

ENVIRONMENTAL EFFECTS METADATA SURVEY FORM

Name of person updating the form

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Project name: Clarence Strait Tidal Energy Project

Project description:

Project Developer: Tenax Energy

Technology type: Axial flow turbines with gravity base

Resource (wave, tidal): Tidal

Project scale (test site, prototype, array, commercial): Planned

Installed capacity (MW): Up to 456 MW (1 MW per device)

Project Website: <http://www.tenaxenergy.com.au/projects.html>

Launch Date: TBD

Additional Description: The project has an area of approximately 1691 ha and is located within waters with current velocities in excess of 2.0 m/sec. This would allow for 456 turbines at this location.

Location: Clarence Strait is a narrow body of water in the vicinity of the Vernon Islands, approximately 50 km north of Darwin, Northern Territory and south of the Tiwi Islands. It links the Beagle Gulf in the west with the Van Diemen Gulf in the east. The Strait is situated within the Timor Sea with the Vernon Islands located within the Strait. The islands consist of North West Vernon, South West Vernon and East Vernon Island and Knight Reef. These islands form three channels that wind through the area. These are generally 100 m to over 1 km wide and have complex bathymetry.

The proposed Clarence Strait site was identified as the site with the greatest tide velocities in the greater Darwin vicinity. Clarence Strait experiences tidal variations of up to 8 m, producing extended periods of suitable tidal currents. The water depth in Clarence Strait varies from 25 to 50 m based on Australia Hydrographic Charts of the area (adequate depth for TEG) and the velocity ranges from 2.00 to 2.75 m/s.

Process status: Established in 2007, Tenax Energy identified a significant gap in Australia's renewable energy sector. Recognising that Australia is in a unique position with thousands of kilometres of coastline, Tenax Energy set about researching how to maximise this natural resource to generate green energy and reduce our greenhouse gas emissions.

Preliminary details outlining the Clarence Strait project were completed in December of 2008. As of July 8th, 2009, the project is currently subject to review under the Environmental Assessment Act (EA Act). During this period, there will be the opportunity for public to comment at the various stages in the assessment process. These opportunities will be listed on the items for public comment page and will be advertised in the local paper as they arise. No devices are yet in the water.

The first stage of the Clarence Strait project involves the establishment of a global centre of excellence in tropical tidal energy. This is supported by MOUs with the Research Institute for the Environment and Livelihoods at Charles Darwin University and with the European Marine Energy Centre in Scotland, and will form an integral part of the initial 10MW or pilot phase of the project. It will accelerate the development of the Clarence Strait project and at the same time contribute to the understanding of the technologies by regulatory bodies in tropical zones and in the Asia Pacific region.

Licensing information (brief description): A formal Notice of Intent (NOI) for assessment under the Environmental Assessment Act of 1982 was prepared by URS Australia Pty Ltd (URS) on behalf of the proponent Tenax Energy Pty Ltd (Tenax Energy). Although Northern Territory legislation applies to the project area, there is also Commonwealth legislation that will apply to the project as well, notably the EPBC Act.

Key Environmental issues: The proponent referred this proposal to the Australian Government under the Environment Protection and Biodiversity Conservation (EPBC) Act. On 28 January 2009, the project was deemed to be a controlled action and will be assessed under the bilateral agreement between the NT and Australian Governments. The controlling provisions are:

- Listed threatened species and communities (sections 18 and 18A);
- Listed migratory species (sections 20 and 20A); and
- Commonwealth marine areas (section 23 & 24A).

Tidal energy generation is a relatively new technology and as there are no previous examples of such a project in the proposed area, consideration will need to be given to site and species-specific monitoring programs for the identification and management of actual and potential environmental impacts. In addition, relevant technical data from environmental impact assessment studies for related technologies should be provided to assist in the assessment of impacts.

Environmental webpage: *link to project official environmental webpage (if available)*

Baseline studies and project effects studies: Clarence Strait Tidal Energy Project				
General description				
Receptor	Study description including question and/or objective (several can be listed per receptor)	Design and methods (brief description)	Results (brief description)	Status (planned, underway, completed, with dates)
Physical Environment	Provide maps and interpret the bathymetry of the turbine project area and along the	N/A	N/A	Planned

	cable route to identify any seabed features of significance.			
	Describe water quality of marine waters including temporal and spatial variations.	N/A	N/A	Planned
	Discuss the soil/sediment types and land units within the onshore project footprint including actual and potential acid sulphate soils and existing levels of erosion and other disturbances.	N/A	N/A	Planned
Marine Ecology	Describe floral & faunal species (including exotic/pest species) and biological communities including those of local, regional and national significance ¹ and listed migratory species that are found within and around the project area (including the wider area of Tiwi Islands, Shoal Bay and Van Dieman Gulf).	N/A	N/A	Planned
	Describe in detail, species' important habitats (including for breeding, foraging and migration paths), including maps of regional distribution of suitable habitat, and of habitat within the proposed development area that clearly identifies areas to be disturbed from development infrastructure.	N/A	N/A	Planned
	Describe the extent and behavior of vertebrate marine species in and around the project in particular sea turtles, dugongs, bird species, fish species (e.g. Narrow-barred Spanish mackerel, <i>Scomberomorus commerson</i> , sharks and rays) and cetaceans (e.g. Indo-Pacific humpback dolphins <i>Sousa chinensis</i> , Australian snubfin <i>Oraella heinsohni</i>).	N/A	N/A	Planned
Terrestrial Ecology	Describe and map native terrestrial and inter-tidal flora and fauna for the proposed onshore cable route and infrastructure.	N/A	N/A	Planned
Marine Transport	Describe the existing and projected maritime traffic use of the proposed project area.	N/A	N/A	Planned
	Describe the isolated danger or safety zones required to adequately mark and protect marine turbines and cable routes in the project area.	Consult with the Marine Safety Branch to determine device marking requirements.	N/A	Planned
Historic & Cultural	Identification of importance and vulnerability of features identified.	Conduct a detailed, physical maritime	N/A	Planned

Heritage Values		survey (eg remote sensing and ground truthing). Conduct an archaeological/heritage survey in the onshore area of the project.		
Social Values	Describe the impacts on boat based recreation such as fishing and tourism activities including scuba diving, boating and sailing and tourist charter fishing tours.	N/A	N/A	Planned
Hazardous Materials Management	Detail all chemicals, including fuels, to be stored and/or used on the project site. Outline the proposed methods for transportation, storage and use of these substances.	N/A	N/A	Planned
Reports or Papers	<ul style="list-style-type: none"> • Notice of Intent for Clarence Strait. December 17th, 2008. • Environmental Impact Statement Guidelines for Clarence Strait. July 2009. 			
Research Projects	<ul style="list-style-type: none"> • Environmental Impact Statement (EIS) Underway 			

Monitoring and adaptive management: Clarence Strait Tidal Energy Project				
General description				
Receptor	Monitoring program description including question and/or objective (several can be listed per receptor)	Design and methods (brief description)	Results (brief description)	Status (planned, underway, completed, with dates)
Physical Environment	Conduct a coastal erosion risk assessment of the shore crossing and any on-shore infrastructure.	N/A	N/A	Unplanned
Marine Ecology	Discuss measures to minimize identified impacts on species.	N/A	N/A	Unplanned
Marine Transport	Describe measures to minimize the impacts on local and international shipping users.	N/A	N/A	Unplanned
Historic & Cultural Heritage Value	Detail measures to mitigate impacts to any features at risk from the project.	N/A	N/A	Unplanned
Hazardous Materials Management	Detail use of responsible antifoulant compounds, or other antifoulant methods such as smooth surface or regular removal/cleaning of devices.	N/A	N/A	Unplanned
Reports or Papers	<ul style="list-style-type: none"> • Notice of Intent for Clarence Strait. December 17th, 2008. 			

	<ul style="list-style-type: none">• Environmental Impact Statement Guidelines for Clarence Strait. July 2009.
Research Projects	<ul style="list-style-type: none">• Environmental Impact Statement (EIS) Underway