



## **DESCRIPTION OF REQUIRED GOODS**

### **1 BACKGROUND**

Transnet National Ports Authority (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 (VTS), Infrastructure Management, Licensing of port services and facilities, Dredging Services, Dry Dock and Ship Repair facilities and Lighthouse services.

Marine Operations Services, Vessel Traffic Services and monitoring of Terminal Performance together with oversight functions forms the core of our service offering. Monitoring of Terminal Performance is a fundamental activity to ensure optimal efficiencies and productivities in the ports to lower the cost of doing business for our customers. One of the major Key Performance indicators to debottleneck our terminals to ensure cargo movement remains fluid for the licenced Terminal Operators is, Truck Turnaround Time.

## **2 MOTIVATION & PURPOSE:**

The Traffic Congestion at the ports and terminals is a well-publicized and long standing issue. The facilities that handle containers and bulk cargo have seen an increase in the number of trucks that call at the port, resulting in Traffic Congestion. Transnet and the various stakeholders have initiated numerous programmes, task-teams and interventions to reduce the ever-increasing traffic congestion.

Various desk-top and bench-marking studies have indicated that a technology intervention is required to assist in the reduction of the traffic congestion. Thus TNPA seeks to implement a Smart Traffic solution, designed and built on the latest technologies, which will manage and monitor both land and water traffic. It is envisioned that the Smart Traffic solution will assist in improving efficient traffic flows, resulting in improved port efficiencies, improved air quality and human safety.

The proposed solution must fulfil the following benefits and objectives for TNPA:

- Simplified, standardised and automated Truck Booking and Management process to maximise port efficiency and productivity
- Improved Truck Turnaround times
- Reduction in Traffic Congestion
- Reduction in Carbon-Footprint
- Reduction in overloading (overloaded trucks damages port road infrastructure)
- Reduction in port disruption due to un-roadworthy trucks entering ports
- Improved and efficient service delivery to Customers
- Enhanced benefits to all Stakeholders
- Centralised, accurate, credible and transparent information readily available to management and Port users
- Predictive indicators to manage congestion both on water and landside.
- Compatible with other traffic systems (inland terminals)

### **3. SCOPE OF WORK:**

The scope of work encompasses designing, building and implementing a Smart Traffic Management System that will manage the land, air and water traffic across the eight commercial ports i.e. Richards Bay, Durban, East London, Port Elizabeth, Port Ngqura, Mossel Bay, Cape Town and Saldanha Bay on a single platform and system. On the landside traffic, a Truck booking and monitoring solution is required, for the commercial vehicles. In addition, the solution must also manage and monitor employees, civilian/visitor and TNPA owned/leased vehicles.

TNPA has implemented the C-Scope AIS system, developed by Kongsberg, which manages the waterside traffic. The desired Smart Traffic Management System will need to integrate to the existing C-Scope system enabling the monitoring of TNPA owned water crafts as well as the commercial crafts. In addition, a complementary solution is required that will provide real-time visuals of all vessels entering the port systems.

A new emerging risk is the use of Drones for commercial use and recreational use which can disrupt those ports with Aviation Services, besides the normal security risks. The solution must be able to monitor all air traffic, including TNPA owned aircrafts within the port environment.

#### **3.1. Functional Requirements**

##### **3.1.1. Landside Traffic Management – Commercial Vehicles**

###### **3.1.1.1. Truck Booking**

###### **3.1.1.1.1. Pre-Arrival Booking/Notification of Trucks**

###### **3.1.1.1.2. Truck Slot Booking and Allocation**

###### **3.1.1.1.3. Integration to Terminal Operating Systems and Depot Management Systems to determine planned capacity**

###### **3.1.1.1.4. Route Planning**

###### **3.1.1.1.5. Workflow approvals**

###### **3.1.1.1.6. Notifications**

###### **3.1.1.1.7. Driver documentation verification (credentials)**

- 3.1.1.2.** Truck Monitoring
  - 3.1.1.2.1.** Advise of start of journey
  - 3.1.1.2.2.** Queuing at Pre-staging area, where applicable
  - 3.1.1.2.3.** Scanning of driver's license and license discs
  - 3.1.1.2.4.** Scanning of drivers vehicle's information
  - 3.1.1.2.5.** Verification of Truck and Driver at Port Entrances
  - 3.1.1.2.6.** Zoning/Geo-fencing of monitoring physical and virtual check-points/gates within the port/terminal
  - 3.1.1.2.7.** Overlay the zoned physical and virtual check-points/gates on a GIS platform
  - 3.1.1.2.8.** Real-time/Live Monitoring of trucks at pre-defined physical and virtual check-points/gates
  - 3.1.1.2.9.** Recording of timestamps of truck movements within the port/terminal
  - 3.1.1.2.10.** Recording of delays
  - 3.1.1.2.11.** Truck Statuses e.g. Inbound, Staging Area, Outbound etc
  - 3.1.1.2.12.** Escalations for deviations
  - 3.1.1.2.13.** The system should store a vehicle transits between two waypoints. The system should also have the ability to accumulate and constantly refines a database of travel times that have occurred to accurately predict the ETA
  - 3.1.1.2.14.** The system should have the facility to reproduce the path taken by vehicle with different colour according to vehicle status
  
- 3.1.1.3.** Reports/Dashboards
  - 3.1.1.3.1.** Truck Turnaround KPI at various check points i.e. Pre-gate, staging etc
  - 3.1.1.3.2.** Operational Reports
  - 3.1.1.3.3.** Management Dashboards
  
- 3.1.2.** Landside Traffic Management – Civilian and Visitor Vehicles
  - 3.1.2.1.** Scanning of driver's license and license discs
  - 3.1.2.2.** Scanning of drivers vehicle's information
  - 3.1.2.3.** Verification that civilian/visitor is authorized to enter the port. Via an integration to the IPMS Security Permit Management Module to obtain a list of civilian/visitor authorized to visit the port
  - 3.1.2.4.** Notifications to "Employee being visited"
  - 3.1.2.5.** Indication of type of visit to the Port e.g Business, private etc

**3.1.3.** Landside Traffic Management – Employee Vehicles

**3.1.3.1.** Scanning of driver's license

**3.1.3.2.** Scanning of drivers vehicle's information

**3.1.3.3.** Verification that employee is authorized to enter the port. Integration to the Bayblon and/or SAP systems to obtain a list of active employees

**3.1.4.** Landside Traffic Management – TNPA Owned/Leased Vehicles

**3.1.4.1.** Scanning of driver's license

**3.1.4.2.** Scanning of drivers vehicle's information

**3.1.4.3.** Notifications

**3.1.4.4.** Real-time/Live Monitoring of vehicles at pre-defined physical and virtual check-points/gates

**3.1.4.5.** Calculation of Distance travelled

**3.1.4.6.** Integration with current user tag identification system

**3.1.5.** Waterside Traffic Management

**3.1.5.1.** Real-time/Live Monitoring of all crafts at pre-defined virtual check-points/gates

**3.1.5.2.** Calculation of Distance travelled for TNPA owned watercrafts

**3.1.6.** Air Traffic Management

**3.1.6.1.** Real-time/Live Monitoring of all aircrafts and drones with the port air-space

**3.1.6.2.** Calculation of Distance travelled for TNPA owned aircrafts

## **4. Technical Requirements**

The system must be designed and built based on leading design, development and implementation architectural standards and processes. A desktop and mobile version of the system is required

### **4.1.1. Integration**

- Terminal Operating Systems to obtain planned capacity and space availability ( yard and slot )
- Integrated Port Management System to obtain Truck/Driver master data and visitor permits
- Baylon (Access Control System) and SAP system to obtain employee master data
- Depot Management System to obtain planned capacity and space availability ( yard and slot )
- eNatis System for validation of vehicles and drivers
- Road Traffic Monitoring system for updates on traffic congestion
- Integration to proposed GIS/Geo-fencing system
- Integration with current Transnet vehicle tracking system

## **5. Financial Proposal**

After the conclusion of the RFI process, its TNPA's intention to compile a business case and issue an RFP for the Design, Development, Deployment and Maintenance/Support (for a minimum period of three years) for a Smart Traffic Management System.

In order to estimate the financial implications for budgeting and planning purposes, we would like the respondents to provide a Financial Proposal covering the following items, at a minimum:

- a) Design, Development and Implementation Cost
- b) Annual Software License/Maintenance Fee
- c) 24x7x365 Support and Maintenance for a period of three (3) years

## APPROVALS

### COMPILED BY:

Name and Surname: Vasu Naidoo

Signature: 

May 18th, 2022

Date

### SUPPORTED/NOT SUPPORTED BY:

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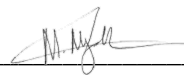
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Name and Surname: Miranda Nyathi

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