



Ministry of Economic Affairs and  
Climate Policy of the Netherlands



## WORKSTREAM 2 – SITE SPECIFICS

## SITE INFORMATION PACKAGE

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

## Contents

1. Document Purpose .....	3
2. Context .....	3
3. Site Location & Description .....	4
3.1 Site Location .....	4
3.2 Site Description.....	6
3.3 Available land for development .....	7
4. Terms & Definitions.....	8
5. Netherlands relevant Laws and Regulations .....	9
6. IAEA Safety & EUR Regulatory Requirements and Guidelines .....	11
7. Websites of Interest for Conducting the Site Evaluation & Specific Studies.....	13
8. Available Documents .....	14
8.1 Deltares Reports .....	14
8.2 Rizzo Reports .....	14
9. Site Information Package .....	16
9.1 Introduction .....	16
9.2 Deltares reports information .....	17
9.3 Additional Rizzo reports information.....	23

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

## 1. Document Purpose

The purpose of this document is to identify the available site technical data in existing reports and to elaborate a Site Information Package (SIP) for the Borssele II site. This Site Information Package shall be used as input by the Vendor for the delivery of the Technical Feasibility Study (TFS).

This document is a fair representation of the available information at issuance date.

## 2. Context

These studies are an extract of the ISAR (Intermediate Safety Analysis Report) which has been prepared at that time. As those studies were issued in the period of 2011 and 2012, they do not necessarily comply with latest Dutch and IAEA rules and methodologies.

These reports are interpretative reports and original or factual datas are not always provided, especially for seawater characteristics and meteorological datas, thus making impossible to calculate or verify the provided statistical datas for the required level/return period.

In order to facilitate the Vendor 'searches for design parameters in these reports, the corresponding chapters have been listed in the document.

In 2023, Deltares has been commissioned by EZK to undertake a high-level site evaluation of the Borssele II site including a feasibility and detailed modelling cooling study for two nuclear units. Within the scope of these studies, external hazards were re-assessed in accordance with the IAEA SSR-01 guideline:

- Evaluation of fault capability;
- Evaluation of ground motion hazards (including human induced seismicity);
- Evaluation of volcanic hazards;
- Evaluation of extreme meteorological hazards;
- Evaluation of rare meteorological events;
- Evaluation of flooding hazards;
- Geotechnical characteristics and geological features of subsurface materials;
- Evaluation of geotechnical hazards and geological hazards;
- Evaluation of other natural hazards (hail, snow, forest fires, lightning);
- Changes of hazards and site characteristics with time.

The following hazards were not re-assessed or considered in the scope of Deltares site evaluation:

- Evaluation for multiple nuclear installations on the same site (co-existence with Borssele 1);
- Feasibility of emergency response actions;
- Human induced events on the site or in the region (except for human induced seismicity);
- Potential impact of radioactive releases and public exposure.

In case of conflict or contradiction between reports, the latest report will take precedence. If additional site data are needed, EZK should be notified in order to provide additional guidance.

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

### 3. Site Location & Description

#### 3.1 Site Location

The government designated the Borssele area as “Preferred Location” (“Voorkeurlocatie”) for the Nuclear New Build Plant (Borssele 2) in its letter to Parliament dated December 12<sup>th</sup>, 2022.

More precisely, the Site of the NNB will be located along the north bank of the Westerschelde and south of the Van Cittershaven in the Vlissingen-Oost harbour area. The boundaries for lay-down and logistical area will be defined within the neighboring areas through an iterative process between Vendor, EZK and local stakeholders.

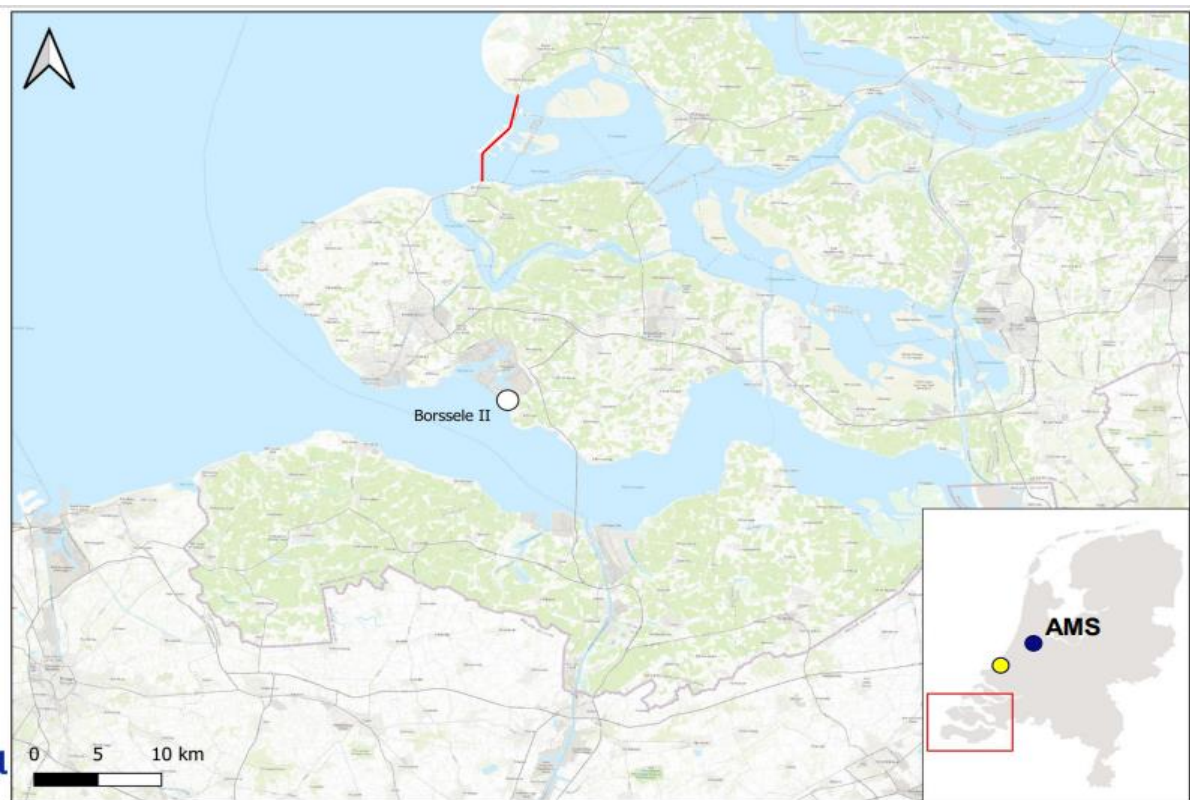


*Designated area for the NNB development*





Currently allowable noise level (excesses shall be reported in WS2 Site Specifics Deliverable)



Site Location

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

## 3.2 Site Description

The proposed Site is situated in the industrial area Sloegebied Vlissingen-Oost near the existing nuclear power plant Borssele 1 at about 500 metres from the Westerschelde.

It is located in the Vlissingen-Oost harbour area north of Europaweg-Zuid, west of Europaweg-Ost and railroad track, and east of the Westerschelde. The railroad track is also used for the transporting anhydrous ammonia by Railway Tank Cars (TRCs). The Vlissingen-Oost harbour area (Havengebied Vlissingen-Oost) is managed and controlled by the port authority N.V. Zeeland Seaports (ZSP).

The site center point is located 1.9 km northwest of the village of Borssele in the municipality of Borssele and 1 km from the southeast border of the municipality of Vlissingen.

A number of harbours such as the Van Cittershaven, are located in the Vlissingen-Oost harbour area. Industrial facilities in the immediate area include shipping facilities along the waterways, warehouses, railroads and rail yards, a petroleum refinery (Zeeland Refinery [ZR]), LPG storage, chemical plants, manufacturing, radioactive waste storage and wind turbines. The area surrounding the industrial area is used for agriculture, residential areas, and recreation as the most significant uses (see Figure 2 Vlissingen-Oost Industrial Area)

The Westerschelde is the seawater estuary connection from Antwerp to the North Sea and opens to the North Sea at Vlissingen approximately 12 km to the west of the of the site and extends upstream to Antwerp, Belgium, 40 km to the southeast.

Initial studies showed that the cooling water can be taken either from the harbour (Van Cittershaven) or from the Westerschelde.

It is expected that the cooling water discharge will be straight into the Westerschelde.

Initial studies (TenneT; 2011) showed that the new NPP will be equipped with two independent connections to the high voltage grid at distinct voltage levels of 380 kilovolt (KV) and 150 kV. Both high voltage connections were directed (power line and possibly cable) to two associated switchyards southwest to the Site directly adjacent to EPZ and Borssele 1. The high voltage power lines connecting to the grid are schematically shown on Figure 3 (Site Area Map 8 km).

A 48-inch (1.22-m) high pressure natural gas pipeline is located directly adjacent to the highway along the southern border of the Site and curves northward along the western border of the Site.

The predevelopment of the elevation of the site is approximately 5m NAP.

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

### 3.3 Available land for development

#### 1) Final Lay-out



Overview of NNB Site

#### 2) Lay down & prefabrication areas

During construction, EZK shall identify in collaboration with the Vendor the necessary lay-down and prefabrication area preferentially on the “Preferred Location” (§3.1). Alternatively, the south shore of the Westerschelde or remote areas could be considered.



Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

## 4. Terms & Definitions

TERM	DEFINITION
AIL	Abnormal and Indivisible Loads
ANVS	Dutch Authority for Nuclear Safety and Radiation Protection
ASY	Assystem Company or any representative of Assystem
BAT	Best Available Techniques
BIS	Bid Invitation Specification
BOP	Balance Of Plant
CAPEX	CApital EXpenditure
CI	Conventional Island
CIW	Commission for Integral Watermanagement (Belgium)
COL	Commissioning and Operation License
Deltares	Dutch Research Institute specialized in geo- and hydrology
DBE	Design Basis Earthquake
DBEH	Design Basis External Hazard
DGCE	Directorate General Climate & Energy
DNE	Directorate of Nuclear Energy (The Hague)
EIA	Environmental Impact Assessment
EZK	Ministerie van Economische Zaken en Klimaat
EPC	Engineering Procurement Construction (Contract)
EPZ	Operator of existing Borssele NPP
FC	First Concrete
FEED	Front End Engineering & Design
FFS	Full Scope Simulator
FID	Final Investment Decision
GIS	Geographical Information System
HAT	Highest Astronomical Tide
HSE	Health Safety & Environmental
IAEA	International Atomic Energy Agency
IID	Intermediate Investment Decision
KNMI	Royal Netherlands Meteorological Institute
LAT	Lowest Astronomical Tide
MER	(Commissie voor de) milieueffectrapportage
MHWN	Mean High Water Neap
MHWS	Mean High Water Spring
MLWN	Mean Low Water Neap
MLWS	Mean Low Water Spring
MSL	Mean Sea Level
NCEA	Netherlands Commission for Environmental Assessment
NDA	Non-Disclosure Agreement
NI	Nuclear Island
NNB	Nuclear New Build
NPA	Nature Protection Act
NPP	Nuclear Power Plant
NSPA	North Sea Port Authority
OPEX	Operational Expenditure
PGA	Peak Ground Acceleration
Project	NNB Project
RFG	Requirements For Generators
RFI	Request For Information
RSEH	Rare and Severe External Hazard



Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

RWS	Ministry of Infrastructure and Water Management
SEA	Strategic Environmental Assessment
SITO	SITO Program
Site	Sites designated for NNB, either Borssele, Maasvlakte I or Eemshaven
SSC	Structures, Systems and Components
SSE	Safe Shutdown Earthquake
TenneT	TSO for Netherlands
TFS	Technical Feasibility Study
TSO	Transmission System Operator
Technology Vendor	Technology Vendor means EPC contractor
WENRA	Western European Nuclear Regulators' Association

## 5. Netherlands relevant Laws and Regulations

The construction, installation, and operation of a nuclear reactor in the Netherlands require strict observance of certain statutory and regulatory procedures. The main statutory and regulatory framework is the Dutch Nuclear Energy Act (“Kernenergiewet”, or “KEW”; <https://wetten.overheid.nl/BWBR0002402/2022-02-16> ). The KEW is the national Dutch incorporation of European directives arising from obligations based on the Euratom (European Atomic Energy Community) Treaty and on guidelines provided by the IAEA (International Atomic Energy Agency), which are not directly binding.

The most important instrument provided by the KEW is the granting of licenses. The KEW and regulations annex thereto together form the statutory safeguard of nuclear safety and radiation protection.

In addition to the KEW license, several other permits are required to carry out the intended nuclear activity. The KEW license for nuclear installations do have an integral character (bear in mind that the KEW license is also taking care of all the non-nuclear aspects within the location), but they do not cover all legal aspects.

General information can be found here: <https://business.gov.nl/sector-specific/construction/environmental-issues-in-the-construction-sector/>

Other laws and regulations that may be relevant and applicable are, inter alia:

- The all-in-one permit for physical aspects (“Omgevingswet”; <https://iplo.nl/regelgeving/omgevingswet/geconsolideerde-teksten-omgevingswet/>) concerning construction activities that require an all-in-one permit for physical constructions;
- The all-in-one permit for physical aspects (for a water activity) regarding non-radioactive disposal in surface waters (“All-in-one permit for physical aspects”; <https://iplo.nl/regelgeving/omgevingswet/geconsolideerde-teksten-omgevingswet/>);
- The all-in-one permit for physical aspects (for a nature activity) e.g. regarding the disturbance of species and the protection of nature (“All-in-one permit for physical aspects”; supplement nature; <https://iplo.nl/regelgeving/omgevingswet/introductie/totstandkoming/aanvullingsspoor-natuur/>);
- The Employment Conditions Act (“Arbeidsomstandighedenwet”; <https://wetten.overheid.nl/BWBR0010346/2023-06-20> ) regarding safe and healthy working environments;
- The law on liability for nuclear incidents (“Wet aansprakelijkheid kernongevallen”; <https://wetten.overheid.nl/BWBR0003234/2022-01-01> ) regarding incidents causing

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

substantial damage and the obligatory insurance for such incidents.

- Construction code: <https://rijksoverheid.bouwbesluit.com/Inhoud/docs/wet/bb2012>

In connection with the application for a KEW license, an environmental impact assessment is needed from which an Environmental Impact Report is the result (EIR:

“milieueffectrapportage”, or “MER”) and needs to be filed. Such environmental impact report is drawn up by the initiator of the activity and is being filed with the ANVS simultaneously with the application for the KEW license. Consequently, ANVS is the competent authority to rule in both procedures.

The MER procedure and the license procedure are closely related legal procedures that merge at the moment on which both the KEW license application and the MER are being filed (this needs to be done simultaneously).

With a nuclear new build (under article 15b KEW) an environmental impact assessments is always needed, and a MER is drawn up. The assessment of the license application on the basis of the KEW will in any circumstances be done via an extensive application procedure.

This extensive procedure, the so-called uniform public preparatory procedure (“uniforme openbare voorbereidingsprocedure”; <https://wetten.overheid.nl/BWBR0005537/2015-07-01#Hoofdstuk3> ).

The impact of the construction of a new nuclear installation on the environment, humans and nature, is being dealt with extensively in the MER procedure. In this way, the MER helps to give the environmental interests full attention in the decision-making process regarding the activity for which a license is requested.

Under the Dutch Environmental Management Act (“Wet milieubeheer”), a distinction is made between activities requiring a MER and activities requiring a MER assessment.

Activities requiring a MER, in the event a KEW license is being applied for, are activities for which the MER Decree (“Besluit milieueffectrapportage”;

<https://wetten.overheid.nl/BWBR0006788/2020-12-18> ) indicates that a MER is obligatory, given the considerable detrimental consequences for the environment that may be caused by such activities (as set forth on the C list, Annex 1 to the MER Decree).

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

## 6. IAEA Safety & EUR Regulatory Requirements and Guidelines

Item	Title	Reference	Version
<b>IAEA Safety Requirements and Guides (Item 1 to 14)</b>			
[1]	IAEA, Geotechnical Aspects of Site Evaluation and Foundations for Nuclear Power Plants	Safety Standards Series, Safety Guide No.NS-G-3.6	2005
[2]	IAEA, Site Evaluation for Nuclear Installations	Safety Standards Series No. SSR-1	2019
[3]	IAEA, Seismic Hazards in site Evaluation for Nuclear Installations	Safety Standards Series Specific Safety Guide No. SSG-9 Rev.1	2022
[4]	IAEA, Meteorological and Hydrogeological Events in Site Evaluation for Nuclear Power Plants	Safety Standards Series Specific Safety Guide No. SSG-18	2011
[5]	IAEA, Volcanic Hazards In Site Evaluation For Nuclear Installations	Safety Standards Series Specific Safety Guide No. SSG-21	2012
[6]	IAEA, Site Survey, and site Selection for Nuclear Installations	Safety Standards Series_ Specific Safety Guide SSG-35	2015
[7]	IAEA Ground Motion Simulation Based on Fault Rupture Modelling for Seismic Hazard Assessment in Site Evaluation for Nuclear Installations	Safety Reports Series No.85	2015
[8]	IAEA, Diffuse Seismicity in Seismic Hazard Assessment for Site Evaluation of Nuclear Installations	Safety Reports Series No.89	2016
[9]	IAEA, Environmental Effects of Cooling Systems	Technical Report Series No. 292	1980
[10]	IAEA, Seismic Hazard Assessment in Site Evaluation for Nuclear Installations: Ground Motion Prediction Equations and Site Response	TECDOC Series, IAEA TECDOC-1796	2016
[11]	IAEA, The Contribution of Paleoseismology to seismic Hazard Assessment In Site Evaluation for Nuclear Installations	TECDOC Series, IAEA TECDOC-1767	2015
[12]	IAEA, Managing Siting Activities for Nuclear Power Plants	Nuclear Safety Series NG-T-3.7	2012
[13]	IAEA, Preliminary Findings and Lessons Learned from the 6th of July 2007	Mission report Volume 1	2007

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

	Earthquake at Kashiwazaki-Kariwa NPP		
[14]	IAEA, Environmental Effects of Cooling Systems at Nuclear Power Plants	Proceedings of a Symposium, Oslo, 26-30 August 1974	1975
<b><u>USNRC Regulatory Guidance (Item 15 to 22 not applicable)</u></b>			
<b>Other Good Practices (Item 23 and above)</b>			
[23]	Guide for Meteorological Instruments and Methods of Observation	WMO-N°8	2010
[24]	International Hydrographic Organization Special Publication_ Standard for Hydrographic Survey	IHO_S_44_SE	2008
[25]	Intergovernmental Panel on Climate Change	IPCC 2023 Report	2023
[26]	EUR guidelines rev E		



Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

## 7. Websites of Interest for Conducting the Site Evaluation & Specific Studies

Relevant open available data for the site evaluation are summarized in the table below. In addition to publicly available databases, several privately owned datasets from the current operator of the Borssele nuclear power plant are included. These data are made available via a QGIS project file. A detailed explanation is given in 11209639-000-GEO-0001

Data type	Subset	Open data
Topography data		<a href="https://ahn.nl">https://ahn.nl</a>
Bathymetry data		<a href="https://waterkaart.net">https://waterkaart.net</a>
Bathymetry & Current data	Westerschelde river	<a href="http://www.hydro.nl">http://www.hydro.nl</a>
Water & Wind data		<a href="https://www.rijkswaterstaat.nl">https://www.rijkswaterstaat.nl</a>
Geology		<a href="https://www.dinoloket.nl/en">https://www.dinoloket.nl/en</a>
Meteorological data		<a href="https://www.knmi.nl">https://www.knmi.nl</a>
Geological data	Outline The Netherlands	<a href="#">Geo services - PDOK</a>
	Elevation maps	<a href="#">AHN-viewer (arcgisonline.nl)</a>
	Geological maps: GKNederlandGeoVlak	<a href="#">Subsurface models   DINOloket</a>
	Geological maps: Belgium TertiaryMap	<a href="#">DOV Vlaanderen</a>
	Paleogeographic maps Holocene	<a href="#">Nationaal georegister</a>
	Historical Topographic maps	<a href="#">Topot idreis - Overzicht (arcgis.com)</a>
	Subsidence_2020_2050low	<a href="#">Subsidence 2050 low</a>
	Subsidence_2020_2050high	<a href="#">subsidence 2050 high</a>
	Subsidence_2020_2100low	<a href="#">subsidence 2100 low</a>
	Subsidence_2020_2100high	<a href="#">subsidence 2100 high</a>
Geohydrological data	Geohydrological model	<a href="#">Grondwaterstanden in Beeld (grondwatertools.nl)</a>
	Geohydrological measurements	<a href="#">Grondwaterstanden in Beeld (grondwatertools.nl)</a>
Seismological data	KNMI_all_tectonic	<a href="#">KNMI - Aardbevingscatalogus</a>
	KNMI_all_induced	<a href="#">KNMI - Aardbevingscatalogus</a>
Data relating to fault displacement	eshm20_fs_model_v09e_active_faults	<a href="#">EFEHR   Active Faults and Subduction Sources</a>
	Neogene_Faults_Flanders	<a href="#">G3Dv2 breuken (vlaanderen.be)</a>
Volcanological data	Holocene_Volcanoes	<a href="#">Global Volcanism Program   Volcanoes of the World (VOTW) Webservices Information</a>
	Pleistocene_Volcanoes	<a href="#">Global Volcanism Program   Volcanoes of the World (VOTW) Webservices Information</a>
Geotechnical data	BRO CPTs	<a href="#">Subsurface data   DINOloket</a>
	DINOloket borehole	<a href="#">Subsurface data   DINOloket</a>
Data on coastal flooding including tsunamis	Waterlevels, waves, tides, water temperature	<a href="https://waterinfo.rws.nl/#/publiek/">https://waterinfo.rws.nl/#/publiek/</a>
Data on river flooding		<a href="https://waterinfo.rws.nl/#/publiek/">https://waterinfo.rws.nl/#/publiek/</a>
Data on meteorological events	Daily data on temperature, wind, precipitation,	<a href="https://daaggegevens.knmi.nl/">https://daaggegevens.knmi.nl/</a>
	Trends and future scenario's for temperature, precipitation, precipitation deficit, sea level, wind	<a href="#">KNMI - Klimaatdashboard</a>
	KNMI Climate Explorer: Trends in return times of extremes (temperature, precipitation)	<a href="https://climexp.knmi.nl/">https://climexp.knmi.nl/</a>
	Lightning	<a href="https://www.meteorage.com/">https://www.meteorage.com/</a>

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

## 8. Available Documents

The following Deltares and Rizzo reports will be made available to the pre-selected Vendors engaged in the TFS.

### 8.1 Deltares Reports

The following Deltares documents will be available for the TFS (see Table 1).

Document ID	Name	Status	Date
11209639-002-GEO-0001	Memo Voorstel regelgevend kader warmtelozingen centrales Borssele en Maasvlakte	Draft	05-10-2023
11209639-002-GEO-0002	Cooling water availability	Preliminary	06-10-2023
11209639-004-GEO-0001	Site evaluation, geological and geotechnical characteristics, and hazards	Draft	04-09-2023
11209639-001-GEO-0002	Site evaluation, wildfires	Draft	23-08-2023
11209639-005-GEO-0002	Site evaluation, hydro & meteo hazards	Draft	26-09-2023

Table 1: Overview of Deltares documents

### 8.2 [REDACTED]

The access to the following reports will be made available for the TFS (see Table 2).

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
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[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
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Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

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Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

## 9. Site Information Package

### 9.1 Introduction

The information in the above listed documents shall be understood as input data for the Vendor preliminary design (and site development) activities.

**Only high priority site parameters needed for the preliminary design and constructability study of a Nuclear Power Plant at the Borssele site have been identified in those reports in order to provide guidance to the desktop study.**

For this purpose, the following types of information related to the site have been identified and searched:

- Information having “stable” character, e.g. topography and soil conditions;
- Information related to the hazards and/or “environmental/physical” conditions on site and at sea, all needed for the preliminary design of the plant systems, structures, and component so that the plant can be developed, designed, and constructed based on reliable site information and further safe operation in all required conditions and accident situations.
- Information related to the site conditions and needed for optimizing the plant operational systems (e.g. cooling water temperature distribution over the seasonal and year periods).

Regarding the external hazards on site, two levels of severity have been considered when looking for the requested information:

- Design Basis External Hazard “DBEH” (frequency typically  $>10^{-4}$  per year) and;
- Rare and Severe External Hazard “RSEH” (frequency of  $>10^{-7}$  per year). The RSEH represent a higher level of challenge than the DBEH when selecting design criteria for the NPP.

Note: Most of the information on RSEH parameters in Rizzo reports are available only for a frequency of  $>10^{-6}$  per year. The availability of continuous data monitoring over a minimum 30-year period for accurate statistical treatment and studies was considered.



Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

## 9.2 Deltares reports information

Section Name	Topic	Expected Information/Parameter	Document ID	Chapter / Paragraph
<b>Seismic Hazards</b>	Ground Motion Hazard	Safe Shutdown Earthquake (SSE) and Design Basis Earthquake (DBE), i.e. value associated with the Peak Ground Acceleration for an Annual Frequency of Exceedance of 10 <sup>-4</sup> and 10 <sup>-7</sup>	Preliminary assessment in 11209639-004-GEO-0001	Chapter 9.2
		Uniform Hazard Response Spectra curves and values for an AFE of 10 <sup>-4</sup> and 10 <sup>-7</sup>	Preliminary assessment in 11209639-004-GEO-0001	Chapter 9.2
	Fault Displacement Hazards	Fault Capability Assessment	Preliminary assessment in 11209639-004-GEO-0001	Chapter 9.1
<b>Subsurface Properties</b>	Geological, Geotechnical and Geophysical Data	Description of the Subsurface Profile/Geological Model	11209639-004-GEO-0001	Chapter 4
		Geotechnical Parameters of the layers/soil units	11209639-004-GEO-0001	Chapter 7
		Presence of Potentially Liquefying Soil	11209639-004-GEO-0001	Chapter 9.2
		Depth, Nature, Bearing Capacity of Load Bearing Layers	11209639-004-GEO-0001	Chapter 4
		Shear Wave Velocity	Preliminary assessment in 11209639-004-GEO-0001	Chapter 9.2
		Deformation Modulus	11209639-004-GEO-0001	Chapter 9.2
		Shear Modulus	11209639-004-GEO-0001	Chapter 7
		Poisson Ratio for Static and Dynamic Loading	11209639-004-GEO-0001	Chapter 7
		Mass Density of each layer	11209639-004-GEO-0001	Chapter 7
		Static and Dynamic Strength Characteristics (cohesion,	11209639-004-GEO-0001	Chapter 7
		Static and Dynamic Deformation	11209639-004-GEO-0001	Chapter 7
	Geotechnical Parameters of the layers/soil units	11209639-004-GEO-0001	Chapter 7	
	Hydrogeology	Aquifer(s) location and level	11209639-004-GEO-0001	Chapter 6
Permeability of each layer		11209639-004-GEO-0001	Chapter 6	

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

<b>Topography &amp; Geomorphology</b>	Maps	Topographical Maps & Geomorphology Maps 1/500. 1/5000 et 1/25000 scale	Topographical maps: <a href="http://www.ahn.nl">www.ahn.nl</a> Bathymetry data: see additional dataset.	
<b>Ambient Air Temperatures, Humidity &amp; Atmospheric Pressure</b>	Maximum and Minimum Air Temperatures	Maximum and Minimum Air Temperatures	11209639-005-GEO-0002	Chapter 2.7
		100 year-return period for Maximum and Minimum Air Temperature	11209639-005-GEO-0002	Chapter 2.7
	Design Basis External Hazard (DBEH)  (frequency typically >10 <sup>-4</sup> per year)	Long-term Base Temperature (extreme temperature for periods > 7 days)	11209639-005-GEO-0002	Chapter 2.7
		Short-term Daily Temperature (extreme temperature for periods between 6 hours and 7 days)	11209639-005-GEO-0002	Chapter 2.7
		Instantaneous Temperature (extreme temperature for a 6-hour period)	More information can be found at KNMI daily observation archive available at <a href="https://daggegevens.knmi.nl/">https://daggegevens.knmi.nl/</a>	
		Maximum Air Humidity Conditions for the Minimum and Maximum Temperatures	11209639-005-GEO-0002	Chapter 2.7
	Rare and Severe External Hazard (RSEH) (frequency typically >10 <sup>-7</sup> per year)	Long-term Base Temperature (extreme temperature for periods > 7 days)	More information can be found at KNMI daily observation archive available at <a href="https://daggegevens.knmi.nl/">https://daggegevens.knmi.nl/</a>	
		Short-term Daily Temperature (extreme temperature for periods between 6 hours and 7 days)		
		Instantaneous Temperature (extreme temperature for a 6-hour period)		
		Maximum Air Humidity Conditions for the Minimum and Maximum Temperatures		
	Atmospheric Pressure	Minimum Atmospheric Pressure	11209639-005-GEO-0002	Chapter 2.7
Maximum Atmospheric Pressure		11209639-005-GEO-0002	Chapter 2.7	

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

<b>Sea Water Characteristics</b>	Sea Water Temperature	Mean, Minimum and Maximum Sea Water Temperature (30-year historical data)	11209639-002-GEO-0002	Chapter 2.3
		DBEH value to be considered in the Standard Design	More information can be found at <a href="#">Watertemperatuur - Rijkswaterstaat Waterinfo (rws.nl)</a>	
		RSEH value to be considered in the Standard Design		
		Predicted temperatures and increased seawater level at the end of the Century	11209639-002-GEO-0002	Chapter 4.6
	Estuarine Flow Regime	Mean, Minimum and Maximum Flow rate	Ambient hydrodynamic conditions are provided in 11209639-002-GEO-0002	
	Estuarine/Sea Currents	Tidal Currents and variations (speed and direction) in the Borssele area	Ambient hydrodynamic conditions are provided in 11209639-002-GEO-0002 and in the additional data set	
Maximum Current Speed		Ambient hydrodynamic conditions are provided in 11209639-002-GEO-0002 and in the additional data set		
Graphical presentation of depth average velocity value and direction of sea current		Ambient hydrodynamic conditions are provided in 11209639-002-GEO-0002 and in the additional data set		
<b>Sea Water Characteristics (continued..)</b>	Sea Water & Tide Levels	Mean, Minimum and Maximum Sea Water Level (30-year historical data) i.e. MHWS, MHWN, MSL, MLWN, MLWS sea Levels	More information can be found at <a href="#">Waterhoogte - Rijkswaterstaat Waterinfo (rws.nl)</a>	
		DBEH and RSEH values of the above parameters	11209639-005-GEO-0002	Chapter 2.6
		Seasonal Variations of the above parameters	More information can be found at <a href="#">Astronomisch getij - Rijkswaterstaat Waterinfo (rws.nl)</a>	
		Tide Levels (30-year historical data)		
		Astronomical Tide Level (HAT) (highest Astro tide)		
		Predicted Tide Levels		
	Conversion Chart Datum to Ordnance Datum levels			
	Cooling Water Distribution	Annual Cooling Water Temperature Distribution at different	11209639-002-GEO-0002	
		Allowable Cooling Water Discharge	11209639-002-GEO-0001 and 11209639-002-GEO-0002	
Allowable Seawater Temperature increase		11209639-002-GEO-0001 and 11209639-002-GEO-0002		

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

	Turbidity & Chemical Characteristics	Salinity, PH, Dissolved Oxygen, Sulfide as H2S, Total suspended Solids, etc.	Salinity data can be found at <a href="#">Zoutgehalte - Rijkswaterstaat Waterinfo (rws.nl)</a>	
	Surge	Values of Surges and Storm Surges (historical data)	11209639-005-GEO-0002	
		Calculation and modelling of Surges	11209639-005-GEO-0002	
		Time series of significant wave height, Mean wave Direction and Mean wave Period	More information can be found at <a href="#">Golfhoogte - Rijkswaterstaat Waterinfo (rws.nl)</a>	
		Wave propagation on seashore and forecasted level (century occurrence)	11209639-005-GEO-0002	
	Tsunami Effect	Probabilistic & Deterministic Tsunami Hazard Assessment	11209639-005-GEO-0002	Appendix C
		Peak Coastal Tsunami Amplitude (PCTA)	11209639-005-GEO-0002	Appendix C
		Presence of Potentially Liquefying Soil	11209639-004-GEO-0001	Chapter 9.2
<b>Precipitation and External Flooding</b>	Design Basis External Hazard (DBEH) (frequency typically >10 <sup>-4</sup> per year)	Maximum Precipitation in 5 minutes	11209639-005-GEO-0002	Appendix B.3.2
		Maximum Precipitation in 1 hour	11209639-005-GEO-0002	Appendix B.3.2
		Maximum Precipitation in 24 hours	11209639-005-GEO-0002	Appendix B.3.2
	Rare and Severe External Hazard (RSEH) (frequency typically >10 <sup>-7</sup> per year)	Maximum Precipitation in 5 minutes	11209639-005-GEO-0002	Appendix B.3.2
		Maximum Precipitation in 1 hour	11209639-005-GEO-0002	Appendix B.3.2
		Maximum Precipitation in 24 hours	11209639-005-GEO-0002	Appendix B.3.2
	Precipitation over a 30-year period	Monthly and annual extreme rainfall (over a continuous 30-	11209639-005-GEO-0002	Appendix B.3.2
		100-year return period precipitation	11209639-005-GEO-0002	Appendix B.3.2
	<b>Wind and Tornadoes</b>	Wind Rose and Wind Data	Wind Rose and prevailing Wind Direction (over a continuous 30-year period)	11209639-005-GEO-0002
Annual maximum wind Speed for a 3s		Annual maximum wind Speed for a 3s Gust and 10 mn Gust	11209639-005-GEO-0002	Appendix A1
Maximum Wind		Maximum Wind Speed over a 100-year period	11209639-005-GEO-0002	Appendix A1
Design Basis External Hazard (DBEH) (frequency typically >10 <sup>-4</sup> per year)		Maximum Wind Speed	More information can be found at KNMI daily observation archive available at <a href="https://datagegevens.knmi.nl/">https://datagegevens.knmi.nl/</a>	
		Tornado/Cyclone Classification for DBEH, i.e. EF? avg	11209639-005-GEO-0002	Appendix B
Rare and Severe		Maximum Wind Speed	11209639-005-GEO-0002	Appendix A1



Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

	External Hazard	Tornado/Cyclone Classification for RSEH, i.e. EF? avg	11209639-005-GEO-0002	Appendix B
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Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

<b>Lightning</b>	Design Basis External Hazard (DBEH)	First Stroke	more information can be found at <a href="#">Météorage</a>		
		Second Stroke			
	Rare and Severe External Hazard (RSEH)	First Stroke			
		Second Stroke			
<b>Other Technical Parameters</b>	Hail & Snow	-	11209639-005-GEO-0002	Appendix B4	
	Drought and Heat	-	11209639-005-GEO-0002	Chapter 2.7	
<b>Key Environmental Regulations</b>	Land & Water Environmental Classification	Protected Habitats	Not (yet) available		
		Protected Species	Not (yet) available		
	Water Extraction & Water Release Regulations	Temperature Increase	11209639-002-GEO-0001		
		Volume Extraction	11209639-002-GEO-0001		
<b>Climate Change</b>	Change in Meteorological Parameters	Rise in mean sea level	11209639-005-GEO-0002	Chapter 2.6	
		Rise in air temperature	<a href="#">KNMI - Klimaatdashboard</a>		
		Rise in sea temperature	11209639-002-GEO-0002	Chapter 4.6	
		Increase in wind strength	<a href="#">KNMI - Klimaatdashboard</a>		
		Increase in precipitation	11209639-005-GEO-0002	Chapter 2.3	

Document Title	Document Number
SITE INFORMATION PACKAGE	AEOS-FEET-EZK-RE-0022 Rev B

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