



## **31122403-NR-Appendix 12-Awarding criteria lot 1 Nautical Radar**

Requirement specification General MIVSP LiDAR

Case number: 3112 2403

Date: 18/05/2017

Status: Final



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### Colophon

Issued by:	Ministry of Infrastructure and the Environment
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## Introduction

The quality assessment of the registration takes place, based on the answers to the questions, provided by the tenderer. The tenderer is required to answer the three questions below. Points can be scored for every question.

Information provided that is not related to one of the questions will be ignored and not included in the assessment. The tenderer is required to:

- Answer every question separately, in less than 4 pages A4 (font Verdana, font size 9) including images, unless the question indicates otherwise;
- not refer to answers to previous questions or include other referrals;
- not combine the answers to different questions into one single answer;
- refrain from stating contradictions in the answers.

You are required to keep to the maximum number of pages when answering the questions. If desired, you can skip the question's text when answering, but you must leave the question number, making it obvious which question your answer is related to. For the assessment, the assessors are instructed not to read any more pages than the maximum number permitted. If more pages are submitted, then only the first pages up to the maximum amount will be assessed.

***The work activities and measures mentioned in the answers are required to be part of the services offered and prices provided by the tenderer. The work activities and measures not included in your prices, cannot be mentioned in your answer, nor can they be charged as additional costs.***



## Quality Nautical radar

### Award criterion 1: Accuracy of the system (25%)

Points of attention with regard to the accuracy of the detection:

1. The detection accuracy of the sensor has been proven, based on a so-called 'coverage diagram' conform the resolution requirements (tangential and radial resolution) set in the VSE. (0-3 points)
2. Specifications of the radar showing that the radars comply with IALA guidelines 1111 (target type 2, availability, capability), conforming requirement set in the VSE. (0-3 points)

#### Objective

The objective of the customer is to gain insight in the accuracy of the Nautical Radar to be supplied by the tenderer based on practical experience and the expected weather conditions at the location

### Award criterion 2. Vision on corporate social responsibility (5%)

Describe your vision with regard to corporate social responsibility for the requested Nautical Radar sensor.

Award criterion 2 is subdivided into a sub-award criteria:

- A .The way in which the Contractor has organised its life-cycle management, focusing on the recycling of used materials for the Nautical Radar sensor.

The customer mentions the following points of attention:

- The way in which the Contractor handles sustainable materials; (0-3 points)
- The choices of the Contractor regarding the use of sustainable materials. (0-3 points)

#### Objective

The objective of the Customer is to gain insight in the work methods of the Contractor in terms of corporate social responsibility.

### Award criterion 3: Maintenance philosophy (10%)

How does your maintenance philosophy contribute to this project through remote management and remote control.

#### Points of Interest

Points of Interest Life Cycle:

1. Which methods and resources you apply(0-3 points)
2. How does your methodology and resources fit into the organization of the client and the relevant maintenance parties; (0-3 points)
3. How to respond to innovation in a timely manner; (0-3 points)
4. How you have a proactive attitude towards proposals for innovations, both in processes and in systems; (0-3 points)
5. How innovations can lead to cost reduction and / or improvement of quality and availability and how you handle this. (0-3 points)

#### Points of interest Maintenance (onshore and offshore):

6. What specific measures are taken to ensure continuity; (0-3 points)
7. What principles do you use to arrange for this maintenance and partly to be carried out by third



parties; (0-3 points)

8. High availability; (0-3 points)

9. High quality, useful data recovery; (0-3 points)

10. Expert and fast support, on / off-site support offshore. (0-3 points)

### Objective

The objective of the client to understand how this contributes to RWS's goals (future reliability, reliability).

## Award criterion 4: Risk Management (15%)

Describe what you think what the most important success factors are in providing, managing and maintaining services related to the collaboration with the Site Integrator and what risks do you see?

- Success factors: Delivery, management and maintenance
- Lessons learned: Delivery, management and maintenance
- Risks: Delivery, management and maintenance

The following practical case has to be worked out by the contractor what the approach is and how it is solved:

The Tennet platform has lost its power detection system and it is not recovered after the power failure has been solved due to an overall power failure. Initially, it seems that the internal radar sensor equipment does not function properly.

The description shows:

- 1) How the contractor seeks information after notification that the radar sensor system does not provide data and determines where the problem is; (0-3 points)
- 2) What contacts and information you need to find a solution and what risks you see in this regard; (0-3 points)
- 3) In case of hardware replacement this is coordinated and which risks should be managed. (0-3 points)

### Objective

The client's objective is to gain insight into the success factors, lessons learned and risks with regard to delivery, management and maintenance

## Award criterion 5: Differentiation between disruptions by ships and wind turbines in sensing range (20%)

How does your system distinguish "clutter" among shipping and wind turbines.

Points of attention:

- a. Waves(0-3 points)
- b. Mist(0-3 points)
- c. Precipitation(0-3 points)
- d. Wind turbines(0-3 points)
  - How the system deals with rotating turbine blades
  - To what extent the rotating turbine blades influence detection, identification and tracking of shipping
- e. ships(0-3 points)
- f. electro-magnetic Interference/Compatibility (EMI/ EMC) (0-3 points)

### Objective



The objective of the customer is to gain insight in the offshore performance of the Nautical Radar to be supplied by the tenderer.

### **Award criterion 6: Case radar coverage safety zone TenneT platform Alpha and Beta in wind park Borssele (25%)**

A proper coverage area with Nautical Radar is essential to support the monitoring of and enforcement on the shipping in and around wind park Borssele, including passage and co-use. In terms of the means of proof, the radar is deemed an indispensable addition to AIS, for "caught in the act" situations as well as beyond. In many cases, AIS is the initiator/trigger for a criminal offence, where additional evidence is required (verification). Also because AIS can be deactivated and/or influenced, the ship is therefore not visible on the Coast guard centre's screens, radar is an essential precondition for successful reinforcement<sup>1</sup>.

The TenneT platforms require radar coverage for the 500 m safety zone around the platforms.

The description shows:

1. How the contractor determines the number of radar sensors, with a substantiated concept coverage plan. (0-3 points)
2. Which types of radars are required.
3. In what way a site integrator can be supported with the implementation that he is responsible for. (0-3 points)

### **Objective**

The objective of the customer is to receive a good price-performance ratio of the radar coverage in the safety zone TenneT platform Alpha and Beta in wind park Borssele.

## **1. Background information**

With regard to the Electricity Supply Act, TenneT is the most appropriate grid operator at sea, designated, as such, by the Ministry of Economic Affairs. The task for TenneT TSO BV: Realise five platforms, connection to the wind regions at sea before 2023.

Realising the gathering of IV data and making it available to third parties in the RWS-datacentre is the responsibility of Rijkswaterstaat Centrale Informatievoorziening (RWS-CIV).

The wind turbine park consists of an Offshore Substation (OSS), a generic platform with associated Wind Turbine Generators (WTG). On the OSS all data of different sensors is collected. Regarding the Nautical Radar, it is possible to position it on the wind turbines, or take the opportunity of improving the traffic image by positioning the Nautical Radars on different WTG's.

For the coming period, the platform is the first part of the planning. Placing the wind turbines will be realised in phases at a later stage, by two different parties (Dong Energy and Blauwwind).

## **2. Problem description**

VTS Schelderadarketen (SRK) provides local radar and AIS-data to the Coast Guard, but covers only part of the area where the TenneT platforms with radar will be placed. Therefore, for the

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<sup>1</sup> Both administratively and criminal



detection of small vessels, IALA target type 2, around the TenneT platforms, additional radar coverage is required.

### 3. Objective

Primary objective of such a radar is the monitoring of and supervision on the shipping in and around wind park Borssele. The Dutch Coast Guard monitors shipping in and around the wind turbine park for maritime safety, Search and Rescue (SAR), also in relation with monitoring, overseeing and supervision of 'passage and co-use'.

Secondary objective is the inclusion of other interests, such as for instance:

1. TenneT TSO BV, owner of the platform, the monitoring of shipping around the platform.
2. Schelder Radar Keten (SRK), with the interest of an improved traffic image of the shipping route on the west side of the wind park.

A distinction is made between Safety and Security.

- Safety is related to what is necessary to be able to adequately carry out the *Service provision tasks* of the Coast Guard. Safety means maritime safety (including the monitoring and supervision of passage and co-use), assuming the cooperative acting of skippers.
- Security is understood to include external border control, crime, human trafficking, drug trafficking. Such considerations are based on an attitude of non-cooperative conduct (deliberately 'under the radar').
- As part of the monitoring and supervision of 'passage and co-use' from a traffic safety point of view, the requirements mentioned under Safety will suffice.



## 4. Requirements

### 4.3. Interests

With regard to the abovementioned, two sessions are required during which the different interests of parties involved are discussed. See table 1, the different interests of the parties involved concerning radar sensor(s) at wind park Borssele.

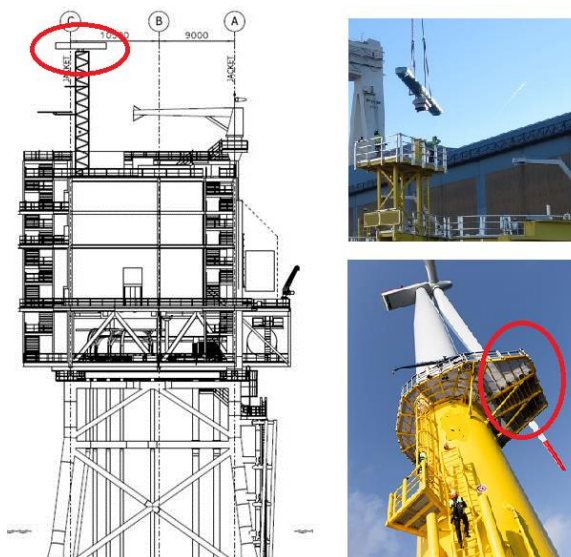
**Table 1. Interests of the parties involved concerning radar sensor(s) wind park Borssele**

Organisation	Interest
<b>Coast Guard</b>	<ul style="list-style-type: none"><li>• Monitoring and supervision shipping wind region Borssele and surroundings</li><li>• Future-proof irt. Modernisation Coast Guard (MOC-project)</li><li>• Safety (Service provision Coast Guard)</li><li>• Security (Enforcement Coast Guard)</li></ul>
<b>DGB-maritime matters &amp; WVL</b>	<ul style="list-style-type: none"><li>• (outside wind park) safety of navigation</li><li>• Incidents &amp; calamity abatement (via Coast Guard)<sup>2</sup></li><li>• (outside wind park) Accessibility NCP &amp; Sea ports (economical interest &amp; security)</li><li>• (outside wind park) Durability for the future<ul style="list-style-type: none"><li>◦ Decrease of manoeuvrable area</li><li>◦ VTS &gt; 12 NM</li><li>◦ e-Navigation</li><li>◦ Autonomous sailing<ul style="list-style-type: none"><li>◦ GMDSS (Global Maritime Distress and Safety System)</li></ul></li></ul></li></ul>
<b>TenneT</b>	<ul style="list-style-type: none"><li>• Securing safety zone transformer station (500 m) against intruders and collisions with the transformer substation</li><li>• Preventing collisions by early detection of ships on collision course.</li><li>• Monitoring cable corridors</li><li>• Presence of radar has a deterrent effect on illegal activities</li></ul>
<b>ScheldeRadarKeten (SRK)</b>	<ul style="list-style-type: none"><li>• Joint inclusion opportunities</li><li>• Safety of Navigation<ul style="list-style-type: none"><li>◦ Specifically 'roundabout' Schouwenbank maritime intersection</li></ul></li></ul>
<b>RWS Zee and Delta</b>	<ul style="list-style-type: none"><li>• Monitoring and supervising shipping wind region Borssele and surroundings</li><li>• Future-proof irt. Modernisation Coast Guard &amp; policy developments)</li></ul>
<b>Wind park owners</b>	<ul style="list-style-type: none"><li>• Security, monitoring of all assets within the wind park</li></ul>

<sup>2</sup> Can also be done by means of AIS and VHF



#### 4.4. Current details



**Figure 1.** Transformer offshore station (OSS), antenna height to be expected: 58 m LAT (Lowest Astronomical Tide). Transition piece 22m LAT.



**Figure 2.** Coverage area wind park Borssele

Explanation table 2. The coverage area is 500 m around the two green dots (OSS), 2NM shaded area around the wind park, 50 m around some 300 wind turbines, corridor through the wind park, the internal wind park. Outside the wind park to the right of the green line VTS area SRK and located along shipping routes. See figure 2.

Inside and outside wind park Borssele			
Coverage area	Vessel Traffic Service (VTS)		No VTS
<b>Primary interest</b> 1. safety zone - 500 m, around OSS - 2 NM, around windfarm - 50 m, around wind turbine 2. Corridor 3. Wind park		Capability	<i>Advanced</i>
		Availability	90-95% <sup>3</sup>
		Coupling	<i>Existing infrastructure</i>
		Target type	2
<b>Secondary interest (outside)</b> - VTS area - Traffic separation system	Capability	<i>Advanced</i>	
	Availability	99.9%	
	Coupling	<i>Existing infrastructure</i>	
	Target type	2	

**Table 2. Coverage area inside and outside wind park Borssele**

For the primary interest (monitoring, supervision of shipping in and/or around the wind park) the specifications of the variant 'no VTS' suffice.

For the secondary interest (ScheldtRadarketen, developments of VTS on the North Sea in the future, shipping routes – for instance approach areas Rotterdam Port) the specifications of the variant 'VTS' will suffice.

#### Further explanation table 2

Radar coverage in a wind park is of considerable technical complexity. For instance the revolutions of the blades of a wind turbine cause reflections in the radar image.

<sup>3</sup> 15 days downtime = availability 95.8%, 30 days downtime = availability 91.8%



*Capability (suitability)*

Use the class Advanced as capability (suitability), so that the traffic safety can be monitored and maintained under the weather conditions and conditions under which passage and co-use can be expected.

*Availability*

For availability make a distinction between No VTS and Yes VTS. For VTS, use an availability of 99.9%, which corresponds to the standards used within ship guidance. The availability for 'No VTS' is between 90 and 95%.

Monitoring (and enforcement) of shipping in and/or around the wind park, including passage and co-use, is not regarded as ship guidance (VTS).

But in order to be able to use the radar coverage in and/or around the wind park for secondary interests, SRK, approach area Rotterdam Port and in with an eye on future policy developments (such as VTS outside territorial waters, 12 miles), the availability should comply with the VTS-norm).

*Target type (Goals)*

For all scenarios and variants, as a target type (goal), IALA class 2 (In-shore fishing vessels, sailing boats and speedboats), radar cross section (RCS) 3 m<sup>2</sup> and height 2 metres above sea level (ASL) should be used. This target type additionally corresponds to the current small-targets detection, as currently coupled at the Coast Guard.