) that spatially defines the Environmental Values (EVs), Environmental Quality Objectives (EQO's) and Level of Ecological Protection (LEP's) that current apply to the area, including for other approved developments. The EQP shall be consistent with the Technical Guidance: Protecting the quality of Western Australia's marine environment (EPA, 2016). 22. Conduct monitoring, to adequately characterise the existing marine environmental water quality in the area potentially affected by the proposal. 23. Predict the likely intensity, duration and extent of any effects on water and sediment quality caused by installation and operation of marine infrastructure and any resultant potential impact on benthic communities and habitats. 24. Demonstrate that all reasonable and practicable avoidance and mitigation measures will be taken to ensure residual impacts and risks to Marine Environment Quality are acceptable. 25. Identify the residual impacts and environmental outcomes to be achieved and describe the proposed monitoring, management and mitigation measures to be implemented for both construction and operation phases to achieve these outcomes and ensure residual impacts and risks to Marine Environmental Quality are consistent with achieving the EQP and environmental outcomes. If management plans are required to demonstrate how the environmental outcome will be achieved, they are to be presented in accordance with the EPAs Instructions on how to prepare EP Act Part IV Environmental Management Plans (EPA 2020a) and comply with the Technical Guidance: Protecting the quality of Western Australia's marine environment (EPA, 2016). Where marine environmental quality is predicted not to achieve the EQP during construction or operational activities, the temporal and spatial extents of the exceedance are to be identified and included on an overlay of the EQP. 26. Demonstrate and document in the ERD how the EPA's objective for this factor can be met. 27. Demonstrate and document in the ERD information sufficient to allow the Commonwealth Minister to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the project for the purposes of each controlling provision.
Relevant policy and guidance	*EPA Policy and guidance* • Instructions on how to prepare an Environmental Review Document (EPA 2020b) • Instructions on how to prepare Environmental Protection Act Part IV Environmental Management Plans (EPA 2020a)

	• Statement of Environmental Principles, Factors and Objectives (EPA 2020c) • Environmental Factor Guideline – Marine Environmental Quality (EPA 2016c) • Technical Guidance – Protecting the Quality of Western Australia's Marine Environment (EPA 2016d) • Identification and investigation of acid sulfate soils and acidic landscapes (DWER 2015) • Technical Guidance: Environmental Impact Assessment of Marine Dredging Proposals (EPA, 2016). *Other policy and guidance* • Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018) • Aquatic Biosecurity Policy 19 January 2017 (DPIRD 2017).
Marine Fauna	
EPA objective	To protect marine fauna so that biological diversity and ecological integrity are maintained. To avoid mitigate or offset significant impacts on related MNES including on threatened species, migratory species and the ecological character of the Peel Yalgorup Ramsar site.
Relevant activities	• Installation and ongoing operation, maintenance and decommissioning of marine infrastructure, including turbines and cables. • Removal of marine sediments during installation of infrastructure and (possible) placement within the marine environment • Artificial lighting during construction, operation, maintenance and decommissioning activities. • Storage and handling of potentially hazardous chemicals. • Vessel movements and presence of offshore infrastructure.

Potential impacts and risks	• Direct or indirect loss and degradation of benthic communities and habitats critical to marine fauna during seabed disturbance to install infrastructure.
	• Injury or fatality of marine fauna as a result of vessel strike or contact with vessels/equipment/infrastructure during installation, maintenance and decommissioning activities.
	• Increased predation by aggregation of marine organisms around new infrastructure.
	• Indirect impacts to marine fauna or habitat critical to the health of marine fauna through:
	  ○ Deterioration of water quality as a result of turbid plumes created during installation of infrastructure
	  ○ Unplanned leaks or spills of potentially hazardous materials
	  ○ Contamination from deterioration of subsea cables
	  ○ Heat transmission from operation of subsea cables.
	• Behavioural impacts on marine fauna resulting from the low frequency noise produced by the operation of turbines.

	• Impacts to marine fauna due to noise generated during the installation of offshore infrastructure (i.e. piling, vessel movements) and ongoing maintenance/operational activity. • Introduced marine species from vessel biofouling or ballast water exchange. • Risk of entanglement of marine fauna in cable-laying equipment. • Short-term and localised disturbance to migratory shorebirds in both foraging and roosting habitats. • Construction, operation, maintenance and decommissioning works may result in the introduction of non-indigenous marine species to the area in vessel ballast water and on vessel hulls. • Electromagnetic field from power transmission via the cable once operational causing resulting in behavioural impacts to marine fauna. • Artificial light resulting in behavioural impacts to marine fauna, including seabirds, turtles and fish species. • Risk of avifauna collision with wind turbine rotors, resulting in injury or mortality.
Required work	28. Present the findings of a desktop review of baseline data to document marine fauna within the receiving marine environment, including identification of species listed under the Biodiversity Conservation Act 2016 and the MNES protected under the EPBC Act (including marine and migratory bird species, and species important to recreational and commercial fisheries). The desktop review should describe the abundance of marine fauna in the proposal area including any spatial and temporal variation. The receiving environment is to include species that are known or are likely to occur in proximity to the proposal, including but not limited to Crested Tern, Fairy Tern, Indian Yellow-nosed Albatross, Loggerhead Turtle, Australian Sea-lion, Southern Right Whale, Long-nosed Fur-seal, Pacific Bottlenose Dolphins, Little Penguins, Great White Shark and Sub-Antarctic Fur-seal. 29. Undertake underwater noise modelling that includes a sensitivity assessment of the potential impacts to marine fauna likely to occur in the area during construction activities. The risk assessment is to include (but not limited to) disturbance to humpback whales, Indo-Pacific bottlenose dolphins, southern right and blue whales, during resting, migrating and calving. 30. Noise modelling for impacts arising from piling for wind turbines are to be consistent with the SA Government's Underwater piling noise guidelines and will address: • Details of the noise and vibrations to be generated during all stages of the proposal (construction, operation and maintenance, and decommissioning) including: o The magnitude, duration and frequency of any vibration o The expected geographic extent of disturbance, and the length of the disturbance period • Baseline monitoring, to gather sufficient data to provide a baseline for later studies • Details of the results of baseline monitoring of noise and vibration in the proposed vicinity of the development • The locations of sensitive sites must be identified on a map at a suitable scale • The impacts of noise and vibrations associated with the construction and ongoing operations of the proposal on all MNES, including:

	○ An assessment of short-term and long-term impacts, including measured background noise levels ○ Disruption of migration, resting, breeding or foraging behaviours of listed species as a result of underwater disturbance must be addressed. 31. Undertake Electromagnetic field modelling that includes an assessment of the potential impacts to marine fauna likely to occur in the area during operational activities. The risk assessment is to include (but not limited to) potential disturbances to elasmobranch and crustacean behaviour, migration and calving/spawning. 32. Electromagnetic field modelling for impacts arising from electrification of offshore infrastructure (eg. inter-array cables, offshore substation and offshore export cables) and will address: • Details of the electromagnetic fields to be generated during all stages of the proposal (construction, operation and maintenance, and decommissioning) including: ○ The extent, magnitude and duration of any electromagnetic fields, including a cumulative electromagnetic field from the proposal as a whole ○ The strength of electromagnetic fields generated around offshore infrastructure • Baseline monitoring, to gather sufficient data to provide a baseline for later studies • Details of the results of baseline monitoring of electromagnetic fields in the proposed vicinity of the development • The locations of potential electrically sensitive sites (eg. elasmobranch nurseries or habitat) identified on a map at a suitable scale • The impacts of electromagnetic fields associated with the construction and ongoing operations of the proposal on marine fauna, and all MNES, including: ○ An assessment of short-term and long-term impacts, including measured background levels ○ Disruption of migration, resting, breeding or foraging behaviours of listed species as a result of underwater electromagnetic disturbance must be addressed. 33. Potential risks must also consider vessel movements and direct and indirect impacts to MNES within the offshore environment during construction, operation, maintenance and decommissioning elements of the proposal. 34. Passive acoustic monitoring and visual surveys are to be conducted within and adjacent to the development envelope to indicate the likely presence, abundance and behaviour (eg. feeding, mating, resting) of listed/protected marine fauna species at a sufficient frequency to detect seasonal patterns. 35. Discuss the likely presence of all marine fauna species within/near the receiving environment (including all listed/protected species), including at minimum: • Information on the abundance, distribution, ecology and habitat preferences of the species; • Spatial and temporal usage patterns, including breeding seasons; • Information on the conservation value of region for each species (e.g. breeding, migration, feeding, resting, inter-nest, etc.) from a local and regional perspective;

	• If a population is present, its size and the importance of the population from a local and regional perspective; • Any critical windows of environmental sensitivity (e.g. breeding or migrating) as well as any suitable windows when disturbance would be minimised 36. Describe and assess the potential direct and indirect impacts at a local and population level from this proposal, including cumulative impacts from other activities in the area to marine mammals, conservation significant or locally important marine fauna, and species important to commercial and recreational fisheries. The assessments should also include, but not be limited to): • The sensitivity of marine fauna to any underwater noise during the construction and operation of the proposal and potential direct or indirect impacts such as behaviour changes (including displacement or avoidance) • Short-term and localised disturbance to threatened and migratory shorebirds and seabirds in both foraging and roosting • Identification of suitable environmental windows when disturbance to marine fauna would be minimised • An assessment of the sensitivity of marine fauna (including elasmobranchs) to the level of electromagnetic radiation expected from the buried cables and potential impacts on behaviour • An assessment of the sensitivity of marine and migratory bird species to turbine strike including consideration of species flight heights (relative to proposed turbine rotor height), potential migratory flightpaths including to or from local, regional, interstate and international habitats and use of wind currents). This should include modelling of flight paths • Characterising the risk of barrier effects of the physical presence of offshore infrastructure on migratory and marine bird migration and/or foraging behaviour • Characterising the listed migratory shorebird and seabird use of the offshore area including key factors that affect collision risk such as morphology, sensorial perception, behaviour, abundance, flight paths, flight and heights in differing wind conditions, food availability and weather conditions relevant to the project site • Assess the likelihood of introduced non-indigenous marine species, particularly if vessels/equipment are mobilised from overseas ports • Assess impacts from artificial light pollution. The impacts of lighting on migratory species (i.e. identification of lighting activities, the potential scale and the significance of direct and indirect impacts to fauna) should be considered during construction, operation, maintenance and decommissioning. This may include modelling of the levels and expected extent of light pollution (direct and sky glow) disturbance and the length of the disturbance period presented in relevant wavelengths for light sensitive species including shorebirds and seabirds

	• Any consideration of the impacts of artificial light on fauna would be anticipated to be consistent with the National Light Pollution Guidelines for Wildlife • Unplanned leaks or spills of potentially hazardous materials • Contamination from deterioration of subsea cables • Heat transmission from operation of subsea cables. 37. This assessment should give regard to any relevant EPBC Act Threat Abatement Plan, Recovery Plan or Approved Conservation advice. 38. Demonstrate that all reasonable and practicable avoidance and mitigation measures will be taken to ensure residual impacts and risks to marine fauna are acceptable. 39. Identify the residual impacts and environmental outcomes that will be achieved during construction, operation and closure of the proposal and describe the proposed monitoring, management actions and/or mitigation measures, including an assessment of their effectiveness, that will be undertaken to achieve the environmental outcomes. If management plans are required to demonstrate how the environmental outcomes will be achieved, they are to be presented in accordance with the EPAs Instructions on how to prepare EP Act Part IV Environmental Management Plans (EPA 2020a). Demonstrate that all residual impacts and risks to marine fauna are acceptable, and that the proposal is not inconsistent with relevant recovery plans and threat abatement plans. 40. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the WA Environmental Offsets Guidelines (GoWA 2014), and the Commonwealth Environmental Offsets Policy (DSEWPaC 2012) and related guide. 41. Where significant residual impacts remain, propose an appropriate offsets package that is consistent with the WA Environmental Offsets Policy and Guidelines and Commonwealth Policy where the impact is for MNES. Spatial data defining the area of significant residual impacts should also be provided. 42. An assessment of any proposed offsets against the six offsets principles in the WA Environmental Offsets Policy. 43. Demonstrate and document in the ERD how the EPA's objective for this factor can be met. 44. Demonstrate and document in the ERD information sufficient to allow the Commonwealth Minister to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the project for the purposes of each controlling provision. 45. Identify any significant gaps in knowledge for conservation significant or locally important marine fauna in the proposal area and assess the importance and/or significance of those gaps with respect to identifying and managing impacts of the proposal, and where required conduct investigations to address critical knowledge gaps relevant to the proposal. 46. Migratory bird assessment will include consideration of Australia's international obligations in relation to agreements for migratory species under section 140 of the EPBC Act including: • The Bonn Convention • China-Australia Migratory Bird Agreement (CAMBA) • Japan-Australia Migratory Bird Agreement (JAMBA)

	• International Agreement - Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).
Relevant policy and guidance	*EPA Policy and guidance* • Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2020b) • Instructions on how to prepare an Environmental Review Document (EPA 2020c) • Instructions on how to prepare Environmental Protection Act Part IV Environmental Management Plans (EPA 2020a) • Statement of Environmental Principles, Factors and Objectives (EPA 2020d) • Environmental Factor Guideline: Marine Fauna (EPA 2016e) *Other policy and guidance* • A Directory of Important Wetlands in Australia (DAWE 2005) • EPBC Act Policy Statement 3.21: Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species (DoEE 2017) • Relevant Commonwealth recovery plans, conservation advice and/or threat abatement plans • Aquatic Biosecurity Policy 19 January 2017 (DPIRD 2017a) • WA Environmental Offsets Policy (GoWA 2011) • WA Environmental Offsets Guidelines (GoWA 2014) • Commonwealth Environmental Offsets Policy (DSEWPaC 2012) • The National Light Pollution Guidelines (DoEE 2020) • National Strategy for Reducing Vessel Strike on Cetaceans and Other Marine Megafauna (DoEE 2017b) • EPBC Act Policy Statement 2.3 Wind Farm Industry (DoEWHA 2009) • EPBC Act Policy Statement 2.1 - Interaction between offshore seismic exploration and whales: Industry guidelines • National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna • SA Government Underwater piling noise guidelines 2012. • Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012). Marine bioregional plan for the South-west Marine Region. • National Assessment Guidelines for Dredging (Commonwealth of Australia, 2009) • Convention on the Conservation of Migratory Species of Wild Animals; Agreement on the Conservation of Albatrosses and Petrels.
Flora and Vegetation	
EPA objective	To protect flora and vegetation so that biological diversity and ecological integrity are maintained. To avoid mitigate or offset significant impacts on related MNES including on the ecological character of the Peel Yalgorup Ramsar site.

Relevantactivities	• Installation and ongoing operation, maintenance and decommissioning of onshore infrastructure, landfall site, transmission corridor and transmission lines. • Construction vehicles and equipment undertaking construction activities within the footprint during the construction phase.
Potential impacts and risks	• Direct loss of conservation significant flora species. • Indirect impacts to conservation significant flora species. • Direct loss of vegetation communities including priority and potential threatened ecological communities ((PECs and TECs). • Direct or indirect degradation of vegetation communities including potential PECs and TECs. • Fragmentation of native vegetation communities including potential PECs and TECs. • Introduction or spread of introduced flora species, weeds and/ or pathogens due to the movement of soil, construction materials and plant/equipment.
Required work	47. Conduct vegetation surveys in accordance with EPA Guidance of all areas directly and indirectly impacted, to confirm the suite of flora species (including threatened flora species) and the extent of vegetation communities and TECs present in a local and regional context. All survey reports and data will be submitted via IBSA Submissions with the IBSA number provided for verification. A figure depicting survey effort applied in relation to the study area and development envelope, identifying the direct and indirect impact areas will also be provided. 48. Identify areas of direct and indirect impacts due to clearing and other relevant activities. Surveys are to be conducted in accordance with relevant WA and Commonwealth policies including the EPA policy and Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment. 49. Present the findings of a desktop review and field survey information to document flora and vegetation within the receiving terrestrial environment, including identification of species listed under the *Biodiversity Conservation Act 2016* and the MNES protected under the EPBC Act. For significant flora species, this includes: • Number of individuals and populations in a local and regional context • Numbers and proportions of individuals and populations directly or potentially indirectly impacted • Numbers/proportions/populations currently protected within the conservation estate (where known). For all vegetation units (noting threatened and priority ecological communities and significant vegetation) this includes: • Area (in hectares) and proportions directly or potentially indirectly impacted, and • Proportions/hectares of the vegetation unit currently protected within conservation estate (where known). 50. Identify the proposed activities and the potential scale and significance of direct, indirect and cumulative impacts to flora and vegetation, giving regard to any relevant EPBC Act Threat Abatement Plan, Recovery Plan or Approved Conservation advice.

	51. Discuss the confirmed and likely presence of threatened flora and vegetation communities within/near the Development Envelope as identified in the desktop review and survey investigations, including at a minimum: • Information on the abundance, distribution, ecology and habitat preferences of the threatened species and TECs. • Information on the conservation value of region for each species and TEC, from a local and regional perspective. • If a population is present, the size and the importance of the population from a local and regional perspective. • An assessment of the risk of impact to any threatened species as a result of proposal activities. • Identification of suitable environmental windows and/or activities when disturbance would be minimised. • For any impact identified, appropriate mitigation/management measures to reduce the level of impact. • Baseline information and mapping of local and regional occurrences. 52. Demonstrate that all reasonable and practicable avoidance and mitigation measures will be taken to ensure residual impacts and risks to Flora and Vegetation are acceptable. 53. Identify the residual impacts and environmental outcomes that will be achieved during construction and operation of the proposal and describe the proposed monitoring, management actions and/or mitigation measures, including an assessment of their effectiveness, that will be undertaken to achieve the environmental outcomes. If management plans are required to demonstrate how the environmental outcomes will be achieved, they are to be presented in accordance with the EPAs Instructions on how to prepare EP Act Part IV Environmental Management Plans (EPA 2020a). 54. Describe the proposed mitigation measures developed for the proposal as a result of the identified MNES, including an assessment of their effectiveness to demonstrate that all reasonable and practicable avoidance and mitigation measures will be taken to ensure residual impacts and risks are acceptable, and that the proposal is not inconsistent with relevant recovery plans and threat abatement plans. 55. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the WA Environmental Offsets Guidelines (GoWA 2014), and the Commonwealth Environmental Offsets Policy (DSEWPaC 2012) and related guide. 56. Where significant residual impacts remain, propose an appropriate offsets package that is consistent with the WA Environmental Offsets Policy and Guidelines and Commonwealth Policy where the significant residual impact is an MNES. Spatial data defining the area of significant residual impacts should also be provided. 57. An assessment of any proposed offsets against the six offsets principles in the WA Environmental Offsets Policy. 58. Demonstrate and document in the ERD how the EPA's objective for Flora and Vegetation can be met. 59. Demonstrate and document in the ERD information sufficient to allow the Commonwealth Minister to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the project for the purposes of each controlling provision.

Relevant policy and guidance	*EPA Policy and guidance* • Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2020b) • Instructions on how to prepare an Environmental Review Document (EPA 2020c) • Instructions on how to prepare Environmental Protection Act Part IV Environmental Management Plans (EPA 2020a) • Statement of Environmental Principles, Factors and Objectives (EPA 2020d) • Environmental Factor Guideline: Flora and Vegetation (EPA 2016g) • Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016h) • Instructions and Form: IBSA Data Packages. *Other policy and guidance* • WA Environmental Offsets Policy (GoWA 2011) • WA Environmental Offsets Guidelines (GoWA 2014) • Commonwealth Environmental Offsets Policy (DSEWPaC 2012) • Wildlife Conservation Plan for Migratory Shorebirds (DoEE 2015) • Australian National Guidelines for Whale and Dolphin Watching • National Light Pollution Guidelines for Wildlife (DoEE 2020)
Terrestrial Fauna	
EPA objective	To protect terrestrial fauna so that biological diversity and ecological integrity are maintained. To avoid mitigate or offset significant impacts on related MNES including on threatened species, and the ecological character of the Peel Yalgorup Ramsar site.
Relevant activities	• Installation and ongoing operation, maintenance and decommissioning of onshore infrastructure, landfall site, transmission corridor and overhead transmission lines. • Noise and artificial lighting during construction, operation, maintenance and decommissioning of offshore and onshore activities. • Construction vehicles and equipment accessing the footprint during construction phase.
Potential impacts and risks	• Direct impacts to fauna species as a result of habitat removal. • Direct and/or indirect loss or degradation of terrestrial and freshwater aquatic habitat, including waterways, Lake Josephine and Lake Preston (a part of the Ramsar listed, Yalgorup Lakes System). • Fragmentation of habitat from ongoing maintenance of vegetation within the cable corridor. • Disturbance to terrestrial birds in both foraging, roosting, and nesting habitats during construction activity. • Artificial light resulting in behavioural impacts to fauna during construction. • Introduction or spread of introduced flora species or pathogens due to the movement of soil, construction materials and plant/equipment which may negatively impact the suitability of habitat.

Required work	60. Undertake fauna surveys to confirm utilisation of the habitat by fauna species, including fauna that utilise aquatic habitat and nearby Lake Preston (a part of the Ramsar listed, Yalgorup Lakes System). These linkages will be assessed for significant impacts on MNES including but not limited to migratory species and the ecological character of the Peel Yalgorup Ramsar site). 61. Fauna surveys are to be conducted in accordance with relevant WA and Commonwealth survey guidelines which includes the EPA policy and Technical Guidance – Terrestrial vertebrate fauna surveys for Environmental Impact Assessment and Technical Guidance – Sampling of short range endemic invertebrate fauna in the local and regional context. All survey reports and data will be submitted via IBSA Submissions with the IBSA number provided for verification. A figure depicting survey effort applied in relation to the study area and development envelope, identifying the direct and indirect impact areas will also be provided. 62. Based on the results of a desktop study, the field surveys include: • A Basic (level 1) survey and fauna habitat assessment; and/or • A Detailed (level 2) survey including sampling inside and outside the impact areas that may be directly or indirectly impacted; and/or • Targeted surveys for significant fauna that may be directly or indirectly impacted. 63. Present the findings of a desktop review and survey information to document fauna within the receiving terrestrial environment, including identification of species listed under the Biodiversity Conservation Act 2016 and the MNES protected under the EPBC Act. 64. Map the locations of significant/restricted fauna records in relation to the terrestrial fauna habitats, the study area, the development envelope, and direct and indirect impact areas. 65. Describe the terrestrial fauna habitats identified by the studies and surveys, including but not limited to: • SRE invertebrate microhabitats • Refugia • Breeding areas • Key foraging habitat • Movement corridors and linkages. 66. Discuss the likely presence of listed terrestrial fauna species within the receiving environment as identified in the desktop review and survey investigations, including at a minimum: • Information on the likelihood of occurrence, abundance, distribution, habitat preferences of the species and known threats. • Information on the conservation value of region for each species • If a population is present, the size and the importance of the population • An assessment of the risk of impact to any listed species as a result of proposal activities. • Identification of suitable environmental windows and breeding seasons and/or activities when disturbance would be minimised. • For any impact identified, appropriate mitigation/management measures to reduce the level of impact. 67. Identify the proposed activities and the potential scale and significance of direct and indirect impacts to terrestrial fauna, giving regard to any relevant

	EPBC Act Threat Abatement Plan, Recovery Plan or Approved Conservation advice. 68. Provide a table of the proportional extents of each habitat within the study area and development envelope, and the predicted amount to be directly impacted and remaining. Consider any local or regional cumulative impacts. 69. Assess these critical linkages for significant impacts on MNES including by not limited to migratory species and the ecological character of the Peel Yalgorup Ramsar site. 70. Describe the proposed mitigation measures to protect listed terrestrial fauna species. This should include an assessment of their effectiveness to demonstrate that all reasonable and practicable avoidance and mitigation measures will be taken to ensure residual impacts and risks are acceptable, and that the proposal is not inconsistent with relevant recovery plans and threat abatement plans. 71. Demonstrate that all reasonable and practicable avoidance and mitigation measures will be taken to ensure residual impacts and risks to Terrestrial Fauna are acceptable. 72. Identify the residual impacts and environmental outcomes that will be achieved during construction and operation of the proposal and describe the proposed monitoring, management actions and/or mitigation measures, including an assessment of their effectiveness, that will be undertaken to achieve the environmental outcomes. If management plans are required to demonstrate how the environmental outcomes will be achieved, they are to be presented in accordance with the EPAs Instructions on how to prepare EP Act Part IV Environmental Management Plans (EPA 2020a). 73. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the WA Environmental Offsets Guidelines (GoWA 2014), and the Commonwealth Environmental Offsets Policy (DSEWPaC 2012) and related guide. 74. Where significant residual impacts remain, propose an appropriate offsets package that is consistent with the WA Environmental Offsets Policy and Guidelines and Commonwealth Policy where the impact is an MNES. Spatial data defining the area of significant residual impacts be provided. 75. An assessment of any proposed offsets against the six offsets principles in the WA Environmental Offsets Policy. 76. Demonstrate and document in the ERD how the EPA's objective for this factor can be met. 77. Demonstrate and document in the ERD information sufficient to allow the Commonwealth Minister to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the project for the purposes of each controlling provision.
Relevant policy and guidance	*EPA Policy and guidance* • Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2020b) • Instructions on how to prepare an Environmental Review Document (EPA 2020c) • Instructions on how to prepare Environmental Protection Act Part IV Environmental Management Plans (EPA 2020a) • Statement of Environmental Principles, Factors and Objectives (EPA 2020d) • Environmental Factor Guideline: Terrestrial Fauna (EPA 2016i)

	• Technical Guidance – Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA 2016j) • Technical Guidance – Sampling Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment (EPA 2016k) • Instructions and Form: IBSA Data Packages. *Other policy and guidance* • WA Environmental Offsets Policy (GoWA 2011) • WA Environmental Offsets Guidelines (GoWA 2014) • Commonwealth Environmental Offsets Policy (DSEWPaC 2012) • The National Light Pollution Guidelines (DoEE 2020) • All relevant EPBC Act Policy Statement 1.1 Significant Impact Guidelines • Hale, J. and Butcher, R., 2007, Ecological Character Description of the Peel-Yalgorup Ramsar Site, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth, Western Australia. • All relevant MNES Recovery plans, Conservation advice and Threat abatement plans.
Subterranean Fauna	
EPA objective	To protect subterranean fauna so that biological diversity and ecological integrity are maintained. To avoid mitigate or offset significant impacts on related MNES including on threatened species, migratory species and the ecological character of the Peel Yalgorup Ramsar site.
Relevant activities	• Excavation for landfall site may extend below regional groundwater level. • Local dewatering may be necessary to manage groundwater inflows to excavation. • Earthworks and trenching for cables and onshore infrastructure.
Potential impacts and risks	• Direct impacts to subterranean fauna and habitat due to excavation for installation of onshore infrastructure and transmission lines. • Indirect impacts to subterranean fauna habitat from localised alterations to groundwater chemistry and quality. • Trenching to install onshore transmission pit may disturb contaminated or acidic soils, with contaminants impacting the subterranean environment.
Required work	78. Conduct desktop study, incorporating existing regional subterranean fauna surveys and databases. 79. If desktop studies indicate the likely presence of subterranean fauna habitat in groundwater or perched aquifers, conduct surveys to identify their presence and abundance. Surveys are to be in accordance with EPA policy and Technical Guidance – Subterranean Fauna Survey and Technical Guidance – Sampling Methods for Subterranean fauna. All survey reports and data will be submitted via IBSA Submissions with the IBSA number provided for verification. A figure depicting survey effort applied in relation to the study area and development envelope, identifying the direct and indirect impact areas will also be provided.

	80. Based on the results of a desktop study, the field surveys include: • A Basic (level 1) survey and fauna habitat assessment; and/or • A Detailed (level 2) survey including sampling inside and outside the impact areas that may be directly or indirectly impacted; and/or • Targeted surveys for significant fauna that may be directly or indirectly impacted. 81. Present the findings of a desktop review and field survey information to document subterranean fauna within the receiving terrestrial environment, including identification of species listed under the Biodiversity Conservation Act 2016 and the MNES protected under the EPBC Act. 82. Provide a map of the survey effort applied in relation to the study area, subterranean fauna habitats, and development envelope, identifying the direct and indirect impact areas. 83. Provide figures and maps showing the extent of subterranean fauna habitats in relation to the proposal and species distributions. 84. Identify and describe the fauna assemblages present and likely to be present within the development envelope that may be impacted by the proposal. Identify significant or restricted fauna and describe in detail their known ecology, likelihood of occurrence, habitats and known threats. 85. Identify the proposed activities and the potential scale and significance of direct and indirect impacts, giving regard to any relevant EPBC Act Threat Abatement Plan, Recovery Plan or Approved Conservation advice. Include relevant geological and hydrological information to determine habitat suitability and connectivity, including inside and outside the impact areas. 86. Provide a table of the proportional extents of each habitat within the study area and development envelope, and the predicted amount to be directly impacted and remaining. Consider any local or regional cumulative impacts. 87. Demonstrate that all reasonable and practicable avoidance and mitigation measures will be taken to ensure residual impacts and risks to Subterranean Fauna are acceptable. 88. Identify the residual impacts and environmental outcomes that will be achieved during construction, operation and closure of the proposal and describe the proposed monitoring, management actions and/or mitigation measures, including an assessment of their effectiveness, that will be undertaken to achieve the environmental outcomes. If management plans are required to demonstrate how the environmental outcomes will be achieved, they are to be presented in accordance with the EPAs Instructions on how to prepare EP Act Part IV Environmental Management Plans (EPA 2020a). 89. Demonstrate t that the proposal is not inconsistent with relevant Subterranean Fauna recovery plans and threat abatement plans. 90. Determine and quantify any significant residual impacts by applying the Residual Impact Significance Model (page 11) and WA Offset Template (Appendix 1) in the WA Environmental Offsets Guidelines (GoWA 2014), and the Commonwealth Environmental Offsets Policy (DSEWPaC 2012) and related guide. 91. Where significant residual impacts remain, propose an appropriate offsets package that is consistent with the WA Environmental Offsets Policy and Guidelines and Commonwealth Policy where the impact is for MNES. Spatial data defining the area of significant residual impacts should also be provided. 92. An assessment of any proposed offsets against the six offsets principles in the WA Environmental Offsets Policy. 93. Demonstrate and document in the ERD how the EPA's objective for this factor can be met.

	94. Demonstrate and document in the ERD information sufficient to allow the Commonwealth Minister to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the project for the purposes of each controlling provision.
Relevant policy and guidance	*EPA Policy and guidance* • Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2020b) • Instructions on how to prepare an Environmental Review Document (EPA 2020c) • Instructions on how to prepare Environmental Protection Act Part IV Environmental Management Plans (EPA 2020a) • Statement of Environmental Principles, Factors and Objectives (EPA 2020d) • Environmental Factor Guideline: Subterranean Fauna (EPA 2016l) • Technical Guidance –Subterranean Fauna Survey (EPA 2016m) • Technical Guidance – Sampling Methods for Subterranean Fauna (EPA 2016n) • Instructions and Form: IBSA Data Packages. *Other policy and guidance* • WA Environmental Offsets Policy (GoWA 2011) • WA Environmental Offsets Guidelines (GoWA 2014) • Commonwealth Environmental Offsets Policy (DSEWPaC 2012) • Aquatic Biosecurity Policy 19 January 2017 (DPIRD 2017) • All relevant EPBC Act Policy Statement 1.1 Significant Impact Guidelines • All relevant MNES Recovery plans, Conservation advice and Threat abatement plans.
Inland Waters	
EPA objective	To maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.
Relevant activities	• Activities that may impact groundwater include: • Excavation for onshore transmission pit, transmission line and substation may extend below regional groundwater level. • Local dewatering may be necessary to manage groundwater inflows to excavation. • Potential for leaks and spills during construction and maintenance activities • Activities that may impact surface water include: • Clearing of vegetation. • Earthworks and trenching for cables and onshore infrastructure. • Potential for leaks and spills during construction and maintenance activities.

Potential impacts and risks	• Direct and indirect impacts to local groundwater quality, through the release of turbid/saline flows or other contaminants e.g. nutrients, chemicals • Direct impacts to surface or groundwater flows and quality due to excavation associated with installation of onshore infrastructure and transmission lines • Potential for disturbance of acid sulfate soils
Required work	95. Conduct water quality surveys, as necessary, to adequately characterise the existing groundwater and surface water quality (including the potential for acid sulfate soils) and hydrology in the area potentially affected by the proposal, including nearby Lake Preston (a part of the Ramsar listed, Yalgorup Lakes System) 96. Assess the suitability of Lake Preston, Myalup Swamp and any other wetlands mapped in the development envelope and receiving inland wetlands and marine environments, with respect to the value of the area to migratory birds and other wetland fauna. 97. Present the findings of water quality surveys to document baseline water quality (including spatial and temporal variation) within the receiving marine environment. Findings should include discussion on indirect impacts on the ecological character of the Peel Yalgorup Ramsar site due to changes in local hydrodynamic processes including groundwater flow 98. Predict the likely intensity, duration and extent of any effects on surface and groundwater during construction and operation of onshore infrastructure 99. Demonstrate that all reasonable and practicable avoidance and mitigation measures will be taken to ensure residual impacts and risks to Inland Waters are acceptable. 100. Identify the residual impacts and environmental outcomes that will be achieved during construction, operation and closure of the proposal and describe the proposed monitoring, management actions and/or mitigation measures, including an assessment of their effectiveness, that will be undertaken to achieve the environmental outcomes. If management plans are required to demonstrate how the environmental outcomes will be achieved, they are to be presented in accordance with the EPAs Instructions on how to prepare EP Act Part IV Environmental Management Plans (EPA 2020a). 101. Demonstrate and document in the ERD how the EPA's objective for Inland Waters can be met. 102. Demonstrate and document in the ERD information sufficient to allow the Commonwealth Minister to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the project for the purposes of each controlling provision.
Relevant policy and guidance	*EPA Policy and guidance* • Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2020b) • Instructions on how to prepare an Environmental Review Document (EPA 2020c) • Instructions on how to prepare Environmental Protection Act Part IV Environmental Management Plans (EPA 2020a) • Statement of Environmental Principles, Factors and Objectives (EPA 2020d) • Environmental Factor Guideline: Inland Waters (EPA 2016l)

	Other policy and guidance • Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018). • Aquatic Biosecurity Policy 19 January 2017 (DPIRD 2017) • Hale, J. and Butcher, R., 2007, Ecological Character Description of the Peel-Yalgorup Ramsar Site, Report to the Department of Environment and Conservation and the Peel-Harvey Catchment Council, Perth, Western Australia. • A methodology for the evaluation of wetlands on the Swan Coastal Plain, Western Australia (Department of Biodiversity, Conservation and Attractions, 2017)
Social Surroundings	
EPA objective	To protect social surroundings from significant harm.
Relevant activities	• Installation and ongoing operation, maintenance and decommissioning of marine infrastructure, including turbines and cables. • Artificial lighting during construction, operation, maintenance and decommissioning activities. • Storage and handling of potentially hazardous chemicals. • Vessel movements and presence of offshore infrastructure. • Changes to access (temporary or permanent).

Potential impacts and risks	• Potential impacts and disturbance to Aboriginal heritage and culture.
	• Potential impacts to sites of natural and historical heritage.
	• Potential impacts to amenity, including visual amenity, due to construction and operation of WTG structures off the coastline.
	• Potential impacts to amenity from noise, dust and odour due to construction and operation of offshore and onshore infrastructure.
	• Potential indirect economic impacts to tourism and local businesses (including commercial fishing) as a result of impacts to amenity and marine fauna during construction and operation.
	• Increased vessel activity in the region during construction and maintenance and the impact on commercial and recreational fishing or tourism activities.
	• Construction, operation, maintenance and decommissioning works may result in the introduction of non-indigenous marine species to the area in vessel ballast water and on vessel hulls, and any potential consequent impacts on existing commercial fishing operations.
	• Potential restrictions in recreational use of nearshore and coastal areas, including exclusions zones during construction and operation.
	• Indirect impacts to important commercial and recreational marine fauna species through:
	  ○ Unplanned leaks or spills of potentially hazardous materials
	  ○ Contamination from deterioration of subsea cables
	  ○ Heat transmission from operation of subsea cables
	  ○ Electromagnetic field from power transmission via the cable

	○ Low frequency noise produced by the operation of turbines and during construction ○ Artificial light pollution. • Marine infrastructure creating an artificial reef.
Required work	103. Identify and assess the Aboriginal heritage and cultural values of the area that may be directly or indirectly impacted by the proposal. 104. Engage in Aboriginal stakeholder consultation to understand and identify tangible and intangible cultural heritage sites and values within the receiving environment. 105. If desktop studies and consultation with Aboriginal stakeholders indicate the likely presence of Aboriginal heritage sites, conduct heritage surveys to confirm location. 106. Identify sites of natural and historical heritage significance (including shipwrecks) located within the development envelope and the impacts to these. 107. Conduct community and stakeholder consultation to understand the values of the area for recreational and commercial activity, both for residents and visitors. 108. Conduct a visual and landscape character impact assessment to understand the impact of the WTG structures and onshore transmission infrastructure on the visual amenity of the area, in accordance with the Visual Landscape Planning in Western Australia Manual. 109. Conduct investigations into baseline levels of noise to understand receiving environment and sensitive receivers. 110. Undertake studies to predict noise from the construction and operation of the Proposal and identify likely extent, severity, and duration of impacts on nearby sensitive receivers. 111. Consider ground disturbance and identify likely extent, severity, and duration of dust and odour impacts on nearby sensitive receivers. 112. Undertake a community impact study to identify what social values may be impacted. This is expected to include matters such as access, loss of recreational opportunities, impacts to tourism or local businesses. 113. Identify any significant marine fauna (as well as ecological 'keystone' species, species important to commercial and recreational fishers or marine-based tourism) likely to be found in the area of influence of the proposal. 114. Assess the potential impact on recreational and commercial fishing if non-indigenous marine species are introduced, particularly if proposal vessels/equipment are mobilised from overseas ports. 115. Assess the risk to commercial and recreational fishing or tourism activity from identified impacts. 116. Determine the direct, indirect and cumulative impacts of the proposal to important commercial and recreational marine fauna, including assessment of: • Unplanned leaks or spills of potentially hazardous materials • Contamination from deterioration of subsea cables • Heat transmission from operation of subsea cables • Electromagnetic field from power transmission via the cable • Low frequency noise produced by the operation of turbines and during construction • Artificial light pollution.

	117. Discuss the proposed management, monitoring and mitigation to prevent impacts to social surroundings as a result of implementing the proposal, which includes measures for: • Aboriginal heritage and culture • Natural and historical heritage • Amenity • Economic 118. Provide a prediction of residual impacts on Aboriginal heritage and culture, natural and historical heritage, amenity and economy. 119. Demonstrate that all reasonable and practicable avoidance and mitigation measures will be taken to ensure residual impacts and risks to Subterranean Fauna are acceptable. 120. Identify the residual impacts and environmental outcomes that will be achieved during construction, operation and closure of the proposal and describe the proposed monitoring, management actions and/or mitigation measures, including an assessment of their effectiveness, that will be undertaken to achieve the environmental outcomes. If management plans are required to demonstrate how the environmental outcomes will be achieved, they are to be presented in accordance with the EPAs Instructions on how to prepare EP Act Part IV Environmental Management Plans (EPA 2020a). 121. Demonstrate and document in the ERD how the EPA's objective for Social Surroundings can be met.
Relevant policyand guidance	*EPA Policy and guidance* • Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual (EPA 2020b) • Instructions on how to prepare an Environmental Instructions on how to prepare and Environmental Review Document (EPA 2020c) • Instructions on how to prepare Environmental Protection Act Part IV Environmental Management Plans (EPA 2020a) • Statement of Environmental Principles, Factors and Objectives (EPA 2020d) • Environmental Factor Guideline: Social Surroundings (EPA 2016f) • Visual Landscape Planning in Western Australia Manual (WAPC, 2007) *Other policy and guidance* • Status reports of the fisheries and aquatic resources of Western Australia 2019: State of the Fisheries (DoA 2019) • Status reports of the fisheries and aquatic resources of Western Australia 2019/20: State of the fisheries (Gaughan & Santoro 2021).

4 Other environmental factors or matters

The EPA has identified the following other environmental factors or matters relevant to theproposal that must be addressed during the environmental review and discussed in the Environmental Review Document:

1. **Coastal Processes –** Any shore crossing required to support the proposal has the potential to directly or indirectly impacts coastal processes, particularly where cables cross onshore and feed into the transmission pit. It is likely that the potential impacts can be appropriately managed through assessment of the receiving environment and potential construction methodologies. The ERD will include relevant assessments, investigations, and management measures to address impacts to coastal processes and to demonstrate that there is a low risk of significant impacts to coastal processes from the interaction between the proposal infrastructure and the oceanography. This will include modelling of potential coastal impacts to demonstrate that there will be no significant changes to erosion/accretion dynamics impacting the shoreline, including consideration of how sand accumulation in the lea of structures could smother surrounding benthic communities and habitats.
2. **Holistic Impact Assessment –** Provide a holistic assessment of the impacts of the proposal on the whole environment. Describe the connections and interactions between the parts of the environment (environmental factors) and discuss predicted outcomes in relation to the environmental principles and the EPA's environmental objectives.
3. **Commonwealth marine area** – The project is adjacent to the *South-west marine region profile* (2015) Commonwealth marine area. The ERD will include consideration of the impacts of the action on the Commonwealth marine area, including social, economic and cultural aspects of the environment. Marine protected areas are marine areas which are recognised to have a high conservation value. Actions in or near marine protected areas have a greater likelihood of significant impacts on the Commonwealth marine environment.
4. **Cumulative Impact considerations –** The ERD will include an assessment of cumulative impacts, which are incremental environmental and community impacts caused by past, present or reasonably foreseeable future activities. When considered in isolation, the environmental impacts of any single project upon any single receiver or resource may not be significant. However, when individual impacts are considered in combination with other projects, significant impacts may result. The ERD will present an assessment of the potential cumulative impacts of the project when considered together with other developments and activities occurring near the project, including but not limited to the Binningup Desalination Plant and Brine Outfall to the south.

5 Stakeholder consultation

The proponent must consult with stakeholders who are affected by, or are interested in the proposal. This includes the decision-making authorities (see section 6), other relevant state (and Commonwealth) government agencies and local government authorities, the local community and environmental non-government organisations.

The proponent must document the following in the ERD:

- Identified stakeholders
- The stakeholder consultation undertaken and the outcomes, including decision- making authorities' specific regulatory approvals and any adjustments to the proposal as a result of consultation
- Any future plans for consultation.

Potential stakeholders include, but are not limited to:

- Department of Agriculture, Water and Environment (DAWE) - Cth
- Department of Water and Environmental Regulation (DWER) – WA
- Department of Primary Industries and Regional Development (DPIRD) – Department of Fisheries WA
- Department of Biodiversity Conservation and Attractions (DBCA) – WA
- Department of Planning, Lands, and Heritage (DPLH) - WA
- Department of Transport – WA
- Department of Jobs, Tourism, Science and Innovation (JTSI) - WA
- Shire of Harvey
- Western Power
- Development WA
- The South West Aboriginal Land and Sea Council (SWALSC)
- Noongar Traditional owners and groups apart of the Gnaala Karla Booja region.
- Any other relevant indigenous groups and elders
- Industry groups (eg. RecFish West, WAFIC, Rock Lobster Council)
- Community and environmental groups within the receiving environment
- Residents and landholders within the receiving environment
- Local business operators.

6 Decision-making authorities

At this stage, the EPA has identified the following decision-making authorities for the proposal. Additional decision-making authorities may be identified during the assessment.

Table 4 Decision-making authorities

Decision-making authority	Relevant legislation
Commonwealth Minister for the Environment	*Environment Protection and Biodiversity Conservation Act 1999*
Minister for Lands	*Lands Administrations Act 1997*
Minister for Environment	*Wildlife Conservation Act 1950* *Conservation and Land Management Act 1984* *Biodiversity Conservation Act 2016*
Minister for Planning	*Planning and Development Act 2005*
Minister for Mines and Petroleum	*Mining Act 1978*
Shire of Harvey	*Planning and Development Act 2005*
Department of Water and Environmental Regulation	*Environmental Protection Act 1986*
Department of Biodiversity Conservation and Attractions	*Biodiversity Conservation Act 2016*

7 References

ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT. Available at <www.waterquality.gov.au/anz-guidelines> [Accessed 22 June 2021]

DoA (2019) Fisheries Status Reports 2019. Department of Agriculture, research by the Australian Bureau of Agriculture and Resource Economics and Sciences, Canberra, ACT, September 2019

DPIRD (2017) Aquatic Biosecurity Policy 19 January 2017. Department of Industries and Regional Development, Perth, WA, January 2017

DSEWPaC (2012) Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy. Department of Sustainability, Environment, Water, Population and Communities, Canberra, ACT, October 2012

DAWE (2005) Directory of Important Wetlands in Australia. Department of Agriculture, Water and the Environment, Canberra, ACT. Available at <https://www.environment.gov.au/water/wetlands/australian-wetlands-database/directory-important-wetlands> [Accessed 22 June 2021]

DoEE (2017a) EPC Act Policy Statement 3.21: Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species. Department of the Environment and Energy, Canberra, ACT, March 2017

DoEE (2017b) National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna. Department of Environment and Energy, Canberra, ACT, December 2017

DoEE (2020) National Light Pollution Guidelines for Wildlife: Including marine turtles, seabirds and migratory shorebirds. Department of Environment and Energy, Canberra, ACT, January 2020

EPA (2016b) Technical Guidance – Protection of Benthic Communities and Habitats. Environmental Protection Authority, Perth, WA, December 2016

EPA (2016c) Technical Guidance – Protecting the Quality of Western Australia's Marine Environment. Environmental Protection Authority, Perth, WA, December 2016

EPA (2016a) Environmental Factor Guideline: Benthic Habitats and Communities. Environmental Protection Authority, Perth, WA, December 2016

EPA (2016d) Technical Guidance – Environmental Impact Assessment of Marine Dredging Proposals. Environmental Protection Authority, Perth, WA, December 2016

EPA (2016e) Environmental Factor Guideline: Marine Fauna. Environmental Protection Authority, Perth, WA, December 2016

EPA (2016f) Environmental Factor Guideline: Social Surroundings. Environmental Protection Authority, Perth, Western Australia, December 2016

EPA (2016g) Environmental Factor Guideline: Flora and Vegetation. Environmental Protection Authority, Perth, Western Australia, December 2016.

EPA (2016h) Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment, Environmental Protection Authority, Perth, December 2016.

EPA (2016i) Environmental Factor Guideline: Terrestrial Fauna. Environmental Protection Authority, Perth, Western Australia, December 2016

EPA (2016j) Technical Guidance – Vertebrate Fauna Surveys for Environmental Impact Assessment. Environmental Protection Authority, Perth, Western Australia, December 2016

EPA (2016k) Technical Guidance – Sampling Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment Environmental Protection Authority, Perth, Western Australia, December 2016

EPA (2016l) Environmental Factor Guideline: Subterranean Fauna. Environmental Protection Authority, Perth, Western Australia, December 2016.

EPA (2016m) Technical Guidance – Subterranean Fauna Survey. Environmental Protection Authority, Perth, Western Australia, December 2016

EPA (2016n) Technical Guidance – Sampling Methods for Subterranean Fauna. Environmental Protection Authority, Perth, Western Australia, December 2016

EPA (2020b) Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual. Environmental Protection Authority, Perth, WA, March 2020

EPA (2020d) Statement of Environmental Principles, Factors and Objectives, Environmental Protection Authority. Perth, WA, April 2020

EPA (2020a) Instructions on how to prepare Environmental Protection Act 1986 Part IV Environmental Management Plans. Environmental Protection Authority, Perth, WA, September 2020

EPA (2020c) Instructions on how to prepare an Environmental Review Document. Environmental Protection Authority, Perth, Western Australia, March 2020

Gaughan DJ, Santoro K (2021) Status reports of the fisheries and aquatic resources of Western Australia 2019/20: State of the fisheries. Department of Primary Industries and Regional Development, Perth, WA, 2019

GoWA (2011) WA Environmental Offsets Policy. Government of Western Australia, Perth, WA, September 2011

GoWA (2014) WA Environmental Offsets Guidelines. Government of Western Australia, Perth, WA, August 2014