Leeuwin Offshore Wind Farm

Proposal Description Document

PROPOSAL DESCRIPTION

Leeuwin Offshore Wind Pty Ltd is proposing the construction, operation and decommissioning of the Leeuwin Offshore Wind Farm within Geographe Bay, off the southwest region of Western Australia. Leeuwin Offshore Wind Pty Ltd is a wholly owned subsidiary of Copenhagen Energy A/S (CE), a Danish renewable energy developer with over 40 years' cumulative experience in delivering offshore and onshore wind and solar photovoltaic (PV) developments in Denmark and throughout Europe.

The Proposal is located approximately 130 km south of Perth between Mandurah and Bunbury, with all wind turbines to be located within Commonwealth Waters. Land-based components of the Proposal are located within the Shire of Harvey local government area. The Proposal will span Commonwealth waters, Western Australian coastal waters and land areas.

Once operational the Leeuwin Offshore Wind Farm will have the capacity to generate in excess of 3.0 GW of electricity (up to 11 Terawatt-hour (TWh) of power per year). This output would be enough electricity to power approximately 3.0 million[1] Western Australian homes and would offset an expected 6 million tonnes of CO_2 annually. This will support Australia's commitment to reduce greenhouse gas emissions by 26-28% by 2030, as well as the Western Australian Government's target of enhanced climate resilience and net zero greenhouse gas emission by 2050.

The Proposal includes the installation of up to 200 wind turbines, each up to 25 MW, and associated substation platforms, within Commonwealth Waters. The generated electricity will be brought onshore via export cables which will traverse State Waters to landfall onshore. Once onshore, electricity generated by the Proposal will be transmitted, via underground and/or overhead cables, to a substation. The electricity can then be connected into the local grid system or other power infrastructure.

The size of individual wind turbines is yet to be determined. At this stage, it is anticipated that individual turbines delivering between 15 MW and 25 MW will be installed, with the definitive number, final location and ultimate turbine specifications being determined prior to construction.

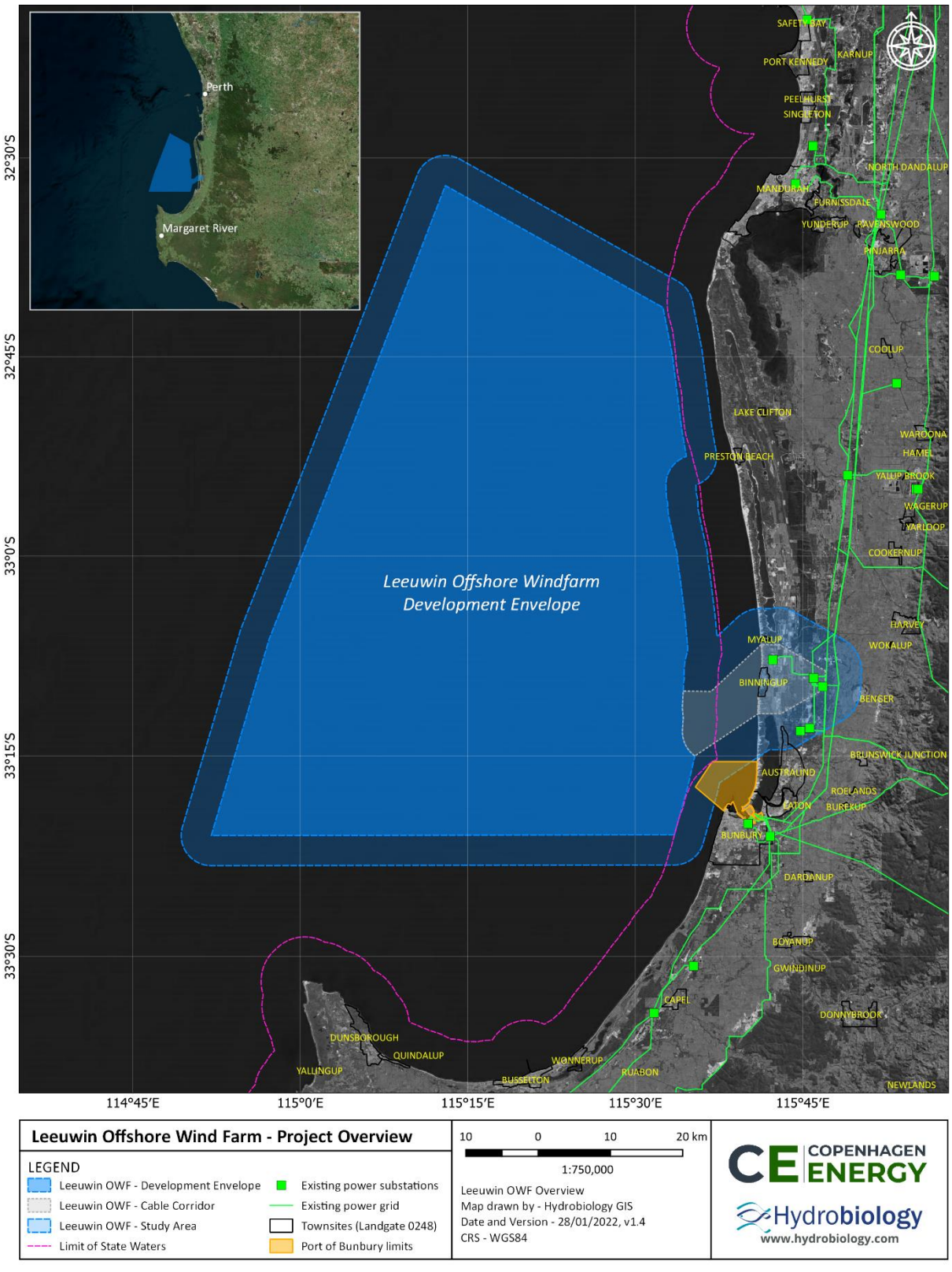
The Project is in the early development stage, and therefore many of the detailed design parameters are yet to be determined. The design process is evolving based on technical feasibility and commercial viability studies and will continue to be refined in response to environmental and social impacts identified, as well as the consultation process.

[1] Based on average household consumption of 5,198kWh / year and 60% load factor for the 3.5 GW OWF (AEMC, 2017)

PROPOSAL KEY CHARACTERISTICS

Summary of Proposal		
Proposal Title	Leeuwin Offshore Wind Farm	
Proponent Name	Leeuwin Offshore Wind Pty Ltd	
Short Description	The Proposal is for the construction and operation of a wind farm in Commonwealth Waters, within Geographe Bay, approximately 15 km to 70 km from the coast off the southwest region of Western Australia. The Proposal comprises the installation of up to 200 turbines, each up to 25 MW, associated substation platforms and export cable (within export cable corridors) for the transmission of electricity onshore to feed into the local grid or other power infrastructure. Once operational the proposed action will have the capacity to generate in excess of 3.0 GW of electricity (up to 11 Terawatt-hour (TWh) of power per year.	
Physical Elements		
Element	**Location**	**Proposed Extent**
Offshore wind farm elements: • Up to 200 turbines. • Up to 6 Offshore Substation Platforms. • Substructures and associated seabed foundations for turbines and platforms. • Inter-array cables linking individual turbines and platforms. • Offshore Export Cable.	Commonwealth Waters	Footprint = 1899.6 ha Development Envelope = 423,339 ha
Offshore wind farm elements: • Offshore export cable.	State Waters	Footprint = 170.4 ha Development Envelope = 5,041 ha
Onshore infrastructure including: • Landfall site • Transmission joint bay • Onshore export cables. • Onshore substation(s). • Connection into grid or other power infrastructure.	State Lands	Footprint = 20.9 ha Development Envelope =6,041 ha
Construction Elements		
Various construction phases may be required and a typical programme for installation of the Proposal would involve the key stages below, with overlaps where possible		
Offshore Infrastructure		
• Installation of navigation aids to support the construction phase. • Marine transportation of components to the installation sites within the windfarm area. • Seabed preparation work. • Installation of foundations (and associated scour protection if required). • Substructure installation onto installed foundations. • Installation of substations and inter-array subsea cables. • Installation of export cable(s), with trenching/protection as required. • Cable connection and commissioning at substations. • Erection of turbines. • Testing and commissioning.		

Coastal and Onshore Infrastructure		
• Preparation work, including clearing and topsoil storage, for onshore construction sites and access routes. • Establishment of temporary onshore construction sites. • Transportation of manufactured components (foundations, towers, nacelles, blades, gearbox, generators etc). • Onshore assemblage of key turbine tower components, then transport offshore with the nacelle and blades for final assembly. • Excavation or tunnelling at the landfall site.		
Rehabilitation		
At the completion of each construction phase, any temporary construction/laydown areas will be rehabilitated.		
Operational and Maintenance Elements		
Offshore Wind Farm		**Proposed Extent**
Electricity Generation and Transmission		Up to 11 TWh per annum
Once commissioned, the Proposal is intended to operate 24 hours a day, 365 days a year. The windfarm will operate automatically with each turbine operating independently of the others. The operation and control of the windfarm will be assessed by a Supervisory Control and Data Acquisition (SCADA) system, installed at each turbine and at the onshore control base. The SCADA system will enable the remote control of individual turbines or the windfarm in general, as well as information transfer, storage and the shutdown of any wind turbine in emergency circumstances. The windfarm will be serviced and maintained throughout its life from a local operation and maintenance base, and an ongoing programme of operation and maintenance activities would be developed and rolled out to support the efficient operation of the windfarm.		
Decommissioning Elements		
Offshore Wind Farm		
Requirements for decommissioning will be established through the planning and assessment phases of the Proposal. A detailed decommissioning plan will be prepared prior to the decommissioning process, in consultation with stakeholders and the relevant authorities, to ensure all approval requirements, environmental impacts, and mitigation measures are fully understood and reported. At this stage, it is anticipated that at the end of the operational life of the Proposal, offshore structures above the seabed would be removed. Offshore cabling would likely be left *in situ* to avoid impacts to the environment. Onshore underground cables would potentially be left in the ground with the cable ends cut, sealed and securely buried as a precautionary measure. Above ground transmission infrastructure would likely be dismantled. Port and harbour facilities are likely to be repurposed for other offshore activities.		
Other elements which affect extent of effects on the environment		
Proposal time	Maximum project life	Up to 50 years (with repowering)
	Construction phase	The proposed action will likely be developed in phases. It is currently planned that construction would span a nominal 36-month period, commencing in 2026 and ending in 2028, subject to the completion of the required permitting processes.
	Operation phase	Up to 50 years (with repowering)
	Decommissioning phase	Included in maximum project life



Leeuwin Offshore Wind Farm - Project Overview

LEGEND

- Leeuwin OWF - Development Envelope
- Leeuwin OWF - Cable Corridor
- Leeuwin OWF - Study Area
- Limit of State Waters
- Existing power substations
- Existing power grid
- Townsites (Landgate 0248)
- Port of Bunbury limits

10 0 10 20 km

1:750,000

Leeuwin OWF Overview
Map drawn by - Hydrobiology GIS
Date and Version - 28/01/2022, v1.4
CRS - WGS84

COPENHAGEN ENERGY

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