Danish Energy Agency

Explanatory notes for the preliminary investigations and environmental assessments for Hesselø OWF (new site)

ID	Delivery	Note
2100	**Metocean**	
2101	Measurement Plan	Setting out the plan for the measurements with system documentation.
2102	Measurements (data)	Monthly and annual cumulative data sets (sub-numbering will be used). Measurements will include air temperature and humidity, fog (visibility), precipitation, wind speed and direction, wave height, period and direction, water level, current speed and direction.
2103	Measurement Reports	Monthly and annual reports for measurements (sub-numbering will be used).
2104	Site Metocean Conditions Assessment Report	Report on statistical assessment of normal and extreme metocean conditions for conceptual/preliminary design.
2105	Site Wind Conditions Assessment Report	Report on statistical assessment of normal and extreme wind conditions for conceptual/preliminary design
2106	Site Ice Conditions Assessment Report	Report on assessment of ice conditions for conceptual/preliminary design.
2107	Statement of feasibility from Certification Body	Review/certification of assessment reports (metocean, wind and ice).
2108	Reverification note for Site Metocean Conditions Assessment Report	Reverification of model basis for metocean conditions assessment against additional measurements.
2109	Reverification note for Site Wind Conditions Assessment Report	Reverification of model basis for wind conditions assessment against additional measurements.
2200	**Environmental assessments and permits**	
2201	Scoping of Strategic environmental assessment (SEA) for Hesselø South (Afgrænsnings udtalelse for miljøvurdering af plan for Hesselø Syd)	A scoping note from the competent authority (the Danish Energy Agency) stating the extent and level of detail of the SEA.
2202	Scoping of environmental impact assessment (EIA) of the land-based project for Hesselø (Afgrænsnings udtalelse for miljøvurdering (VVM) af landanlægget til Hesselø)	A scoping note from the competent authority stating the extent and level of detail of the EIA.
2203	Environmental Statement/SEA report for Hesselø plan made public (Offentliggørelse af miljørapport for plan for Hesselø)	The SEA report is to be published on the Danish Energy Agency's website. An eight weeks' public consultation will take place
2204	SEA summary statement (Sammenfattende redegørelse for miljøvurdering (SMV) af plan)	Based on the SEA report and public consultation, the Danish Energy Agency will prepare an SEA summary statement that will contain environmental conditions for the plan and general requirements to the contents of the EIA of the actual project. The SEA summary statement will be published on the website of the Danish Energy Agency. There will be a four weeks' appeal period.

2205	EIA report for the land-based project submitted and made public	The competent authority will issue the EIA report for the land-based project. An eight weeks' public consultation will take place.
2206	EIA permit for land-based project obtained (VVM-tilladelse til landanlæg meddelt)	The competent authority will issue an EIA permit after consultation period. The permit is subject to 4 weeks appeal period
2207	Planning documents for Hesselø on shore Plangrundlag (landsplandirektiv).	An approved planning consent is a prerequisite for obtaining an EIA permit and also for obtaining a building permit.
	Technical reports and reports on environment	
2208	Visibility analysis	Visibility analysis prepared for offshore wind farms scenarios
2209	Benthic fauna and flora	Data collection and baseline reporting for later EIA for the offshore wind farm
2210	Marine mammals (Year 1)	Data collection and baseline reporting for later EIA for the offshore wind farm – first year data collection
2211	Marine mammals (Final)	Possible second year of data collection and updated baseline reporting f or later EIA for the offshore wind farm
2212	Birds (Year 1)	Data collection and baseline reporting for later EIA for the offshore wind farm – first year data collection
2213	Birds (Final)	Possible second year of data collection and updated baseline reporting f or later EIA for the offshore wind farm
2214	Bats	Data collection and baseline reporting for later EIA for the offshore wind farm
2215	Fish and fish populations	Data collection and baseline reporting for later EIA for the offshore wind farm
2216	Fisheries	Data collection and baseline reporting for later EIA for the offshore wind farm
2217	Underwater noise and vibrations	Estimation and baseline reporting for later EIA for the offshore wind farm
2218	Radar and radio interference	Data collection and baseline reporting for later EIA for the offshore wind farm
2219	Marine traffic and safety of navigation (HAZID)	Data collection and baseline reporting for later EIA for the offshore wind farm
2300	**Seabed investigations**	
2301	Geology and sea-level, desk study	Based on existing data archives a geological study is performed to characterize the geology at the site including depositional history and environment as well as expectations to lithology. The study provides a base for nomenclature and soil unit definitions following Danish conventions. Furthermore, historical sea-level variations during Holocene is described to guide marine archaeological assessment of potentials for stone age heritage.
2302	Marine archaeology: Archaeological analysis, desk study	In advance of the geophysical surveys, a preliminary site assessment is performed to investigate archive information regarding cultural heritage.
2303	Geophysical site survey, report	A geophysical site survey including 2D UHR seismic survey is performed with full coverage in the project areas. The survey must map the bathymetry, the static and dynamic elements of the seabed

		surface and the sub-surface geological soil layers to at least 100m below seabed. The delivery will include a geophysical site survey report with relevant charts presenting the bathymetry, the seabed surface, and the geology. Furthermore, a GIS database with all interpreted results as well as relevant raster grids of seabed surface DTM is included. Native geophysical data is included in the delivery package including bathymetrical XYZ data, side scan sonar SonarWiz project and a Kingdom project with interpreted geological horizons.
2304	Preliminary geotechnical investigations, report	To establish a basis for an initial assessment of the OWF area, a geotechnical program including 8 boreholes, 30 seabed CPTs, seismic CPTs, P-S loggings and laboratory tests are performed. The investigations are reported provisionally as field reports following the demobilization of the marine vessels and later as geotechnical factual reports with full presentation of all investigations and laboratory results. The factual report is enclosed boreholes profiles, CPT logs, laboratory results and selected cross sections. A digital delivery of all results as AGS is included in the delivery package.
2305	Integrated 3D geological model	For the OWF project areas, a joint analysis of the geophysical site survey and the preliminary geotechnical investigations is performed to correlate to provide an optimized 3D ground model of the geological horizons and to provide a geotechnical characterization of the identified soil units. The work is delivered as an interpretation report including a digital package with a Kingdom project of the modified and optimized 3D ground model.
2306	UXO threat and risk assessment, report	A desk study is performed to characterize the threat from unexploded ordnance (UXO) on the seabed. The report includes a risk assessment as well related to the anticipated seabed activities and a plan for mitigating the risk.
2307	Marine archaeology: Geoarchaeological analysis, report	Based on the geophysical surveys, the Danish cultural heritage authority evaluates the risk of archaeology in the OWF project area. The work is documented in a report that identify possible locations with cultural heritage and advice on possible mitigative actions for the project.
2308	Export cables, cable route survey report	For the connection between the offshore wind farm to and landfall the cable route corridors are investigated with geophysical and geotechnical methods to map the water depths, the seabed surface, and the geology to 10m below seabed. Furthermore, the survey will map crossings intersecting the cable routes.

		The delivery will include a cable route survey report with relevant chart series presenting the bathymetry, the seabed surface, and the geology. Furthermore, a GIS database with all interpreted results as well as relevant raster grids of seabed surface DTM is included. Native geophysical data is included in the delivery package including bathymetrical XYZ data, side scan sonar SonarWiz project.
2309	Export cables, Cable Burial Assessment	A threat and risk assessment of the export cable protection will be performed including a preliminary analysis of appropriate installation methodologies and recommended depth of burial.
2310	Export cables, Landfall Site investigations	For the landfall location a terrestrial, geotechnical investigation will be performed to demonstrate the ground conditions for a potential installation with horizontal directional drilling.