

Scope of Work: Service Information

1 Service Information

The *Contractor* shall provide an efficient and effective team of resources and equipment to carry out leak detection and data logging for a period of 36 (Thirty six) months at the Port of Durban, ensuring a high standard of data accuracy (correctness) is delivered and maintained, meeting the clients' expectations.

The *works* are located at the Port of Durban. The Port of Durban is divided into 5 Zones each one with several eThekwinini bulk connections.

2 Location of bulk connections

Transnet National Ports Authority (TNPA) existing water reticulation is relatively old as most installations have been done in the 1940's.

2.1 Zone 1- Point

Point location - North Pier to R berth - Tug Jetty.

This area has 3 x 150 mm eThekwinini bulk connections with internal TNPA water reticulation network. This zone can be accessed via Port Entrance 3 on Quayside road.





2.2 Zone 2 - Maydon Wharf

This zone cover Maydon Wharf and includes Berth 1 to 15.

Location of the eThekwini bulk connection:

- Currently there is a 150 mm eThekwini bulk connection at the old I&J fish landing site and 3 x 150 mm along Maydon Wharf berth 1 to 15.
- One of the eThekwini's bulk connection (located in the Zone 3 Bayhead) supplies the Maydon Wharf as well as a portion of the Graving dock within the Zone 3 area. Precaution should be taken by isolating the valves before any date recording can be taken. The isolation valve will have to be closed for both zones and only then recording can take place.

This zone can be accessed via Maydon Road.





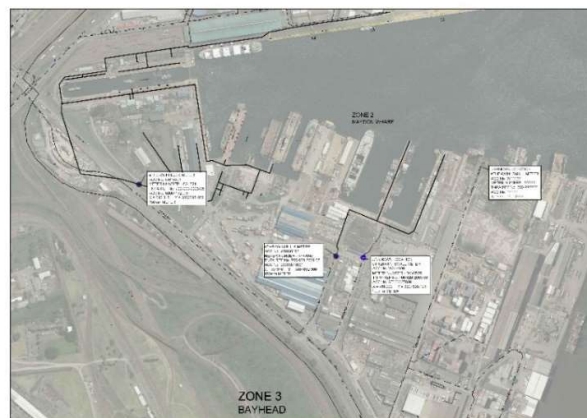
2.3 Zone 3 - Graving Dock and Bayhead Park

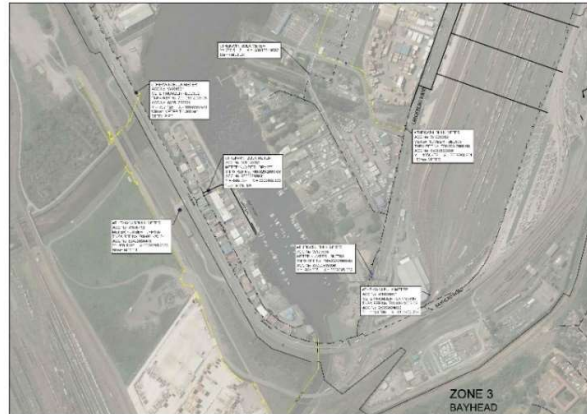
This zone covers the Bayhead area and includes the Graving dock.

Location of the eThekweni bulk connection:

- There is 2 x 150 mm bulk connections, the one is within the Drydock area close to shop 24 and the other one is in Belfast road. The bulk connection within the Drydock area also supply Maydon Wharf berth 15 as per Zone 2
- Ship repair jetty at Bremen road has 1 x 100 mm bulk connection.
- Ambrose Park has 1 x 150 mm bulk connection.
- Fish Wharf at Bayhead – Grunter Gully has 1 X 100 mm bulk connection
- Truck Weigh Bridge next to Bayhead road has 1 x 50 mm bulk connection.
- Lot 10 area next to Hamburg road has a bulk connection

This zone can be accessed via Bayhead Road.





2.4 Zone 4 Kings Rest and Piers

This zone covers Kings Rest, Pier 1 and 2 main supply.

Location of the eThekwin bulk connection:

- TPT - A Check Facility has 1 X 80 mm connection on the verge next to the old incinerator facility.
- There are 3 x 150 mm bulk connection supplying the Pier 1 and Pier 2 precincts (Main reticulation supply). There a connection just past the Sharkmesher and Langeberg road intersection. The other bulk connections is within the Pier 1, close to the naval base entrance, and the other connection a few meters past the TNPA fire station opposite the ESS buildings.
- Berth 9 at Navy base at Causeway road has 1 x 150 mm bulk connection





2.5 Zone 5 - Fynnlands, Island view and BCA

This Zone covers the Fynnlands, Island View and the Coal terminal. Strict requirements pertaining to access apply. Access disks and permits are required to enter this areas.

Location of the eThekweni bulk connection:

- Island View - Berth 1 to 10 has 2 x 150 mm connections however the new pipe is now above ground and not an issue, there is various small connections 25 to 40 mm
- BCA has 2 X 150 mm bulk connections
- Fynnlands Rail Yard has 1 x 150 mm connection



3 Description of the Service and Executive Overview

The *Employer* requires a specialist service provider in the field of leak detection and data recording for the existing water reticulation system in the Port of Durban. The service provider would be required to find all leaks as well as providing a baseline of the pressure, flow and water usage in the system. The service provider would also be required to assist the Port Engineering team on an **Ad hoc (as and when)** basis for leaks detection and data recording.

The Scope of the leak detection and data logging required as below:

- Provide Smart leak detection at all 5 zones – equipment must have CCTV technology coupled with high powered sonde for precise leakage and acoustic surveys.
- Provide for leak location on any of the zones or sub reticulation from main supply line in all the zones as and when required
- Provide routine testing for pressure and flow recording of all main lines and all tee off branch lines for the 5 Zones – once a month at every first and second week of each calendar month for at least 12 hours per day.
- All data will be issued to TNPA in excel spreadsheet format for each month as per the data recorded per zone.

Once a leak has been detected, the *Employer* will do all excavation and repair to pipeline. All data will help TNPA set a High and Low k/l threshold per Zone for the Main POD billing project.

4 Leak Location, Flow recording and Detection system (Equipment)

- 4.1 The water leak detection system must accurately trace any leaks within the reticulation as well as record the co-ordinates of these leaks.

This must be given to TNPA in the following format:

- Accurate GPS co-ordinates within traceable locations for repairs. (maximum of 500mm of leak location)
- All co-ordinates to be in WGS84 co-ordinate system as well as any levels to mean sea level (MSL). This must be given in a spreadsheet format (CSV)
- Any drawings provide must be in these formats – Autocad (.dwg) or as a shape file (.shp)

- 4.2 Any reasonable proven track record of the tendered leak location and display method/ technique system will be considered as long as it can be demonstrated to meet the project requirements and standards.

The leak detection system the *Contractor* will be using will be:

- Latest applicable technology as used in Industry
- Capable of repeated re-use.
- Capable of internal CCTV inspections and recordings as and when required.

- Not affected by dust and debris
- Capable of being attached directly to bare metal surfaces or pipes without cutting or drilling into pipes.
- The leak detection system will/should be capable to use other types of leak sensing devices.

These may also include other technology's such as:

- CCTV
- Smoke detection
- Inherent gas detection

- 4.3 The sensitivity of the system must be adjustable to heavy industrial particular site conditions, especially the high traffic flow of heavy laded trucks.
- 4.4 The *Contractor* is required to carry out routine servicing of the Zones, this includes pressure, flow data recording for each zone every 1st or 2nd week of each calendar month for the period of the contract. All this water flow data must be submitted to TNPA before that specific months before invoice will be certified correct for payment
- 4.5 Similarly, the *Contractor* is required to respond to AFTER Hours call-outs from TNPA to trace and locate faults, as directed by the TECHNICAL OFFICER. Notification to this effect will be by means of "ORDER FORM" The official callout will be e-Mailed or faxed to the *Contractor* the next working day (Monday 07H00 to Friday 16H00).
- 4.6 Once the leak has been located, will the Data and Call out claim form be submitted to the *Service manager* to enable the paper work processes to be done timeously.
- 4.7 The *Contractor* shall be a recognised Water leak detecting specialist with a proven track record and accreditation in the KZN industry.
- 4.8 The *Contractor* shall supply the required complement of competent labour to complete the services at the specified zones within the allocated period/s, as determined by TNPA operational requirements. However, TNPA will not be held liable for any claims arising from delays arising from such operations.
- 4.9 TNPA reserves the right to terminate the contract at any point if it is found that the *Contractor's* performance, supervision, tools, equipment, services, test instrumentation are found to be substandard.

- 4.10 The *Contractor* shall only utilize testing devices and measuring equipment that are certified and which carry a valid calibration certificate as issued by an approved calibration authority. Examples of such certification of the test equipment to be utilized to complete the services, shall be submitted as part of the tender bid.
- 4.11 The *Contractor* shall be required to bear all cost which may arise as result of damage which may have been caused to equipment or services or which may arise as a result of his operation on the respective sites.

5 Plant and Materials Standards and Workmanship

5.1 Applicable Standards and Service Conditions

- 5.1.1 The following standards, specification and drawings are applicable and may be used as a reference guide in the execution of the Services.

Occupational Health and Safety Act No 85 OF 1993.

5.2 Temporary works, Site services & construction constraints

- 5.2.1 The equipment shall be designed and rated for operation under the following conditions:

Altitude	-	sea level
Ambient temperature	-	minus 5°C to plus 40°C
Relative humidity	-	As high as 86%
Lightning conditions	-	Severe
Atmosphere laden	-	Saline, highly corrosive, dust
Water supply pressure	-	Between 2.0 – 2.5 BAR

- 5.2.2 *Employer's* Site entry and security control, permits, and Site regulations. All tenderers shall attend a compulsory site briefing to be held at TNPA building complex to familiarize himself/herself with the nature of the work, the conditions under which the work is to be performed, and the means of access to the site, any limitations or other authorities

- 5.2.3 The *Contractor* must attend TNPA induction training and retain proof of induction for period of project and keep a copy on the safety file.

- 5.2.4 The *Contractor* keeps daily records of his people engaged on the Site and working with access to such daily records available for inspection by the TNPA *Engineer*.

5.3 Health and safety facilities on Site

- 5.3.1 The successful tenderer shall be responsible for all aspects associated with the provision of the supply of testing equipment to test and locate the leaks in the pipes, and provision of logged site data per leak traced in GIS format.
- 5.3.2 The successful tenderer will carry out the work within the scope of this specification and any other specifications and standards referred to or linked with the safe execution of the work and the safe and effective functionality of the equipment to be installed.
- 5.3.3 The Occupational Health and Safety Act No 85 of 1993 must be complied with in all respects during the execution of this contract. The onus shall be on the *Contractor* to ensure that staff under his control adheres to the provisions of the Act at all times.
- 5.3.4 Tools and equipment used during the implementation of the work must conform to the regulations governing them in accordance with the Occupational Health and Safety Act No.85 of 1993 and with regards to the safety of personnel using them in the vicinity of live electrified equipment.
- 5.3.5 The *Contractor* shall prepare, implement and administer the *Contractor's* Health and Safety Management Plan (CHSMP). The Health and Safety Management Plan must provide a systematic method of managing hazards and implementing control measures.
- 5.3.6 The *Contractor* performs the works and all construction activities within the Site and Working Areas in accordance with the *Contractor's* Health and Safety Management Plan (CHSMP).

5.4 Title to Materials from demolition

- 5.4.1 The *Contractor* has no title to any materials arising from demolition in the performance of the works with title to such materials remaining with the *Employer*. The Project Manager shall instruct the *Contractor* how to label, mark, set aside and/or dispose of such materials for the benefit of the *Employer*.

5.5 Cooperating with and obtaining acceptance of others

- 5.5.1 The *Contractor* performs the Works and co-operates with the *Employer* who operates on site during the entire duration of the Contract period.
- 5.5.2 The *Contractor* performs the Works and co-operates with others, of whom the *Contractor* is to be notified once appointed by the *Employer*, who operate on Site during the entire duration of the Contract period.

5.6 Contractor's Equipment

- 5.6.1 The *Contractor* keeps daily records of his Equipment used on Site and the Working Areas (distinguishing between owned and hired Equipment) with access to such daily records available for inspection by the Project Manager at all reasonable times.
- 5.6.2 All Equipment used by the *Contractor* on site shall be properly maintained and operated. All vehicles on public roads shall be roadworthy, with the necessary licences and safety requirements.
- 5.6.3 The Contractor shall supply all necessary materials, transport, labour, tools, plant, PPE, demarcating signage as per the latest construction regulation for proper completion of the works.

5.7 Equipment provided by the Employer

- 5.7.1 No Equipment shall be provided by the *Employer*.

5.8 Site services and facilities:

- 5.8.1 No facilities shall be provided by the *Employer*. The *Contractor* may make the necessary arrangements with the relevant Transnet Supervisor to make use of ablution facilities that might be on or near the site.

5.9 Facilities provided by the Contractor:

- 5.9.1 No facilities shall be required for this project.

5.10 Existing premises, inspection of adjoining properties and checking work of Others

- 5.10.1 The *Contractor* will be held responsible for any damage to existing structures and surfacing caused by the *Contractor* during the execution of the contract; fair wear and tear excluded, and shall be repaired to the satisfaction of the Supervisor on conclusion of the works. For this purpose, a joint inspection with the Supervisor will be carried out prior to occupation of the site(s) and any existing damage noted. A post-inspection to note any damages caused by the *Contractor* during the execution of the works will also be carried out.

5.11 Control of noise, dust, water and waste

- 5.11.1 Before moving Equipment onto the Site and Working Areas and commencing operations, the *Contractor* shall submit his proposed methods of construction which demonstrate the measures taken to avoid and or reduce any nuisance arising from dust, noise and vibration for acceptance by the Project Manager.

5.12 Completion, testing, commissioning and correction of Defects

- 5.12.1 The work to be done by the Completion Date.
- On or before the Completion Date, the *Contractor* shall have done everything required to provide the Works required which is to be done before the Completion Date and in any case before the dates stated. The Project Manager cannot certify Completion until all the work required has been done and is also free of Defects, which would have, in his opinion, prevented the *Employer* from using the works and others from doing their work.

5.13 Operating manuals and maintenance schedules

- 5.13.1 The *Contractor* provides the following:
- Provision of Operating and Maintenance Manuals in both hard copy and electronic format as per the Technical Specification.
- 5.13.2 Installation, Maintenance and Operating Manuals and Data Books
- All operating and maintenance manuals shall be submitted to the Project Manager at handover. The *Contractor* must service the chilled water AHU's during the guarantee period as per the manufacture's specification.

5.14 Workmanship

- 5.14.1 However, TNPA shall reserve the right to review the maximum period of the contract depending on prevailing circumstances and TNPA business strategy.
- 5.14.2 The *Contractor* is required to respond to emergency call-outs from TNPA Engineer. Calls shall be classified by the *Contractor* as emergency. The *Contractor* shall respond accordingly for emergency calls.
- 5.14.3 A log book shall be maintained of all service calls received; a description of the problem or requested work, date and time received site/substation/equipment name and number, and caller's name/telephone number shall be recorded for each call.
- 5.14.4 The *Contractor* shall maintain sufficient parts, materials, and equipment on hand to perform all the work as specified, as required to minimize malfunction, breakdown, and deterioration of equipment; and the identification of and/or performance of any repairs required to ensure the equipment is operating per manufacturer's standards. The *Contractor* shall complete all identified repairs and provide all necessary services, parts, and materials as part of the preventative maintenance as recommended by the OEM.
- 5.14.5 The *Contractor* shall ensure that the equipment once repaired still complies with the provisions of the Occupational Health and Safety Act Of 1993 (OHS act; ACT NO. 85 OF 1993) and all regulations as amended. If in the *Contractor's* view the EQUIPMENT required to be serviced/repaired, does not comply with the provisions of the OHS act, this shall be brought to the attention of the TNPA Engineer in writing.
- 5.14.6 The *Contractor* shall be competent to carry out all work required in terms of this contract using only qualified competent personnel, and approved and appropriately certificated equipment/instruments.
- 5.14.7 Only new materials of reputable manufacture shall be used to carry out repairs to faulty equipment. The *Service manager* shall be consulted if there is any uncertainty with respect to action to be taken.

6 List of Drawings

6.1 Drawings issued by the Employer

- 6.1.1 No as build drawings will be issued by the *Employer* to the *Contractor* however once a leak is reported TNPA will assist fully in trying to provide any Historical data drawings information it may have to the *Contractor*.

7 Management and Star-Up

7.1 Safety risk management

All Occupational Health and Safety Act Regulations pertaining to the work being carried out must be adhered to. The *Contractor* shall be responsible for the precautions and measures to ensure the health and safety of all individuals on the Site and temporary areas (if applicable) outside of the Site, but utilised by the *Contractor*, with the prior approval of the *Employer*.

The *Employer's* employees and *Contractors* (including their employees) shall at all times be supervised by a competent *Supervisor* appointed in writing in terms of the regulations of the Occupational Health and Safety Act and made aware of his responsibilities.

The *Contractor* shall adhere to all the Health and Safety requirements as stipulated on the *Employer's* Health and safety specification.

The *Contractor* is required to submit a Safety, Health and Environmental (SHE) file to the risk department for assessment and approval. SHE File is to be kept on site at all times. The file has to contain amongst others the following:

- Valid Letter of Good Standing With The Compensation Insurer
- General Liability Insurance (Summary Of Policy)
- Client, Safety, Health And Environmental Specification
- Section 37(2) Signed
- Health And Safety Plan
- Copy Of TNPA Induction Cards
- Notification Of Construction Work
- Principal Contractors Construction Site Organogram
- Method Statement
- Risk Assessment
- Appointments
- Health and Safety Training Records - Induction Records of Personnel.
- Copies of Tool Box Talk Topics. These Talks Should Deal With Risks Relevant To The Construction At Hand.

- List Of Sub-Contractors
- Emergency Contact Numbers
- Monthly Site Meeting Minutes
- Checklists/Register
- Emergency Plan
- First Aider and Equipment
- PPE and Clothing, Register
- Asbestos Management
- Environmental Management Plan
- Fall Protection Plan (Inclusive of Risk Assessment)
- Incident Investigation Report
- Medical Examinations
- Permits (Hot Work, Confine Space, Excavation, Hi-Voltage)
- MSDS
- Calibration Certificates
- PCI Declaration Form
- Demolition Requirements (CR12)
- Site Access Certificate

Contractor shall be responsible for the supply and use of the following PPE:

- SABS approved Safety Protective and Occupational Footwear,
- SABS approved Acoustics - Hearing Protection,
- Eye protection - glasses, goggles and face shields as required,
- SABS approved Occupational Protective Helmets,
- Full length work clothes, long sleeved and long pants on the berth areas,
- Life jackets if working within 2m of the quay edge,
- Any specialized protective clothing which is standard work practice as referred to in their Contract.
- SABS approved and calibrated gas meters for confined spaces.

Risk Specialist will be responsible for assisting the Project Manager with health and safety related issues. Monitoring risks and updating the risk register.

7.2 Environmental constraints and management

The *Contractor* complies with the following Environmental Management requirements:

- 7.2.1 The *Contractor* shall identify the kinds of environmental impacts that will occur as a result of his activities and then prepare separate method statements describing how each of those impacts will be prevented or managed so that the standards set out in this document are achieved.
- 7.2.2 The *Contractor* shall submit an Environmental Management Plan (EMP) to be included in the SHE File. The EMP must include, but not limited to the following sections detailing the environmental risks/possible impacts and management controls (mitigation measures) pertaining to the risks listed in the section:
- Site establishment including contractor's site camp;
 - Protection of sensitive/no-go areas;
 - Management of hazardous chemicals and flammable substances;
 - Pollution control & Spill response;
 - Waste Management;
 - Environmental education and awareness;
 - Protection of marine species and birds;
 - Removal of project waste and debris from the marina waters;
 - Decommissioning of site camp;
 - Monitoring and auditing and;
 - Record keeping.
- 7.2.3 The *Contractor* performs the works and all construction activities within the Site and Working Areas having due regard to the environment and to environmental management practices as more particularly described in *Employer's Plan*.
- 7.2.4 The *Contractor* shall ensure that his management, foremen and the general workforce, as well as all suppliers and visitors to Site have attended the Induction Programme prior to commencing any work on Site. If new personnel commence work on the Site during construction, the *Contractor* shall ensure that these personnel undergo the Induction Programme and are made aware of the environmental specifications on Site.

- 7.2.5 Where applicable, the *Contractor* ensures that he appoints a suitably qualified Subcontractor, to be approved by the Project Manager, to undertake the "Removal of rare, endemic or endangered species". This appointment must be completed at least three weeks before commencement of any other work on Site.
- 7.2.6 The *Contractor* shall ensure that any Materials delivery drivers are informed of all procedures and restrictions (e.g. which access roads to use, no go areas, speed limits, noise, etc.) required by the CEMP before they arrive at Site and off load any Materials.
- 7.2.7 The *Contractor* shall clear and clean the Site and Working Areas and ensure that everything not forming part of the works is removed from the Site and Working Areas and that all rehabilitation has taken place in accordance with the Environmental plan. The *Contractor* is responsible for the removal from Site of all waste generated through the Contractor's activities.
- 7.2.8 The *Contractor* shall ensure that all waste is removed to appropriate licensed waste management facilities. The classification of waste determines handling methods and the ultimate disposal of the Material. The *Contractor* shall manage hazardous wastes that are anticipated to be generated by his operations as follows: Characterise the waste to decide if it is general or hazardous, Obtain and provide an acceptable container with label, Place hazardous waste material in container, Inspect the container on a regular basis as prescribed by the *Contractor's* waste environment management plan, Track the accumulation time for the waste, Haul the full container to the disposal Site and Provide documentary evidence of proper disposal of the waste.

EXAMPLE OF CONSTRUCTION WASTE CLASSIFICATION

WASTE	CLASSIFICATION	
	HAZARDOUS	NON-HAZARDOUS
Clean soil		X
Construction debris contaminated by oil or organic compounds	X	
Empty drums (depends on prior use)	X	X
Empty paint and coating containers		X
Waste paint and/or solvent	X	
Waste oil	X	
Phenolic waste	X	
Waste concrete		X
Rubble (not contaminated by oil or organic compounds)		X
Waste containing appreciable properties of fibrous asbestos	X	
Sewerage sludge	X	
Scrap metal		X
Explosive waste	X	
Waste timber		X
Waste Cable		X
PCB waste	X	
Waste plastic		X
Aerosol containers	X	
Batteries, light bulbs, circuit boards, etc.	X	X
<i>Domestic waste</i>		X

The *Contractor* shall be responsible for the management of Hazardous Materials. Prior to bringing any Hazardous Material required to carry out the work, the *Contractor* shall submit an MSDS to the

Employer's Occupational Hygienist or Environmental Specialist. Hazardous Material shall not be brought into the premises until authorization is given by *Employer*.

The work will not be deemed to be complete unless the site is cleared to the satisfaction of the Engineer. Burying of discarded material will not be tolerated. All relevant legislation pertaining "WASTE" must be adhered to.

The *Contractor* shall comply with the regulations of the Water Act (Act 36 of 1998), the *Hazardous Substances Act* (Act 115 of 1973), and the *Environment Conservation Act* (Act 73 of 1989). The *Contractor* shall provide details for approval of its spill response plan in the event of any spills of fuel, oils, solvents, paints or other hazardous Materials. The plan will show measures to be taken to remove contaminated soils from Site and demonstrate complete removal of contamination.

7.3 Contractor's management, supervision and key people

- 7.3.1 The *Contractor* provides an Organogram of all his key people (both as required by the *Employer* and as independently stated by the *Contractor* under Contract Data Part Two) and how such key people communicate with the Project Manager and the Supervisor and their delegates all as stated in the *Employer's* Works Information.

Starting date:

Company name and contact no:

Completion date:

Requisition no.:

Closing date of tenders:

Procurement Fax - 031 361 8930

	NAME	DESIGNATION	DATE	SIGNATURE
Compiled by:	Riaan Benade	Chief Eng Technician		
Compiled by:	Johan Sauerman	Senior Engineer		
Verified by:	Anesh Harisinker	Risk Specialist		
Verified by:	Cindy Cande	Environmental Specialist		
Reviewed by:	Akash Tulsie	Senior Electrical Engineer		
Approved by:	Malefetsane Setaka	Port Engineer		

TNPA Representative: Riaan Benade Email: Riaan.Benade@transnet.net

Contact no: (031) 361 3707; Cell: 073 701 8342

Compulsory Site visit to be held at Port Of Durban on the:

Date and Time: _____