

ANNEX A1 TO APPENDIX A
PRELIMINARY
INTERFACE MATRIX

TRANSPORT AND INSTALLATION OF
OFFSHORE SUBSTATIONS

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1 OFFSHORE SUBSTATION

1.1 Offshore Substation Jacket

In this Interface Matrix the words listed shall have the following meaning:

- **CoG** means Centre of Gravity
- **DP** means Dynamic Positioning
- **EPC/Fabrication Contractor** means the Contractor responsible for engineering and/or procurement and/or fabrication and/or construction of the Units.
- **Fabricator's Port** means the port of where the Units are handed over to T&I Contractor.
- **Field** means offshore location
- **HLV** means Heavy Lift Vessel
- **Installation Aids** mean equipment items and systems that are attached permanently or temporary. That are required for installation such as (but not limited to); guides, pin/buckets, bumpers, and posts, tugger bollards, inclinometers, counterweights, attachment points, Rigging release systems, miscellaneous Rigging (minor e.g., manoeuvring lines with shackles), markings, guides and any temporary fixings and equipment removal of any sea-fastening. main equipment and systems such as guides, bumpers, tugger bollards, inclinometers, attachment points, counterweights, markings.
- **Jacket** means the steel frame supporting the OSS Topsides
- **MWS** means Marine Warranty Surveyor
- **NDT** means Non-Destructive Testing
- **NTE** means Not To Exceed weight
- **OSS** means Offshore Substation
- **Piles** means the complete offshore substation foundation
- **SJA** means Safe Job Analysis
- **T&I Contractor** means the contractor that shall be responsible for transport and installation of the OSS Jacket and Piles.
- **Topside** means the structure placed on the top of the OSS Jacket, housing electrical equipment for power transmission to shore
- **Unit** means the items to be handled, transported, installed as the case may be by the T&I Contractor (T&I).
For this Annex, Units refers to OSS Jacket and Piles or any other permanent or temporary equipment.

Both T&I Contractor, EPC/Fabrication Contractor and MWS are engaged by Company and work under separate contracts for Company.

Note to table below: A party responsible for the performance of an interface item is not relieved from this responsibility in case the other party accept the interface item.

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
General - early procedure concept design and main design parameters	- Prepare design briefs for all analyses and interfaces with marine operations. - Review and accept T&I Contractor's design briefs and criteria. - Review early procedure, main design parameters and concepts.	- Review and accept design briefs applicable for T&I Contractor's Scope of Work. - Prepare design briefs for T&I Contractor's Scope of Work. - Prepare the early procedure for installation to provide frozen main design parameters for EPC/ Fabrication Contractor.	
General - reviews	Perform design reviews as per Scope of Work.	Participate in design reviews.	
General – HAZID & HAZOP	- Conduct an early HAZID and HAZOP for Load-out. - Participate in early HAZID and HAZOP for transport and installation activities.	- Conduct an early HAZID and HAZOP for transport and installation activities. - Participate in HAZID and HAZOP for Load-out activities.	Contractors are responsible for HAZID / HAZOP within their contract of activity.
General – delivery schedule	Prepare register and schedule of deliverables.	Review and agree schedules of deliverables.	Note: MDR dates and schedule is to be aligned and agreed between all parties, to ensure good interface flow
General – interface & interface matrix	Agree and updates the interface matrix (this document) according to an agreed schedule.	Agree and updates the interface matrix (this document) according to an agreed schedule.	Lead Interface Coordinator will be appointed by Company for the marine interface towards the EPC/Fabrication Contractor(s), and the Marine Warranty Surveyor. Company will handle main interface toward Marine Warranty Surveyor.
General - site visit/ assistance	Provide assistance to T&I Contractor's representatives at EPC/Fabrication Contractor's sites.	Attend EPC/Fabrication Contractor's facility to verify T&I requirements.	
General – Barges and vessels	- Review Barges or transport vessels details. - Attend Barges or transport vessels survey. - Prepare Load-out and sea-fastening schedule.	- Provide Barges or transport vessels for Jacket transport. - Provide Barges or transport vessels for Piles transport. - Arrange Barges or transport vessels survey - Provide Barges or transport vessels dossiers and details for review and acceptance by all parties.	Note: Company might arrange for OVID (Offshore Vessel Inspection Database) inspection together with the MWS suitability survey
General – grout	Develop grout specification including strength requirements.	Implement grout specification.	Seawater will be used in grout mix. Note: A grout strength of 60MPa is the default requirement.

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Jacket Installation preparations – NTE Weight and CoG envelope	- Propose, agree, and maintain Unit NTE weights and associated CoG envelopes. - Provide well defined weight control reports and weighing procedures (weight, NTE and CoG). - Weigh the Unit in accordance with agreed procedures and schedule.	- Review and agree NTE weights and associated CoG envelopes. - Review weight control philosophy, reports & weighing procedures. - Agree weighing schedules. - Witness final weighing, review, and accept final weighing report.	NTE weights and associated CoG envelopes shall be accepted by Company.
Jacket Installation preparations – lifting analysis	- Perform detail design of lifting points and structural integrity checks. - Fabricate and install lifting/support points for all lifts. - Perform hydrostatic and dynamic lift and upending analysis to prove the design for installation.	- Provide concept for lifting system as/if required. - Input to lift point design, as required. - Review and accept lift point position and design. - Lifting analysis for all lifts - Perform independent hydrostatic and dynamic lift and upending analysis for verification and operational planning.	T&I Contractor to give early input to lift point design and particularly the sling retainers, if required. Lift water depth and seabed clearance to be to DNV (Det Norske Veritas) criteria.
Jacket Installation preparations – Rigging and Rigging design	Review and accept Rigging design.	Concept and detailed design of Rigging.	Note: Rigging equipment shall cover all parts of the Rigging, such as (but not limited to) shackles, pins, spreader-bars/beams, lifting frames and hydraulics and any other part that is part of the system. Note: Depending on final design, the Rigging may be required to be preinstalled or not.
Jacket Installation preparations – Installation Aids	- Detail design, fabricate, supply and installation of Installation Aids, as required. - Offload, handle, protect, preserve, and store the Installation equipment provided by T&I Contractor in accordance with T&I Contractor's requirements if applicable. - Provision of lifting lugs necessary for removal of the sea fastening, as required by the T&I Contractor. - Install sea-fastening removal aids.	- Provide concept design for Installation Aids. - Review and accept design of Installation Aids. - Provide own installation equipment and Rigging required for installation, as required. - Provide temporary nav-aids for Jacket to suit period of Jacket in place before Topsides installed. - Design and provide sea-fastening removal aids to EPC/Fabrication Contractor's yard. - Design and supply additional guides, grillage, and sea-fastening on the HLV, if required.	

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Jacket Installation preparations – Rigging installation and laydown platforms	- Detailed design, supply, fabrication and installation of sling laydown platforms, sling deflectors and sling support structures, including temporary access. - Take receipt of T&I Contractor's Rigging equipment. - Offload, handle, protect, preserve, and store the Rigging equipment in accordance with T&I Contractor's requirements. - If applicable, install all Rigging equipment in accordance with T&I Contractors description. - Provide lashing materials for sea-fastening of Rigging - If applicable, perform test (including rotation test in place, if needed) and commission the Rigging equipment.	- Conceptual design of sling laydown platforms, sling deflectors, protection, and sling support structures, as applicable. - Review and accept detailed design of sling laydown platforms, sling deflectors and sling support structures. - Provide Rigging equipment to EPC/Fabrication Contractors' yards. - Specify lifting equipment handling, preserving and protection requirements including delivery schedule. - Provide Rigging certification on all parts. - Witness and approve Rigging installation. - Witness and accept commissioning including testing of the system.	Design shall allow for safe and simple removal offshore.
Jacket - Installation preparations – safe access	- Provide safe access to all T&I Contractor's work areas, e.g., Rigging, lift points, tugger bollards. - Provide safe access from deck of Barges or transport vessels to the Units as well as access to the Units for all stages of installation. - Provide temporary lighting at EPC/Fabricator Contractor work yard, as required.	- Specify access requirements. - Witness and accept access. - Specify lighting requirements. - Provide temporary lighting for offshore.	
Jacket Installation preparations – clearance	- EPC/Fabrication Contractor to ensure clearance to existing structures, around lift Rigging and lift points. - Ensure clear areas are maintained on the Barges or transport vessels.	- Specify clear areas/exclusion zones. - Specify clearances on Barges or transport vessels in between structures and to vessel forecastle/tower structures.	T&I Contractor specified exclusion zones are mandatory.

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Jacket Installation preparations – Jacket systems	- Preparation of the commissioning procedures for ballasting and grouting systems. - Commissioning and testing of the ballasting (if applicable) and grouting systems in close cooperation with T&I Contractor and Company. - Supply of grout connectors for T&I Contractor use. - Supply of gripper operating system for T&I Contractor use. - Ship equipment to T&I onshore base for use offshore.	- Provide input, review, and agree the commissioning procedures for ballasting, gripper, and grouting systems. - Witness and assist commissioning and testing of Jacket ballasting, gripper, and grouting systems in close cooperation with EPC/Fabrication Contractor. - Accept commissioning of ballast, gripper, and grouting systems. - Review and accept gripper and levelling systems, if applicable. - Receive and operate gripper and levelling systems offshore, if applicable.	
Jacket – installation preparations – dimensional control	Provide dimensional control documentation for the Jacket for T&I Contractor's review.	Review dimensional control documentation.	If required, Company shall provide third party dimensional control verification.
Piles - installation preparations	- Design Piles based on T&I Contractor's nominated piling equipment and Company geotechnical data. - Perform Pile handling and driveability analysis. - Review Pile upending concept.	- Nominate piling equipment and tools hammers. - Confirm and perform Pile handling and driveability - Provide concept for Pile upending frames, if applicable - Provide detailed design for Pile upending frames, if applicable	
Jacket and Piles installation preparations – Load-out	- Prepare Load-out procedure - Detailed design of Load-out operation - Provide ballast plan, strength, and stability for Barges, if applicable. - Provision of Barges or transport vessels mooring arrangement for Load-out of Barges, or transport vessels movements required for Load-out. - Provide onshore transport plan for the Load-out. - Perform Rigging calculations, for Load-out.	- Review and accept Load-out procedure. - Provide transport vessels ballast plan, lay-out, strength and stability for Load-out. - Advice requirements for Barges or transport vessels mooring arrangement for Load-out and Barges or transport vessels movements required for Load-out. - Review Load-out calculation for Rigging.	T&I Contractor is responsible to review relevant interfaces for his scope of work MWS to Review and accept Load-out procedure

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Transport	- Design the Units for sea Transport on the Barges / transport vessels and HLV. - Review and agree concept design for grillage and sea-fastening. - Provide detailed design, fabricate, and install grillage and sea-fastening.	- Provide Barges or transport vessels motions for sea Transport. - Provide Barge / transport vessel lay-out including concept design for grillage and sea-fastening. - Provide strength and stability calculation of Barges and vessels for sea Transport.	
Transport -arrival at yard	- Assist in the arrival of unladen Barges or transport vessels. - Provide mooring crew. - Establish a safe keeping procedure for the Barges (or vessels). - Notify Company and T&I Contractor up front of any Barges or vessels movements.	- Provision of tow- and harbour-tugs for Barges or transport vessels at arrival. - Review and accept the safe keeping procedure.	
Transport - Load-out Jacket & Piles	- Provide Load-out Rigging according to MWS and Company. - Provision of Load-out equipment incl. multiwheel trailers, crange, skidding equipment, external ballast pumps including operators etc. - Transfer the Units from the EPC/Fabrication Contractor's yard to the quayside in accordance with agreed procedure including removal of Barge or transport vessel furniture, if required. - Design and supply of all Load-out related structure, incl. necessary reinforcements due to pull forces during break loose and skidding, if required. - Load-out the Units from the EPC/Fabrication Contractor's quayside to Barges or transport vessels in accordance with agreed procedure. - Arrange intermediate Barge or transport vessel movements at yard until sail-away - Provision of tow- and harbour-tugs for Barges or transport vessels at intermediate movements.	- Deliver Barges or transport vessels with clear deck for Load-out. - Deliver 1 No. offshore rated container for ship loose items if required. - As/if required/requested, provide ballast engineer to operate Barges or transport vessels system when Barges or transport vessels are under control of EPC/Fabrication Contractor. - Accept and attend any Barges or transport vessels movements.	

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Transport – sea-fastening	• Install sea-fastening after Load-out. • Sea-fasten Rigging, ship loose and other items • Provide dimensional control documentation for the grillage and as installed sea-fastening. • Provide grillage & sea-fastening NDT documentation. • Install soft ropes (Dyneema or equivalent) to avoid VIV, if required. • Mark cut lines as indicated by T&I Contractor	• Review and accept Barges or transport vessels, grillages & sea-fastenings and accept position. • Review and accept grillage and sea-fastening as installed documentation • Review and accept NDT documentation. • Supervise marking of sea-fastening cut lines in yards. • Prepare towing manual/procedures and stability documentation for Transport of all Units from Handover Point to inshore transfer location if applicable and onwards to offshore location eq. filed of installation.	
Transport – safe access	• Installation of temporary scaffold access to all T&I Contractor's work areas, including Rigging and for cutting of sea-fastening • Detailed design of temporary scaffold access. • Supply of all materials for temporary scaffold access.	• Conceptual design of temporary scaffold access. • Witness and accept scaffold access.	
Transport - preparation for departure	• Reinstate all furniture removed by EPC/Fabrication Contractor during load out. Reinstate Barges or transport vessels to class requirements. • Install towing and bridle system to T&I Contractor's requirements. • Install post Load-out items associated with Pile upending frames, if applicable. • Install Pile upending Rigging and tools, if applicable and sea-fasten.	• Accept reinstatement of furniture by EPC/Fabrication Contractor. • Deliver towing and bridle to EPC/Fabrication Contractor's yard, if required. • Take receipt of laden Barges or transport vessel at Handover Point.	
Transport - departure	• Ballast Barges or transport vessels to tow condition (provided no water depth restrictions), if temporary system is used. • EPC/Fabrication Contractor to provide mooring crew.	• Ballast transport vessels to tow / transport condition and finalize ballasting if required by water-depth restrictions if permanent system is used. • Provision of tow- and harbour-tugs for any Barges or transport vessels movements.	MWS to issue Declaration for all Transports.

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Inshore Unit transfer activities as required		- Undertake mooring of the Barges or transport vessels for Piles alongside Installation vessel, if applicable. - Perform transfer of the Piles and any other equipment onto Installation vessel deck, if applicable - Sea-fasten the Piles or any other equipment, on Installation vessel if applicable. - Arrange marshalling area for laden Barges and vessels if required. - Demobilise and clean-off Barges and vessels.	Supply of guides and additional grillage and sea-fastening on the Installation vessel by T&I Contractor, for any Units transported on the vessel deck if applicable.
Transport		Sail to the field.	MWS to issue Declarations for the Inshore transfer.
Offshore Installation		- Mobilise Installation vessel with personnel to the field. - Conduct simultaneous operations (with other marine Contractors/users) in accordance with agreed procedures.	Company will provide pre-installation seabed survey data including bathymetry. Company will provide as built survey data for other installed platforms and structures in filed.
Offshore Installation position of the vessel and prepare for lift		- Perform DP function tests. - Move in with Installation vessel in accordance with procedures. - Survey the installation location and seabed for Jacket installation. - Remove soft ropes (Dyneema or equivalent) installed to avoid VIV.	

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Offshore Installation - installation of Unit		• Lift, upend and install the Jacket in accordance with the reviewed procedures. • Install the Piles in accordance with the reviewed procedures. • Perform completion work in accordance with reviewed procedures. • Recover Rigging. • Backload temporary steel if applicable. • Perform Jacket leg cut off. • If required, install main Jacket leg covers. • Perform as installed survey of Jacket location and orientation. • Activate navigation lights, fog horns etc. • Demobilise at the field • Issue "As-installed" information.	MWS to issue Declaration for the offshore installation activities. T&I Contractor to prepare offshore installation manual to address all installation procedures and processes.
Offshore Installation Barge/HTV cleaning		• Dispose of all Company provided surplus materials which are left on the Installation vessel, Barges, or transport vessels decks, unless instructed otherwise.	

1.2 Offshore Substation Topside

In this Interface Matrix the words listed shall have the following meaning:

- **CoG** means Centre of Gravity
- **DP** means Dynamic Positioning
- **EPC/ Fabrication Contractor** means the Contractor responsible for engineering and/or procurement and/or fabrication and/or construction of the Unit
- **Fabricator's Port** means the port of where the Units are handed over to T&I Contractors.
- **Field** means offshore location
- **HLV** means Heavy Lift Vessel
- **Installation Aids** mean equipment items and systems that are attached permanently or temporary. That are required for installation such as (but not limited to); guides, pin/buckets, bumpers, and posts, tugger bollards, inclinometers, counterweights, attachment points, Rigging release systems, miscellaneous Rigging (minor e.g., manoeuvring lines with shackles), markings, guides and any temporary fixings and equipment removal of any sea-fastening.
- **Jacket** means the steel frame supporting the Topsides in a fixed offshore platform
- **MWS** means Marine Warranty Surveyor
- **NDT** means Non-Destructive Testing
- **NTE** means Not To Exceed weight
- **Piles** means the complete offshore substation foundation
- **SJA** means Safe Job Analysis
- **T&I Contractor** means the Contractor that shall be responsible for transport and installation of the Unit.
- **Topsides** means the structure placed on the top of the OSS Jacket, housing electrical equipment for power transmission to shore
- **Unit** means the items to be handled, transported, installed as the case may be by the T&I Contractor.
For this Annex, Units refers to OSS Topsides

Both T&I Contractor, EPC/Fabrication Contractor and MWS are engaged by Company and work under separate contracts for Company.

Note to table below: A party responsible for the performance of an interface item is not relieved from this responsibility in case the other party accept the interface item.

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
General - early procedure concept design and main design parameters	• Prepare design briefs for all analyses and interfaces with marine operations. • Review and accept T&I Contractor's design briefs and criteria. • Review early procedure, main design parameters and concepts.	• Review and accept design briefs applicable for T&I Contractor's Scope of Work. • Prepare design briefs for T&I Contractor's Scope of Work. • Prepare the early procedure for installation to provide frozen main design parameters for EPC/ Fabrication Contractor.	
General - reviews	• Perform design reviews	• Participate in design reviews.	
General – HAZID & HAZOP	• Conduct an early HAZID and HAZOP for Load-out. • Participate in early HAZID and HAZOP for transport and installation activities.	• Conduct an early HAZID and HAZOP for transport and installation activities. • Participate in HAZID and HAZOP for Load-out activities.	Contractors are responsible for HAZID / HAZOP within their contract of activity.
General – delivery schedule	• Prepare register and schedule of deliverables.	• Review and agree schedules of deliverables.	Note: MDR dates and schedule is to be aligned and agreed between all parties, to ensure good interface flow
General – interface & interface matrix	• Agree and updates of the interface matrix (this document) according to an agreed schedule.	• Agree and updates of the interface matrix (this document) according to an agreed schedule.	Lead Interface Coordinator will be appointed by Company for the marine interface towards the EPC/Fabrication Contractor(s), and the Marine Warranty Surveyor. Company will handle main interface toward Marine Warranty Surveyor.
General – site visit/ assistance	• Provide assistance to T&I Contractor's representatives at EPC/Fabrication Contractor's sites.	• Attend EPC/Fabrication Contractor's site(s) to verify T&I requirements.	
General – Barges and vessels	• Review Barges or transport vessels details. • Attend Barges or transport vessels survey. • Prepare Load-out and sea-fastening schedule.	• Provide Barges or transport vessels for transport. • Arrange Barges or transport vessels survey • Provide Barges or transport vessels dossiers and details for review and acceptance by all parties.	Note: Company might arrange for OVID (Offshore Vessel Inspection Database) inspection together with the MWS suitability survey

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Installation preparations – NTE Weight and CoG envelope	- Propose, agree and maintain Unit NTE weights and associated CoG envelopes. - Provide well defined weight control reports and weighing procedures (weight, NTE and CoG). - Weigh the Unit in accordance with agreed procedures and schedule.	- Review and agree NTE weights and associated CoG envelopes. - Review weight control philosophy, weighing procedures and reports. - Agree weighing schedules - Witness final weighing, review, and accept final weighing report.	NTE weights and associated CoG envelopes shall be accepted by Company. Grillage weights and attachments to Units to be included in the transfer lift, where applicable.
Installation preparations – lifting analysis	- Perform detail design of lifting points and structural integrity checks. - Fabricate and install lifting/support points for all lifts. - Perform static and dynamic lift analysis to prove the design for installation.	- Provide concept lifting for system as/if required. - Input to lift point design, as required. - Review and accept lift point position and design. - Lifting analysis for all lifts - Perform independent static and dynamic lift analysis for verification and operational planning.	T&I Contractor to give early input to lift point design and particularly the sling retainers, if required.
Installation preparations – dimension control	Provide dimensional control documentation for the Units for T&I Contractor's review.	Review dimensional control documentation.	If required, Company shall provide third party dimensional control verification.
Installation preparations – Rigging and Rigging design	Review and accept Rigging design.	Concept and detailed design of Rigging.	Note: Rigging equipment shall cover all parts of the Rigging, such as (but not limited to) shackles, pins, spreader-bars/beams, lifting frames and hydraulics and any other part that is part of the system. Note: Depending on final design, the Rigging may be required to be preinstalled or not.

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Installation preparations – Installation Aids	• Detail design, fabricate, supply and installation of Installation Aids, as required. • Offload, handle, protect, preserve, and store the Installation equipment provided by T&I Contractor in accordance with T&I Contractor's requirements if applicable. • Provision of lifting lugs necessary for removal of the sea fastening, as required by the T&I Contractor. • Install sea-fastening removal aids.	• Provide concept design for Installation Aids. • Review and accept design of Installation Aids. • Provide installation aid equipment and Rigging required for installation. • Design and provide sea-fastening removal aids to EPC/Fabrication Contractor's yard. • Design and supply additional guides, grillage, and sea-fastening on the HLV, if required.	
Installation preparations – Rigging installation and laydown platforms	• Detailed design, supply, fabrication and installation of sling laydown platforms, sling deflectors and sling support structures, including temporary access • Take receipt of T&I Contractor's Rigging equipment. • Offload, handle, protect, preserve, and store the Rigging equipment in accordance with T&I Contractor's requirements. • If applicable, install all Rigging equipment in accordance with T&I Contractors description. • If applicable, perform test (including rotation test in place, if needed) and commission the Rigging equipment. • Provide lashing materials for sea-fastening of Rigging. • If applicable, install equipment and Rigging protection as required by T&I Contractor	• Conceptual design of sling laydown platforms, sling deflectors, protection, and sling support structures, if required. • Review and accept detailed design of sling laydown platforms, sling deflectors and sling support structures • Provide Rigging equipment to EPC/Fabrication Contractors' yards. • Specify lifting equipment handling, preserving and protection requirements including delivery schedule. • Proved Rigging certification on all parts. • Witness and approve Rigging installation. • Witness and accept commissioning including testing of the system.	Design shall allow for safe and simple removal offshore.

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Installation preparations – safe access	• Provide safe access to all T&I Contractor's work areas, e.g., areas for Rigging, lift points, tugger bollards • Provide safe access from deck of Barges or transport vessels to the Units as well as access to the Units for all stages of installation. • Provide temporary lighting at T&I Contractor work areas and along escape routes. • Define power supply requirements, for transport. • Mark all cut lines and provide safe access to all areas where cutting shall be performed	• Specify access requirements. • Witness and accept access. • Specify lighting requirements. • Provide power supply (generator or vessel power) for the Units, during the transport.	
Installation preparations – clearance	• EPC/Fabrication Contractor to ensure clearance to existing structures, around lift Rigging and lift points. • Ensure clear areas are maintained on the Barges or transport vessels.	• Specify clear areas/exclusion zones. • Specify clearances on Barges or transport vessels in between structures and to vessel forecastle/tower structures.	T&I Contractor specified exclusion zones are mandatory.
Installation preparations – Load-out	• Concept design of Load-out operation including Barges or transport vessels ballast plan. • Document strength and stability of Barges or transport vessels for Load-out • Prepare Load-out procedure. • Provision of Barges or transport vessels mooring arrangement for Load-out and Barges, or transport vessels movements required for Load-out.	• Provide sail away ballast arrangement.	T&I Contractor is responsible to review relevant interfaces for his scope of work
Transport	• Design the Units for sea transport on the Barges / transport vessels and HLV. • Review and agree concept design for grillage and sea-fastening. • Provide detailed design, fabricate, and install grillage and sea-fastening.	• Provide Barges or transport vessels motions for sea transport. • Provide Barge / transport vessel lay-out including concept design for grillage and sea-fastening. • Provide strength and stability calculation of Barges and vessels for sea transport.	Grillage to be designed to allow transfer together with Units onto HLV deck (grillage to suit HLV deck framing) if applicable.

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Transport - arrival at yard	- Assist in the arrival of unladen Barges or transport vessels. - Provide mooring crew. - Establish a safe keeping procedure for the Barges or transport vessels. - Notify Company and T&I Contractor up front of any Barges or transport vessels movements.	- Provision of tow- and harbour-tugs for Barges or transport vessels at arrival. - Review and accept the safe keeping procedure.	
Transport - Load-out	- Provide Load-out Rigging according to MWS and Company. - Provision of Load-out equipment incl. multiwheel trailers, cramage, skidding equipment, external ballast pumps including operators etc. - Transfer the Units from the EPC/Fabrication Contractor's yard to the quayside in accordance with agreed procedure including removal of Barge or transport vessel furniture, if required. - Design and supply of all Load-out related structure, incl. necessary reinforcements due to pull forces during break loose and skidding, if required. - Load-out the Units from the EPC/Fabrication Contractor's quayside to Barges or transport vessels in accordance with agreed procedure. - Arrange intermediate Barge or transport vessel movements at yard until sail-away - Provision of tow- and harbour-tugs for Barges or transport vessels at intermediate movements.	- Deliver Barges or transport vessels with clear deck for Load-out. - Deliver 1 No. offshore rated container for ship loose items if required. - As/if required/requested, provide ballast engineer to operate Barges or transport vessels system when Barges or transport vessels are under control of EPC/Fabrication Contractor. - Accept and attend any Barges or transport vessels movements.	

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Transport – sea-fastening	- Install sea-fastening after Load-out. - Sea-fasten Rigging, ship loose and other items - Provide dimensional control documentation for the grillage and as installed sea-fastening. - Provide grillage & sea-fastening NDT documentation. - Mark cut lines as indicated by T&I Contractor	- Review and accept Barges or transport vessels, grillages & sea-fastenings and accept position. - Review and accept grillage and sea-fastening as installed documentation - Review and accept NDT documentation. - Supervise marking of sea-fastening cut lines in yards. - Prepare towing manual/procedures and stability documentation for transport of all Units from Handover Point to inshore transfer location if applicable and onwards to offshore location eq. filed of installation.	
Transport – safe access	- Installation of temporary scaffold access to all T&I Contractor's work areas, including Rigging and for cutting of sea-fastening - Detailed design of temporary scaffold access. - Supply of all materials for temporary scaffold access.	- Conceptual a design of temporary scaffold access. - Witness and accept scaffold access.	
Transport – preparation for departure	- Reinstate all furniture removed by EPC/Fabrication Contractor during load out. Reinstate Barges or transport vessels to class requirements. - Install towing and bridle system to T&I Contractor's requirements.	- Accept reinstatement of furniture by EPC/Fabrication Contractor. - Deliver towing and bridle to EPC/Fabrication Contractor's yard. - Take receipt of laden Barges or vessel at Handover Point.	
Transport - departure	- Ballast Barges or transport vessels to tow condition (provided no water depth restrictions), if temporary system is used. - EPC/Fabrication Contractor to provide mooring crew.	- Ballast to tow / transport condition under EPC/Fabrication Contractor's direction and finalize ballasting if required by water-depth restrictions if permanent system is used. - Provision of tow- and harbour-tugs for any Barges or transport vessels movements	MWS to issue Declaration for all transports.
Inshore Unit transfer activities as applicable.		- Arrange marshalling area for laden Barges or transport vessels if required. - Transfer equipment or Units to deck and sea-fasten, if required. - Demobilise and clean-off Barges or transport vessels.	Supply of guides and additional grillage and sea-fastening on the Installation vessel by T&I Contractor, for any Units transported on the vessel deck if applicable.

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Transport		Sail to the field.	MWS to issue Declarations for the Inshore transfer.
Offshore Installation		- Mobilise Installation vessel with personnel to the field. - Conduct simultaneous operations (with other marine Contractors/users) in accordance with agreed procedures.	Company will provide pre-installation seabed survey data including bathymetry. Company will provide as built survey data for other installed platforms.
Offshore Installation - installation of Unit		- Perform DP function tests. - Move in with Installation vessel in accordance with procedures. - Perform any surveys needed. - Remove temporary nav-aids from Jacket before Topsides are installed. - Lift and install the Units in accordance with the reviewed procedures.	MWS to issue Declaration for the offshore installation activities. T&I Contractor to prepare offshore installation manual to address all installation procedures and processes.
Offshore Installation - weld out	- Prepare welding requirements for welding of the Topside legs to the Jacket - Review welding procedures - Perform final NDT of Offshore welds, sandblast welds and affected area, paint welds and affected areas	- Prepare welding and NDT procedures - Weld out the Topside legs to the Jacket according to requirements and procedure. - Perform NDT after welding - Perform wire brushing and apply one layer of primer on all welds	

Interface Activity	EPC/Fabrication Contractor's responsibilities	T&I Contractor's responsibilities	Comments
Offshore Installation - completions	Sandblast and paint affected areas	- Perform platform completion work in accordance with reviewed procedures. - Remove and recover Rigging, spreader bars, lifting points Rigging platforms including temporary steel work for lifting and guiding. - Backload temporary steel if applicable. - Activate navigation lights, fog horns etc. - Demobilise at the Field. - Issue "As-installed" information.	
Barge/HTV cleaning		- Clean all Barges or HTV's and dispose of any remaining sea-fastening, grillage, and surplus material. - Dispose of all Company provided surplus materials which are left on the Installation vessel, Barges, or transport vessels decks, unless instructed otherwise.	