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CONSTRUCTION MANAGEMENT PLAN

For: Transnet National Ports Authority

Project Name: Refurbishment of Queens Warehouse

Project Number: TBA

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Client: Port Engineer

Project Sponsor: Port Manager

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1. Owners Objectives, Priorities & Philosophy

Transnet has decided for all Transnet Operational Divisions (OD's) to utilize Transnet owned assets/facilities for staff accommodations purposes. OD's have been tasked to identify and refurbish/upgrade the existing facilities. The refurbishment is to ensure that all these administration or operational facilities are compliant with all regulations and standards. TNPA Port of Durban has identified Queens Warehouse for refurbishment.

The benefits of refurbishment of Queen's warehouse are as follows:

- Providing safe working environment for TNPA employees
- Optimization of Port Land usage

2. Construction Strategy

During the design and scoping phase of the project, the project team reviewed and provided construction input to the design relating to construction strategy, labour, materials and quality requirements.

The contractor may employ their preferred sub-contractors in accordance with NEC 3 conditions of contract. Once appointed, the contractor will be expected to comply with the following employer's requirements:

- Health and safety
- Environment
- Security
- Industrial relations
- Construction specifications

The contractor will be expected to supply a schedule of works programme during the contract negotiation stage that will have to comply with all stipulations contained within the tender document requirements and shall show clear logical methodology as well as critical path for undertaking the works within the stipulated time constraints. This will be reviewed and approved by the project manager or the supervisor prior to work commencement.

Construction procedures must be followed according to the Occupational Health and Safety Act No. 85 of 1993, Construction regulations 2014.

The contractor will have to submit the following documents as a minimum that should be approved before the construction can commence:

- Health and Safety file
- Contractor's works insurance
- Public liability insurance
- Construction guarantee

The employer will have to prepare and submit the following as a minimum:

Appoint a safety specialist in terms of construction regulations 5(5). The appointed safety specialist to ensure the relevant competency for this appointment and meet requirement of construction regulations 5(7)

Proposed Floor Occupation

The project team suggested modifying the phase method for Queen's warehouse construction which will enable the project team to remove concerns such hazardous working conditions, slip, trip, and fall hazards, employee noise and sound exposure, and chemicals by implementing a phased strategy.

This strategy will enable the construction team to learn first-hand about the project execution restrictions, allowing for efficient activity execution coordination and enforcing compliance with quality standards. This kind of project management is intended to implement a carefully constructed plan that maximizes the chances of success.

Proposed Workspace Options

The following phases outline the proposed workspace options for employees to allow the smooth coordination of the execution of works at Queen's warehouse to eliminate the exposure of employees to safety hazards:

- Phase 1 – All employees that belong to port will be relocated to OTB

- Phase 2 – PDU, TSS and KZNLH will be relocated to Bay Terrace
- Phase 3 – Engineering HQ to occupy the second floor to allow for the refurbishment to be carried out. Once the refurbishment has bee completed, Facilities department would decide where to relocate the employees.

3. Construction Philosophy

The project team developed project management plans that will serve as a guideline during the execution phase of the project life cycle, from project planning to post-construction warranty. The project manager will enforce the implementation of the developed project management plan to ensure the smooth execution of the project scope of work to meet the needs and objectives of the stakeholders.

Project planning entails all project planning activities (With the End in Mind) from concept design to preliminary cost estimation, project completion, and post construction. Based on their individual professional expertise and experience, the project subject matter experts created a rigorous planning template that provides the structure for all stages of construction. This construction management planning process provides the organization and stability needed to be a catalyst, as well as seamlessly integrating our full complement of professional and construction management services to be delivered in the project for effective project work package execution.

Cost Estimating

The project hires professionals from the control team to manage the project cost effectively. Each project is a one-of-a-kind opportunity to create something special. Rather than relying on square to meet the needs of the business. The project cost control team will manage the project cost throughout the project lifecycle, beginning with the design development stage and continuing until the relevant phase is completed.

The project cost control will be implemented continuously throughout the project execution to ensure compliance with the imposed project budget in accordance with the expectations of the stakeholders.

Quality and Service

A quality assurance manager ensures that the company adheres to all applicable laws and regulations, including health and safety, environmental protection, and consumer rights. The manager also ensures that the company has adequate resources to meet its obligations.

The primary responsibility of a quality assurance manager is to oversee the implementation of quality control procedures at each stage of manufacturing or distribution. For this, a quality assurance manager works closely with various groups within the organization. These include marketing personnel, engineers, purchasing agents, human resource specialists, legal counsel, financial analysts, etc.

A quality assurance team consists of several members who perform different functions. These include the quality control manager, quality assurance engineer, quality assurance analyst, quality assurance supervisor, quality assurance inspector, quality auditor, quality assurance technician, quality assurance manager, quality assurance coordinator, quality assurance specialist, quality process analyst, quality assurance associate, quality assurance assistant, quality assurance officer, quality assurance director, quality assurance manager, supplier quality manager, and quality assurance supervisor.

project team developed the catalyst team that is singularly focused on providing a quality product. Every time, that goal encompasses unparalleled customer service, industry experience, responsiveness, problem solving, integrity and professionalism. The project manager has assembled the best team for the project. The project will make use of the quality products and use the experience-driven system of checks and testing.

Scheduling

The developed construction schedule will include a timeline for each project task/activity and event. The construction schedule is an important part of the project planning phase because it specifies the resources required and the teams in charge of each task in the construction process.

Construction scheduling will involve different types of resources, stakeholders and participants. The schedule will begin by listing all subcontractors involved in the project subject to the extent of the work to be subcontracted.

The construction schedule will delineate the sequence of the work to be complete, milestone and critical path activities that need to be prioritised to enforce compliance to the imposed completion date to mee the business need

The construction schedule will identify all major activities for detail design, approvals, procurement of materials and actual building time. As the design is developed, the schedule will be expanded in detail particularly for the construction phase. This construction schedule utilizes specialized software, which is constantly monitored and updated throughout the project life cycle, so the project internal and external stakeholders know exactly the status of the project.

Procurement/Subcontractor Selection

The appointed contractor will be mandated to subcontract specialised scope of work with the best subcontractors with high level of construction expertise to maintain the highest quality and meet the client's expectations. The procurement management plan formulates a detailed scope of work and bid packages that are distributed to the subcontractors on TNPA approved list that have experience with similar projects, are financial stable, have the manpower capacity and workload volume to handle the project in consideration.

TNPA supplier development will be acquired to review the qualified list of subcontractors that will be utilized by the appointed contractor.

Construction Process

During construction, a NEC ECC 3 Supervisor, and a NEC3 ECC Project Manager (PM) will lead the project. The NEC ECC 3 Supervisor will be on the project full time and will be responsible for the day-to-day organization, supervision, scheduling, quality control, and safety of the project. The PM will work closely with all project team members to ensure that all upcoming work is coordinated with the NEC ECC 3 Supervisor to ensure the proper sequencing of materials, equipment, and subcontractors to deliver the project on time and within budget.

Post-Construction

Throughout the post-construction phase, the project team members will remain actively involved with the project until the completion of the project lesson learnt. The NEC ECC 3 Supervisor and NEC ECC3 Project Manager will be available to address any last-minute concerns that may arise. The post-construction activities will include, completion of punch list work, all subcontracts' warranties, the delivery of as-built records, operating, maintenance manuals and any other paperwork.

4. Constructability Objectives

Construction Team members will review and offer input to the design during the engineering phase of the project in the areas of construction efficiency, construction methods, labour, materials, and quality requirements to meet the goals of safety, cost, schedule, and quality more effectively. The obligations of the "Designer" as stated in the Construction Regulations will be specifically monitored during the Constructability Reviews to ensure compliance.

5. Engineering & Procurement

The appointed contractor will be mandated to subcontract specialised scope of work with the best subcontractors that have high level of construction expertise to maintain the highest quality and meet our client's expectations in line with TNPA procurement processes mandate.

The procurement management plan formulates a detailed scope of work and bid packages that are distributed to the subcontractors on TNPA approved list that have experience with similar projects, are financial stable, have the manpower capacity and workload volume to handle the project in consideration.

TNPA supplier development will be acquired to review the qualified list of the appointed contractor select qualified subcontractor should they so choose.

6. Construction Methodology

7.1. Pre-Assembly

Prefabrication will be the assembly of structures or their parts away from the construction site. This reduces the cost of building by making savings on labour, materials, and time. Doors, stairways,

windows, walls, floor panels, room-sized components, and the entire building will all be prefabricated parts.

Regarding unit size, prefabrication will necessitate the collaboration of architects, suppliers, and builders. The base panel used in this project is an ordinary piece. Floor plans are stated in multiples of three storeys, and building designs are created utilizing ceilings. Prefabricated wall unit suppliers construct wall frames with certain dimensions. The modular unit is built with insulation, plumbing, electrical wiring.

7.2. Pre-fabrication

There won't be a part for putting structural parts (steels or piping materials) together in a factory or other production location and moving the finished assemblies or semi-assemblies to the building site where the structure will be built. The project will adhere to the more conventional construction method of bringing the fundamental supplies to the construction site, where all assembly will be done if necessary. Prefabrication, whether volumetric or component-based, necessitates consideration of the building procedure. Prefabrication will offer benefits like better-quality goods, enhanced productivity, and environmental advantages.

7.3. Modularisation

The construction method known as modularization will be used when specific skills are needed for a project but are not readily available. In these situations, the best course of action is to outsource the necessary skills to avoid the significant economic disadvantages of the traditional stick-built construction method, which calls for many laborers, construction tools, and supporting infrastructure. A project's timetable will often be shortened with modularization, but costs may vary.

7.4. Heavy Lifts

The Occupation Health Safety Act of 1985 and Regulations defines standard criteria for lifting and moving heavy structures, equipment, and material during the project work packages' construction. It necessitates keeping the forces placed on the structure under control during the entire procedure. Such tasks call for skilled heavy lifters in the construction industry, dependable machinery, careful

operation, and exact positioning. To ensure worker safety, structure preservation, and worksite environment protection, relying on qualified and experienced teams and adequate risk management is crucial, especially when these operations are carried out in dense urban settings.

7.5. Transportation

Distinct construction supplies will arrive at different project milestones during the work packages' construction, requiring competent coordination to ensure a seamless workflow. The genuine costs of material transportation, such as truck rental fees, operational costs, and fuel charges, are also taken into consideration by good material logistics. The price of loading and off-loading is also accounted for in material logistics.

7.6. Construction Facilities

A construction manager will set up construction sites to receive goods as they come in and ensure that there are personnel needed to remove items from trucks, store them safely, and make them readily available as needed. Any disruption in the logistics supply chain can result in lost productivity and time costs. All the logistical steps needed for efficient trucking to and from building sites will be considered as part of the contractor site establishment plan.

Site Facilities

Building site facilities involve the setting up of an operational and safe building site. This ensures that the construction project is executed as efficiently as possible with minimal standstills and frustration.

A construction project will begin with breaking ground and preparing an area to quickly build a small ‘construction village’ that has its own - temporary - infrastructure. The project works information (C3) will allow for a variety of factors, such as the type of construction work packages, location and environment, materials to be used, required utilities, legislation, and, of course, building site safety.

Queen's warehouse overview

Fencing

Fencing will be used to barricade the site. This will assist in keeping out loiterers, the laying of a sewer, materials security, and terrain lighting. Toilets and site huts will also be indispensable for creating a decent work environment. Lifts and cranes will also be indispensable during the workday if necessary.

Power and Water

Power

The contractor will be responsible for metering separately his own electricity requirements for the duration of the construction period. Electrical supply to the construction site will be made available to the appointed contractor through TNPA processes and supplied by the local authority.

The appointed contractor is urged to adhere to the endorsed TNPA application processes regarding electricity connection.

Water

The contractor will be responsible for obtaining the necessary water for construction purposes. It is envisaged that the local domestic supply will be utilized for construction water, which shall be metered by the contractor separately within the bulk-meter position for control purposes.

Rates for water supply shall be negotiated with the Employer. The appointed contractor is urged to adhere to the endorsed TNPA application processes regarding water connection.

Lighting

The contractor will be responsible for providing lighting for both building site facilities. Professional lighting deters unauthorized persons entering your building site at night. It will also ensure that there is plenty of light at the physical workplace. Temporary lighting should be installed at strategic locations, both direct and indirect. For example, outdoor lighting, temporary indoor lighting, such as floors, etc. In brief, turn on the lights.

Safety and security

Building site safety and security will be essential, it will optimize a safe work environment for staff and visitors, and it will minimize vandalism and theft on site. The appointed contractor to ensure that this component has a high priority for both site facilities. The appointed contractor is urged to comply Occupation Health Safety Act of 1985 and Regulations defined standard criteria

Toilets and Site Huts (offices)

The contractor will be responsible for the installation of enough toilets and site huts for the staff and visitors. A site hut will a unique place where workmen gather and relax after working hard. Site huts will be equipped with a toilet, storerooms, kitchen block with refrigerator, roller shutters, additional office spaces, etc.

Personal protection

The contractor will be responsible to provide their employees with PPE as an employer and required by law to provide safe working conditions and personal protective equipment, e.g., safe work clothes, shoes, and head and hearing protection. This is an absolute given as the building industry is beset by hearing damage.

Facilities and Logistics

The contractor will install access control, for example, a gate, at a strategic location to keep undesired visitors outside the building site and maintain insight into who is located on your building site. Vandalism and theft can be reduced by using 'smart' logistics, namely, the just-in-time delivery of materials. This fosters a safe work environment

7. Industrial Relations / Workforce Studies

The appointed contractor will employ its project liaising officer to handle industrial relations between workers' representatives and employers' organizations or companies are inherently linked to good governance of the construction labour market. As the construction industry has many typical characteristics, which distinguishes the industry from all other sectors, the social partners are best placed the define the challenges and needs of the construction labour market.

For this it is vital that the social partners have the competence to take up their joint responsibilities' Industrial Relations issues.

8. Infrastructure and Temporary Services

The contractor will be responsible for application of the of the temporary services to be provided by the employer and provide the services that form part of the contractor's contractual obligation that might be required before work can begin on a construction site, irrespective of the extent of the project work , a number of services must be temporarily set up. This is in addition to the permanent services that will be required for the completed development and temporary site facilities that are required for the welfare of workers.

The development of temporary site services should be part of the site layout plans. These are prepared by contractors as part of their mobilisation activities before work on site commences.

9. Site Project Controls and Reporting

The Refurbishment of Queen's warehouse project fall within the Point precinct. Access to the facilities is strictly controlled. The contractors will be required to comply with the specific access requirements as dictated to by TNPA Security Management. The contractor will be required to apply

for access permits to the site for the duration of his/her contract. The Contractor will be required to secure his own works until final acceptance.

10. Communications and IT

TNPA communications / TNPA Corporate department processes will be employed/followed for communications with all the project stakeholders regarding the approach to be adopted for the execution of the project work packages, the status of the project, issues that might that affect all the interested parties. TNPA or any appointed Contractor shall not carry out any communications with any representative of the media or local community without the express permission and guidance of TNPA.

11. HSEC Management

A "Zero Harm" objective will be adopted for health and safety management and will be integrated into all work practices, behaviours, and procedures. Health and Safety will be managed in accordance with the requirements of the site-specific Health and Safety Execution Plan while contractors will be managed strictly in accordance with the Health and Safety Specification including Occupation Health Safety Act of 1985 and Regulations defined standard criteria.

The contractor is under obligation to employ professional services of the registered construction health and safety practitioner as external service provider to monitor and control the execution of the work packages if required.

In addition, the prevention and minimisation of environmental damage/degradation will be adopted for the project. Where environmental damage cannot be avoided, mitigation measures will be integrated into all work practices, behaviours, and procedures. All work shall conform to Transnet's internal Environmental Governance Framework in addition to applicable environmental legislation. The following are legal and environmental standards that the execution of the project work packages must be executed in accordance with specified standard criteria.

- Section 24 of the South African constitution
- National Environmental Management Act, Act 107 of 1998 and its regulations
- The project Environmental management plan
- Transnet's Standard Environmental Specification (ENV-STD-002 Rev 03)

- Transnet's Construction Environmental Management Plan (ENV-STD-001-Rev 03)

12. Materials Management

Construction material management process will be employed by the contractor for sourcing appropriate materials at a reasonable cost and ensuring their availability — at the right place and time to meet project requirements and deadlines. The construction material will be a vital function for construction projects of every scope, therefore, the contractor must develop quality management plan inclusive of material quality control plan. The contractor will enforce control measure to ensure the quality of the construction material management can make or break a project budget.

The data sheet of the procured material will be submitted to Supervisor for acceptance to enforce compliance to the specification and TNPA quality control practitioner as part of the materials management strategy risks skyrocketing costs through decreased labor productivity, material waste, and missed project milestones and deadlines.

13. Quality Management

The construction quality plan will be based on the requirement that the Contractor who will submit a quality Plan for approval by TNPA's quality department and after its approval, will perform the work in accordance with their approved quality plan. The Contractor will provide a full-time quality officer, who will perform the requirements of the approved quality plan. The contractor's quality officer will have no other duties other than quality assurance and control.

The TNPA's quality assurance on site will perform quality assurance and control of the contractor's construction activities to ensure that all work performed is in accordance with the project technical documents. The project team will provide the necessary support to ensure that the Quality Control system, including the inspection and test plans and quality verification documents are not only implemented but are being executed to provide a quality project. The team will also review contractor purchased material for compliance to specifications. In addition, all contractor method statements will be reviewed for accuracy, completeness, and suitability for the intended application.

14.Site Administration

The project supervisor jointly with the contractor's representative will carry out validation of the project deliverables and sign off all criteria under the works information the Contractor will be responsible for before permission is granted to de-establish site.

Proper site administration will ensure that the quality of construction matches the quality of design, and that construction is executed on time and within budget. The construction manager together with the appointed contractor will ensure comprehensive, professional contract administration and site supervision.

15. Commissioning Management

TNPA will identify the required operational staff in advance of any commissioning activities. The contractor will be required to conduct training for the nominated TNPA personnel.

The primary objective of construction commission will be to provide direction for the entire construction process. Acting as a road map for the construction crew management, it will outline roles and responsibilities of employees and teams, including lines of collaboration and reporting, providing a resolution process for conflict, and providing overall project team coordination.

Commissioning and recommissioning plans will ensure that the newly refurbished buildings are functioning as intended. The commissioning process will help the project owners and building managers know that their buildings' installed systems and equipment are running correctly, smoothly, and as planned.

Project owners will have a specific set of building standards that must be met, and a commissioning process can help with that. There are numerous benefits to commissioning, including a better operation, a smoother construction process, and cost savings.

16.Systems Testing

The contractor will be responsible for organising and carrying out all equipment tests and trials of the works that have been replaced and repaired in accordance with Quality management plan. The completion certificate will be issued post the testing of the systems.

17. Construction Close-out

The project team will make sure that the facility, accompanying infrastructure, and equipment (whether finished or nearly finished) are tested to confirm their functionality in accordance with the goals or requirements of their design. The project team will make sure that all reports, quality files, as-built drawings, deliverable documents, training manuals, and other materials have been delivered, accepted, and that all copies have been appropriately stored as part project processes.

Handover and Acceptance

The project team will make sure that all paperwork necessary to transfer ownership of the facilities to the customer is completed and that the client's completed facilities are operational when they are handed over and the hand over certificate will be issued to the employer.

Contract close-out

The project team will make sure that all services have been provided in accordance with contracts, that all claims have been filed and resolved, that final payments have been issued, and that all project accounts have been officially reconciled and closed.

Close-out report

The project team will make sure that a report detailing the project's ultimate completion is put together and submitted to the appropriate stakeholders. The report's compilation and distribution will be the project manager's responsibility.