



## **TRANSNET NATIONAL PORTS AUTHORITY**

### **A DIVISION OF TRANSNET LIMITED**

#### **SCOPE OF WORK**

#### **SUPPLY, INSTALLATION AND MAINTENANCE OF e-LTE WIRELESS BROADBAND NETWORK EQUIPMENT**

## LIST OF ACRONYMS

Acronyms or Abbreviations	Descriptions
4IR	Fourth Industrial Revolution
AP	Access Points
CPE	Customer Premises Equipment
eLTE	Enterprise Long Term Evolution
ICASA	Independent Communications Authority of South Africa
IPMS	Integrated Port Management System
IT	Information Technology
OEM	Original Equipment Manufacturer
POC	Proof of Concept
SLA	Service level Agreement
SOC	State Owned Company
TNPA	Transnet National Port Authority

## **1. PURPOSE**

The purpose of this document is to define the scope of work for the procurement and installation of the eLTE equipment to complete the remaining scope of the current installed eLTE network at TNPA ports. The document further defines the scope of work for the support and maintenance services required post installation.

## **2. BACKGROUND**

TNPA is a wholly owned subsidiary of Transnet SOC Ltd. TNPA is a port authority that manages the eight commercial ports in South Africa. It has several business units providing various services to a diverse spectrum of port users. These services include but are not limited to Marine Operations, Vessel Traffic Services, Infrastructure Management, Licensing of port services and facilities, Dredging Services, Dry Dock and Ship Repair facilities and Lighthouse services.

Recognizing the need for digital transformation and keeping abreast of the latest technologies, TNPA has embarked on a Smart Ports Programme to improve operational efficiencies and customer service delivery. One of the foundational building blocks of a Smart Port, is a reliable and resilient network infrastructure, which provides the required connectivity of the various 4IR technologies and applications.

In 2016 TNPA initiated a POC to test viability of Huawei eLTE Wireless Broadband Network. Post successful implementation of the POC at the Port of Durban, TNPA rolled out the technology to all the eight commercial ports. The network is in operation however due to the limited number of procured and installed equipment; the network does not provide sufficient coverage in the ports' critical operational areas. The current equipment was procured in 2019 and implementation was completed in 2021. The equipment warranty has since expired. No post-implementation maintenance and health checks were conducted on the equipment.

## **3. GOALS AND OBJECTIVES**

The eLTE network provides connectivity access to TNPA operational sites, port community, terminal systems, IPMS and other applications within all eight ports. The network is in operation, however; it does not provide network coverage in all the critical operational areas.

The objective of this project is to procure and install additional AP's and CPE's to extend coverage in operational areas within the ports. Prior to installation, an assessment of the network equipment health needs to be conducted to provide a health status of the equipment. TNPA also seeks support and maintenance services on a 24/7 basis to have a reliable and resilient network across all the eight ports. In addition, a centralized Network Management and Monitoring software is required.

#### 4. CURRENT STATE

TNPA is currently using the network for operational reasons. The internal under capacitated regional IT team is assisting with support and fault repairs on the network. There are 1.8Ghz ICASA licensed and 5.8Ghz unlicensed network equipment at different ports. The figure below depicts the current deployed equipment.

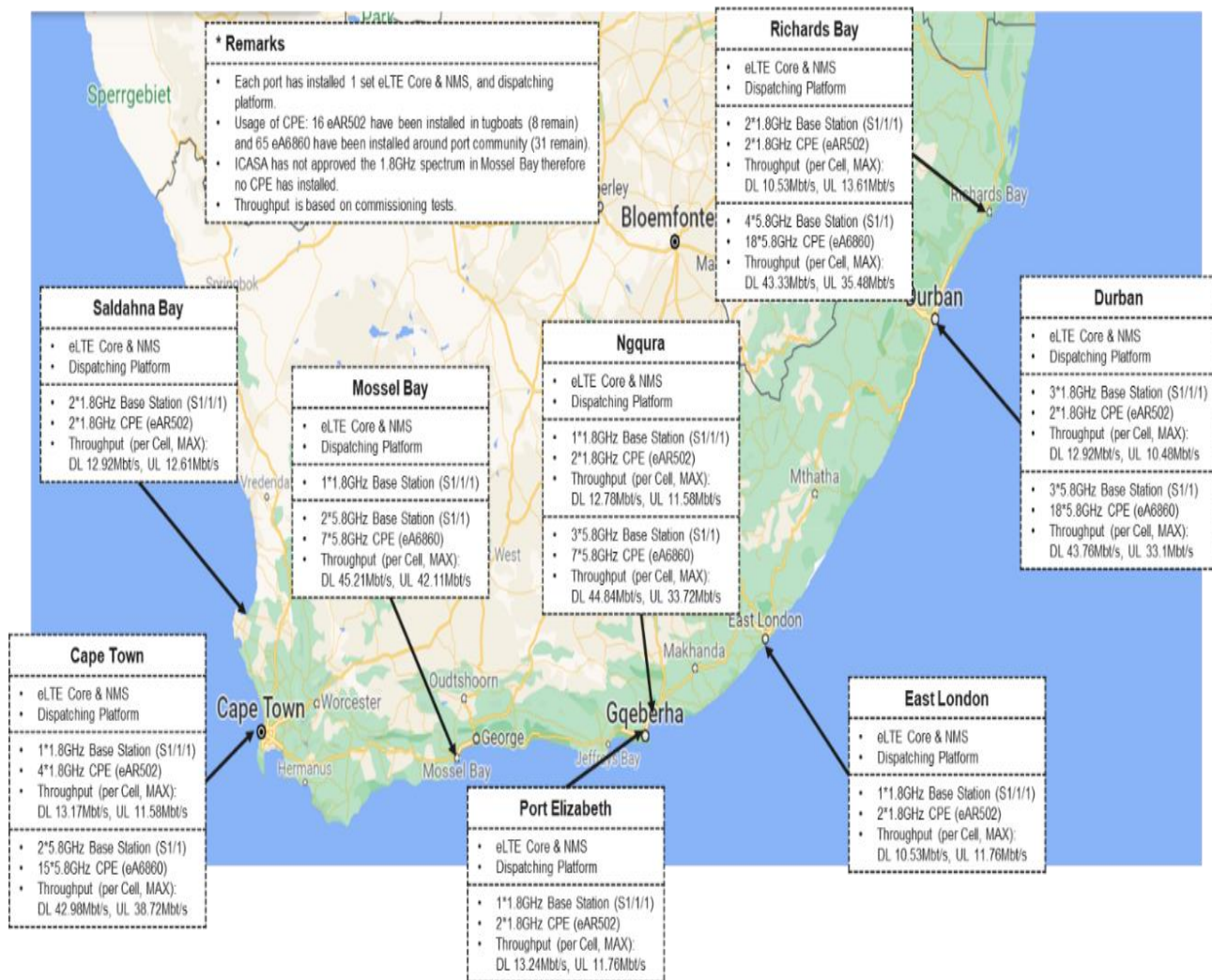


Figure 1: 1.8Ghz and 5.8Ghz Network Equipment

The key components of the network are depicted in figure 2 below.

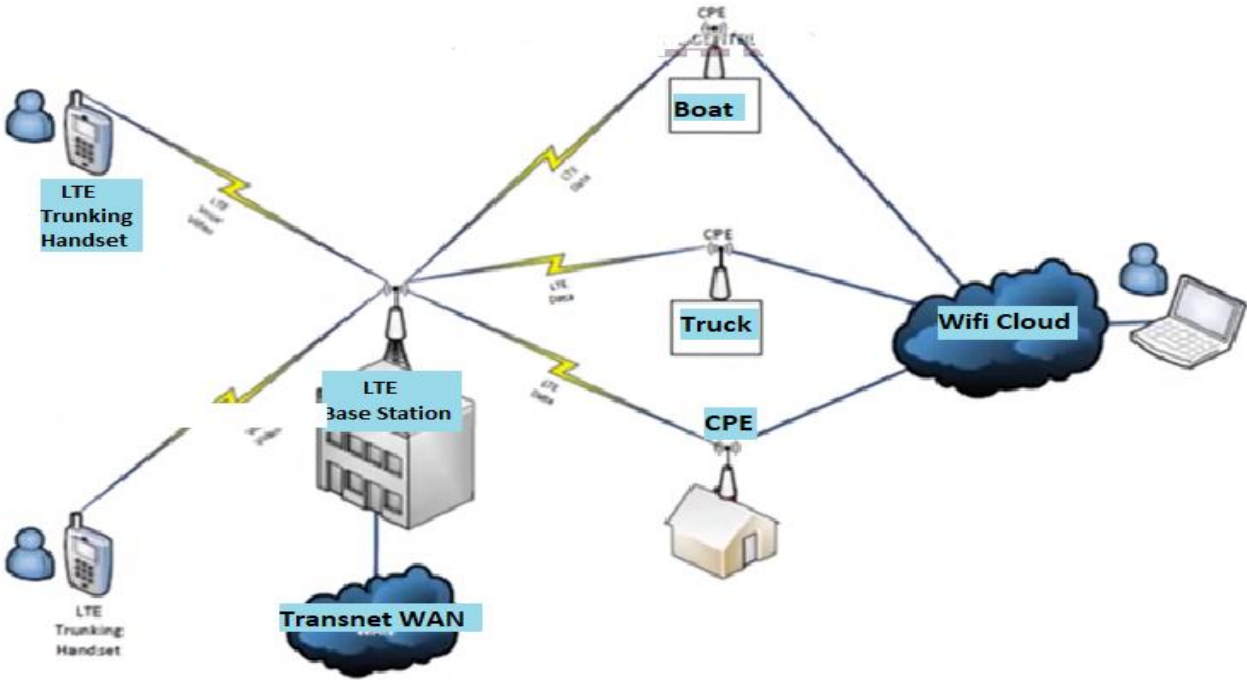


Figure 2: Network Components

Table 1 and Table 2 below depict the type and number of 1.8 Ghz equipment currently installed at each port.

Port	Base Stations	Sectors	CPE	Terminals	Mifi
Saldanha Bay	2	6	2	10	0
Cape Town	1	3	3	10	0
Mossel Bay	1	3	0	0	0
Port Elizabeth	1	3	2	10	0
Ngqura	1	3	2	0	0
East London	1	3	2	10	0
Durban	3	9	5	10	20
Richards Bay	2	6	5	10	0
<b>Total</b>	<b>12</b>	<b>36</b>	<b>21</b>	<b>60</b>	<b>20</b>

Table 1: 1.8 Ghz Equipment

Port	Base Stations	Sectors	CPE	Terminals	Mifi
Saldanha Bay	0	0	0	0	0
Cape Town	2	4	10	0	0
Mossel Bay	2	4	10	0	0
Port Elizabeth	0	0	0	0	0
Ngqura	3	6	10	0	0
East London	0	0	0	0	0
Durban	3	6	10	0	0
Richards Bay	4	8	10	0	0
<b>Total</b>	<b>14</b>	<b>28</b>	<b>50</b>	<b>0</b>	<b>0</b>

*Table 2: 5.8 Ghz Equipment*

## 5. SCOPE OF WORK

The scope of work entails two key categories:

- Supply and installation of **1.8 Ghz** Equipment.
- Support and Maintenance Services for a period of 3 Years.

### 5.1. SUPPLY & INSTALLATION OF 1.8 Ghz EQUIPMENT

The supplier will be required to supply and install e-LTE equipment as per table 3 below. The supply and installation activities will include, but not limited to the following:

- Assessments and surveys of the current network at all the ports to provide health status of each equipment.
- Advise TNPA on optimal equipment positioning to cover vast operational areas.
- Design a network layout and provide layout diagrams.
- Test the network coverage and signal strength around the base stations and access points.
- Provide detailed coverage and signal strength reports.
- Facilitate the procurement of additional equipment by placing orders with the suppliers and ensuring delivery to TNPA's premises.
- Installation and commissioning of the equipment.
- Integration of the new additional equipment into the existing network.
- Network testing and handover of the network to TNPA.
- Provide installation reports, test results, final designs, and all technical documents pertaining to the network.

- k) Future network expansion on Transnet request to support TNPA or any other Transnet Operational Division's requirements.
- l) Provide TNPA IT Personnel skills transfer, by allowing port personnel to overshadow all installations activities.
- m) Provide a centralized Network Management System for both the eLTE and APs.

Port	Access Point	CPE	Handheld	Skills Transfer (Personnel)
Cape Town	23	8	0	2
Saldanha Bay	4	4	0	2
Richardsbay	50	26	0	2
Mossel Bay	16	0	0	2
Port Elizabeth	9	0	0	2
East London	0	5	0	2
Marine (All ports)	48	37	13	4
<b>Total</b>	<b>150</b>	<b>80</b>	<b>13</b>	<b>16</b>

Platform/System	Quantity
e-LTE Network Management System	1
AP Management System	1

*Table 3: Bill of Quantities*

#### 5.1.1. OPERATIONAL RESOURCE REQUIREMENTS

The team must be adequately resourced with necessary tools and suitably experienced individuals comprising of the following skill sets and resources:

- a) Installation personnel comprising of IT/Radio Engineers and Huawei certified installers.
- b) Quality Assurance and Test Resources.
- c) Account or Project Manager.

#### 5.2. SUPPORT AND MAINTENANCE SERVICES

TNPA does not have resources and capacity to conduct maintenance, troubleshoot and restore services in case of network failures or faults. The successful bidder will be required to render this service for a period of three (3) years. The support and maintenance activities will include, but not be limited to the following:

- a) Support and maintenance of the entire eLTE Network (new and old equipment), at all the 8 ports.
- b) Monitoring of the network health and performance on a 24/7 basis.
- c) Provision of performance reports to TNPA.
- d) Remote Client assistance in determining whether system problems are machine or program related.
- e) On-site and remote diagnostic to endeavor to:
  - Detect and analyze permanent errors.
  - Correlate temporary errors.
  - Identify and report hardware problems.
- f) Continuous Network performance tuning to ensure user Quality of Service.
- g) Troubleshooting and resolving network issues reported by TNPA.
- h) Faulty equipment replacement and/or repairs. The service provider must remove the faulty equipment and package it and install and configure the replacement equipment.
- i) Conduct monthly software update checks and advise on the latest releases.
- j) Perform Software upgrades as per the OEM requirements.
- k) Addition and removal of equipment on the network.
- l) Regular cleaning of equipment, as per OEM recommendations.
- m) Generation of weekly/monthly network usage and performance reports.
- n) Conduct cyber-security tests on monthly basis.
- o) Implement Network security standards and policies as per TNPA requirements.
- p) Future network expansion on Transnet request to support TNPA or any other Transnet Operational Division's requirements.
- q) Provide TNPA IT Personnel skills transfer, by allowing port personnel to overshadow all installations activities.

#### **5.2.1. OPERATIONAL RESOURCE REQUIREMENTS**

The team must be adequately resourced with suitably qualified and experienced individuals and should comprise the following skill sets:



- a) Helpdesk and first line support resources
- b) Technical Resources comprising Network Specialists, Network Security and Architects
- c) Quality Assurance and Test resources
- d) Account Manager or Project Manager

The support team must be able to perform tasks as depicted on table 4 below. A detailed Service Level Agreement will be drafted and approved on contract award.

No.	Service Item	Description
1	Help Desk	<ul style="list-style-type: none"> <li>Available 24 hours a day, 7 days a week.</li> </ul>
2	Remote troubleshooting	<ul style="list-style-type: none"> <li>Available 24 hours a day, 7 days a week;</li> <li>For Priority 1 calls, respond within 30 minutes;</li> <li>For Priority 2 calls, respond within 45 minutes;</li> <li>For Priority 3 calls, respond within 1 hour;</li> <li>For Priority 4 calls, respond within 4 hours.</li> </ul>
3	Download of software updates	<ul style="list-style-type: none"> <li>Providing the maintenance releases (patches and minor releases) of host software versions.</li> </ul>
4	Hardware repairs and replacement	<ul style="list-style-type: none"> <li>Available 9 hours a day (07:00 – 16:00), Monday to Friday;</li> <li>For service request received between 07:00-14:59, replacement part to be sent to designated site on the same day.</li> <li>For service request received after 15:00, replacement parts will be sent to designated site within the next Business Day (NBD).</li> <li></li> </ul>
5	Technical Information	<ul style="list-style-type: none"> <li>Technical information sharing including latest patch downloads.</li> <li>Updates on latest eLTE technological advancement.</li> </ul>

*Table 4: Maintenance and Support Services*

## 6. WORKING WITH TRANSNET

Although some elements of support may be performed remotely, the service provider must be able to provide services and requirements in accordance to timelines as stipulated on table 4 above. A permanent Account Manager or Project manager must be available to attend meetings with TNPA,

resolve issues, concerns and or disputes. All tasks e.g., procurement, site visit, installation etc. must be approved by TNPA prior execution.

## **7. SAFETY**

Prior commencement of the execution phase of the project, the Service Provider will be required to adhere and comply with TNPA safety standards by providing a detailed safety File that will be approved by TNPA safety office. Annexure G contains the Contractor Compliance File Assessment checklist containing all the required safety elements.

## **8. TIMEFRAME FOR CONTRACT**

The contract is divided into two, Supply & Installation and Support & Maintenance. The timelines for each are as follow:

- Supply and installation of Equipment: **1 year**
- Support and Maintenance Services: **3 years**