Base Load Power Hub (BLPH)

Project Execution Plan

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please provide appendices

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1 ABBREVIATIONS AND DEFINITIONS

Term	Definition
AHT	Anchor Handling Tug
DGPS	Differential Global Positioning System
DP	Dynamic Positioning
ED50	European Datum 1950
FCN	Field Change Notice
HAZID	Hazard Identification
HLV	Heavy Lift Vessel
IMO	International Maritime Organisation
MOC	Management Of Change
MOM	Marine Operations Manager
MWS	Marine Warranty Surveyor
PT	Project Team
PQCP	Project Quality Control Plan
TMS	Tug Management System
UXO	Unexploded Ordnance
VHF	Very High Frequency
ER	Emergency Response
HAZID	Hazard Identification Study
HLS	Heavy Lift Supervisor
HSE	Health Safety Environment
ITP	Inspection Test Plan
MST	Method Statement
OLB	One Line Broken
PMS	Power Management System
PS	Portside
QAQC	Quality Assurance Quality Control
QHSE	Quality Health Safety Environment
SB	Starboard
SCA	Scaldis
SMS	Safety Management System
TBC	To Be Confirmed
TBD	To Be Discussed
SNS	Southern North Sea
STCW	Standards of Training, Certification and Watchkeeping

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2 REFERENCES

2.1 CONTRACTOR DOCUMENTS

Nr.	Contractor Doc. No.	Company Doc. No.	Title
Ref [1]	23-RE006-MST-001	123A90-DDL-MO-PL-91014	Project Execution Plan
Ref [2]	23-RE006-MST-002	123A90-DDL-MO-RE-91023	Basis of Design for Installation
Ref [3]	23-RE006-MST-003	123A90-DDL-MO-RE-91024	Topside TP & Caissons Installation Aids Concept Design
Ref [4]	23-RE006-MST-004	123A90-DDL-MO-MAN-91051	OIM V2 - Installation Manual Including Drawings and Check List
Ref [5]	23-RE006-MST-005		Weather Assessment
Ref [6]	23-RE006-SUB-BOL-001	123A90-DDL-MO-MAN-91052	OIM V3 - Subcontractor Procedure for Bolting
Ref [7]	23-RE006-SUB-ROV-001	123A90-DDL-MO-RE-91060	OIM V3 - ROV Survey Deliverables
Ref [8]	23-RE006-SUB-WEL-001	123A90-DDL-MO-MAN-91053	OIM V3 - Welding and NDE Procedure
Ref [9]	23-RE006-HSE-001	123A90-DDL-MO-HP-91012	Project HSSE Plan
Ref [10]	23-RE006-HSE-002	123A90-DDL-MO-MAN-91050	Offshore Installation Manual Volume 1 - Emergency Information Manual
Ref [11]	23-RE006-HSE-003	123A90-DDL-MO-RE-91013	Project Risk Assessments
Ref [12]	23-RE006-HSE-004	123A90-DDL-MO-RE-91020	Hazop Terms Reference
Ref [13]	23-RE006-HSE-005	123A90-DDL-MO-RE-91021	Hazop Report
Ref [14]	23-RE006-HSE-006	123A90-DDL-MO-RE-91022	Hazop Close Out Report
Ref [15]	23-RE006-HSE-007		Personnel Transfer Procedure
Ref [16]	23-RE006-QUA-001	123A90-DDL-MO-LIS-91000	Project Master Document Register
Ref [17]	23-RE006-QUA-002	123A90-DDL-MO-ORG-91001	Project Organisation Organigram
Ref [18]	23-RE006-QUA-003	123A90-DDL-MO-QP-91010	Project QA-QC Plan
Ref [19]	23-RE006-QUA-004	123A90-DDL-MO-ITP-91011	Project Inspection and Test Plan
Ref [20]	23-RE006-SUB-SUR-001		OIM V3 - HLV Positioning Procedure
Ref [21]	23-RE006-CAL-001	123A90-DDL-MO-PRO-91070	HLV Ballast Procedure
Ref [22]	23-RE006-CAL-002	123A90-DDL-MO-PRO-91071	HLV Mooring - DP Analysis
Ref [23]	23-RE006-CAL-003	123A90-DDL-MO-PRO-91072	HLV Preliminary Mooring Analysis Including Weather Limitation
Ref [24]	23-RE006-CAL-004	123A90-DDL-MO-CA-91073	Lifting Engineering Including Rigging Calculation
Ref [25]	23-RE006-CAL-005	123A90-DDL-MO-RE-91074	Motion Analysis
Ref [26]	N/A	202200794-ROS-DES-PRR-00001	Monthly Weight Report

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Nr.	Contractor Doc. No.	Company Doc. No.	Title
Ref [27]	SC-25-220-E0(*)	N/A	Refuelling on deck procedure
Ref [28]	SC-22-004-E1 (*)	N/A	Bunkering procedure
Ref [29]	N/A	CWHKN-MCO-PJA-PRD-00005	EWOO Marine Coordination Procedure QIS- 2802

2.2 HOLD POINTS

Hold Nr.	Hold Point	Owner
Hold 1	Specifications of transport barge tug	Rosetti
Hold 2	Exclusion zone demarcation	Rosetti

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3 INTRODUCTION

3.1 GENERAL PROJECT DATA

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation. Scaldis was awarded the tender to install the BLPH, together with its transition piece and caisson structure.

3.2 PROJECT LOCATION

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

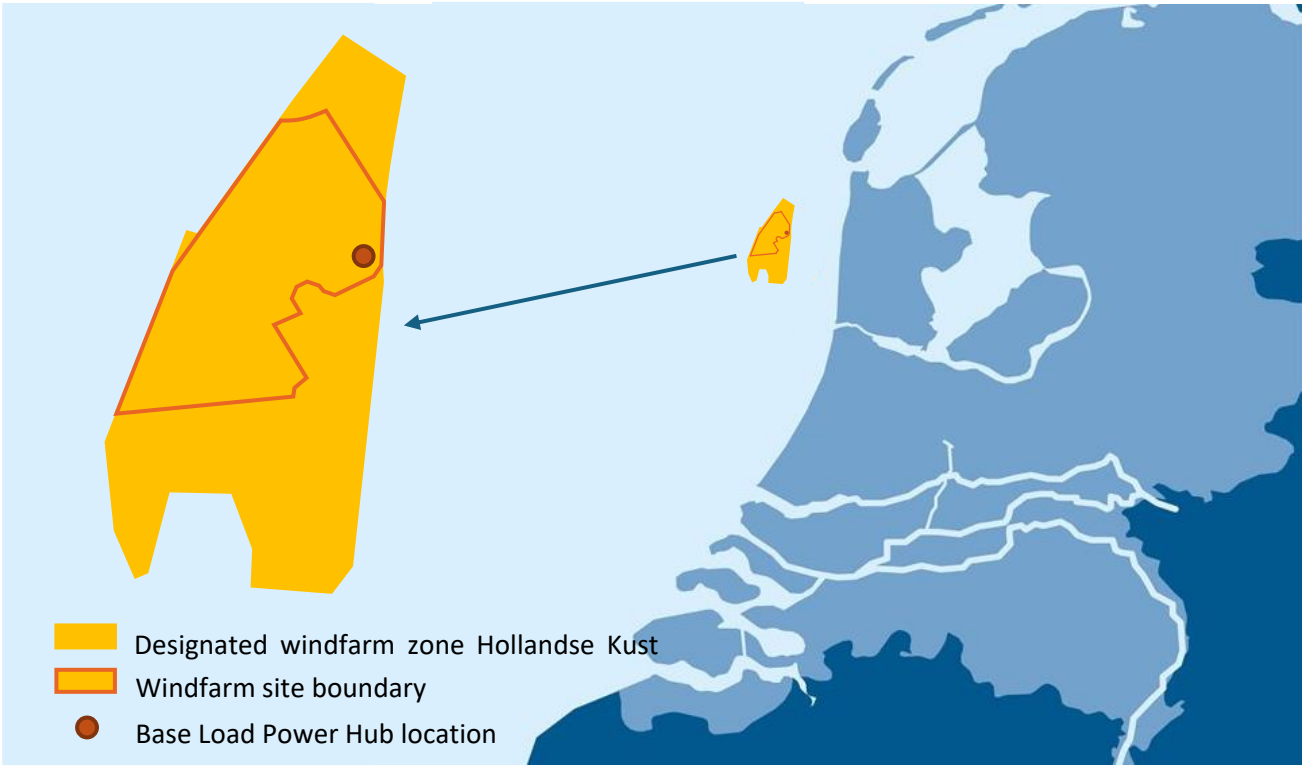


Figure 1: BLPH Location

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile is reserved for installing the platform accommodating the BLPH. The monopile structure is already installed and therefore not part of the BLPH scope.

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4 WORKS INFORMATION

4.1 SCOPE OF WORK

Scaldis was awarded the contract to install the BLPH. The main activities include:

- Project management and engineering in relation to the main offshore activities
- Mobilization of HLV and AHT
- Transit to site
- Anchoring on site
- Perform in-survey around monopile
- Receive cargo barge loaded with structures
- Lift Transition Piece from barge and install on existing monopile
- Bolt Transition Piece to monopile flange
- Re-moor cargo barge loaded with structures
- Lift, upend and install Caisson frame in Transition Piece
- Re-moor cargo barge loaded with structures
- Lift and install Base Load Power Hub onto Transition Piece
- Weld Base Load Power Hub to Transition Piece
- Perform out-survey around monopile

please re-arrange the sequence according to scenario "2":
- CF lower part
- TP
- TOPSIDE

4.2 BLPH LOCATION

The Base Load Power Hub location is given below:

BLPH Location (ETRS89 / UTM zone 31N)	
Location	N 5.841.602.42, E 590.718,95
Water depth [LAT]	20,5m -> 22.2m

Table 1: Location of BLPH

4.3 TP MAIN DIMENSIONS

The main dimensions of the Transition Piece are given below:

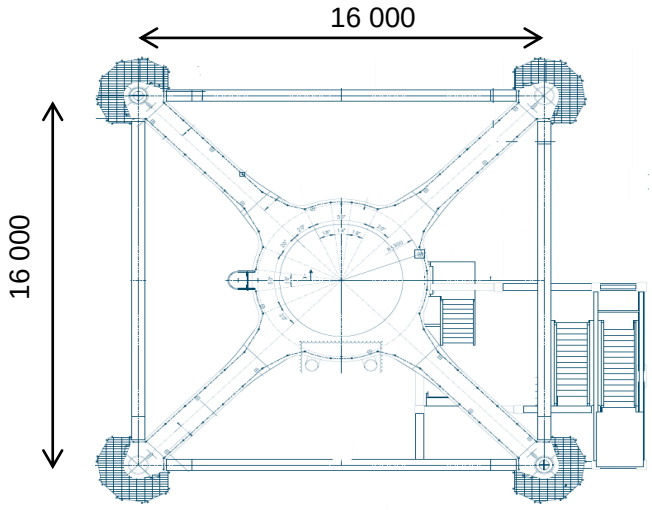
Transition Piece		
NTEW	300 t	
Actual weight	Ref [26]	
Lift points	4 pad-eyes	
Length	16 000 mm	
Width	16 000 mm	
Height	8 000 mm	

Table 2: Transition Piece Main Particulars

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4.4 CAISSONS MAIN DIMENSIONS

The main dimensions of the Caissons are given below:

Caisson frame	
NTEW	26 t
Actual weight	Ref [26]
Lift point	On top
Length	27 350 mm
Width	2 680 mm
Height	24 000 mm

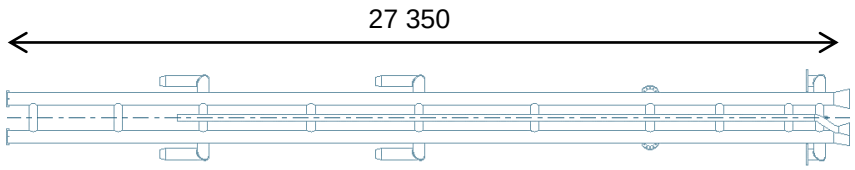


Table 3: Caisson Main Particulars

4.5 BLPH BASE DIMENSIONS

The main dimensions of the Base Load Power Hub are given below:

Base Load Power Hub	
NTEW	2000 t
Actual weight	Ref [26]
Lift points	4 trunnions
Length	40 000 mm
Width	16 000 mm
Height	24 000 mm

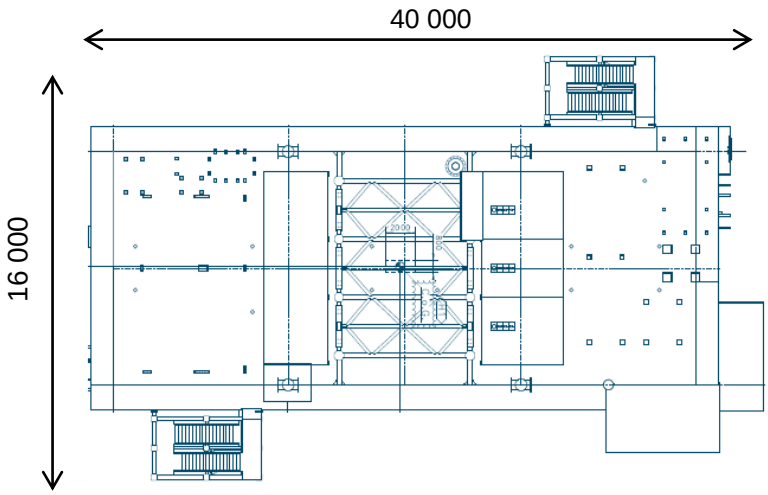


Table 4: BLPH Main Particulars

4.6 EXCLUSION / UXO FREE ZONE

During the operations, a restriction zone for all non-authorised vessels will be set up. This zone will need to be defined by the client, Hold 2.

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5 PLANNING

5.1 KEY DATES

Following dates are taken form the contract:

KD14	Notification Date prior to KD14	Period	KD14 Window	Given by	LVAD
1	Effective Date	Period 1	**15 June 2025 – 20 Aug 2025**	N/A	Latest date of Period 1 window
2	120 days before start of Period 1	Period 2	30 days window within Period 1	CONTR	Latest date of Period 2 window, plus a grace period of ten (10) days*, but not later than 20th of August
3	45 days before start of Period 2	Period 3	21 days window within Period 2	CONTR	Latest date of Period 3 window, plus a grace period of ten (10) days*, but not later than 20th of August
4	30 days before start of Period 3	Period 4	14 days window within Period 3	CONTR	Latest date of Period 4 window, plus a grace period of ten (10) days*, but not later than 20th of August
5	15 days before start of Period 4	Period 5	7 days window within Period 4	CONTR	Latest date of Period 4 window, plus a grace period of ten (10) days*, but not later than 20th of August
6	7 days before start of Period 5	Period 6	3 days window within Period 5	CONTR	Latest date of Period 4 window, plus a grace period of ten (10) days*, but not later than 20th of August
7	3 days before start of Period 6	Period 7	KD14 start within Period 6	CONTR	Latest date of Period 4 window, plus a grace period of ten (10) days*, but not later than 20th of August

Table 5: Key Dates

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5.2 EXECUTION PLANNING

Task Name	Duration
Crosswind BLPH Installation Works	
HLV Spread	***10 days***
Preparation of equipment	2 days
Mobilisation to site	1 day
Demobilisation to Flushing	1 day
Clearance of equipment	1 day
HLV OFFSHORE EXECUTION WORKS	***5 days***
HLV arrival at site	0 days
Transport Barge arrival at site	0 days
Anchor HLV on site	0 hrs
BLPH Transition Piece (TP) Installation	***1,5 days***
Moor cargo barge to stern HLV	2 hrs
Prepare and connect rigging to TP	3 hrs
Cut seafastening and ballast HLV	1,5 hrs
Lift TP	1,5 hrs
Position TP onto MP foundation, secure TP to MP	3 hrs
Recover rigging	1 hr
Bolting connection MP - TP	24 hrs
BLPH Caissons Installation	***1,5 days***
Moor cargo barge to stern HLV	
Prepare and connect rigging to cais	
Cut seafastening and ballast HLV	
Lift caissons	
Positioning caissons to BLPH found	
Recover rigging	3 hrs
BLPH Topside (TS) Installation	***2 days***
Prepare and connect rigging to TS	6 hrs
Cut seafastening and ballast HLV	2 hrs
Lift TS	4 hrs
Position TS onto TP	3 hrs
Recover rigging TS	3 hrs
Store rigging equipment	2 hrs
Welding works TS to TP	1 day
Retrieve anchors	3 hrs
Leave site	1 hr

please update

Table 6: Preliminary Execution Planning

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6 EQUIPMENT

6.1 VESSELS

6.1.1 HLV RAMBIZ

The main works will be executed by HLV Rambiz, whose specification sheet is added in appendix 11.

HLV Rambiz		
Owner	Scaldis	
Lifting capacity	3300t	
Max. lift height	78m	
Main dimensions	85m x 44m x 5.6m	
Summer draught	4.6m	

Table 7: HLV Rambiz

6.1.2 ANCHOR HANDLING TUGS (AHT)

There will be an Anchor handling tug (AHT) for assisting the HLV with anchoring. The AHT for this project is the *Fairplay 32* or equivalent. The specification of a the AHT are included in appendix 11.1.

Fairplay 32		
Owner	Fairplay	
Main dimensions	34.50 x 11.60 m	
Bollard pull	75 t	
Speed	13.9 kts (eco. 9)	

Table 8: AHT Nublo

6.1.3 TRANSPORT BARGE

The transport barge loaded with the TP, BLPH and caisson is transported to site by 2 Tugs. Technical specifications of the transport barge are given below. The barge will be referred to as '*transport barge*' throughout all documents, and is under custody of Employer.

Transport barge		
Owner	Ocean Team	
Main dimensions	91.5 m	
Light weight	27.4 m	
Loaded draught	4.8 m	

Table 9: Transport Barge

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6.1.4 TUGS TRANSPORT BARGE

A tug, under custody of Employer, will be used to tow the transport barge to site and conduct the barge approach to and departure from the installation location, Hold 1.

Technical specifications of the tug are given in attachment 11.3.

Transport barge tug		
Owner		
Main dimensions		
Bollard pull		
Speed		

Table 10: Transport Barge Tug

6.2 TOOLS

6.2.1 CRAWLER CRANE

The Sennebogen 7700 will be installed on crawler tracks on Rambiz. Technical specifications of this crawler crane can be found below.

Sennebogen 7700		
Owner	Dutch Offshore Contractors	
Main dimensions	13.9m x 8.0m x 5.10m	
Boom height	52.3m	
Lifting capacity	300t	
Max. lift height	50m	
Configuration	SH (Main boom, Heavy/light)	
Reeving of block	2x4	

Table 11: Technical Specifications of Sennebogen 7700

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6.3 RIGGING

6.3.1 LIFTING BEAM

The lifting beam will be used for the BLPH installation.

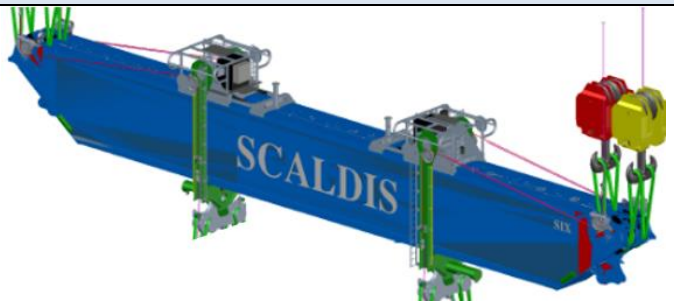
Lifting beam		
SWL	3200 t	
Length	34200 mm	
Weight	225 t	
Features	- Skidding - Wire rerouting points for runners - Hydraulic unit for shoe lock-in	

Table 12: Technical Specifications of Lifting Beam

6.3.2 SUB-SPREADERS

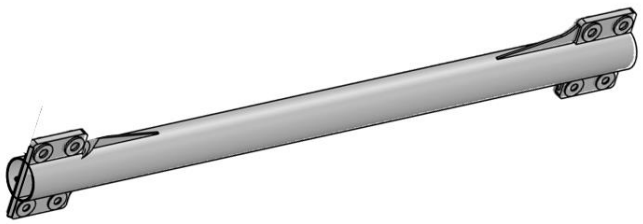
Subspreader		
SWL	1000t	
Length	16000 mm	
Weight	17t	

Table 13: Technical Specifications of Subspreaders

6.4 ANCHORING AND BARGE MOORING EQUIPMENT

6.4.1 WINCHES

HLV Rambiz is equipped with following winches:

	Unit	Main	Additional	Barge mooring	Tuggers
Legend	[-]				
Amount	[-]	3	6	2	2
Pull capacity 1st layer Pull capacity 3rd layer	[t] [t]	97 n.a.	80 n.a.	9	60 52
Max brake holding capacity	[t]	165	120	9	150
Wire length capacity	[m]	1000	1170	n.a.	800
Wire diameter	[mm]	58	44	n.a.	44

Table 14: Technical Specifications of the Mooring Winches of Rambiz

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Figure 2: Rambiz Top View with Lay-Out of Winches

6.4.2 ANCHORS

The Rambiz will use 4 Delta Flipper anchors.

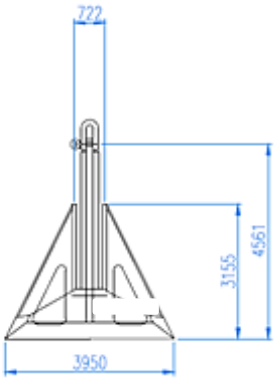
Flipper Delta		
Amount	4	
Weight [t]	9.0	
Dim [m]		

Figure 3: Rambiz Anchors

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6.4.3 ANCHOR AND BARGE MOORING CONFIGURATION

The anchor configuration and barge mooring line configuration is as follows. The numbers correspond to the numbers from Figure 2: Rambiz Top View with Lay-Out of Winches.

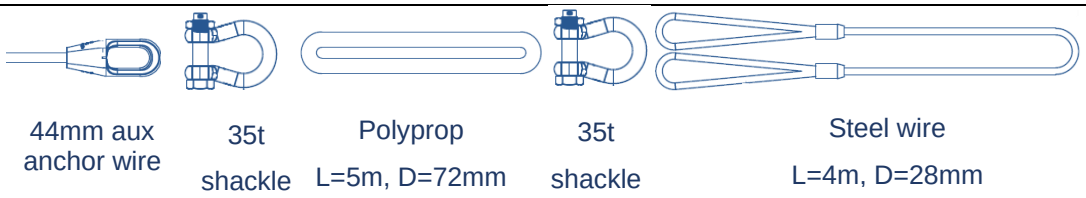
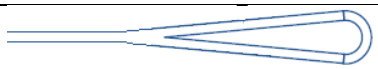
Nr	Specifications
1	
2	
3	

Table 15: Technical Specifications of Anchoring and Mooring Arrangements

6.5 SURVEY EQUIPMENT

Positioning and orientation measurements of HLV Rambiz and support vessels is handed to Fugro. Positioning, orientation and inclination measurements of the TP and BLPH will be performed as well.

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7 DOCUMENT PACKAGE

A specific document package will be produced to support the offshore execution. The document package will consist of:

- Method statements, including task plans and drawings
- Calculations
- Lift plans
- ITP's
- QHSE documents

The chronological order of method statements is given below, where scopes in method statements are linked though color-code.

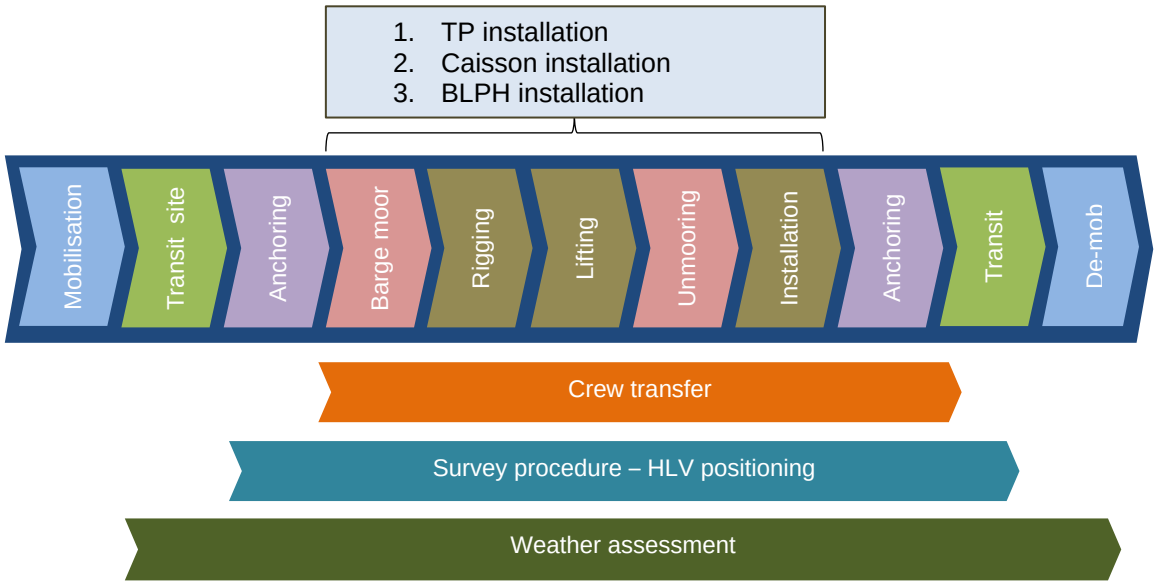


Figure 4: Chronological Order of Method Statements

The method statements will describe a general overview of the envisaged works and contingency plans. All relevant operational details will be written down in the supporting task plans, which will be added to the appendices. Where necessary, task plans will include sketches for clarification. During the offshore execution, the task plans will be used as input for the toolbox talks, and to verify that all subtasks are executed according to plan.

The calculations will prove that the hardware used to perform the works has sufficient capacity to perform the works in the offshore environment.

The heavy lift lift plans will describe the details of the crane and the item to be lifted in a safe and controlled way.

The ITP's form a guidance document offshore and outlines planned inspections based on the procedures. Quality checklists will detail the location specific acceptance criteria and will be verified and signed by responsible persons.

The QHSE documents cover how the works will be conducted in a safe, efficient and ALARP way.

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7.1 METHOD STATEMENTS AND TASK PLANS

7.1.1 MOBILISATION AND DEMOBILISATION HLV'S

The mobilisation focusses on the preparation of the marine spread, to make it suitable to do the intended works, Ref [4].

The port of mobilisation for Rambiz will most likely be in Vlissingen, The Netherlands, at the Westhofhaven. The anchor handling tug will be mobilised at the same port.

7.1.2 TRANSIT

The transit depicts the voyage plans of the marine spread towards the HKN field. It also details the different shelter ports, and routes towards tidal standby areas, Ref [4].

7.1.3 WEATHER ASSESSMENT

The weather assessment procedure describes the vessel workability and survival limits during all phases of the project, Ref [5].

7.1.4 SURVEY PROCEDURE

The survey scope is divided in two parts. One part covers the positioning and orientation measurements of the marine spread. The second part covers the positioning, orientation and inclination measurements of the BLPH, Ref [20].

7.1.5 ANCHORING AND ANCHOR REMOVAL HLV'S

The anchoring and anchor removal method and sequence of Rambiz details all necessary information with regards to anchoring methodologies, Ref [4].

7.1.6 PERSONNEL TRANSFER

The personnel transfer procedure describes the different means of transferring between the different marine assets, Ref [15].

7.1.7 BARGE MOORING AND UNMOORING

The barge mooring and unmooring method, including the towing operation of the barge from outside the Exclusion zone to site and back is described in Ref [4].

7.1.8 LIFTING AND PLACING STRUCTURES

The lifting and placing describe the lifting of the TP, Caisson frame and BLPH from the barge, including rigging connection and disconnection, Ref [4]. Furthermore, it will detail the bolting procedure between the monopile flange and the TP flange. The welding of the BLPH to the TP will also be described.

7.2 CALCULATIONS

A summary of the calculations, as well as different guidelines, factors and specifics can be found in Ref [2]..

7.3 ITP'S

The inspection and test plan (ITP), Ref [19] contains 'hold points' at various stages within the process. Each control point is a verification to ensure the required actions are executed in the correct sequence and according to specified criteria. The ITP's are Project Quality Documents including records generated during the actual Inspection & Test activities will be filed in the As-Built documentation file.

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7.4 QHSE DOCUMENTS

Reference is made to chapter 9 and 10.

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8 MEETINGS & PROGRESS REPORTING

8.1 PLANNING AND REVIEW MEETING

During the execution, upcoming works are discussed in the daily Planning and Review Meeting to optimise the progress and identify possible clashes of work fronts. Subcontractor is responsible for organising the daily progress meeting. Subcontractor, masters of the applicable marine spread, client and MWS are invited for this meeting. Minutes will be made by a PE of subcontractor, and will be shared with the attendees.

8.2 DAILY PROGRESS REPORTS

During the execution, Subcontractor will update the Daily Progress Reports (DPR) and send these to the Company Representative(s) and relevant parties involved.

The content of this DPR includes:

- HSE Summary
- MOC Register
- Vessel details/activities
- Personnel on Board
- Observed and forecast weather
- Progress summary and planned activities (last 24hrs)
- Summary of events and progress (past 24hrs)
- Time inside/outside exclusion zone boundary (total and past 24hrs)

The DPR will be issues to client representative onboard the HLV daily at 08:45 AM CET for review. Subcontractor will receive comments no later than 09:45 AM CET, and will issue a signed copy to the distribution list at 10:00 AM CET.

8.3 TOOLBOX (ALL VESSELS)

Prior to every activity a toolbox talk will be held as part of the permit to work. During this meeting all safety and operational hazards are discussed, and tasks are described and explained (method and required tools). Each toolbox meeting shall be registered in a toolbox form. The toolbox meetings are initiated by the Master, Chief Officer or HLS.

8.4 GO/NO GO MEETINGS

Employer representative(s), Contractor representative(s), Subcontractor representative(s), MWS, MOM, HLV Master(s), HLS, and anchor handling tug Master(s) are attending, depending on the activities covered by the Go/No Go. During the meetings, these parties will check the respective ITP and weather forecast for an available weather window and possible other issues to decide:

- To proceed with operation: GO
- To postpone operation: NO GO

If it is decided to postpone the operation due to unfavourable weather conditions, it shall be decided when to have a new Go/No Go meeting. If it is decided to postpone the operation because not all preparational actions have been taken, these should be carried out and it shall be decided when to have a new Go/No Go meeting.

8.5 WEATHER REPORTING

All vessels on site will receive weather forecasts and if required weather routing information, during the entire operation. Weather forecasts will be obtained commencing 7 days prior to the planned date of starting the

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lifting and transport operations and will be needed for the specific area through which the marine spread is navigating or is located.

Weather forecasts are used to evaluate the operational restrictions described in the Weather Assessment, Ref [5].

8.6 SITE MANAGEMENT

8.6.1 MARINE COORDINATION

please update

The marine coordination plan can be found in **Error! Reference source not found.** and will provide clarity on c ommunication with important stakeholders.

8.6.2 WASTE MANAGEMENT

Standard operating procedure for waste management at the HLV's can be found in the garbage management plans included in Ref [9].

8.6.3 BUNKERING

All vessels are bunkered before transit to site. The HLV will not bunker inside the exclusion zone. The AHT might need to bunker during the operations. This will not have any effect on the overall project schedule. The procedure for bunkering of the AHT is included in Ref [28].

In addition, refuelling of HLV deck equipment is foreseen, e.g. crawler crane or HPU. A refuel tank will be installed on the HLV. A procedure is included in Ref [27].

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9 HSE MANAGEMENT

The link between the execution documents and the QHSE measures is illustrated in Ref [18] and Ref [9]. The Package Execution Plan will provide input for the HAZOP session, Ref [13].

9.1 SAFETY VISION

Our strategy and commitment is FaCT:

Allowing Forethought by assessing and managing the risks and opportunities based on our risk management process to eliminate and/or mitigate hazards.

Applying Craftmanship at all levels of the Company that consists of specialist knowledge, a limitless sense of safety and genuine ownership to apply, maintain, evaluate and continuously improve our quality, health, safety, environment, and security processes that are based on ISO 9001, ISO14001 and ISO 45001 and that are designed to comply with local, regional, and international laws and regulations and local community expectations. Our Craftmanship meets Company objectives which are regularly reviewed and monitored using measurable Key Performance Indicators.

We will listen to communities we work in to ensure their community, ethical and environmental values are respected and, where viable, enhanced.

While craftmanship is something personal, Teamwork is how we get the job done. This is achieved through clear agreements, clear division of roles and effective communication to ensure everyone makes a maximum contribution to the result. Together, we ensure a workplace where everyone has and takes the opportunity to give input and is always supported in making the right decision, including subcontractors and employees of third parties, by openly discussing risk and the challenges this presents and acting appropriately together to reduce and control these risks.

9.2 QHSE MANAGEMENT PLAN

In compliance with the requirements of Employer and Contractor, Subcontractor prepares a Safety, Health, Environment & Quality (QHSE) Management Plan, Ref [9] and Ref [18], to describe the responsibilities, documents and procedures that will be applicable during the execution of the Project, in order to deliver quality services to Employer/Contractor in a safe and efficient manner, with respect for the environment.

9.3 RISK ASSESSMENTS

To ensure that the project organisation has a constant focus on identifying risks, implementation of adequate mitigation measures and verification of its effectiveness, emphasis will be on the control and assessment of risks throughout the total life cycle of the project.

The risk control means that are in place within the project organisation and their aspects, are summarized in the table below.

Aspect	Purpose	Scope
HAZOP	To identify hazards or operability issues related to the design, installation and operation.	Project methodology
Toolbox talk	Last Minute Risk Assessment / task risk assessment / job safety analysis	On the Job, Non-registered, workers assessment for the tasks at hand.

Table 16: Risk Control Means

The inventory of hazards in the field regarding safety, health, environment and security is made in the project preparation phase.

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The basis for the project risk assessments is the HAZOP, Ref [13], which reports all the hazards, risks and taken measures of the works.

9.4 PERMIT TO WORK (PTW)

Subcontractor will use the in place PTW systems onboard the HLV for all activities related to the HLV routine tasks. The PTW system will be required for certain activities, to be identified during the HAZOP, Ref [13] and included in the task plans.

9.5 HSE PLAN

The project HSE plan will cover all the HSE methods that will be applied throughout the project. The methodology defined in the project HSE plan applies to all documents created for the preparations, the project execution and the close-out phase of the project at hand.

Furthermore, the project HSE plan is created in accordance with the approved codes of practices defined in the Subcontractor QHSE management system.

The Safety Management System of the vessels is certified by Lloyds Register in accordance with the ISM-code of the IMO. These standards and regulations form the basis of the Subcontractor management system.

9.6 EMERGENCY RESPONSE PLAN

The emergency response plan describes the response of Subcontractor in case of an emergency during the execution of the project. The project emergency flowchart is included in the Project Organisation Chart, Ref [10]. This flowchart will be displayed in and around much frequented locations both on onshore sites and on board of the vessels.

A high degree of preparedness shall be maintained at all times at workplaces, in order to respond and efficiently control any emergency situation in the shortest possible time. This will be ensured through training, emergency drills and personnel qualifications.

9.7 PPE PROCEDURE

The PPE procedure provides a systematic approach for the (suitability) selection, use, inspection and maintenance of Personal Protective Equipment (PPE). It provides the methodology to ensure that all personnel are provided with suitable PPE and trained in its proper use, limitations and maintenance. More information is given in the HSE Management Plan, Ref [9].

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10 QA MANAGEMENT

Subcontractor's management systems are in compliance with ISO 9001:2008. A Quality Plan, Ref [18], shall be available throughout the execution of the project to outline all phases of the Work and Quality Assurance (QA) and Quality Control (QC) procedures.

10.1 DOCUMENT CONTROL

The document control procedure used by Subcontractor is aligned with Employer. It aims to guarantee high quality documents, identify documents with document numbers and to align the preparation, lay-out and review processes of documents. This is detailed in Ref [18].

10.2 SUITABILITY SURVEY

The marine spread will be subject of a suitability survey. Vessels can only carry or aid in the operations after close-out of the inspection report.

10.3 ITP

The inspection and test plan (ITP) contains critical control points or 'hold points' at various stages within the process. Each control point is a verification to ensure the required actions are executed in the correct sequence and according to specified criteria. The endorsed Inspection & Test Plans are Project Quality Documents including records generated during the actual Inspection & Test activities will be filed in the As-Built documentation file.

The ITP can be found in Ref [19].

10.4 QHSE TRAINING AND COMPETENCIES

All work will be executed by qualified individuals with adequate skills. Procedures, inductions and requirements are described in document, Ref [18].

10.5 MANAGEMENT OF CHANGE

Management of Change (MOC) is the systematic approach to dealing with change, both from the perspective of an organization and at an individual level.

Management of change consists of at least three different aspects, these include:

- Adapting to change;
- Managing change;
- Effecting change.

Change types can refer to Operational, Engineering, Organizational and Procedural changes. The Management of Change Procedure, Ref [18], provides the details of the MOC process and identifies the roles and responsibilities of all stakeholders.

10.6 MANAGEMENT OF NON-CONFORMITIES

Subcontractor will comply with all official requirements for notifying and reporting undesired events/hazardous conditions relating to safety, occupational health and the environment. Further details have been provided in Ref [18].

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10.7 LESSONS LEARNED

A thorough lessons learned will be held and reported after completion of the installation activities.

10.8 AS-BUILT

As-built documentation is to be delivered after installation and provides a detailed description of the executed installation supported by as-built survey dimensions. More information is given in the Project Quality Management Plan, Ref [19].

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11 APPENDICES

11.1 APPENDIX 1: SPECIFICATIONS OF RAMBIZ

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11.2 APPENDIX 2: SPECIFICATIONS OF ANCHOR HANDLING TUG

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11.3 APPENDIX 3: SPECIFICATIONS OF TRANSPORT BARGE TUG

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