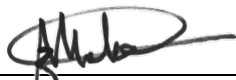


**Transnet National Port Authority
Sturrock Dry Dock Infrastructure Upgrade (SDD)-Substation
Control and Instrumentation Gap Analysis Report**

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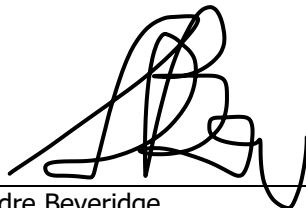
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Glossary

The definitions listed below apply to this document.

Acronyms	Definition
Transnet	Transnet SOC Ltd
TNPA	Transnet National Ports Authority
FEL	Front End Loading
PLP	Project Lifecycle Process
ORS	Owners requirement specification
C&I	Control and Instrumentation

1. Introduction

The purpose of the report is to identify specific areas requiring improvement on the documentation received from ZML Africa Group, by assessing or reviewing the expected deliverables for advancement to FEL4 stage of the Sturrock dry dock project.

This evaluation aimed to ensure that the project is well prepared for the next stage, with a focus of assisting ZML Africa Group on refining and enhancing various expects as necessary.

1.1 Background

ZML Africa Group were appointed by Transnet National Ports Authority (TNPA) to provide professional engineering services as part of a feasibility study for a Sturrock Dry Dock Electrical Infrastructure upgrade in the Port of Cape Town.

The objective of this project is to design a SCADA System for controlling and monitoring the operation of the Sturrock dry Electrical Equipment, ensuring safety and efficiency of its operation.

ZML Africa Group have developed and issued the preliminary designs, layout drawings, specifications, estimated costs and duration to design a Sturrock dry dock upgrade project. Upon reviewing the documentations received from ZML Africa Group as per the PLP deliverable requirements, the outcome of the review was that some deliverables were met and others were missing.

As part of the gap analysis the following documents were received and reviewed:

Table 1: List of Documents

Document Number	Document Description
TNPA/2020-EE-RPT-0001	Final Electrical Design Report
TNPA/2020-000-E-DS-0006	Battery Tripping Unit (BTU) DATA Sheet
Annexture I	Battery Tripping Unit (BTU) Specification
TNPA/2020-000-E-DS-0008	SCADA DATA Sheet
ANNEXURE L	SCADA specification
TNPA/2020-000-E-DS-0010	Power meter DATA sheet
ANNEXURE M	Power Meter Specification
TNPA/2020-000-E-DS-0009	Telemetry DATA Sheet
ANNEXURE O	Telemetry Specification
C3	Main Works Information
TNPA/2020-000-E-STM-0001	SCADA, Telemetry and Metering Layout sheet 1
TNPA/2020-000-E-STM-0002	SCADA, Telemetry and Metering Layout sheet 2
TNPA/2020-000-E-STM-0003	SCADA, Telemetry and Metering Layout sheet 3

TNPA/2020-000-E-STM-0004	SCADA, Telemetry and Metering Layout sheet 4
TNPA/2020-000-E-STM-0005	SCADA, Telemetry and Metering Layout sheet 5
TNPA/2020-000-E-STM-0006	SCADA, Telemetry and Metering Layout sheet 6
	Bill of Quantities Rev 5

2. Gap Analysis

The Control and Instrumentation design pack produced by the external consultant has numerous areas where information is missing as per the project lifecycle guidelines for front end load (FEL) 3. Below is a table that shows the minimum expected documentation that is required in terms of the PLP.

2.1 Documentation Review

Table 2: List of Findings

Feasibility Design Deliverable	Document Number	Status of Documentation	Comments/Findings
Final Electrical Design Report	TNPA/2020-EE-RPT-0001	Report available	
Works Information	C3	Report available	Not applicable
Battery Tripping Unit (BTU) DATA Sheet	TNPA/2020-000-E-DS-0006	Document not available, only cover page is available	Data sheet must be available
Battery Tripping Unit (BTU) Specification	Annexure I	Document available	

Feasibility Design Deliverable	Document Number	Status of Documentation	Comments/Findings
Control and Instrumentation Drawings		Drawings available, not detailed.	
	TNPA/2020-000-E-STM-0001	Incomplete	- Primary medium of communication exiting the substation should be fibre. - To provide redundancy to use two network switches and additional fibre to form a ring, and remove the wireless data radio. - A detail drawing showing what is connected to the RTU is required. - Detail designed drawing required
	TNPA/2020-000-E-STM-0002	Complete-High Level Drawing	
	TNPA/2020-000-E-STM-0003	Complete-but high level	The SCADA communication network needs to be redesigned and must at least include the following but not limited to: - Network redundancy. - Indicate devices connected on the switch. - Indicate all protocols. - Indicate all connections in details. - All connections and housings. - The patch panels are not numbered on some drawings.
	TNPA/2020-000-E-STM-0004	Complete-but high level	The SCADA communication network needs to be redesigned and must at least include the following but not limited to: - Network redundancy. - Indicate devices connected on the switch. - Indicate all protocols. - Indicate all connections in details. - All connections and housings.

Feasibility Design Deliverable	Document Number	Status of Documentation	Comments/Findings
			The patch panels are not numbered on some drawings.
	TNPA/2020-000-E-STM-0005	Complete-but high level	The SCADA communication network needs to be redesigned and must at least include the following but not limited to: - Network redundancy. - Indicate devices connected on the switch. - Indicate all protocols. - Indicate all connections in details. - All connections and housings. - The patch panels are not numbered on some drawings.
	TNPA/2020-000-E-STM-0006	Complete-but high level	The SCADA communication network needs to be redesigned and must at least include the following but not limited to: - Network redundancy. - Indicate devices connected on the switch. - Indicate all protocols. - Indicate all connections in details. - All connections and housings. - The patch panels are not numbered on some drawings.
SCADA specification	ANNEXURE L	Complete	The industrial PC design must be finalized, it has a touch screen.
Telemetry Specification	ANNEXURE O	Complete	
Power Meter Specification	ANNEXURE M	Complete	

Feasibility Design Deliverable	Document Number	Status of Documentation	Comments/Findings
SCADA Data Sheet	TNPA/2020-000-E-DS-0008	Cover Page available- no Data sheet submitted.	No Data sheet
Telemetry Data Sheet	TNPA/2020-000-E-DS-0009	Cover Page available- no Data sheet submitted.	No Data sheet
Power Meter Data Sheet	TNPA/2020-000-E-DS-0010	Cover Page available- no Data sheet submitted.	No Data sheet
BOQ		Document available.	Detailed design of a SCADA system is missing.

3. Recommendations

The contractor shall review and update the drawings but not limited to the findings on the table above and submit to the Employer for reviews and acceptance.

The contractor to detail design the SCADA systems to show all connected equipment, protocols and communication devices as per the scope of works.

4. Conclusion

Based on the above GAP analysis, the submitted documents are satisfactory, but there is few missing information that needs to be included. There are other documents required as per the FEL 3 deliverables that were not submitted, the C&I discipline shall develop and submit for client approval.