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Site Studies – Various Sites 1 & 2

Expert support Wind & Water

Annex 5

Scope of Work

Colophon

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Contents

- Introduction 4
- 1. Project set-up 7
- 2. Roles and Responsibilities..... 10
- 3. Schedule Key Dates upcoming W&W studies 14

Introduction

Scope document

This document details the Scope of Work (SoW) to provide RVO with Wind & Water (W&W) expert support services for a number of sites.

Background

The Ministry of Economic Affairs and Climate Policy is responsible for the legislative framework for the development of offshore wind farms in the Netherlands. Within this framework (a) (concession) tender(s) for subsidy for construction and operation of (a) wind farm(s) will be organized. As part of the tender documentation, the participants will receive an information package in which detailed information on the offshore site is included. Detailed information about soil and wind & water conditions at the site will be part of this information package. The Contracting Authority for this assignment is the Netherlands Enterprise Agency (Rijksdienst voor Ondernemend Nederland - RVO).

Objective

RVO has been requested to prepare and collect all site data required for commercial developers to prepare a competitive bid. In order to achieve the highest results from the site investigations, RVO intends to contract high quality experts who can support RVO in managing the site investigations. The objective of this tender is conclude an agreement with Tenderers who can support RVO on the different site investigations regarding contracting, quality control and operational support.

RVO is looking for an expert support Contractor who can support RVO with managing the site investigations for potential future wind farm sites / zones, and who is able to support RVO with managing the interfaces between different site investigations.

In this tender RVO is looking for expertise in the field of wind & water (W&W) investigations.

Site Description

There are multiple W&W site studies ongoing, and many studies (MC and MA) will be initiated in the upcoming future. The order in which the different W&W studies will be initiated is still being discussed with The Ministry of Economic Affairs and Climate policy, although a general outline is anticipated.

As such, the potential sites, contractor(s) will provide expert support for are the search areas as indicated in figure 1 (but not limited to):

- Search area 3
- Search area 6
- Search area 7
- Search area 8

The expert services will not consider the full characterization of all the listed areas but will contain a selection of works. This selection can be adjusted due to the course of the execution of the WORK, to the needs and priority as set by the Contracting Authority.

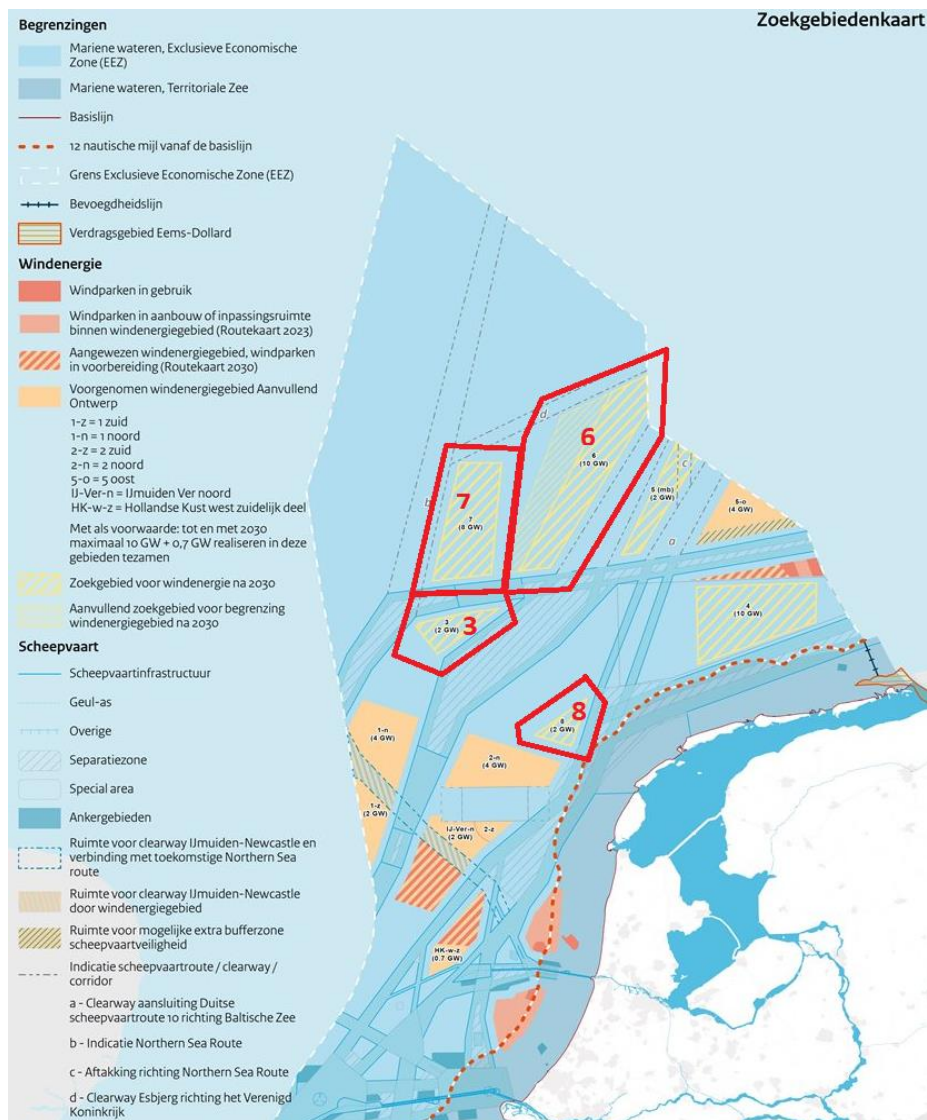


Figure 1: Site indication

Scope of Work

The Contracting Authority intends to conclude the contract with one contractor.

For the wind & water investigations of the future sites, the following expertise is requested from the expert support:

1. Expertise with Metocean measuring campaigns (MC) (total of 3).
2. Expertise performing duties as Offshore Client representatives during MCs (total of 3).
3. Expertise with Metocean assessment (total of 2) (Metocean Assessment - MA is a combination of the Metocean desk study, database and Wind Resource Assessment - WRA).

The SoW is to provide RVO with 8.000 hours of experts support as indicated above.

Main scope: 8.000 hours are specified for predetermined areas in figure 1.

Optional scope 1: 1.000 hours of expert support. The 1.000 hour scope is not specified for predetermined areas or - investigations. RVO would like to use the 1.000 hours of expert support for a wide array of investigations/enquiries, which have yet to be determined. During the contract RVO might need support with a new study or help with a new tender for a new selected (demonstration) site. As such, RVO wishes to reserve the right to use the optional hours with some degree of flexibility. Using them for sites and studies not listed/specified in this SoW though related to wind and water investigations. The optional scope might be used (in part) by RVO, but might also not be used. The use of the optional scope is to the discretion of RVO.

Optional scope 2: 1.500 hours of expert support. The 1.500 hour optional scope can be required when RVO decides to initiate more MC's and MA's.

Various sites in SOW

The search areas included into this SoW for W&W expert support are:

- Search area 3
- Search area 6
- Search area 7
- Search area 8

As mentioned, The Ministry of Economic Affairs and Climate will decide later in which order the sites will be developed. This tender focuses on expert support for the development of two of the aforementioned search areas. For now, the to be developed wind farm areas will be referred to as Various Site 1 (VS1) and Various Site 2 (VS2). The exact MC locations will be decided later as well, and in consultation with experts. RVO intends to execute a double campaign (MC) at larger windfarm sites combined with 1 MA. In this tender RVO intends to have expert support available for at least three (3) MC's with the option for a fourth (4) MC, two (2) MA's with the option of a third (3) MA's depending on new policy and insights.

A single MC (Metocean campaign) can be defined as a field wind and water campaign with various wind and water measuring instruments at one location. In our tenders these are mostly floating buoys with wind and water measurement instruments. For one MC location 3 buoys are used; 2 measuring in the field and 1 serves as spare buoy. A Metocean campaign has a typical duration of approximately 2 years. For more details and example data and reports please look at: <https://offshorewind.rvo.nl/>.

The SoW has been subdivided into the following works:

1). Providing expert support for MCs:

Tasks of expert support for the Metocean campaign include (but are not limited to):

- Support with preparing tenders for MC's.
- Evaluation of proposals of the tender
- Review project documentation
- Give input/feedback in meetings with contractor(s)
- Make notes in project meetings
- Review data (monthly)
- Review other deliverables
- (Data) management activities
- Other tasks related to the project

2). Providing offshore client representatives (OCR) during MCs:

Tasks of OCRS include (but are not limited to):

- Presence during buoy deployments
- Overseeing buoy modification (at location)
- Presence during buoy swaps and buoy recovery
- Controlling role - works are executed according to project documentation and safety standards
- Play a role in field reporting between contractor and RVO (End of Cruise reports)
Participate and contribute in various project meetings (e.g. close out meetings) regarding QHSE during mobilizations and operations.

3). Providing expert support for MAs:

Tasks of expert support for the Metocean assessment (include but are not limited to):

- Support with preparing tender documents
- Evaluation of proposals of the tender
- Give input/feedback in meetings with contractor(s)
- Data management activities
- Examination and verification contractor work
- Other tasks related to the project

4). Optional scope 1:

1000 Hours that are reserved for support for new unforeseen developments, like helping with a tender or support for a wind and water study for a new wind farm

5). Optional scope 2:

The 1.500 hour optional scope can be required when RVO decides to initiate more MC's.

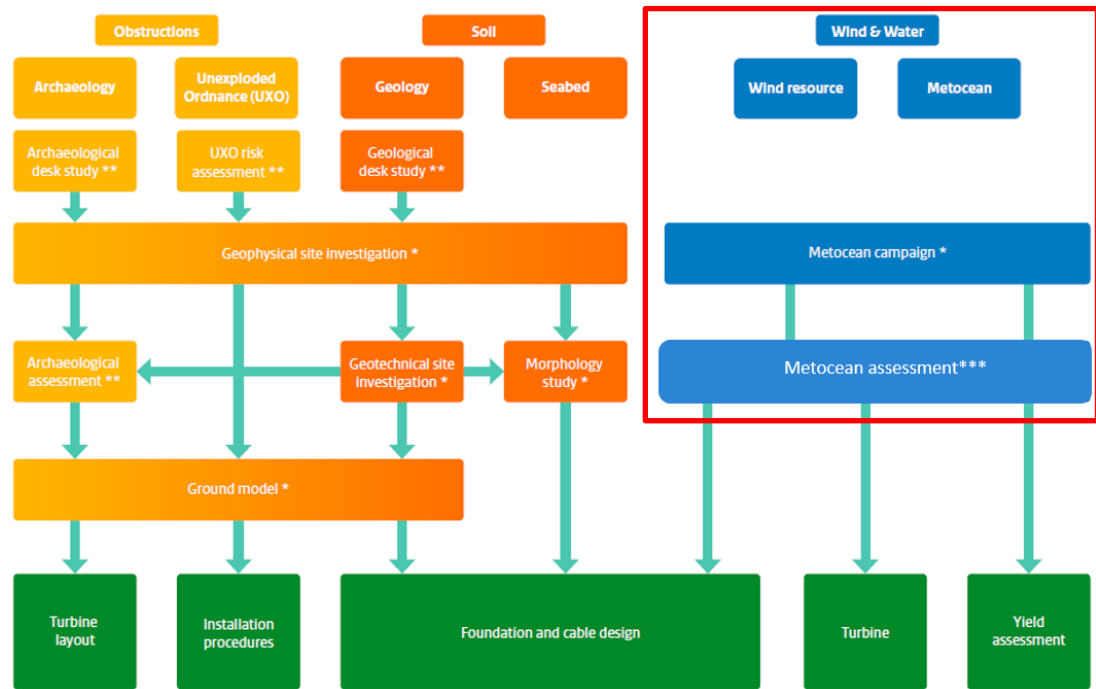
1. Project set-up

The W&W package in will contain the site characterisation studies as indicated by the red outline in 2.

General expert support will comprise of supporting RVO with selecting a contractors, assessing study/campaign plans and quality assurance in relation to reporting and provided deliverables (data/reports) for the separate parts of the W&W site studies.

Included in the Wind and Water studies are the MC and the MA. The latter being a combination of the Metocean desk study, the wind resource assessment and creation/verification of the metocean data-base.

The contractor providing expert support will also deliver a lead expert managing the interfaces between the different studies and the different site study Contractors.



* Certified, ** Quality approved, *** combined metocean deskstudy and wind resource assessment

Figure 2: Wind and Water site characterisation package

RVO will manage the wind and water site characterisation for the different sites, hereafter called PROJECT. Expert support will be required to assist the RVO team with in-depth knowledge.

To visualise the PROJECT team set up an organization chart is presented in 3.

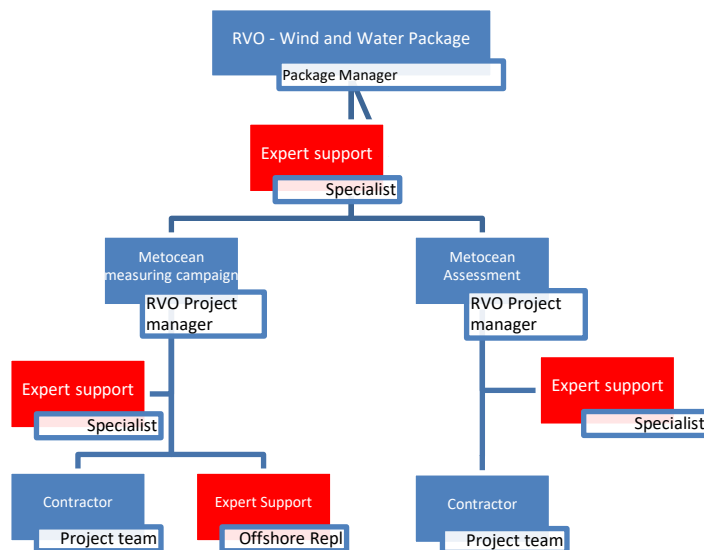


Figure 3: Organisation chart W&W studies

Items marked in red are presenting the areas where in-depth knowledge support by external experts is requested by means of this SOW.

The PROJECT organisation will be built under supervision of a package manager from RVO. The package manager will be responsible for interfaces between studies, overall planning and overall budget.

In addition to the package manager from RVO there will be multiple RVO project managers assigned to the PROJECT to manage the individual studies. A single RVO project manager can be assigned to multiple studies and can be adjusted during the PROJECT.

The expert support Contractor is expected to supply lead expert(s) and specialists in the sectors as presented in 3. The lead expert will need overall knowledge to participate into the different studies and to advise the RVO package manager where necessary. The main task of the lead expert will consist of interfacing between the studies. For in-depth discussions, reviews and support through the PROJECT the lead expert (and the RVO project managers) can call in the specialist experts. For detailed roles and responsibilities of the requested expert support reference is made to section 2 of this SOW.

Aim of the project set up as described is to optimize the interfaces and optimise the use of the specialist knowledge.

During the execution of the PROJECT all the communication between the different parties as described above and site study Contractors will be managed by the RVO project manager. The communication lines are visualised Figure 4..



Figure 4: Communication lines

Note: If required during the PROJECT direct communication lines can be established between the Experts and site study Contractors upon discretion of the RVO project manager(s).

2. Roles and Responsibilities

This section describes the roles and responsibilities for the expert support during the PROJECT.

Table 1: Hours for the main and optional Scope of Work, divided per required expertise.

Role	Hours main scope (8.000 hours)	Hours optional scope 1 (1000 hours)	Hours optional scope 2 (1000 hours)
Lead expert	1000	1000	1500
Specialists Expert Metocean measuring campaign	3500		
Client representatives	1500		
Specialists Expert Metocean assessment	2000		
Total amount	10.500		

Lead expert (1000 hours in main scope)

This expert must have knowledge in both Metocean assessments (MA: metocean desk studies (MDS) and wind resource assessments (WRA)) and Metocean campaigns (MC). The lead expert shall be capable to participate during the calls as representative of all specialist experts. The lead expert should be able to answer questions related to the studies or be able to capture the essence and transfer them to the experts to arrange follow up.

To improve interfaces and consistency it is important that a single lead expert will supervise and participate in all studies together with the RVO project managers.

If required a deputy (temporary) lead expert can be assigned to support the lead expert during absence or when workload requires.

Required know-how; the lead expert will need to have general knowledge regarding MCs and WRAs preferably within the North Sea. For detailed in-depth knowledge the lead expert can consult the specialist experts in the team, but the lead expert will need the following required know-how;

- Project management and interface skills;
- The general meteorological and oceanographic conditions preferably in the North Sea;
- State of the art methods and equipment for metocean data acquisition by using LiDAR based measuring systems;
- Insight in the metocean data required for wind farm engineering design and planning of vessel operations;
- Assessing data of MCs (meteorology, physics).

Activities and responsibilities (but not limited to)

- Participate in meetings related to Wind resource assessment, MCs, Metocean desk study and offshore operations;
- Help define strategy for future MCs and MAs and preparation of associated procurement documents;
- During the meetings it is expected that the lead expert can represent the expert group and participate in discussions;
- Manage interfaces between studies, experts and RVO;

- The lead expert will have to share information between the teams so that all experts have all the required information. When questions arise the lead expert will arrange follow up with the correct party;
- Quality assurance and quality control;
- Participate in webinars;
- Drafting the scope of work for contractors to execute the studies;
- Assessing the contractor's bids.

Expert support contractors are requested to offer **one** senior expert for the lead expert position. Additional experts offered will be assessed as back-up experts.

Specialist Expert Metocean measuring campaign (3500 hours in main scope)

RVO is considering to contract site study Contractor(s) to execute MCs for VS1 and VS2 with multiple floating LiDAR systems. The datasets and reports will (generally) cover monthly periods, a yearly (12 months) dataset accompanied with a post-processing report, and a two year (24-months) dataset accompanied with a post-processing report. Support during tender process for the MC is included in this SOW.

The expert(s) must have experience in acquiring metocean data for offshore wind farms, preferably in the North Sea.

Required know-how:

- a. The meteorological and oceanographic conditions in the North Sea;
- b. State of the art methods and equipment for metocean data acquisition by using LiDAR based measuring systems;
- c. Insight in the metocean data required for wind farm engineering design and planning of vessel operations;
- d. Assessing and interpretation of data of metocean measuring campaigns (meteorology, physics).

Activities (but not limited to):

- Help define strategy for future MCs and MAs and preparation of associated tender documents;
- Review and evaluate proposals of the MC tender;
- Support in managing the MC: check the planning, assist in document control (including check on required actions from progress meetings);
- Review of data and (validation) reports (certification) of the deployed metocean systems;
- Quality assurance and quality control including providing a Statement of Compliance as a quality certificate that the metocean data is in conformance with industry standards and for purpose, after review of the data and data (validation) reports;
- Attend progress meetings with the MC contractor;
- Disclosure of information to the market (publication at offshorewind.rvo.nl, contribution to the project and site description, market questions, webinars, etc.).

Offshore Client representatives (1500 hours in main scope)

The offshore experts must have a training as Client REP, understanding of contract law, project documentation and HSE with a valid BOSIET and medical (or equal) as minimum.

Required know-how:

- a. Method Statements for deploying / recovering / lifting / towing buoys/platforms;
- b. State of the art methods and equipment for metocean data acquisition by using LiDAR based measuring systems.
- c. QHSE (Quality, health, Safety, Environment) within offshore environment

Activities (but not limited to):

- Review of Method Statements, Operational reports and other documentation from the MC Contractor;
- Attending kick-off meetings at locations before operations for deployment or recovery of buoys;
- Presence as Client Representative during offshore operations for maintenance, deployment, recovery or inspections or other of the metocean buoy(s);
- Reporting on the operations.

The offshore operations are usually planned at short notice and are mostly single day work executed with small vessels. Expert contractors are requested to offer **five** available offshore client representatives (OCR's) . Additional OCR's will be assessed as back-up OCR's.

Specialist Expert Metocean assessment (2000 hours in main scope)

The purpose of the metocean assessment (MA) is to provide the meteorological and oceanographic (metocean) conditions for business case calculations and to serve as input for the design, installation and maintenance of wind turbines, inter array cables, substations and their support structures at planned Wind Farm Zones.

The analysis is based on the best available data sources, to be carried out with state-of-the-art methods. The results (i.e. tables, graphs) will be made available through reports and a digital metocean database that will enable obtaining output at any requested (x, y) location within the site boundaries.

The Wind Resource Assessment component of the MA shall provide data that can be used as an input by potential wind farm developers for future wind farm modelling, energy yield assessments and business case calculations for the offshore wind farm to be developed.

Required know-how:

- a. Assessing and interpreting data and wind resources of metocean measuring campaigns (meteorology, physics);
- b. Assessing the wind climate of the North Sea;
- c. Wave and current modelling and maximum wind and wave conditions and extreme value analysis;
- d. Insight in the metocean data required for wind farm engineering design;
- e. Preferably know how of (floating) LiDAR based measurements and resource assessments.

Activities (but not limited to):

- Updating and preparing the procurement documents for the metocean assessment tender;
- Help define strategy for future MCs and MAs and preparation of associated procurement documents;
- Review and evaluate proposals of the metocean assessment tender;
- Technical support in the execution of the metocean assessment and database by the Contractor;
- Review of the (draft) reports of the metocean assessment;

- Disclosure of information to the market (publication at offshorewind.rvo.nl, contribution to the project and site description, market questions, webinars, etc.).

Table 2: required experts for Scope of Work

Role	amount of experts (junior, medior, senior)	Required amount of senior experts	available offshore client representative
Lead expert*	1	1	-
Metocean campaign	1 or more	1 or more	-
Metocean assessment	1 or more	1 or more	-
PM support**	None or more	-	-
Client representatives	-	-	5
<i>*the lead expert can take multiple roles</i> <i>** These persons will not be assessed</i> <i>The core team of experts should consist of minimum 2 and maximum 6 experts with a minimum of 2 and a maximum of 5 senior experts.</i>			

3. Schedule Key Dates upcoming W&W studies

Table 3: Schedule and interfaces related to the delivery of the Metocean campaign, offshore client representatives and Metocean Assessments.

<i>Metocean Campaign (MC)/Metocean Assessment (MA)</i>	<i>Estimated Schedule for delivery (estimated)</i>	<i>Various Site</i>	<i>Task included in SoW</i>
Providing expert support for Metocean Campaign			
MC *	2023	VS1+VS2	Creating tender documents
MC *	2024	VS1+VS2	Evaluation of proposals
MC *	2024	VS1+VS2	Project documentation review
MC *	2025-2026	VS1+VS2	Review data and reports (monthly review) + (yearly review)
MC *	2025-2026	VS1+VS2	Join progress and project meetings
Providing Client Representatives			
MC *	2025-2026	VS1+VS2	Buoy deployment, modification, exchange and recovery
Providing expert support for Metocean Assessment			
MA	2025	VS1+VS2	Creating tender documents
MA	2025	VS1+VS2	Evaluation of proposals
MA	2026	VS1+VS2	Project documentation review
MA	2027	VS1+VS2	Examination and verification contractor work
MA	2027	VS1+VS2	Join progress and project meetings
* Note that this envelopes three (or four) Metocean Campaigns (likely) executed/ongoing simultaneously			
<i>This table provides an estimation of the dates. Tenders cannot derive any rights from the provided information.</i>			

