[19.] QUALITY

[19.1.] Project Quality Plan [PM02]

Quality Control provisions in support of this project.

[19.1.1.] Scope

This Quality Plan (QP) has been prepared to comply with the BWL SHE-Q system requirements for the works described in section 6.

The prime objective of this QP is to detail the application of the BWL SHE-Q management system for the specific case of this Project. Since BWL is certified to ISO 9001, ISO 14001 and OHSAS 18001, reference is given in many places to existing procedures and supporting documents from the BWL SHE-Q management system.

This QP contains a description of the specific Project Organisation and the Quality Guidelines to be followed. It is prepared in accordance with ISO 9001 and ISO 10005 standards. The content of this QP covers all activities during preparation, execution and completion of the Project.

[19.1.2.] References

Client and/or Contract specific procedures, documents, standards:

Port Operations Guide for Capital Dredge Tender, 25 August 2013

BWL SHE-Q procedures and documents:

BWL-001 Manual Boskalis Westminster
BWL-001a Bridging Document Q-Aid Framework
RBW-003 Policy Statement Quality (included at Appendix 10.2)
RBW-104 Preparing
RBW-105 Executing
RBW-106 Evaluating
RBW-301 Document and Data Control
RBW-303 Project Preparation Operational Summary
RBW-304 Survey for Projects
RBW-305 Project End Report
RBW-308 Auditing
RBW-310 Non-conformities and Corrective Actions
RBW-311 Preventive Actions
BWL-312 Site Reporting
BWL-402 Control of Suppliers and Subcontractors
BWL-403 Purchasing
BWL-510 Incident Reporting and Follow-up

RBW-528 Hand-over Guidelines

RBW-531a Request for Inspection and Approval

RBW-532 Inspection & Test Plan

RBW-533 Work Method Statement

BWL-534a Project Close-down Checklist

BWL-534b Completion Certificate

RBW-535 Project Master File

BWL-536 Control and Archiving of Quality Records

RBW-537 Master Document Register

RBW-550 Survey Method Statement

International Standards and Regulations:

ISO 9001 Quality Management Systems – Requirements

ISO 10005 Quality Management Systems – Guidelines for Quality Plans

[19.1.3.] Outline Project Details

[19.1.3.1.] Identification of Key Parties

Details are provided in section 5 of this document.

[19.1.3.2.] Key Dates and Milestones

Contract award	-	to be confirmed
Project Commencement	-	to be confirmed
Dredging Commencement	-	to be confirmed
Project Completion	-	to be confirmed

[19.1.3.3.] Progress Measurement

During the execution phase of the project, regular interim ‘process control’ surveys will be carried out to ensure that dredging operations achieve design requirements. The project’s Surveyor will ensure that all survey equipment is calibrated and tested, and remains in a serviceable condition.

Horizontal control will be by Differential Global Positioning System (DGPS). For this purpose all dredgers and survey vessels will be equipped with receiver units, while a differential receiver/transmitter will be established in or close to the project area. All positioning will be expressed in local grid co-ordinates or any other co-ordinate system required by the Client.

The performance of the positioning system will be checked regularly against existing trig-points.

For vertical control a radio tidal transmitter will be installed in or close to the operational area. Survey vessel and dredgers will be equipped with receivers to ensure that tidal data is available on each vessel at all times. The levels transmitted will be checked

regularly against visual tide-boards and/or benchmarks. Vertical measurement will be by precision dual-frequency echo-sounder. The echo-sounder will be calibrated by means of the bar check method before any important survey operation is carried out. In areas subject to heave, a heave-compensator will be connected to the echo-sounder in order to compensate measured depths for vertical displacements. All vertical measurements will be expressed in local datum or any other datum required by the Client.

"Dredge View" is an 'in-house' survey package developed by Boskalis. The basic properties of the package are:

Data logging: Vessel position is made visible relative to the centreline of the works and the desired survey line.

Processing: Where depths are reduced to datum, spurious data is removed and the integrity of the data is checked.

Presentation: Processed data can be plotted as bathymetric charts with contour lines, as cross-sections and can be formatted for use on the navigation display of the Captain or Senior Dredge Master on board the dredger.

Volume calculation: Performed by either subtraction of Pre Contract Survey and Post Contract Survey DTM layers or surface areas of cross-sections. (Pre/Post Contract Surveys are sometimes also referred to as “Pre/Post Dredge Surveys”).

Positioning of dredging units: To optimize the dredging operation, the package allows the graphical display of the dredger's position, including the position of the drag head, objects of interest such as channel centre/toe lines, buoys, quay walls, dredging limits, etc.

[19.1.4.] Quality Management System

[19.1.4.1.] General

BWL operates an integrated SHE-Q Management System as described in section 15.

[19.1.4.2.] Quality Plan Objective and Validity

The objective of this QP is to ensure that the preparation, execution and evaluation of this project is carried out in a controlled manner. The QP also ensures that all relevant personnel are made aware of specific quality requirements imposed on them by the contract and client specifications, and the manner in which tasks and duties are to be carried out.

The validity of this QP starts from the approval date of the Plan (by the Project Manager) up to and including the completion date of the project.

[19.1.4.3.] Quality Management System Implementation [PM10]

The ultimate responsibility for Quality Assurance matters during this project lies with the Project Manager.

The following plans will be prepared to comply with Quality Control requirements:

- Work Method Statement and Survey Method Statement
- Inspection & Test Plan – Survey;
- Inspection & Test Plan – Dredging.

[19.1.4.4.] Client Audits

The Client is welcome to carry out verification of the works, when mutually agreed with the BWL Project Manager. Verification is limited to the scope of the Contract. Reference is made to section B of the corporate procedure RBW-308 Auditing, where guidelines for the handling of external audits by Clients is provided.

[19.1.5.] Document Control

[19.1.5.1.] General

Approvals, changes and revisions to documents shall be controlled in accordance with RBW-301 Document and Data Control. This control shall ensure that the correct and approved issues of project documents are available to the relevant personnel and at the required location.

Filing of all relevant project related information during project execution will be done according to the guidelines of RBW-535 Project Master File, and as provided for on the project portal.

The project will provide and maintain a register for the control of documentation, i.e. Master Document Register (RBW-537), that will contain details of all formal project documents such as contracts, drawings, plans, survey reports, etc. The Project Manager shall be responsible for maintaining the Master Document Register.

All pertinent correspondence will be retained within the Project Master File / project portal, applicable sections.

Archiving of all relevant project related information after project close down will be done in accordance with BWL-536 Control and Archiving of Quality Records.

[19.1.5.2.] Distribution and Security

Documents will be distributed according to the established lines of communication between the Project and the Client's Representative.

Project Master File hard copy documents shall be stored in site office designated cabinets, such that accidental loss of information is prevented. Binders shall be used accordingly, identified with the Project filing code.

Project Master File electronic copy documents shall be managed and stored in the project portal, which is controlled using access levels for users – and is backed up via Boskalis ICT department procedures.

[19.1.6.] Personnel and Organisation

[19.1.6.1.] Description of Project Organisation

The Project Manager shall select personnel for the project team qualified for the various tasks to be performed. The Project Organisation shall be in relation to the Scope of Work.

The basic role of key-personnel on the Project is detailed further in this section.

The Project Manager is to ensure that assigned tasks will be arranged according to the function descriptions given, so that each person knows the limits of his responsibilities in relation to the overall structure of the Project Organisation.

The organisation is described in section 8 and presented in Appendix 2.2 of this document, showing the hierarchical reporting lines, the relationship between the various functions and interfaces with the Engineer / Consultant and Client.

[19.1.7.] Control of Suppliers and Subcontractors [PG01]

The Project Manager shall ensure that assigned suppliers and/or subcontractors are appointed from the preferred list, BWL-576f, or that any new appointments are selected in accordance with BWL-402, Control of Suppliers and Subcontractors, as follows:

Wherever possible, Royal Boskalis Westminster Group companies shall be preferred. Otherwise, the basis for selection will be a positive outcome from one or more of the following:

- Historical working relationship with BWL;
- Examination of works previously executed or works currently under execution;
- Completion of Pre-qualification and Tender Questionnaire (BWL-576g1);
- Audit of supplier / subcontractor systems, processes and equipment etc.

On advice from the Management Team, the Technical Manager or the SHE-Q Manager, the following additional considerations may apply:

- Certification or registration to a recognised standard / professional body / institution / trade association;
- Recommendation from an external friendly organisation;
- Taking up of references;
- Examination of plant and equipment – its condition, certification and any contingency arrangements;
- Investigation of company accounts or credit status.

Any prospective supplier or subcontractor investigation conducted at the Tender stage shall be recorded within the Tender file.

Upon contract award and handover to Operations, the Project Manager will ensure that:

- Supplier or subcontractor selection is based on the requirements listed above;
- The basis for selection is recorded in the Project Preparation Operational

Summary (ref. RBW-303) and Project Master File (RBW/BWL-535) accordingly;
- Any written subcontract contains 'SHE-Q Requirements Subcontractors & Suppliers' (BWL-576h).

The Project Manager will ensure that the provisions within BWL-402, section 6 (Control of Subcontractors during Execution) are implemented and maintained, i.e. that:

The Project Manager will ensure that suppliers and subcontractors receive an induction upon first arrival at the project site. Provisions shall be made in accordance with RBW-519 (series) documents, or localised equivalents. The induction will include particulars of the:

- NINA (Safety Program) Safety Values / Safety Rules;
- SHE-Q Policies (BWL-002/002a, RBW-003);
- Relevant information from the SHE Risk Assessment Matrix (BWL-513);
- Applicable / relevant sections and provisions from the SHE Plan (BWL-501);
- Applicable sections of the Quality Plan etc (RBW-530/531/532);
- Arrangements for weekly progress meetings;
- Specific requirements form the Client and regulatory provisions.

During Execution, suppliers and subcontractors will be invited to participate in any applicable / relevant Toolbox Meetings (ref. BWL-516).

[19.1.7.1.] Client Approval

When stipulated in the contract, the Project Manager shall not engage or permit the engagement of any supplier or subcontractor without prior written approval of the Client.

[19.1.7.2.] Supplier and Subcontractor Evaluation

The supplier or subcontractor assessment (RBW-576k) shall be carried out as a minimum after completion of the works. The assessment will be based on at least the following:

- precision of the works;
- reliability;
- punctuality;
- completeness;
- quality approach;
- SHE measures;
- administrative quality.

[19.1.8.] Project and Process Control

[19.1.8.1.] General

The certified SHE-Q management system of BWL contains three main process control procedures that describe the process flow of a project from Preparation via Execution to Evaluation. These process control procedures are:

RBW-104 Preparing;
RBW-105 Executing;

RBW-106 Evaluating.

Essential process steps in these procedures are summarised below.

[19.1.8.2.] RBW-104 Preparing

The preparation process in RBW-104 describes the following process steps:

1. Start of preparations;
2. Appoint Project Manager (Project Manager);
3. Collect files;
4. Kick-off Meeting;
5. Execution Method;
6. Selection of equipment, personnel, suppliers and sub-contractors;
7. Project Preparation Operational Summary (PPOS);
8. Project Quality plan;
9. Project SHE plan;
10. Work Budget;
11. Hand-over.

[19.1.8.3.] RBW-105 Executing

The execution process in RBW-105 describes the following process steps:

1. Mobilisation;
2. Preparation / installation;
3. Execution of the works;
4. Control and Reporting;
5 Project completion;
6. Demobilisation;
7. Project close down.

[19.1.8.4.] RBW-106 Evaluating

During the closing stages of the project, BWL will begin the evaluation process (RBW-106), as described below:

Collect information: The Project Master File is the primary source of information, including various reports, meeting minutes, audit performance details and Client satisfaction indicators;

1. Review and analysis: The Project Manager and Business Sector Manager will arrange a formal close out meeting to discuss any conclusions, recommendations and proposals for improvements;
2. Project End Report: The Project Manager will conclude the Project End Report following the close out meeting;

3. Implementation: BWL departments implement any recommendations or corrective/preventive actions agreed following management approval of the Project End Report.

The Project End Report will remain on the project portal indefinitely, and may be referenced for future tenders and the preparation of future projects.

[19.1.8.5.] Project Reporting

For reporting processes, reference is made to the reporting procedures available in the SHE-Q system. The following procedures are applicable:

BWL-312	Site Reporting
BWL-510	Incident Reporting and Follow-up
RBW-527	Non-conformity Report
RBW-528	Hand-over Guidelines
BWL-534a	Project Close-down Checklist
BWL-534b	Completion Certificate
RBW-305	Project End Report

[19.1.9.] Identification and Traceability

The purchasing of materials for this project is not anticipated at this stage, however procedures for the transport, receipt, inspection and storage of materials shall be established if/when necessary.

[19.1.10.] Quality Control

[19.1.10.1.]General

This section details the overall Quality Control activities for the preparation, execution and reporting of this scope of work. The purpose of Quality Control is to assure and verify that certain predetermined control activities have been carried out. Ultimately it is to ensure that the result meets the specified requirements.

The Inspection & Test Plans (Appendix11) describe the actual Inspection & Test activities that will be performed during this scope of work. They include activities with contractual Quality Requirements, or those from applicable Standards – and will be developed to identify the following: Acceptance Criteria, Registration Document, Frequency, Hold/Witness/Review points for Client's Representative and Date of Approval.

The input information for the preparation of the Inspection & Test Plans is derived from the project requirements and relevant contract and Client specifications. The Inspection & Test Plans are linked to the project's Work Method Statements (ref. RBW-533). The Project Manager is responsible for the proper implementation of the Inspection & Test Plans.

[19.1.10.2.]Proceedings

The Client's Representative may indicate their intended presence during specific activities using Hold and/or Witness Points. Inspection & Test Plans are subject to

approval by the Client. During execution, BWL shall give the Client's Representative notice of the expected dates when agreed Witness and/or Hold points will be reached.

The Client's Representative will be informed of the actual dates and locations of inspections (ref. RBW-531a Request for Inspection and Approval). The Client's Representative shall confirm to the Project Manager as to whether they will attend. In addition, the Client's Representative will be given access and assistance to audit the Quality Control process at any time mutually agreed with the Project Manager.
The endorsed Inspection & Test Plans, reports and other documents generated during the actual Inspection & Test activities, are project Quality Records and shall be filed in the Project Master File (RBW-535).

[19.1.11.] Non-conformance

This section is applicable for all Non Conformities having a direct effect on the progress and/or quality of the project works. It is also applicable for the corrective and/or preventive actions taken.

The following procedures from the BWL SHE-Q system are applicable in these circumstances:

- RBW-310 Non Conformities & Corrective actions;
- RBW-311 Preventive Actions;

These procedures describe the instructions for dealing with Non Conformities when reported, to ensure that:

- Non Conformities are identified, documented and reported;
- the cause of the Non Conformance will be investigated;

corrective and/or preventive action is taken to prevent re-occurrence.

[19.1.11.1.]Audits

A description of audits and inspections applicable to this project is provided in section 15.14.

[19.2.] SHE-Q Targets

Final targets to be confirmed during Project Preparation possible considerations identified below:

% of dredged material for beneficial re-use
Actual production within x% of planned
Actual operational hours within x% of planned
Actual site and management SHE inspections completed against planned

[19.3.] Test and Inspection Sheets

Inspection and Test Plan – Dredging	Appendix 11
Inspection and Test Plan – Survey	Appendix 11