Specification

Camera Network for KZN DOT

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1. INTRODUCTION

The KwaZulu-Natal Department of Transport has embraced the use of technology to enhance the efficiency of traffic law enforcement. The technology deployed by the Department started with a simple unit emulating a fixed camera unit which flashed when a motorist exceeded the speed limit. Although no enforcement action was taken against motorists, this simple device resulted in a dramatic decrease in speeding and a reduction of collisions.

Since then, the Department has expanded the use of technology into a sophisticated integrated law enforcement system which has played a significant role in the provision of safer roads in the Province. The current technologies deployed include, inter alia, the following:

a) The establishment and operation of a Camera Network Management capability;

b) The measurement of a vehicle's average speed over a fixed distance (ASD);

c) Benchmark traffic monitoring sites to monitor the effectiveness of the strategies deployed;

d) Fixed camera sites which have been introduced at red spot areas across the Province to prosecute speeding motorists;

e) Strategically located weigh-in-motion installations linked to the system with remote access which allows Traffic Officers to detect overloaded vehicles and to escort such vehicles to a weighbridge from where prosecution can be done;

f) Automatic number plate recognition (ANPR) which allows the system and Traffic Officers to interrogate the e-Natis system and various national databases consisting of various categories of offences;

g) Remote access to the system by Traffic Officers downstream of an ASD or other site to detect serious offences including Warrants of Arrest; and

h) Roving vehicles fitted with automatic number plate recognition (ANPR) which can check vehicles real time against a Query Functionality for violations, warrants etc.

The current integrated system allows Traffic Officers to focus their attention on offending motorists which have been detected using the technology. This results in little or no inconvenience to law abiding motorists and ensures the free flow of traffic during law enforcement exercises.

The Department has acknowledged that in order to build on the successes of the past it is necessary to continue with the utilisation of the technology. Based on this, the Department is calling for experienced Service Providers to submit bids for the supply of a speed management service and integrated reporting system to provide this continuity of service.

This document (Annex) focuses on this portion of the solution requirement within the overall consolidated DOT tender.

2. SCOPE

2.1 High Level scope

The scope of work envisaged in terms of this contract will require the successful Service Provider to provide, implement, manage and support a solution which will provide ongoing traffic information services to the Department and which will encompass all functional elements currently provided and used.

Table 1 summarises the functional service requirements in the solution. Each numbered functional area refers to a corresponding paragraph in this document.

Table 1 - Functional areas in scope

Document Reference	Functional Service Area
3	The establishment and operation of a Camera Network Management capability
4	Average speed over distance (ASD) determination sites using automatic number plate recognition (ANPR);
5	Benchmark traffic monitoring sites
6	Fixed location speed enforcement cameras
7	Weigh-in-motion monitoring sites for potential overload detection
8	Real-time access to a Query Functionality including eNatis and other national and specialised databases
9	Portable and fixed systems for remote monitoring by traffic officers
10	Mobile automatic number plate recognition vehicles
11	Enhanced Mobile Monitoring App development, support and maintenance
12	Expansion of speed management and integrated reporting system

2.2 Implementation Phases

The timescale for the implementation of the Camera Network solution and services requires a phased approach. All phases must be implemented within twelve months from the implementation date of the contract. The service provider must provide a project plan specifying the expected implementation of the various phases of the specification. Table 2 provides details of the phases.

Table 2 - Phases for implementation

Phase	Requirement	Document Reference
1	The Camera Network Management capability must be established and functioning	Paragraph 3
	National Route 3 between Cato Ridge and Van Reenen's Pass must be installed and functioning ("**Section A**")	Paragraph 4 Annex B
	The Benchmark Traffic Monitoring Sites must be installed and functioning	Paragraph 5 Annex F
	The Fixed Location Speed Enforcement sites must be installed and functioning	Paragraph 6
	The Weigh-in-Motion Traffic Monitoring Sites must be installed and functioning	Paragraph 7 Annex F
	The Query Functionality must be functioning and available for use	Paragraph 8
	The Fixed and Portable Remote Monitoring Systems must be functioning and available for use	Paragraph 9
	The Automatic Number Plate Recognition (ANPR) Vehicles must be functioning and available for use	Paragraph 10

Phase	Requirement	Document Reference
	Road Safety Project on R102 Verulam must be installed and functioning	Annex F
	Enhanced Mobile Monitoring App must be developed and implemented	Paragraph 12
	Metropolitan Route M13 between Key Ridge and St Johns must be installed and functioning ("**Section D**")	Paragraph 4 Annex E
2	National Route 3 between Cato Ridge and the Four Level Interchange must be installed and functioning ("**Section B**")	Paragraph 4 Annex C
3	National Route 2 between Illovo River to Umtentweni must be installed and functioning ("**Section C**")	Paragraph 4 Annex D

2.3 Duration

The duration of the contract will be 60 months. For the purposes of tendering, Service Providers must price their rates based on a 60 month period.

3. CAMERA NETWORK MANAGEMENT CAPABILITY

3.1 Overview

Provision of the solution as described in this document will require the establishment of a capability for monitoring and management of the camera network.

This capability shall be equipped with computer servers, monitors and display units in order to provide the services described in this specification. Provision must also be made for a real-time system interface to the KZN DoT Traffic Management Centre to provide violation information determined by the system at no additional cost.

3.2 Establishment and Operation of a Camera Network Management Capability

The Service Provider shall establish and maintain a fully operational in-house facility to monitor and manage its installed infrastructure, and to collect and process the information for the provision of a speed management and integrated reporting service which shall be accessible to the Department at all times.

The Service Provider is to ensure that all images are retrieved, stored and available in a database for interrogation/querying allowing images to be overwritten after a period of two years. Service provider is to provide a standard interface for querying this database from any authorized outside source e.g. SAPS, Incident Management System in accordance with the specifications for interfaces in the Common Interface Specification.

The service provider must implement control mechanisms to ensure the integrity of the reporting and data transferred to the traffic contraventions software solution. The department shall approve the mechanisms for implementation by the service provider, and change management must be applied should there be any changes to the controls after implementation. Weekly reports should reflect actual unaltered records processed, with no means of manipulation of data by service provider.

The service provider is to ensure that the necessary tools are in place to flag and resolve sites that are down or sites that are faulty. From a departmental perspective the MINIMUM requirement is to provide 99% uptime, with weekly reports provided as evidence of compliance with this requirement. The report must also provide details on downtime or issues experienced and what interventions were implemented to resolve.

The Service Provider will be responsible for the provision, operation and maintenance of all the equipment and systems required for the management and monitoring centre. This includes, but is not limited to:

a) High speed broadband network connectivity;

b) Adequate system storage and power redundancy;

c) Adequate back-up and disaster recovery facilities with provision for off-site data back-ups.

3.3 Payment for Establishment and Operation of Camera Network Management Capability

Payment for the operation of a Camera Network Management Capability shall be measured by the number of months the capability is operational. The rate shall include all costs related to the operation and maintenance of the capability including maintaining an off-site backup of all data. The rate shall include all management reporting and supplying of violation data to the KZN Traffic Camera Office.

The service provider must provide the Department with a reporting system to allow the Department to draw standard and customized reports on an ad-hoc basis, in addition to any other reporting requirements stated in paragraph 12.5 and elsewhere. The rate shall also include for the provision of technical information and expert evidence in a Court of Law as and when required in the event of the system being challenged. The service provider will be required to

attend monthly management meetings and approximately four additional ad hoc meetings annually in Pietermaritzburg at no additional cost. The Department reserves the right to visit the Camera Network Management facility on an unannounced ad hoc basis.

4. AVERAGE SPEED DETERMINATION SYSTEM

4.1 Overview

The average speed over distance or average speed determination is the process of determining the average speed of vehicles travelling between two points on a road. This is achieved by using Automatic Number Plate Recognition (ANPR) cameras located at locations on a road section. The time taken to travel between the two ANPR cameras is used to calculate the average speed of the vehicle travelling between the two points.

The ANPR cameras located at each ASD point will be required to capture the number plates of vehicles travelling past that point in all lanes, including shoulders.

The ANPR cameras must be time synchronised to a GPS time source.

The distance between pairs of ANPR cameras must be determined in accordance with the TCSP Guideline Document obtainable from the KZN Department of Transport.

The equipment used must comply with all legislative requirements, including the Legal Metrology Act, 2014 (Act 9 of 2014) and its regulations.

The ANPR system must capture a clear image of the number plate together with the optical character recognition information.

In addition to ANPR images, colour overview images must be captured for each vehicle passing an ASD point. The minimum resolution for the images is 800 x 600 pixels.

The information captured at each ASD point shall be encrypted in accordance with SANS 1795 and transferred in real-time to the Camera Network Management server located at the Service Provider's offices where the information is processed and displayed in an acceptable manner to minimise down time and to maintain and monitor system performance.

At strategic locations within the ASD system, the ANPR information is linked to information obtained from benchmark Weigh-in-Motion traffic monitoring stations. This information is processed against the Query Functionality and the information is used to determine habitual overloading offenders in addition to heavy vehicle speed violations. The data is also used to monitor heavy vehicle trends and overloading patterns.

The ANPR data captured must be processed real-time against the Query Functionality. Violation information returned from this process must be forwarded real-time to portable and fixed monitoring systems used by the Traffic Officers.

The Enhanced Mobile Monitoring App will enable offices to use their mobile devices, obtain ANPR data from ASD cameras and make enquiries against the contraventions/eNatis or other systems.

Vehicle information from the ASD system and the Query Functionality shall be captured into the ASD database which will be used to generate violation data and also be used for reporting and management purposes. Vehicle data shall be classified into the following classes:-

a) Light Motor Vehicles;

b) Taxis;

c) Buses; and

d) Heavy Vehicles

The Service Provider shall be responsible for ensuring that the data captured by the ASD system can be integrated into the contravention system used at the KZN Traffic Camera Office. It is an express condition of this contract that if the contravention system is changed at any stage the Service Provider will be required to amend his system accordingly at no additional cost.

The Service Provider will be required to interrogate the ASD system for violations on a weekly basis and submit the data on a CD, DVD or suitable archivable medium to the KZN Traffic Camera Office within two (2) working days of the validation of the data for further processing. The Service Provider shall provide the required violation viewing software at the KZN Traffic Camera Office to view the data. The archivable medium must be labelled in accordance with the requirements of the KZN Traffic Camera Office and a log book maintained by the Service Provider for auditing purposes.

The Service Provider shall ensure that the relevant controls are in place to prevent any unauthorised access, modification or deletion of data and shall report to KZN DoT on a monthly basis on the implementation of such controls. The report shall include any deviations, corrective actions and continuous improvements. Refer to section 13.4 (Information Security and Governance) for additional details.

The ASD system shall allow for interrogation of data for various reports including traceability of vehicles using the road network in order to provide assistance to various authorities including the SAPS.

The Service Provider will be required to provide management reporting on all activities on a monthly basis as well as any ad hoc reports as required by the Department at no extra cost. Sample reports must be submitted with the Service Provider's tender.

The effectiveness and quality of the ASD system will be monitored against the Benchmark Monitoring Systems installed by the Service Provider.

4.2 Establishment of an ASD System and Service

Unless otherwise specified, the Service Provider will be responsible for the provision and maintenance of all the equipment and systems required for the ASD system. The Service Provider will be responsible for obtaining wayleaves from the relevant authorities and will be responsible for the provision of power, including alternative energy sources and communications to the ASD sites.

Where there is no suitable infrastructure to accommodate the ASD equipment, the Service provider will be required to install cantilever poles in accordance with the design shown in Annexure E. The Service Provider may offer an alternative design for the installation of the ASD equipment. Alternative designs will be subject to the approval of the Department and details of the design must be submitted with the tender. A separate once-off payment will be made for the installation of the cantilever poles which will remain the property of the Department on completion of the tender.

The Service Provider will be required to install warning signs in accordance with the requirements of the Technical Committee for Standards and Procedures (TCSP) Guideline Document and at strategic locations as indicated on the strip diagrams. The signs shall be manufactured in accordance with the design contained as Annex G to this document. The signs shall remain the property of the Department. The signs shall be erected in accordance with the requirements of the SADC RTSM. The signs shall be erected on the left hand verge of the road and in the median on dual carriageway sections. A separate once-off payment will be made for the supply and erection of these signs.

All equipment in the form of cameras, housings, imitation cameras, computers, servers, display units required for the purpose of the provision of the ASD system will be provided by the Service Provider and will remain the property of the Service Provider. The Service Provider will be responsible for the operation and maintenance of the ASD system for the duration of the contract and shall ensure that he is in possession of adequate spare equipment to maintain the system. The Service Provider will be responsible for all costs for the provision of power, alternative energy sources and communications for the system.

On termination of the contract, the Service Provider shall be responsible to remove all his equipment installed in the field and the termination of any agreements for the provision of power and communications.

The Service Provider shall ensure that an off-site backup of all ASD data collected is maintained for the duration of the contract. Ownership of all data collected through the ASD system is the property of the Department. The Service Provider may not provide any data or information collected during operation of the ASD system to any third party without the written permission of the Department. On termination of the contract, the Service Provider will be required to hand over to the Department all the ASD data collected and delete the data from his system.

The ASD system provided in terms of this contract must comply with all the requirements of the TCSP Guideline Document and the Service Provider must be suitably competent to be able to provide technical information and expert evidence in a Court of Law in respect of the system provided. To this end, the Department reserves the right and in accordance with the TCSP guidelines to discontinue ASOD in specific areas after a 2 year period. The Service Provider will be given 30 days notification, when an ASOD side needs to be de-commissioned. There is no obligation on the Department to recommission another ASOD site, if one has been de-commissioned, however, should the Department intends on commissioning a new site, the Service Provider will be given 60 days' notice period.

The Service Provider is responsible for all costs relating to Calibration / Verification of their equipment and such costs cannot be passed over to the Department.

4.3 Payment for Supply and Operation of Average Speed Determination System

4.3.1 Supply, delivery and installation of cantilever poles

The unit of measurement shall be the number of cantilever poles supplied and delivered and installed by the Service Provider at an active or imitation ASD location. The rate shall include obtaining of wayleaves, establishment on site, accommodation of traffic, materials and all equipment required to undertake the installation of the cantilever poles at an active or imitation ASD position.

Traffic accommodation shall be done strictly in accordance with the requirements of SADC RTSM. Proposed traffic accommodation layouts for each installation must also comply with the requirements of the relevant road authority on which the ASD system is to be installed.

4.3.2 Supply, install, operate and maintain an ASD station

Payment for each ASD station installed will be measured by the number of months the station is monitored and will be adjusted on a pro rata basis for periods where a station is not available or functioning.

It is expected that a station will be fully deployed and operational for a minimum of 90% per calender month.

No separate payment will be made for the initial installation and commissioning of equipment at an ASD station as this will be deemed to be included in the monthly rate.

The monthly rate must be all inclusive and shall include all costs related to the operation of the site and include all installation, maintenance, vandalism and operation costs of the equipment including the provision of power and communications between the site and the Camera Network Management capability. The rate shall include calibrating the installation, performing any quality controls and quality assurance procedures that have been adopted.

Traffic accommodation required during maintenance activities shall be done strictly in accordance with the requirements of SADC RTSM. Proposed traffic accommodation layouts for each activity must also comply with the requirements of the relevant road authority on which the ASD system is to be installed.

4.3.3 Supply, install, operate and maintain an imitation ASD station

The unit of measurement shall be the number of imitation ASD stations installed. The rate shall include establishment on site, accommodation of traffic, materials and all equipment required to undertake the installation on the cantilever poles at an imitation ASD position including provision of the dummy camera/s.

Traffic accommodation shall be done strictly in accordance with the requirements of SADC RTSM. Proposed traffic accommodation layouts for each installation must also comply with the requirements of the relevant road authority on which the ASD system is to be installed.

4.3.4 Supply and install ASD information signs

The unit of measurement shall be the number of information signs supplied and installed in accordance with the specification. The rate shall include all plant and materials, including excavation and planting of poles, brackets and mounting materials. Traffic accommodation shall be done strictly in accordance with the requirements of SADC RTSM. Proposed traffic accommodation layouts for each installation must also comply with the requirements of the relevant road authority on which the ASD system is to be installed. The Department will be responsible for the cost to replace any damaged ASD information signs should this be necessary due to damage caused by accident, adverse weather conditions vandalism etc.

5. BENCHMARK TRAFFIC MONITORING SITES

5.1 Overview

Benchmark monitoring sites are established as a management tool for the Department to monitor the effectiveness of the ASD system and Fixed Location Speed Enforcement sites deployed in the Province. The benchmark sites are used to determine traffic patterns and trends which provide essential input into enforcement deployment strategies. The positions of the current benchmark traffic monitoring sites are indicated in Annex F to this document.

The columns on the right hand side of the table indicate what purpose the data from each of the stations is used for. Certain of the stations are required for trends only while others are required for trends as well as for quality control for ASD stations.

Where stations are deployed for trends and flasher modules, these stations are linked to the positions of Fixed Location Speed Enforcement sites where enforcement equipment is rotated between fixed sites. When the enforcement equipment is removed, the traffic monitoring station is use to trigger a flasher unit in the camera housing to emulate an enforcement camera. The dual functionality of these traffic monitoring sites must be maintained.

The Service Provider will be required to establish his own benchmark traffic monitoring sites to provide this functionality. In this respect, the traffic monitoring equipment shall comply with the minimum requirements of TMH3 Type C1 accuracy class. As such the data formats shall comply with TMH14.

The benchmark traffic monitoring stations shall be provided with remote data extraction facilities. The data shall be extracted and validated by the Service Provider on a daily basis and the data stored in a traffic database from which the following reports can be generated:-

a) General and peak traffic trend reports;

b) Volume reports;

c) Speed profiles; and

d) Comparison reports with ASD data. It is expected that the comparison of the ASD data with the Benchmark monitoring site shall be within 80% of each other measured over a monthly period.

The interval for the reports must be user definable, for example, hourly, daily, weekly etc. Service Providers shall submit sample reports together with this tender.

The Service Provider shall ensure that the relevant controls are in place to prevent any unauthorised access, modification or deletion of data and shall report to KZN DoT on a monthly basis on the implementation of such controls. The report shall include any deviations, corrective actions and continuous improvements. Refer to section 13.4 (Information Security and Governance) for additional details.

The Service Provider will be required to provide the Department with:-

a) The standard monthly management reports must be provided to the Department within three 3 working days after the end of each month;

b) The traffic infringement data collected must be provided to the Traffic Camera Office within 7 working days of the end of each month; and

c) Data management and reporting software for the data.

5.2 Establishment of Benchmark Traffic Monitoring Stations and Service

The Service Provider will be responsible for the selection of sites, installation and maintenance of all the equipment and systems required for the benchmark traffic monitoring systems. The Service Provider will be responsible for obtaining wayleaves from the relevant authorities and

will be responsible for the provision of power and communications to the benchmark traffic monitoring sites.

In accordance with the requirements of THM3 and TMH14 the Service Provider will be required to be in possession of valid Traffic and WIM Monitoring Service Provider Certificates.

All equipment in the form of housings, traffic monitoring equipment, enforcement emulation units, required for the purpose of the provision of the benchmark traffic monitoring system will be provided by the Service Provider and will remain the property of the Service Provider. The Service Provider will be responsible for the operation and maintenance of the benchmark traffic monitoring system for the duration of the contract and shall ensure that he is in possession of adequate spare equipment to maintain the system. The Service Provider will be responsible for all costs for the provision of power and communications for the system.

Benchmark monitoring sites range from 2 lane sites to 6 lane sites. For the purposes of this contract, no differentiation will be made for the number of lanes monitored at each of the sites and Service Providers must acquaint themselves with the sites required and to ensure that they price accordingly.

On termination of the contract, the Service Provider shall be responsible to remove all his equipment installed in the field and the termination of any agreements for the provision of power and communications.

It is a requirement of the specification that the service provider will ensure that information/data supplied by the ASD station or fixed camera site will be within 80% of the data obtained from the benchmark monitoring site.

The Service Provider shall ensure that an off-site backup of all benchmark traffic monitoring data collected is maintained for the duration of the contract. Ownership of all data collected through the benchmark traffic monitoring system is the property of the Department. The Service Provider may not provide any data or information collected during operation of the benchmark traffic monitoring system to any third party without the written permission of the Department. On termination of the contract, the Service Provider will be required to delete the data from his system.

5.3 Payment for Benchmark Traffic Monitoring Stations Data Collection

Payment for each benchmark traffic monitoring station will be measured by the number of calendar months the station is monitored and will be adjusted on a pro rata basis for periods where a station is not available or functioning. See Paragraph 12.1 - "Pro Rata Payment Determination" for more details. Remuneration shall include calibration of the station, its operation, maintenance, the collection and validation of the data collected by it, any further processing of the data and the updating of the data bank.

No separate payment will be made for the selection, construction, provision of the benchmark traffic monitoring equipment and its installation or the costs involved in providing the data and data management tools to the Department. The Service Provider will also be responsible for the provision of power and communications to the site.

The rate shall include for the provision of the management reports as envisaged under 12.5 and shall submit sample reports together with his tender.

6. FIXED LOCATION SPEED ENFORCEMENT

6.1 Overview

The Department has established a network of fixed location speed enforcement sites at red spot locations as indicated in Annex F. In view of the high cost of speed enforcement equipment, the Department has embraced the principle of the rotation of speed enforcement cameras at these sites. When the speed enforcement camera is removed from a location, the camera must be replaced with a system which emulates speed enforcement by flashing when vehicles exceeding the speed limit are detected.

The speed enforcement locations are to be located in the vicinity of the benchmark traffic monitoring stations so that the optimum deployment of the speed enforcement equipment can be determined and managed.

6.2 Establishment of Fixed Location Speed Enforcement Sites

The Service Provider will be required to supply and maintain a minimum of 8 speed enforcement cameras which will be deployed on a rotational basis such that they will each be deployed and operational for a minimum of 80% per calendar month.

The Service Provider will be responsible to ensure that the speed enforcement cameras supplied comply with the following:

a) All cameras to be type approved in accordance with SANS 1795 and have valid certification

b) The TCSP Guideline Document

c) Calibration certificates in terms of SANS 1795 to be provided to the Department.

d) Legal Metrology Act, 2014 (Act 9 of 2014) and its regulations.

The Service Provider shall be responsible for ensuring that the data captured by the enforcement cameras can be integrated into the contravention system used at the Traffic Camera Office. It is an express condition of this contract that if the traffic contravention system is changed at any stage the Service Provider will be required to amend his system accordingly at no additional cost.

The Service Provider will be required to extract the violation data from the enforcement cameras on a weekly basis and submit the validated data on a CD, DVD or other archivable medium to the Traffic Camera Office within two (2) working days for further processing. The Service Provider shall provide the required violation viewing software at the Traffic Camera Office to view the data. The CDs, DVDs or other archivable medium must be labelled in accordance with the requirements of the Traffic Camera Office and a log book maintained by the Service Provider for auditing purposes.

The Service Provider shall ensure that the relevant controls are in place to prevent any unauthorised access, modification or deletion of data and shall report to KZN DoT on a monthly basis on the implementation of such controls. The report shall include any deviations, corrective actions and continuous improvements. Refer to section 13.4 (Information Security and Governance) for additional details.

The Service Provider shall ensure that an off-site backup of all fixed enforcement camera data collected is maintained for the duration of the contract. Ownership of all data collected through the fixed enforcement cameras is the property of the Department. The Service Provider may not provide any data or information collected during operation of the fixed enforcement cameras to any third party without the written permission of the Department. On termination of the contract, the Service Provider will be required to hand over to the Department all the fixed enforcement camera data collected and delete the data from his system.

The Department will make available the existing fixed location housings and poles at the existing locations on a "voetstoets" basis. In the event of the Service provider choosing not to utilise the

existing housings and poles, the Service Provider will be required to remove these poles and housings and return them to the Department. Where a Service Provider chooses to install his own poles and housings for his enforcement equipment, this will be at the Service Provider's own cost and no separate payment will be considered for this. The Service Provider will be required to remove these poles and housings at his own cost at the end of the contract. Should the Service provider chose to use the existing piezo triggering profiles, this will be at his own risk. Any costs involved in installing, repairing, replacing or maintaining these profiles will be at the cost of the Service Provider. There are currently 19 sites which require to be operated on a fixed camera rotation basis. Refer to Annex F.

The Service Provider will be responsible for providing permanent or alternative power to the sites to ensure that the operational requirements are met.

The Service Provider must ensure that the fixed camera infrastructure is initially painted yellow and thereafter of a 6 monthly basis, repainted.

6.3 Payment for Fixed Location Speed Enforcement Equipment

Payment for each speed enforcement camera will be measured by the number of calendar months the speed enforcement camera is operated at a site or sites and will be adjusted on a pro rata basis for periods where each speed enforcement camera is operated for less than 80% of the time for the month. No additional payment will be made where each speed enforcement camera is operated for more than 80% of the time during a calendar month. See Paragraph 12.1.2 - Pro Rata Payment Determination for Enforcement Cameras.

No separate payment will be made for the initial installation and commissioning of speed enforcement camera at a station as this will be deemed to be included in the monthly rate.

The monthly rate shall include for all costs related to the initial supply of the speed enforcement cameras and shall include all installation, operation, calibration, vandalism and maintenance costs, including the provision of power to the sites. The rate shall include calibrating the speed enforcement equipment, performing any quality controls and quality assurance procedures that have been adopted to ensure compliance with SANS 1795 and the TCSP Guideline Document. The calibration interval shall be in accordance with SANS 1795.

Traffic accommodation required during installation and maintenance activities shall be done strictly in accordance with the requirements of SADC RTSM. Proposed traffic accommodation layouts for each activity must also comply with the requirements of the relevant road authority on which the speed enforcement cameras are is to be installed and operated.

7. WEIGH-IN-MOTION TRAFFIC MONITORING SITES (WIMS)

7.1 Overview

Weigh-in-Motion traffic monitoring sites are established at strategic locations and are either linked or will be required to be linked to specific ASD sites in order to supplement the ASD information with the loading information obtained from the weigh-in-motion traffic monitoring equipment for processing through the Query Functionality.

The information is used by the Department to monitor the extent of overloading at these locations and to determine the companies responsible for overloaded heavy vehicles. The real time information is also used to alert traffic officers using Fixed or Mobile Remote Monitoring Stations, or the Enhanced Mobile Monitoring App of potentially overloaded vehicles using the road.

7.2 Establishment of Weigh-in-Motion Traffic Data Monitoring and Service

The Service Provider will be responsible for the selection of sites, installation and maintenance of all the equipment and systems required for the weigh-in-motion traffic monitoring systems and the link for real time data export to the specific ASD site. The Service Provider will be responsible for obtaining wayleaves from the relevant authorities and will be responsible for the provision of power and communications to the weigh-in-motion traffic monitoring sites.

All equipment in the form of housings, traffic monitoring equipment, enforcement emulation units, required for the purpose of the provision of the weigh-in-motion traffic monitoring system will be provided by the Service Provider and will remain the property of the Service Provider. The Service Provider will be responsible for the operation and maintenance of the weigh-in-motion traffic monitoring system for the duration of the contract and shall ensure that he is in possession of adequate spare equipment to maintain the system. The Service Provider will be responsible for all costs for the provision of power and communications for the system.

Weigh-in-motion monitoring will only be required in the slow lane. The weigh-in motion monitoring sites may be incorporated with benchmark monitoring sites. Service Providers must take cognisance that payment for the benchmark monitoring site will be deemed to be included under pay item 5.3 above and only the weigh-in-motion data collected in the specific lane will be paid for under this item.

The positions of the existing weigh-in-motion traffic monitoring sites are indicated in Annexes B to F of this document. Annex F, Table 5, provides the detailed information pertaining to the existing sites.

The Department reserve the right to include additional WIMS, as and when required.

Lanes equipped with weigh-in-motion measurements must comply with the requirements of TMH3 Type B2 with WIM Class II, while any other lanes monitored shall comply with TMH3 Type C1 accuracy.

In accordance with the requirements of TMH3 the Service Provider will be required to be in possession of valid Traffic and WIM Monitoring Service Provider Certificates.

On termination of the contract, the Service Provider shall be responsible to remove all his equipment installed in the field and the termination of any agreements for the provision of power and communications.

Service Provider shall submit sample reports together with its tender.

Reporting from the weigh-in-motion lanes shall include:

a) Heavy vehicle loading trends;

b) Identification of habitual offenders;

c) Statistics on worst offenders;

The Service Provider will be required to provide the Department with:

d) The WIM traffic data collected within 3 working days after the end of each month

e) Data management and reporting software for the data

The Service Provider shall ensure that the relevant controls are in place to prevent any unauthorised access, modification or deletion of data and shall report to KZN DoT on a monthly basis on the implementation of such controls. The report shall include any deviations, corrective actions and continuous improvements. Refer to section 13.4 (Information Security and Governance) for additional details.

The Service Provider shall ensure that an off-site backup of all weigh-in-motion traffic monitoring data collected is maintained for the duration of the contract. Ownership of all data collected through the weigh-in-motion traffic monitoring system is the property of the Department.

The Service Provider may not provide any data or information collected during operation of the weigh-in-motion traffic monitoring system to any third party without the written permission of the Department. On termination of the contract, the Service Provider will be required to delete the data from his system.

7.3 Payment for Weigh-in-motion data collection

Payment per month will be made for each lane in which weigh-in-motion traffic monitoring is required and will be measured by the number of calendar months the lane is monitored and will be adjusted on a pro rata basis for periods where data from a lane is not available or functioning. See Section 12.1.1 - Pro Rata Payment Determination.

Remuneration shall include calibration of the weigh-in-motion lane, its operation, maintenance, the collection and validation of the data collected by it, any further processing of the data and the updating of the data bank.

Separate payment will be made for the selection, construction, provision of the weigh-in-motion traffic monitoring equipment and its installation or the costs involved in providing the data and data management tools to the Department i.e. infrastructure costs. These costs will be spread across the contract period, and if data from a lane is not available or functioning then these costs will still be applicable.

The Service Provider will also be responsible for the provision of power including alternative power/energy and communications to the site and for the linking of the real time data to the appropriate ASD station.

The rate shall include for the provision of the management reports as envisaged under paragraph 7.2 and shall submit sample reports together with this tender.

8. QUERY FUNCTIONALITY

8.1 Overview

All Relevant ANPR data received from the ASD locations and the mobile vehicles fitted with ANPR cameras must be processed in real time by invoking query functionality consisting of live access to eNatis, the database of outstanding warrants, the SAPS database and any database information supplied by the Department. The information returned from the query functionality shall include, but not be limited to, the following:-

a) Vehicle class;

b) Vehicle characteristics and status:

i. Make;

ii. Model;

iii. Colour;

iv. Licence status;

v. Roadworthy status; and

vi. Stolen indicator.

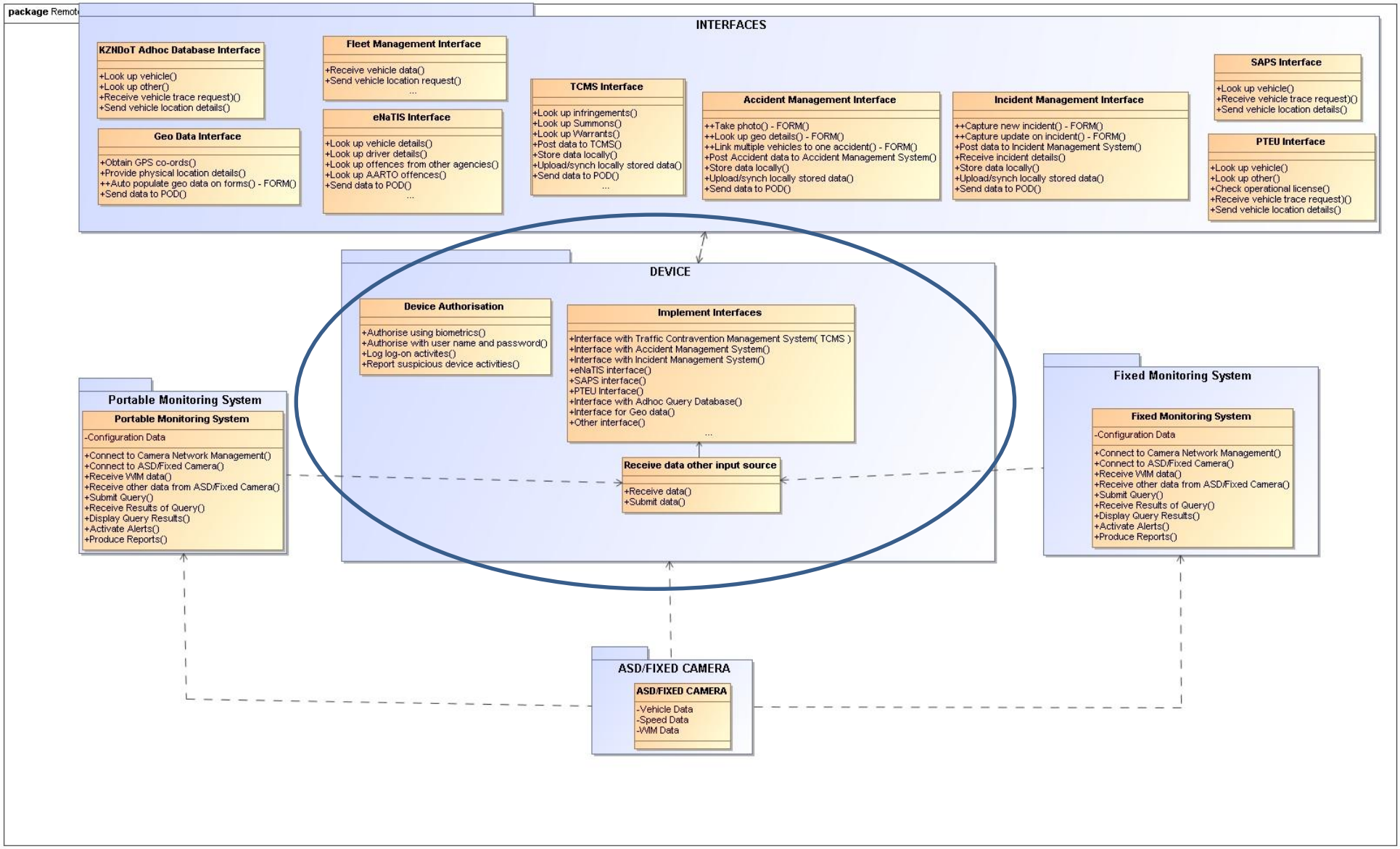
The information returned from the query functionality shall be used to provide the necessary alerts to traffic officers using Fixed or Mobile Remote Monitoring Stations.

The query functionality must be capable of handling multiple queries from the data received from all the ASD stations as well as from the Fixed and Mobile Remote Stations.

8.2 Establishment of a Query Functionality and Service

The Query Functionality is an essential component of the Speed Management and Integrated reporting system. Service Providers will be required to demonstrate the ability to query the relevant databases in real-time. Access to eNatis must be a live access. Accessing copies of the eNatis database will not be accepted.

Since the necessary interfaces to the applicable systems (eNatis, TCMS, SAPS etc.) will already be developed as a re-usable service for KZN DoT (see Common Interface Specification), there will not be a need to re-develop the interfaces for this Query Functionality. The service provider will need to simply implement the calls to the existing interfaces as highlighted below:


package Remot
INTERFACES
KZNDoT Adhoc Database Interface
+Look up vehicle()
+Look up other()
+Receive vehicle trace request)()
+Send vehicle location details()
Fleet Management Interface
+Receive vehicle data()
+Send vehicle location request()
...
Geo Data Interface
+Obtain GPS co-ords()
+Provide physical location details()
++Auto populate geo data on forms() - FORM()
+Send data to POD()
eNaTIS Interface
+Look up vehicle details()
+Look up driver details()
+Look up offences from other agencies()
+Look up AARTO offences()
+Send data to POD()
...
TCMS Interface
+Look up infringements()
+Look up Summons()
+Look up Warrants()
+Post data to TCMS()
+Store data locally()
+Upload/synch locally stored data()
+Send data to POD()
...
Accident Management Interface
++Take photo() - FORM()
++Look up geo details() - FORM()
++Link multiple vehicles to one accident() - FORM()
+Post Accident data to Accident Management System()
+Store data locally()
+Upload/synch locally stored data()
+Send data to POD()
Incident Management Interface
++Capture new incident() - FORM()
++Capture update on incident() - FORM()
+Post data to Incident Management System()
+Receive incident details()
+Store data locally()
+Upload/synch locally stored data()
+Send data to POD()
SAPS Interface
+Look up vehicle()
+Receive vehicle trace request)()
+Send vehicle location details()
PTEU Interface
+Look up vehicle()
+Look up other()
+Check operational license()
+Receive vehicle trace request)()
+Send vehicle location details()
DEVICE
Device Authorisation
+Authorise using biometrics()
+Authorise with user name and password()
+Log log-on activites()
+Report suspicious device activities()
Implement Interfaces
+Interface with Traffic Contravention Management System(TCMS)
+Interface with Accident Management System()
+Interface with Incident Management System()
+eNaTIS interface()
+SAPS interface()
+PTEU Interface()
+Interface with Adhoc Query Database()
+Interface for Geo data()
+Other interface()
...
Receive data other input source
+Receive data()
+Submit data()
Portable Monitoring System
Portable Monitoring System
-Configuration Data
+Connect to Camera Network Management()
+Connect to ASD/Fixed Camera()
+Receive WIM data()
+Receive other data from ASD/Fixed Camera()
+Submit Query()
+Receive Results of Query()
+Display Query Results()
+Activate Alerts()
+Produce Reports()
Fixed Monitoring System
Fixed Monitoring System
-Configuration Data
+Connect to Camera Network Management()
+Connect to ASD/Fixed Camera()
+Receive WIM data()
+Receive other data from ASD/Fixed Camera()
+Submit Query()
+Receive Results of Query()
+Display Query Results()
+Activate Alerts()
+Produce Reports()
ASD/FIXED CAMERA
ASD/FIXED CAMERA
-Vehicle Data
-Speed Data
-WIM Data

The Service Provider will be responsible for obtaining all authorities required in order to access the relevant databases forming the query functionality and shall be responsible for establishing and maintaining such links as may be required.

8.3 Payment for Establishment and Maintenance of a Query Functionality

Payment per month will be for the establishment and operation of a query functionality and shall be measured by the number of months the query functionality is operational and will be adjusted on a pro rata basis for periods where data is not available or functioning.
See Section 12.1.1 Pro Rata Payment Determination.

No separate payment will be made for the development or establishment of the query functionality as this is deemed to be included in the monthly rate. The rate shall include the provision of all computer hardware, software and communication systems required to effectively query and return the relevant information and shall include all costs related to the operation of the Query Functionality.

The unit rate shall be a fixed monthly rate.

9. FIXED AND PORTABLE REMOTE MONITORING SYSTEMS

9.1 Overview

Remote monitoring systems form an integral part of the Integrated Traffic Information Systems and Services. These systems are in the form of Fixed and Portable Remote Monitoring Systems.

The Fixed Remote Monitoring Systems consist of a computer and screen or similar arrangement with remote communications to the Camera Network Management capability, located at a weighbridge site where overloading information is relayed from selectable ASD sites linked to weigh-in-motion data on a route. This information is then used to deploy traffic officers to intercept potentially overloaded heavy vehicles. Fixed remote monitoring sites are required at RTI stations: Ladysmith, Midway, Pietermaritzburg, Pinetown, Winkelspruit, Park Rynie, and Port Shepstone.

The Portable Remote Monitoring Systems consist of portable computer or similar system with remote communications to the Camera Network Management capability. Traffic officers can configure the remote systems to be site specific to receive various forms of violation information ranging from potential overloaded vehicles, outstanding traffic violations and warrants, licencing and roadworthy violations thereby providing an intelligent roadblock.

The remote monitoring systems must be capable of receiving, displaying and printing of offences and details of the vehicle. Typical information shall include the following:-

a) Outstanding warrants;

b) Speed violations;

c) Unlicensed vehicles;

d) Unroadworthy vehicles;

e) Stolen vehicles;

f) Potential overloads; and

g) eNatis related violations.

9.2 Establishment of Fixed and Mobile Remote Monitoring Systems

9.2.1 Fixed Remote Monitoring Systems

The fixed remote monitoring sites installed at weighbridges must be standalone units and shall in no way interfere with other systems installed at the weighbridge. Fixed Remote Monitoring shall make use of the KZN DoT Common Interfaces for purposes of integration and no additional point-to-point integration will be required (refer section 8.2).

The Service Provider will be responsible for all costs related to the provision, insurance and maintenance of the systems provided and will be responsible for initial and ongoing training of the traffic officers using the systems. The systems will remain the property of the Service Provider.

9.2.2 Mobile Remote Monitoring Systems

The portable remote monitoring systems are required to be robust units suited to field usage and shall be fitted with dual communication capability (Vodacom/MTN/CellC). The systems must be simple and easy to use and must allow for the selection of the relevant ASD site in the field. The portable remote monitoring systems shall have sufficient battery life to enable operation over an 8 hour shift.

Mobile Remote Monitoring shall make use of the KZN DoT Common Interfaces for purposes of integration and no additional point-to-point integration will be required (refer section 8.2).

The Service Provider will be responsible for all costs related to the provision, insurance and maintenance of the systems provided and will be responsible for initial and ongoing training of the traffic officers using the systems. The systems will remain the property of the Service Provider.

It is an explicit requirement that the Mobile Remote Monitoring shall be packaged as a deployable solution to be handed over to KZN DoT inclusive of an installation and configuration manual. This will enable KZN DoT to easily install and configure the Mobile Remote Monitoring solution on additional KZN DoT owned equipment, without any dependency on the service provider.

9.3 Payment for services

9.3.1 Supply and maintain Fixed Remote Monitoring Systems

Payment per month for each fixed remote monitoring system will be measured by the number of calendar months the fixed remote monitoring system is at a site.

No separate payment will be made for the initial installation and commissioning of a fixed remote monitoring system at a station as this will be deemed to be included in the monthly rate.

The monthly rate for the fixed remote monitoring system shall include all costs related to the provision, insurance and maintenance of the hardware as well as all communication costs between the Camera Network Management capability and the remote site.

The fixed remote monitoring system will remain the property of the Service Provider and at the end of the contract, the Service Provider will be required to remove the fixed remote monitoring systems from site at no additional cost.

9.3.2 Supply and maintain Portable Remote Monitoring Systems

Payment per month for each portable remote monitoring system will be measured by the number of calendar months the portable remote monitoring system is at a site regardless of whether it is used or not. Where the Portable Remote monitoring system cannot be used within the calendar month due to a fault of the service provider, the monthly payment will be reduced Pro-rata for the portion of the month the system could not be used. See Section 12.1.1 - Pro–rata payment determination.

No separate payment will be made for the initial provision and commissioning of a portable remote monitoring system as this will be deemed to be included in the monthly rate. This includes the costs associated with packaging the Mobile Remote Monitoring into a deployable solution for roll-out by KZN DoT.

The monthly rate for the portable remote monitoring system shall include all costs related to the provision, insurance and maintenance of the hardware as well as all communication costs between the Camera Network Management capability and the remote site.

The portable remote monitoring system will remain the property of the Service Provider and at the end of the contract the Service Provider will be required to remove the portable remote monitoring systems from site at no additional cost.

9.3.3 Provide training workshops every 2 months

The Service Provider will be required to provide on-going training to traffic officers to ensure that they are competent in the operation of both the fixed and portable remote monitoring systems. The training will be provided at the Department's Training College and provision should be made to train up to 30 candidates at a time. The Service Provider will be required to keep records of the personnel trained and will be required to submit a confidential report on the training and the results to the Training Officer in charge. The rate shall include all travelling costs and training material required.

9.3.4 Provide ad hoc training

The Service Provider will be required to provide ad hoc training to traffic officers as and when required to ensure that they are competent in the operation of both the fixed and portable remote monitoring systems. The training will be provided at the Department's Training College and provision should be made to train up to 10 candidates at a time. The Service Provider will be required to keep records of the personnel trained and will be required to submit a confidential report on the training and the results to the Training Officer in charge. The rate shall include all travelling costs and training material required.

10. AUTOMATIC NUMBER PLATE RECOGNITION ON VEHICLES AND FIXED SITES

10.1 Overview

ANPR systems can be installed in patrolled vehicles of the Road Traffic Inspectorate or at strategically determined fixed sites. The Department, once a determination is made will identify the fixed sites that the ANPR system must be installed in.

All the vehicles used for the ANPR systems will be provided by the Department.

The Department requires fifty (50) vehicles to be fitted with three ANPR cameras fitted such that they capture information from the left, front and right of the vehicle. The ANPR information is deciphered by an on-board system and sent real time via a dual Communication system to the Query Functionality (See Common Interface Specification). Information returned must include the following:

a) Outstanding warrants;

b) Speed violations;

c) Unlicensed vehicles;

d) Un-roadworthy vehicles;

e) Stolen Vehicles;

f) Habitual offenders;

g) Potential overloads; and

h) eNatis related violations.

In addition, the mobile vehicles must receive information from the Camera Network Management capability regarding ASD violations.

10.2 Payment for services

10.2.1 Supply, Install and Maintain ANPR systems in Department owned vehicles

Payment per month for each ANPR system installed in a Departmental vehicle or at a fixed site where the equipment is not owned by the Department will be measured by the number of calendar months the ANPR system is operational regardless of whether it is used or not. Where an ANPR monitoring system cannot be used during a calendar month due to fault of the Service Provider, the monthly payment will be reduced pro rata for the portion of the month the system could not be used. See Paragraph 12.1.1 - Pro Rata Payment Determination.

No separate payment will be made for the initial supply, installation, maintenance and commissioning of the ANPR system as this will be deemed to be included in the monthly rate. Should the Department wish to change vehicles or fixed sites the Service Provider will be paid as per 10.2.2 and 10.2.3.

The monthly rate for the ANPR system shall include all costs related to the provision, insurance and maintenance of the hardware as well as all communication costs between the Camera Network Management capability, the Query Functionality and the ANPR vehicle and shall include initial training in the operation of the system.

The ANPR system will remain the property of the Service Provider at the end of the contract. At the end of the contract period, the Service Provider will be required to remove his equipment from the vehicles with the minimum of damage to the vehicle.

10.2.2 Commission of ANPR equipment when required

The service provider will be required to install and commission the ANPR equipment to another vehicle as and when required by the Department.

10.2.3 Removal/ de-commission of ANPR equipment

The Service Provider will be required to remove/de-commission ANPR equipment from a vehicle as and when required by the Department.

10.2.4 Provide ad hoc ANPR training

The Service Provider will be required to provide ad hoc training to traffic officers as and when required to ensure that they are competent in the operation of both the ANPR systems installed in the Department's vehicles. The training will be provided at the Department's Training College and provision should be made to train up to 10 candidates at a time. The Service Provider will be required to certify and keep records of the personnel trained and will be required to submit a confidential report on the training and the results to the Training Officer in charge. The rate shall include all travelling costs and training material required.

11. ENHANCED MOBILE MONITORING APP REQUIREMENTS

As part of the scope of work an Enhanced Mobile Monitoring App must be developed which executes the business requirements defined hereunder at minimum. The device will be provided by KZN DoT.

App must be developed and implemented within a period not exceeding 12 months. Thereafter support and maintenance of the app must be provided for remaining 4 year duration of the contract.

11.1 App General Requirements

11.1.1 App Authorisation

Description	Functional Requirement
Authorise user	The user will already be authenticated onto the device. The app should provide further authentication if required, or re-use log-on details from the device authentication for single sign-on.

11.1.2 Implement Interfaces

Description	Functional Requirement
Implement Interface via app	The device will provide the capability to implement the interfaces, however the actual interface is to be called as required from within the app. Below are the list of interfaces that the app must support (see Common Interface Specification):
Interface with Traffic Contravention Management System (TCMS)	Enable bi-directional interfacing with TCMS. Data retrieved from TCMS will be sent to the POD for processing and appropriate display. Data from the POD (via the applicable forms) will be sent to the TCMS Interface to post to the TCMS system.
eNaTIS interface	Enable one-directional interfacing with eNaTIS System – eNaTIS updates the POD only. Data retrieved from eNaTIS will be sent to the POD for processing and appropriate display.
SAPS interface	Enable one-directional interfacing with SAPS System – SAPS updates the POD only. Data retrieved from SAPS will be sent to the POD for processing and appropriate display.
Interface for Geo data	Enable one-directional interfacing with Geo Solution – Geo Solution updates the POD only. Data retrieved from Geo Solution will be sent to the POD for processing and appropriate display.
PTEU Interface	Enable bi-directional interfacing with PTEU system. Data retrieved from PTEU will be sent to the KZN DoT Traffic Management Center database's for processing and appropriate display. Data from the POD (via the applicable forms) will be sent to the PTEU Interface to make enquiries with the PTEU system, receive results and send back to the POD.
KZN DoT Ad-hoc Query Database Interface	Enable bi-directional interfacing with KZN DoT Ad-hoc Query Database. Data retrieved from KZN DoT Ad-hoc Query Database will be sent to the KZN DoT Traffic Management Center database's for processing and appropriate display. Data from the POD (via the applicable forms) will be sent to the KZN DoT Ad-hoc Query Database Interface to make enquiries with the KZN DoT Ad-hoc Query Database system, receive results and send back to the POD.
Display data on POD to officer	The data retrieved via the interfaces must be displayed appropriately on the POD via the app. This display would need to be context sensitive and auto-populate data based on the applicable actions taken by the user and/or the forms from which the interface was called.

11.1.3 Process Scanned Details

Description	Functional Requirement
Process Scanned Details	The POD will be able to scan a South African ID barcode and a vehicle license disk barcode. The app must be able to receive and process the scanned details as required for further computation within the app.

11.1.4 Capture Master Data Manually

Description	Functional Requirement
Type in Drivers details	Should the scanning functionality not be possible for whatever reason, or should the interface to eNatis not work then the app must enable the user to manually type in the driver's details as per driver's license.
Type in vehicle details	Should the scanning functionality not be possible for whatever reason, or should the interface to eNatis not work then the app must enable the user manually type in the vehicle's details as per vehicle registration disk.
Type in other details	Allow user to manually capture other master data on the app as required for the form

11.1.5 Submit GPS location

Description	Functional Requirement
Submit current GPS location data to the calling system	A system may request the current GPS location to be sent. The app must determine current GPS and submit details to the calling application.

11.2 App Specific Requirements

11.2.1 Package App

Description	Functional Requirement
Enhanced Mobile Monitoring Application	For the "Enhanced Mobile Monitoring" app: Create the required forms for data capture on the app, forms for data display on the app, logical processing of data that must be performed on the app, calling of interfaces and processing of data from/to an interface, printing of data from the app. Package all forms logically as an "Application" which can be deployed to the POD, defining the necessary user security roles needed for this application. Assume that for this application, the following applies: • Number of forms = 5; • Average Number of tabs per form = 5; • Total screens = forms x tabs = 25; This App will function similar to Mobile Remote monitoring (See section 9) however instead of being called from a laptop the functionality will be executed off a mobile device to be provided by the Department. Below is an indicative set of app functions which will be based on a logical grouping of the above-mentioned forms (list is not exhaustive): **Search for and connect to an ASD camera:** Traffic officers can search for and configure the app to connect to an ASD camera, such that it will be site and search type specific: e.g. to receive at a particular site applicable forms of violation information ranging from potential overloaded vehicles, outstanding traffic violations and warrants, licencing and roadworthy violations thereby providing an intelligent roadblock. **Run ASD Queries:** After connecting to an ASD camera, an officer can set up the app to run queries against the ASD data and receive results of the queries. The ASD camera sends the vehicle number plate to the app, the app connects to the interface and makes the necessary queries (as per search type criteria configured by the officer) and results of the query are displayed to the officer directly on the app. Thus instead of the officer scanning a vehicle registration number on the app and sending a query, the vehicle registration number is relayed from the ASD camera to the app and the query is thereafter executed in the same way as if the vehicle registration number was scanned by the POD. **Display ASD Query Results:** Results of the ASD queries are displayed to the officer in an appropriate, easy to understand format. E.g. vehicle details followed by a key indicating if offences exist of not. Officer can drill into details of offences.

11.2.2 Manage App Configuration Data

Description	Type
Enhanced Mobile Monitoring Config Data	Enhanced Mobile Monitoring application: All the configuration/parameter data needed for this application and it's forms will be maintained as look-up tables and configuration data which can evolve over time with version control applied. i.e. no hard coding at all.
Interface data	Data required for interfaces: All the configuration/parameter data needed for the interfaces will be maintained as look-up tables and configuration data which can evolve over time with version control applied. i.e. no hard coding at all.

Description	Type
Set up Config data	Functionality to capture and record the initial configuration data described above
Manage Config data	Functionality to make updates over time to the existing configuration data described above

11.2.3 Execute App

Description	Functional Requirement
Provide App Menu	Forms should be packaged as one "application" comprising logical functions e.g. Incident Management, Accident Management, Traffic Law Enforcement, Other. The forms within an application must be grouped logically into functions and packaged into an easy to navigate menu. User to be able to navigate through menu functions based on user access. Retrieve and display the applicable forms for the menu function selected by the user. The app should be scalable to allow for additional "forms" or "functions" to be seamlessly developed and deployed at a later stage. Functionality must be re-usable wherever possible.
Auto-populate data where possible	Data retrieved from scanned documents and/or interfaces should be auto-populated onto the relevant fields on the form
Fill in data manually	Allow user to manually add data on the form. This would typically be the data not auto populated.
Edit data	Allow user to manually edit data on the form. This would typically be the data which was incorrectly auto populated or where user has manually entered an incorrect value.
Validate data captured	Perform data validations based on the fields in the form.
Display data received from interfaces	The data retrieved via the interfaces must be displayed appropriately on the POD via the app.
Post data via interface	Data captured on the form should be posted to the applicable system via the well-defined interface.
Store data for later upload	Should network connectivity not be available then the app should store data on the device and allow for synchronisation with the application server at a later stage. I.e. network connectivity should not be a single point of failure for the app.

11.2.4 Print

Description	Functional Requirement
Print applicable documents from the app	The user must be able to print the applicable documents from the app. POD will provide printing capability. For the Enhanced Mobile Monitoring App this may include a list of all vehicles to be pulled over, or a list of infringements for a particular vehicle. Note that actual notices, warrants and summons will be printed and issued via the Traffic Law Enforcement App and that functionality will not need to be duplicated within the Enhanced Mobile Monitoring App.
Capture signature	Parties must be able to sign on the POD as required by the form. App must process the signature captured.

11.3 App Security and Reports

11.3.1 Security

Description	Functional Requirement
Decryption of 2D barcodes	Certain barcodes are 2D encrypted and the device will be capable of decrypting same. The app should be capable of passing necessary data to the device and receive decrypted results for further processing.
Provide https connectivity	The connection between the device and the system interface will be secured via the app.
Encrypt transmitted data	Data exchanged between the device and the system interface will be encrypted via the app
Maintain local logs	Logs for the app will need to be retained locally until the device is able to connect to a network and upload the logs onto a database. At that point local logs can be deleted. Included as part of the app logs will be a full history of GPS co-ordinates of the device as it moves, to enable reporting on activities undertaken using the app on a particular day with the device.
Upload local logs to database	Enable uploading of local logs to a database. This is necessary to allow for auditing, however there is an appreciation that the storage on the device will be limited.

11.3.2 Audit

Description	Functional Requirement
Conduct audit of app	Audit the changes to configuration, settings etc. that have been applied on the app for a particular device.
Conduct audit of activities for the app per device	The user must be able to conduct a full audit of app activities undertaken on a particular device (which may have been used by different users), over a specified timeframe. This audit must also provide the geo-location data.
Conduct audit of activities per officer	The user must be able to conduct a full audit of app activities undertaken by a particular officer (which may be across multiple devices), over a specified timeframe. This audit must also provide the geo-location data.
Flag exceptions	Exceptions must be identified and flagged for an administrator or super user to investigate. Some exceptions will be flagged periodically whilst others are to be flagged real time e.g. multiple sequential log in attempts.

11.3.3 User Account Management

Description	Functional Requirement
Manage App User Details	Register and manage a user's details and credentials for the app.
Manage App User Roles	Define the app user access roles that a particular user will be assigned to and manage updates required thereafter.
Manage App User Privileges	Within a particular user access role, define the app privileges that a particular user will be assigned to (e.g. read, update, create, delete) and manage updates required thereafter.

11.3.4 Provide App Reports

Description	Functional Requirement
5 Basic	Provision to be made in scope for 5 basic reports.
3 Complex	Provision to be made in scope for 3 complex reports

12. EXPANSION OF SPEED MANAGEMENT / WIMS AND INTEGRATED REPORTING SYSTEM

12.1 Overview

The Department reserves the right to expand the Speed Management, Weigh in Motion System and Integrated reporting System to other sections of roads or to increase the number of sections being monitored within the defined sections. In order to accommodate this, the Service Provider is required to price the Schedule of Rates included in the Bill of Quantities. Costs proposed for the duration of the contract will be based on Year 1 prices quoted, with increases calculated on the applicable CPI increase for subsequent years.

13. PAYMENT CONDITIONS AND COSTING MODEL

13.1 Measurement and Payment Conditions

13.1.1 Pro-rata payment determination

Where the monthly payment to a Service Provider is to be adjusted on a pro rata basis for periods where the services are not available, the monthly payment for each station or item will be adjusted based on the following formula:-

$$Payment = \frac{[MH - DTH]}{MH} * Rate$$

Where:
MH = Total Hours for the Month
DTH = Contractor Responsibility Downtime Hours

13.1.2 Pro-rata payment determination for Enforcement Cameras

The monthly payment to the Service Provider for the supply and operation of the Enforcement Cameras is to be based on a pro rata basis if the cameras are operated less than 80% of the monthly period, the monthly payment per camera will be adjusted on the following basis:-

Greater or Equal to 80% Operation for a month Payment factor = 1
Less than 80% Operation for a month

$$Payment = \frac{Actual\%}{80\%} * Rate$$

13.1.3 Pro-rata Determination for ASD

The monthly payment to the service provider for the supply and operation of an ASD station is to be based on a pro rata basis if the ASD Station is operated less than 90% of the monthly period, the monthly payment per ASD station will be adjusted on the following basis.

Greater or Equal to 90% Operation for a month Payment factor = 1
Less than 90% Operation for a month

$$Payment = \frac{Actual\%}{90\%} * Rate$$

13.1.4 Penalties

Penalties will be deducted against the monthly claim at a rate of 0,5% per day for each specific monthly deliverable not satisfactorily:

a) implemented within six (6) months from the implementation date of the contract;

b) restored to a fully operational status within 30 days of breakdown.

13.2 Variation Orders

In the event of the Department requiring services or equipment not covered in the Bill of Quantities or the Schedule of Rates, the Department reserves the right to negotiate with the Service Provider to obtain such services by means of a variation order which will then be deemed to form part of the contract. The Department reserves the right to increase quantities as and when required.

13.3 Contract Price Adjustment

For the purpose of this contract, the base date for escalation shall be the month prior to the date of the closing date of the Tender. The Tender will be subject to escalation which will be adjusted monthly in accordance with the Consumer Price Index, Table A, CPI per Province, KwaZulu-Natal contained in Statistical Release P0141 as published by the South African Department of Statistics.

13.4 Information Security and Governance

The service provider must at all times be compliant with the Minimum Information Security Standards (MISS) and KZN DoT Information Security Policy based on ISO 27000.

The service provider must at all times be compliant with the KZN DoT IT Governance Policy and Framework, which is based on the DPSA Corporate Governance of ICT Policy Framework, COBIT 5 and ITIL v3. This will require:

a) Service provider's adoption of the KZN DoT IT Governance policies and procedures, or tailoring of KZN DoT IT Governance policies and procedures as required;

b) Obtaining approval from KZN DoT for implementation of IT Governance policies and procedures, and thereafter implementation of same;

c) Providing monthly reports to KZN DoT on the implementation of approved IT Governance policies and procedures, including deviations and plans for corrective actions and continuous improvements;

d) Obtaining independent assurance on an annual basis on the implementation of IT Governance policies and procedures and providing KZN DoT with the report;

13.5 Reporting

The Service Provider must at a minimum provide the following reports:

a) Monthly;

b) Automatically generated report indicating a site that has been non-operational for 24 hours;

c) A remedial action plan report for restoration of a site that has been non-operational/damaged for more than three calendar days; and

d) Ad-hoc reports as and when required by the Department must be supplied within 24 hours of the request at no additional cost.

13.6 Costing Model

The costing model to be completed is attached to the RFB document.

Annex A : Abbreviations and Definitions

A.1 Abbreviations

ANPR	Automatic Number Plate Recognition
ASD	Average Speed (over) Distance
COTO	Committee Of Transport Officials
KZN	KwaZulu-Natal
RTI	Road Traffic Inspectorate
RTSM	Road Traffic Signs Manual
SADC	Southern African Developing Countries
SANS	South African National Standards
SAPS	South African Police Services
SITA	State Information Technology Agency
TCSP	Technical Committee (for) Standards (and) Procedures
TMH	Technical Methods (for) Highways
WIM	Weigh in Motion

A.2 Definitions

Term	Definition
SANS 1795	A family of standards documents known collectively as "Road traffic law enforcement systems", and arranged in the following parts: Part 0 – General requirements Part 1 – Laser speed measuring equipment Part 2 – Radar speed measuring equipment Part 3 – Distance-over-time speed measuring equipment (fixed distance/variable time) Part 4 – Distance-over-time speed measuring equipment (variable distance/variable time) Part 5 – Data capturing and recording devices for road traffic law enforcement
Camera Network Management capability	A control room environment specifically intended for managing and monitoring the network of fixed position and ASD cameras, along with the related WIM and weighbridge devices deployed.
TMH3	Specifications for the Provision of Traffic and Weigh-in-Motion Monitoring Service
TMH14	South African Standard Automatic Traffic Data Collection Format

Annex B : N3 – Van Reenen's Pass to Cato Ridge

B.1 Section A - Zones and sites

On the National Route 3 between Van Reenen's Pass and Cato Ridge, there are existing zones which have been established and approved for ASD. The details of these zones are outlined below. This section also includes a section of the R103 between Nottingham Road and Balgowan. On this section of road, certain existing infrastructure in the form of cantilever poles, mountings on bridges or signs gantries can be made available to the successful Service Provider.
The positions where benchmark traffic monitoring is currently undertaken on this section of road are, together with the relevant owner of infrastructure, indicated in Annex F. The functionality of each site is indicated in the table. The successful bidder will be required to provide similar bench mark sites to monitor the ASD sections.
There are currently two locations within this section of road where weigh-in-motion systems are installed to detect potential heavy vehicle overloading. These weigh-in-motion monitoring stations may not be available to the successful Service Provider. In this event, the successful Service Provider will be required to establish his own weigh-in-motion monitoring sites in order to satisfy the requirements of the tender.

Annexure A

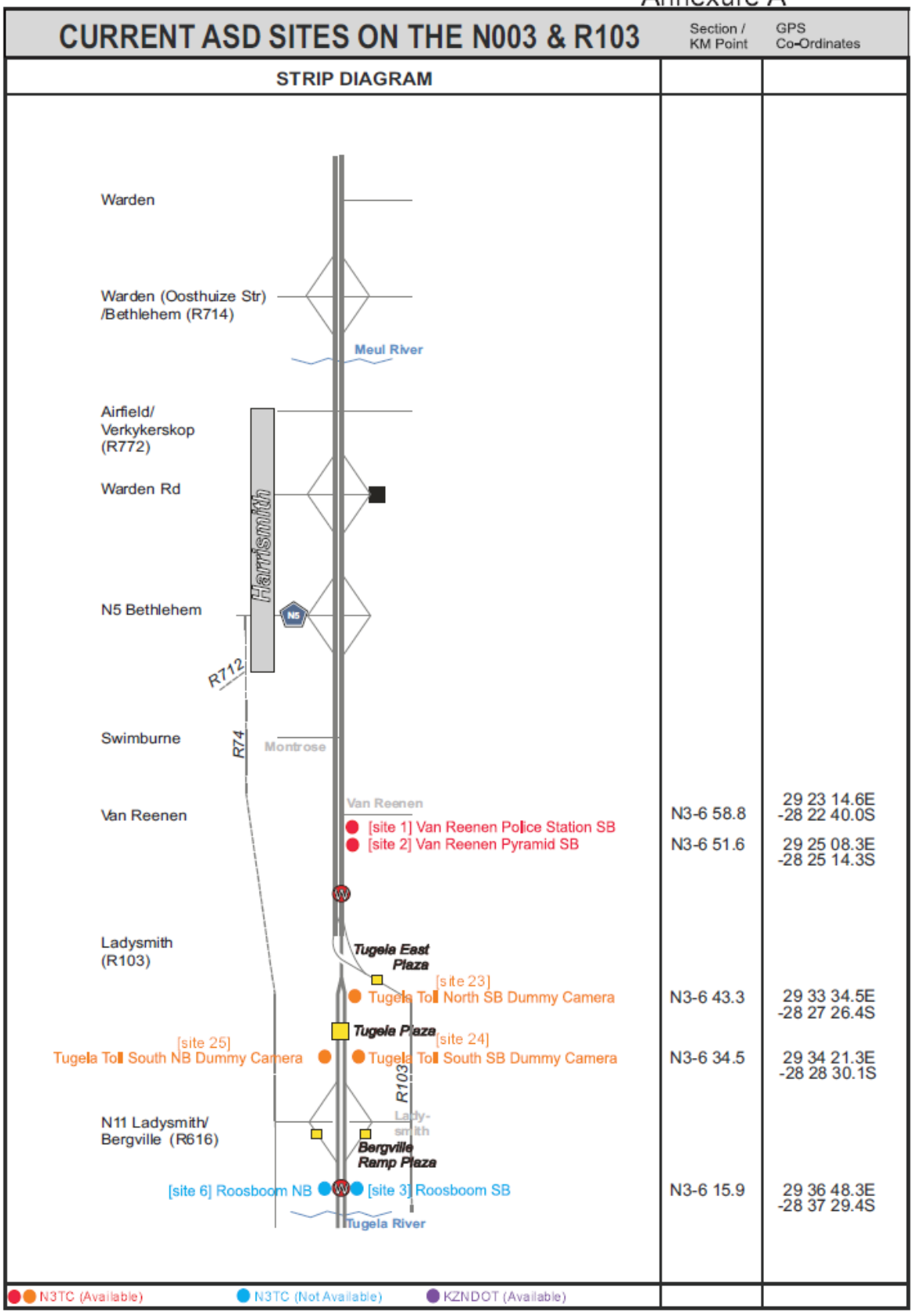


Figure 1 - Van Reenen's Pass to Cato Ridge - part 1

Annexure A

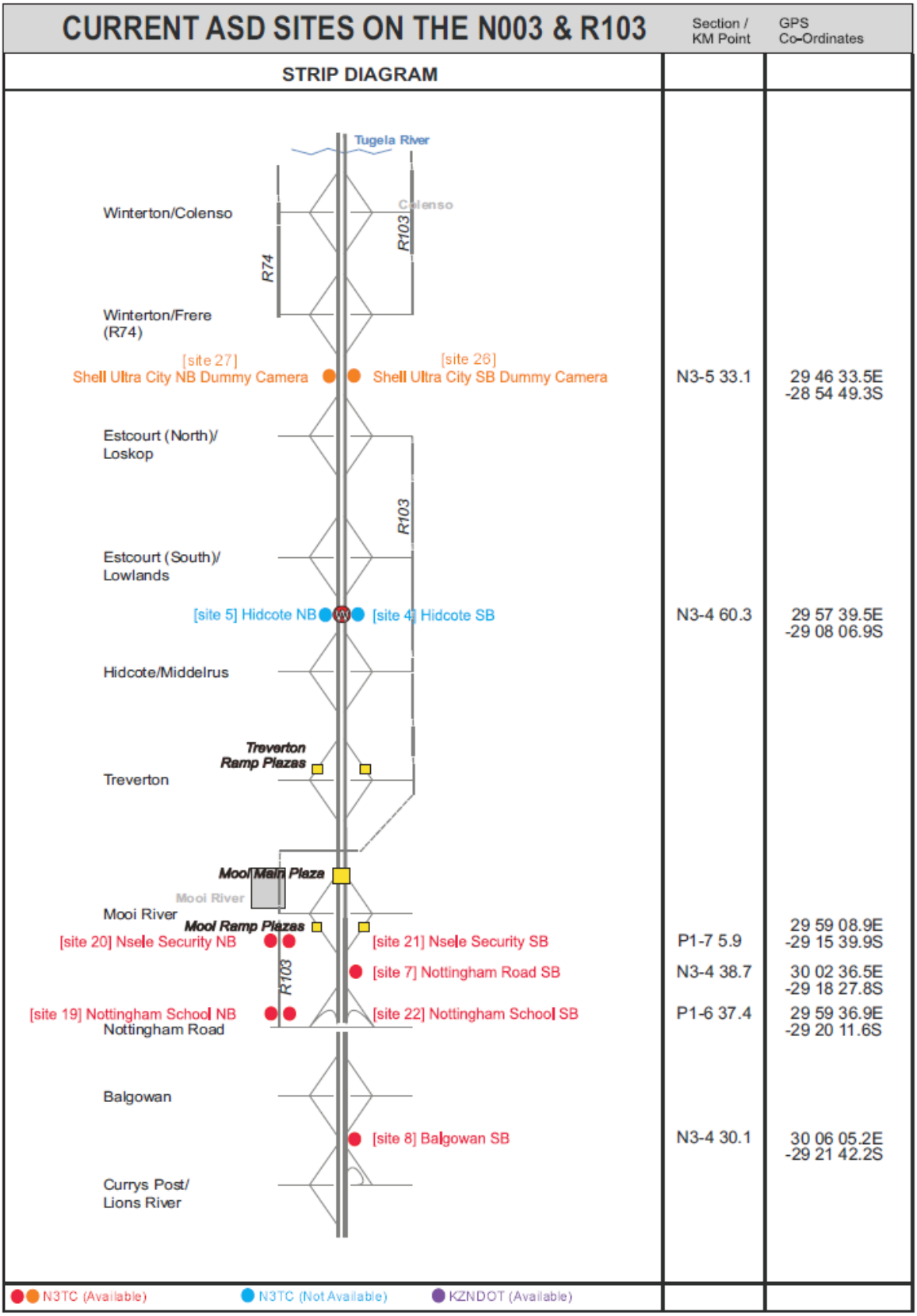


Figure 2 - Van Reenen's Pass to Cato Ridge - part 2

Annexure A

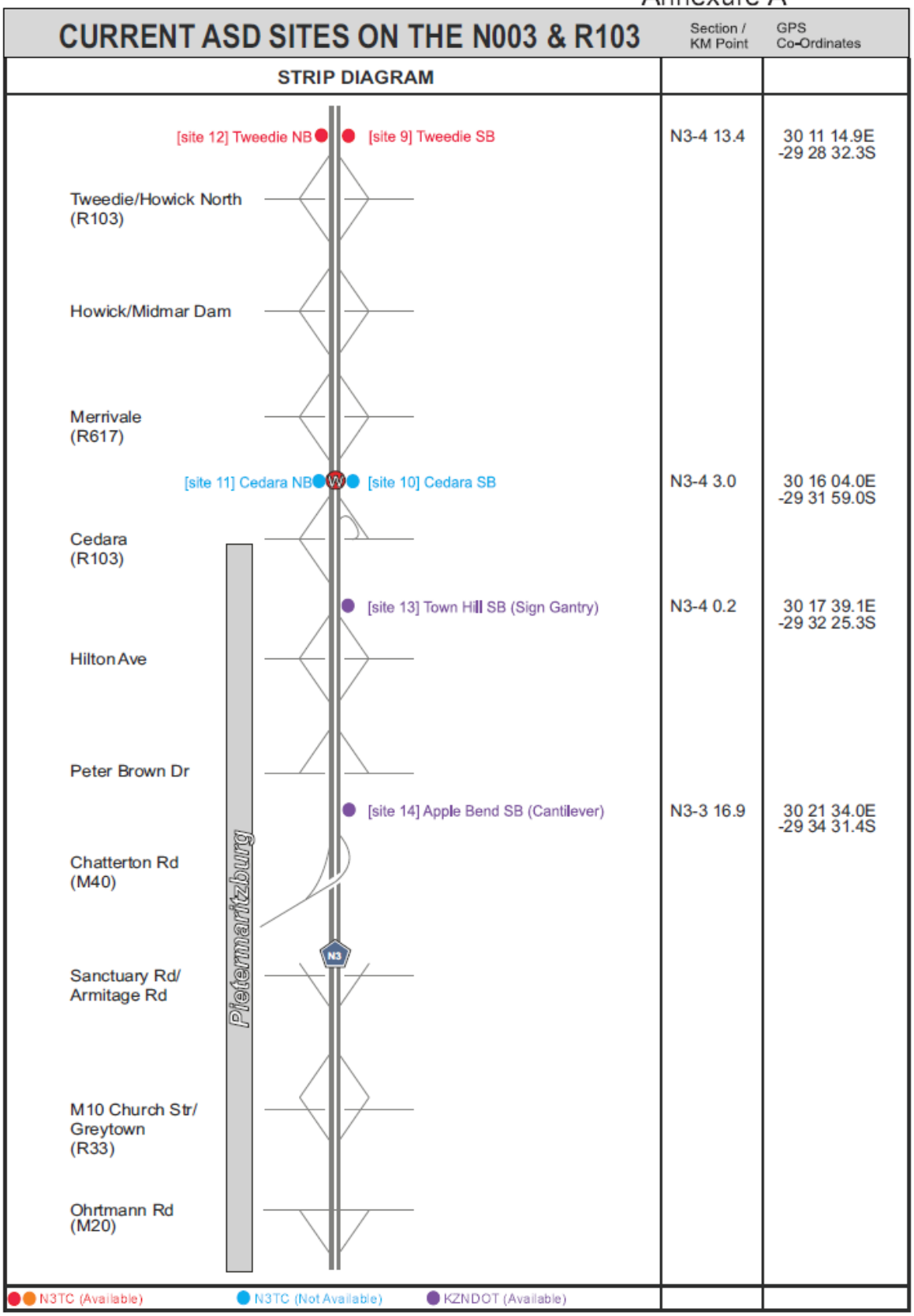


Figure 3 - Van Reenen's Pass to Cato Ridge - part 3

Annexure A

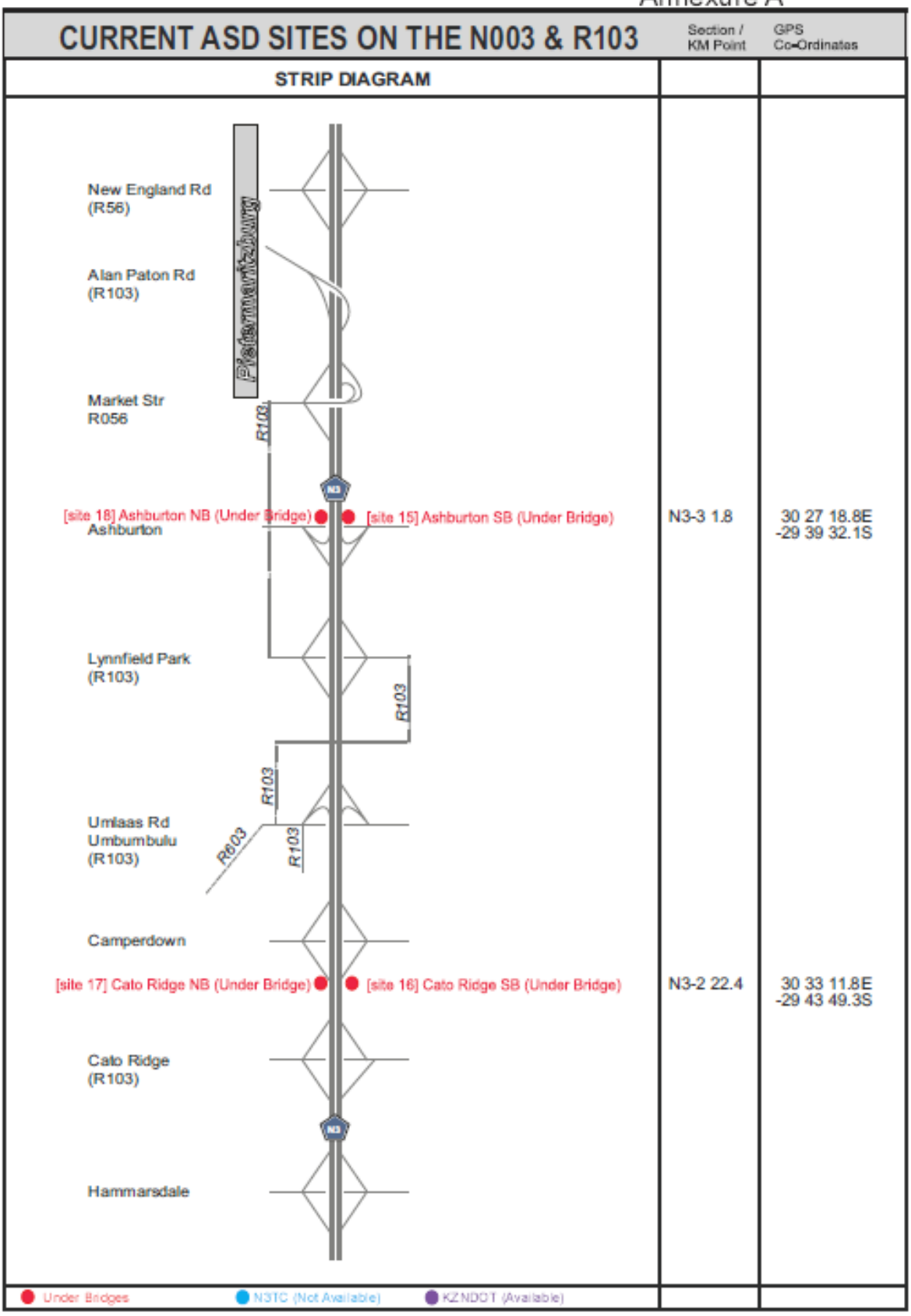


Figure 4 - Van Reenen's Pass to Cato Ridge - part 4

ANNEXURE A

Current Average Speed Determination (ASD) Sites on N003 and R 103

Site Number	Station Description	Road	Km	GPS Coordinates S	GPS Coordinates E	Comments
1	Van Reenen Police Station (Southbound)	N3-6	58.8	28 22 40.04	29 23 14.68	Sites 1 and 2 form a ASD Segment (Southbound)
2	Van Reenen Pyramid (Southbound)	N3-6	51.6	28 25 14.35	29 25 08.32	
3	Roosboom (Southbound)	N3-6	15.9	28 37 29.43	29 36 48.32	Sites 3 and 4 form a ASD Segment (Southbound)
4	Hidcote (Southbound)	N3-4	60.3	29 08 06.03	29 57 40.34	
5	Hidcote (Northbound)	N3-4	60.3	29.08 06.95	29 57 39.59	Sites 6 and 6 form a ASD Segment (Northbound)
6	Roosboom (Northbound)	N3-6	15.9	28 37 29.47	29 36 47.96	
7	Nottingham Road (Southbound)	N3-4	38.7	29 18 27.85	30 02 36.54	*Sites 7 and 8 form a ASD Segment (Southbound)
8	Balgowan (Southbound)	N3-4	30.1	29 21 42.23	30 06 05.28	
9	Tweedie (Southbound)	N3-4	13.4	29 28 32.36	30 11 14.92	Sites 9 and 10 form ASD Segment (Southbound)
10	Cedara (Southbound)	N3-4	3.0	29 31 58.67	30 16 04.34	
11	Cedara (Northbound)	N3-4	3.0	29 31 59.08	30 16 04.00	Sites 11 and 12 form ASD Segment (Northbound)
12	Tweedie (Northbound)	N3-4	13.3	29 28 33.08	30 11 15.57	
13	Town Hill (Southbound)	N3-4	0.2	29 32 25.34	30 17 39.14	Sites 13 and 14 form ASD Segment (Southbound)
14	Apple Bend (Southbound)	N3-3	16.9	29 34 31.41	30 21 34.09	
15	Ashburton (Southbound)	N3-3	1.8	29 39 32.10	30 27 18.84	Sites 15 and 16 form ASD Segment (Southbound)
16	Cato Ridge (Southbound)	N3-2	22.4	29 43 49.35	30 33 11.86	
17	Cato Ridge (Northbound)	N3-2	22.4	29 43 51.87	30 33 10.22	Sites 17 and 18 form ASD Segment (Northbound)
18	Ashburton (Northbound)	N3-3	1.8	29 39 34.45	30 27 17.85	
19	Nottingham Comb School (N/b) R103	P1-6	37.4	29 20 11.60	29 59 36.92	Sites 19 and 20 form ASD Segment (Northbound)
20	Nsele Security Services (N/b) R103	P1-7	5.95	29 15 39.94	29 59 08.96	
21	Nsele Security Services (S/b) R103	P1-7	5.95	29 15 39.94	29 59 08.96	Sites 21 and 22 form ASD Segment (Southbound)
22	Nottingham Comb School (S/b) R103	P1-6	37.4	29 20 11.60	29 59 36.92	
23	Tugela Toll North (Southbound)	N3-6	43.3	28 27 26.45	29 33 34.50	Existing Cantilever – Place 2 Dummy Cameras
24	Tugela Toll South (Southbound)	N3-6	34.5	28 28 30.11	29 34 21.37	Existing Cantilever – Place 3 Dummy

Figure 5 - Existing ASD Sites for N3 and R103 – Part 1

						Cameras
25	Tugela Toll South (Northbound)	N3-6	34.5	28 28 33.45	29 34 15.87	Existing Cantilever – Place 3 Dummy Cameras
26	Shell Ultra City Frere (Southbound)	N3-5	33.1	28 54 49.39	29 46 33.52	Existing Cantilever – Place 3 Dummy Cameras
27	Shell Ultra City Frere (Northbound)	N3-5	33.1	28 54 51.75	29 46 33.27	Existing Cantilever – Place 3 Dummy Cameras
	Notes: *ASD sites 7 and 8 must incorporate site 9 as well. i.e. worst case violations must be calculated between: • Sites 7 and 8 OR • Sites 8 and 9 OR • Sites 7 and 9					

Figure 6 - Existing ASD Sites for N3 and R103 – Part 2

Annex C : N3 – Cato Ridge to Four Level Interchange

C.1 Section B - Zones and sites

The Service Provider will be required to extend the system from Cato Ridge to the Four Level Interchange. The proposed locations for the required systems are indicated below. In this respect, the successful Service Provider will be required to verify the actual locations for each of the sections in consultation with the Department and submit a detailed design of his proposed system to the Department for approval.

Annexure B

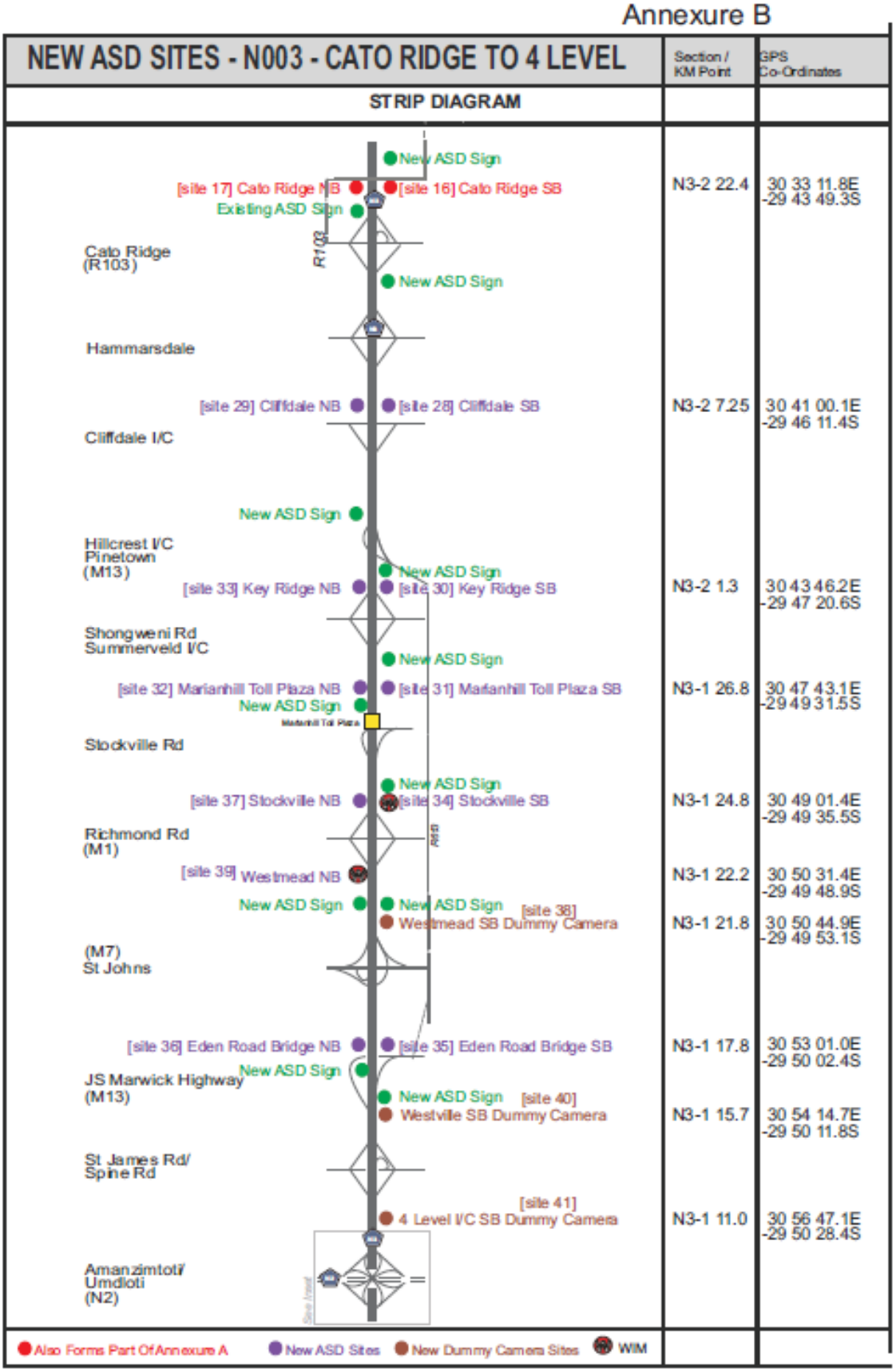


Figure 7 - Cato Ridge to Four Level Interchange

ANNEXURE B

New Average Speed Determination (ASD) Sites – N003 Cato Ridge to 4 Level Interchange

Site Number	Station Description	Road	Km	GPS Coordinates		Comments
				S	E	
16	Cato Ridge (Southbound)	N3-2	22.4	29 43 49.35	30 33 11.86	Sites 16 and 28 form a new ASD Segment (Southbound)
28	Cliffdale (Southbound)	N3-2	7.25	29 46 11.44	30 41 00.13	
29	Cliffdale (Northbound)	N3-2	7.25	29 46 11.64	31 41 00.00	Sites 29 and 17 form a new ASD Segment (Northbound)
17	Cato Ridge (Northbound)	N3-2	22.4	29 43 51.87	30 33 10.22	
30	Key Ridge (Southbound)	N3-2	1.3	29 47 20.62	30 43 46.27	Sites 30 and 31 form a new ASD Segment (Southbound)
31	Marrianhill Toll Plaza (Southbound)	N3-1	26.8	29 49 31.55	30 47 43.11	
32	Marrianhill Toll Plaza (Nortbound)	N3-1	26.8	29 49 31.78	30 47 43.20	Sites 32 and 33 form a new ASD Segment (Northbound)
33	Key Ridge (Northbound)	N3-2	1.3	29 47 20.88	30 43 44.96	
34	Stockville (Southbound)	N3-1	24.8	29 49 35.51	30 49 01.49	Sites 34 and 35 form a new ASD Segment (Southbound)
35	Eden Road Bridge (Southound)	N3-1	17.8	29 50 01.56	30 53 0.72	
36	Eden Road Bridge (Northbound)	N3-1	17.8	29 50 02.42	30 53 01.05	Sites 36 and 39 form a new ASD Segment (Northbound)
39	Westmead (Northbound) WIM	N3-1	22.2	29 49 48.9	30 50 31.4	
39	Westmead (Northbound) WIM	N3-1	22.2	29 49 48.9	30 50 31.4	Site 39 and 37 form a new ASD Segment (Northbound)
37	Stockville (Northbound)	N3-1	24.8	29 49 35.70	30 49 01.41	
38	Westmead (Southbound)	N3-1	21.8	29 49 53.18	30 50 44.92	New Cantilever – Place 3 Dummy Cameras
40	Westville (Southbound)	N3-1	15.7	29 50 11.83	30 54 14.70	New Cantilever – Place 3 Dummy Cameras
41	4 Level Interchange (Southbound)	N3-1	11.0	29 50 28.48	30 56 47.19	New Cantilever – Place 3 Dummy Cameras

Figure 8 - New ASD Sites - Cato Ridge to Four Level Interchange

Annex D : N2 – Illovo River to Umtentweni

D.1 Section C - Zones and sites

The Service Provider will be required to extend the system from the Illovo River to Umtentweni. The proposed locations for the required systems are indicated below. In this respect, the successful Service Provider will be required to verify the actual locations for each of the sections in consultation with the Department and submit a detailed design of his proposed system to the Department for approval

Annexure C

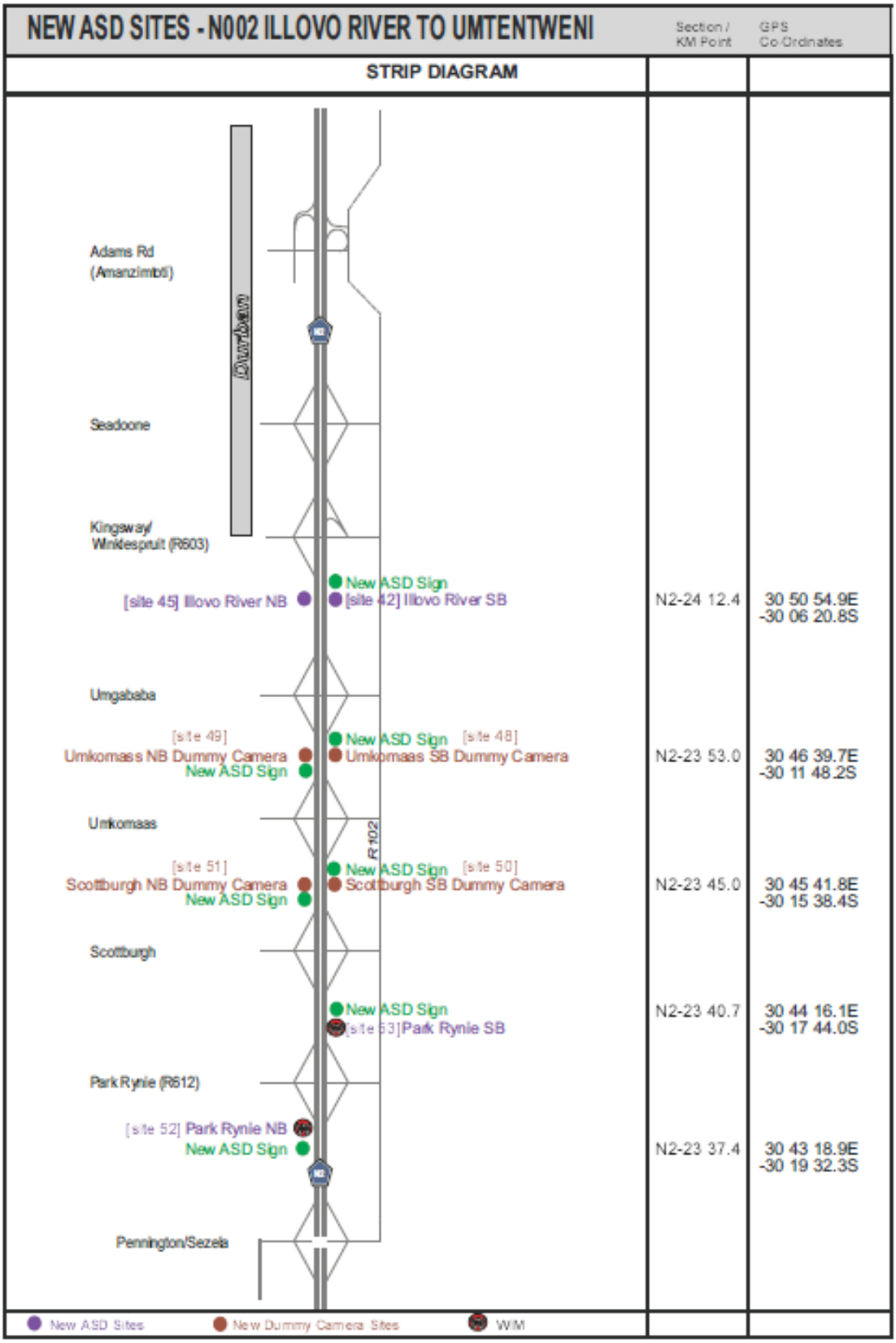


Figure 9 - Illovo River to Umtentweni - part 1

Annexure C

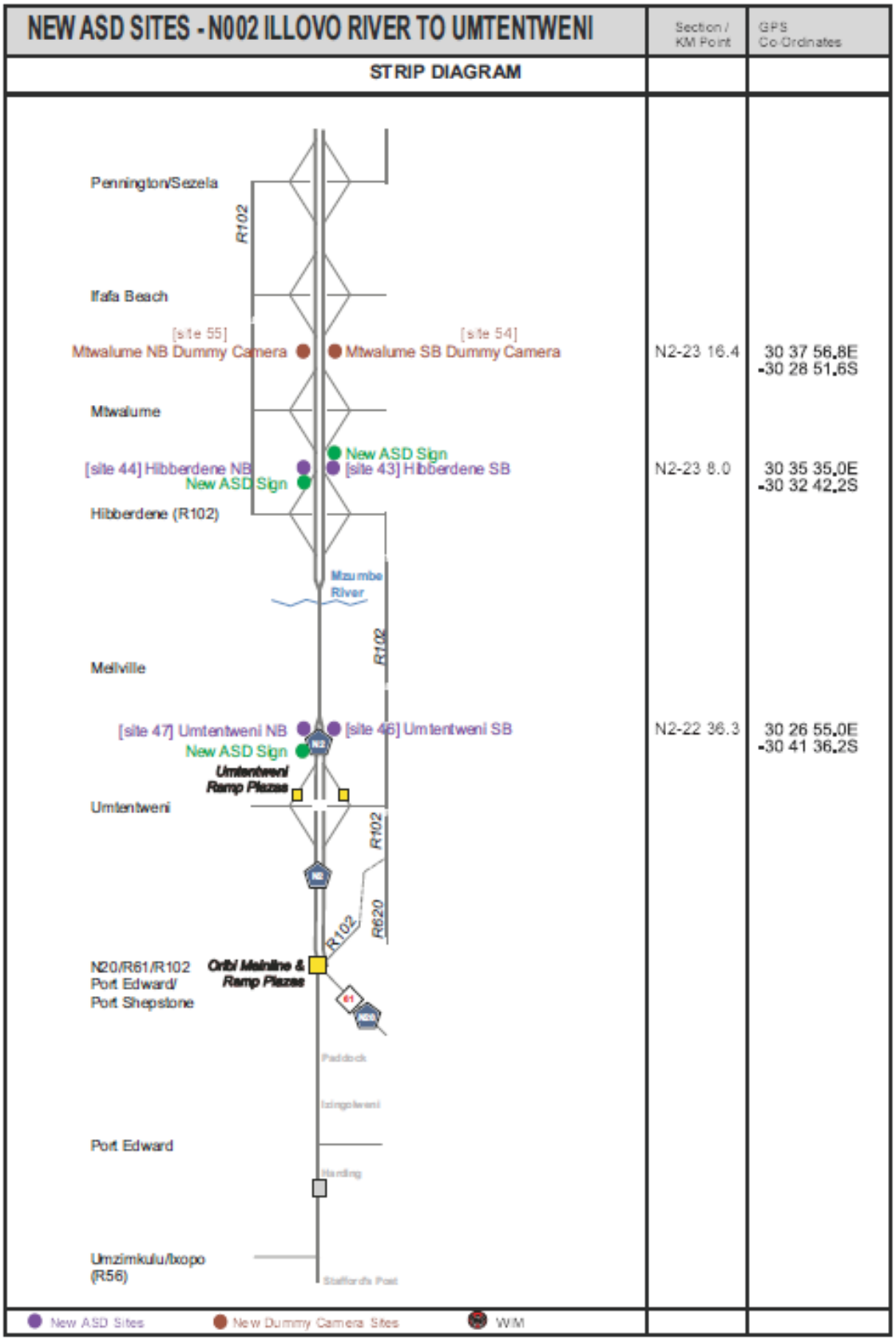


Figure 10 - Illovo River to Umtentweni - part 2

ANNEXURE C

New Average Speed Determination (ASD) Sites – N2 Illovo River to Umtentweni

Site Number	Station Description	Road	Km	GPS Coordinates S	E	Comments	
42	Illovo River (Southbound)	N2-24	12.4	30 06 20.85	30 50 54.93	Sites 42 and 53 form a new ASD segment (Southbound)	
53	Park Rynie (Southbound)	N2-23	40.7	30 17 44.02	30 44 16.17		
52	Park Rynie (Northbound)	N2-23	37.4	30 19 32.31	30 43 18.9	Sites 52 and 45 form a new ASD segment (Northbound)	
45	Illovo River (Northbound)	N2-24	12.2	30 06 19.27	30 50 55.65		
53	Park Rynie (Southbound)	N2-23	40.7	30 17 44.02	30 44 16.17	Sites 53 and 43 form a new ASD segment (Southbound)	
43	Hibberdene (Southbound)	N2-23	8.0	30 32 42.24	30 35 35.07		
44	Hibberdene (Northbound)	N2-23	8.0	30 32 42.24	30 35 34.51	Site 44 and 52 form a new ASD segment (Northbound)	
52	Park Rynie (Northbound)	N2-23	37.4	30 19 32.31	30 43 18.9		
43	Hibberdene (Southbound)	N2-23	8.0	30 32 42.24	30 35 35.07	Site 43 and 46 form a new ASD segment (Southbound)	
46	Umtentweni Southbound)	N2-22	36.3	30 41 36.27	30 26 55.05		
47	Umtentweni (Northbound)	N2-22	36.3	30 41 36.28	30 26 54.59	Site 47 and 44 form a new ASD segment (Northbound)	
44	Hibberdene (Northbound)	N2-23	8.0	30 32 42.24	30 35 34.51		
48	Umkomaas (Southbound)	N2-23	53.0	30 11 47.84	30 46 39.79	New Cantilever – Place 3 Dummy Cameras	
49	Umkomaas (Northbound)	N2-23	53.0	30 11 47.84	30 46 39.52	New Cantilever – Place 3 Dummy Cameras	
50	Scottburgh (Southbound)	N2-23	45.0	30 15 38.4	30 45 41.8	New Cantilever – Place 3 Dummy Cameras	
51	Scottburgh (Northbound)	N2-23	45.0	30 15 38.67	30 45 40.73	New Cantilever – Place 3 Dummy Cameras	
54	Mtwalume (Southbound)	N2-23	16.4	30 28 51.69	30 37 56.84	New Cantilever – Place 3 Dummy Cameras	
55	Mtwalume (Northbound)	N2-23	16.4	30 28 51.64	30 37 55.61	New Cantilever – Place 3 Dummy Cameras	

Figure 11 - New ASD Sites - Illovo River to Umtentweni

Annex E : M13 – Key Ridge to St Johns

E.1 Section D - Zones and sites

The Service Provider will be required to provide electronic monitoring from the Key Ridge to St Johns. The locations for the required systems are indicated in figures 12 and 13.

Annexure D

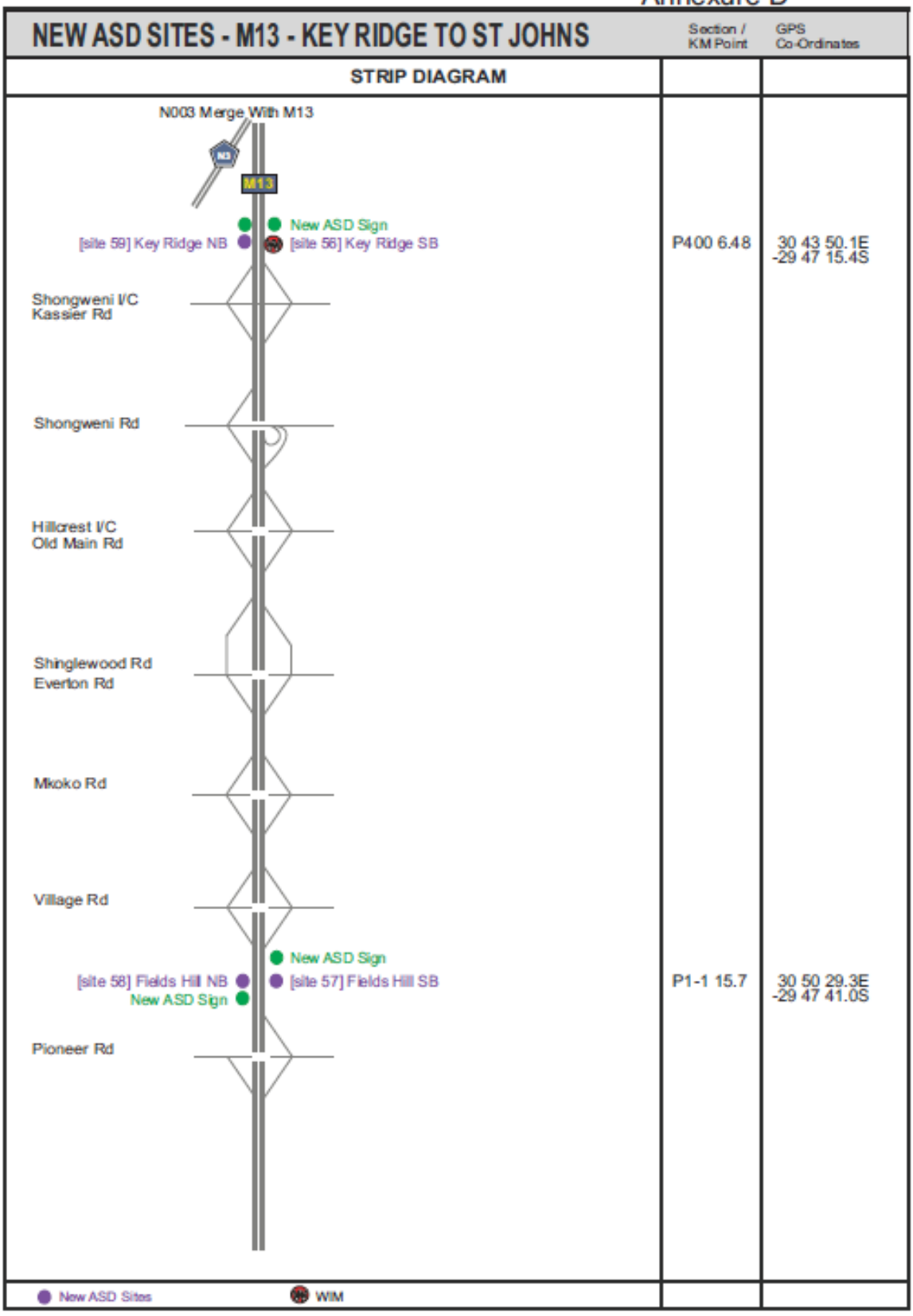


Figure 12 - Key Ridge to St. Johns - part 1

Annexure D

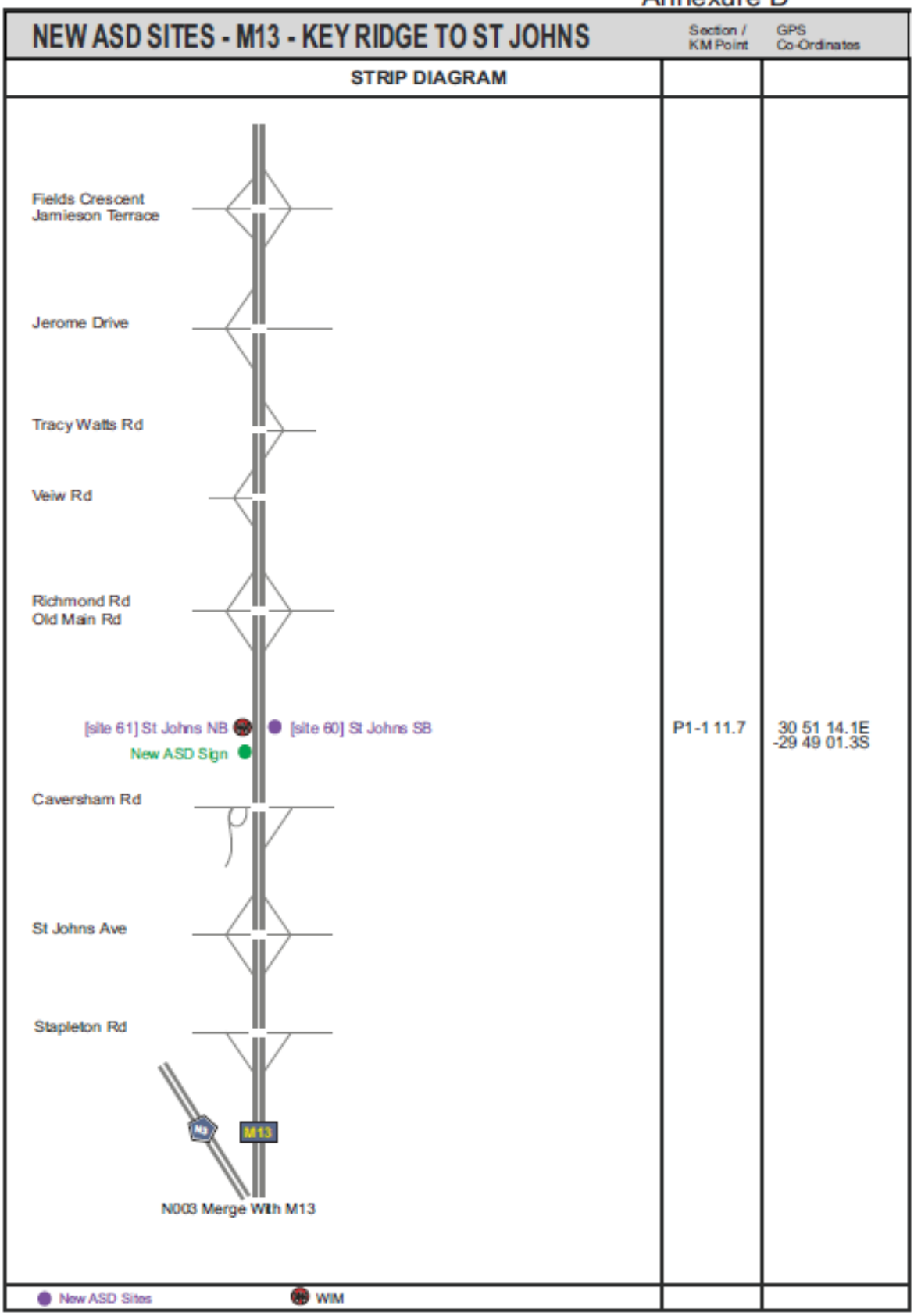


Figure 13 - Key Ridge to St. Johns - part 2

Annex F : Existing benchmark traffic monitoring and WIMS sites

Table 3 - Existing benchmark traffic monitoring sites - N3

Station Number	Station Description	Road	Km	GPS Coordinates		Outputs Used For				
				S	E	Traffic Trends	Flasher Module Rotation	Fixed Camera Rotation	ASD QA	WIM
N3 Corridor										
1	Police Station (Southbound)	N3-6	58.8	28 22 39.5	29 23 13.4	Yes	No	No	Yes	No
2	Pyramid (Southbound)	N3-6	51.5	28 25 14.8	29 25 10.3	Yes	No	No	Yes	No
3	Sand River (Southbound)	N3-6	43.7	28 26 18.9	29 29 21.9	Yes	Yes	Yes	No	No
4	Tugela (Both Directions)	N3-6	34.5	28 28 29.2	29 34 21.4	Yes	Yes	No	No	No
5	Roosboom (Both Directions)	N3-6	15.9	28 37 29.0	29 36 48.0	Yes	No	No	Yes	Yes
6	Hidcote (Both Directions)	N3-4	60.3	29 08 07.3	29 57 40.2	Yes	No	No	Yes	Yes
7	Nottingham Road (Southbound)	N3-4	38.7	29 18 25.5	30 02 35.5	Yes	No	No	Yes	No
8	Balgowan (Both Directions)	N3-4	30.1	29 21 43.5	30 06 03.9	Yes	Yes*	Yes*	Yes**	No
9	Tweedie (Both Directions)	N3-4	13.5	29 28 31.9	30 11 13.2	Yes	No	No	Yes	No
10	Town Hill (Southbound)	N3-4	0.2	29 32 24.6	30 17 38.0	Yes	No	No	Yes	No
11	QE Park (Southbound)	N3-3	21.1	29 34 26.3	30 19 31.4	Yes	No	No	No	No
12	Apple Bend (Southbound)	N3-3	16.8	29 34 32.8	30 21 31.4	Yes	No	No	Yes	No
13	New England Road (Both Directions)	N3-3	8.8	29 37 12.2	30 24 27.1	Yes	Yes	Yes	No	No
14	Ashburton (Both Directions)	N3-2	35.0	29 40 16.9	30 27 54.8	Yes	No	No	Yes	No
15	Camperdown (Both Directions)	N3-2	22.4	29 43 50.1	30 33 10.9	Yes	No	No	Yes	No
16	Hammarsdale (Both Directions)	N3-2	9.05	29 45 30.57	30 40 3.16	Yes	No	No	Yes	No
17	Shongweni (Both Directions)	N3-1	32.8	29 48 13.34	30 44 35.46	Yes	No	No	Yes	No
18	Marrianhill (Both Directions)	N3-1	26.6	29 49 31.44	30 47 43.76	Yes	No	No	Yes	No
19	Westmead (Northbound)	N3-1	22.2	29 49 48.9	30 50 31.4	Yes	Yes	Yes	Yes	Yes
20	Westmead (Southbound)	N3-1	23.8	29 49 37.8	30 49 20.1	Yes	Yes	Yes	Yes	Yes
21	Paradise Valley (Both Directions)	N3-1	15.0	29 50 15.85	30 54 36.54	Yes	No	No	Yes	No

* Northbound Only

** Southbound Only

Table 4 - Existing benchmark traffic monitoring sites - N2 and others

Station Number	Station Description	Road	Km	GPS Coordinates		Outputs Used For				
				S	E	Traffic Trends	Flasher Module Rotation	Fixed Camera Rotation	ASD QA	WIM
N2 Corridor										
22	Springfield Park (Both Directions)	N2-25	22.1	29 48 04.9	30 58 59.8	Yes	Yes	Yes	No	No
23	NPC (Both Directions)	N2-25	10.1	29 54 0.27	30 57 7.6	Yes	Yes	Yes	No	No
24	Oppenheimer (Southbound)	N2-24	22.6	30 01 40.7	30 54 30.5	Yes	Yes	Yes	No	No
25	Illovo River (Southbound)	N2-24	12.2	30 06 14.6	30 50 59.6	Yes	Yes	Yes	No	No
26	KwaMashu (Both Directions)	N2-25	29.0	29 45 24.0	31 01 0.8	Yes	Yes	Yes	No	No
27	Nandi Drive (Northbound)	N2-25	24.9	29 46 58.5	30 59 49.3	Yes	Yes	Yes	No	No
28	Nandi Drive (Southbound)	N2-25	25.7	29 46 28.4	30 59 55.2	Yes	Yes	Yes	No	No
29	Illovo River (Both Directions)	N2-24	12.2	30 6 19.27	30 50 55.65	Yes	No	No	Yes	No
30	Park Rynie (Both Directions)	N2-23	38.7	30 18 53.58	30 43 29.68	Yes	No	No	Yes	Yes
31	Hibberdene (Both Directions)	N2-23	6.6	30 33 16.12	30 35 5.50	Yes	No	No	Yes	No
32	Umtentweni (Both Directions)	N2-22	35.4	30 42 0.0	30 26 43.23	Yes	No	No	Yes	No
N11 Corridor										
33	Majuba Pass (Both Directions)	N11-4	27.5	27 31 32.4	29 51 48.5	Yes	Yes	No	No	No
34	Ngogo (Both Directions)	N11-4	19.0	27 35 16.8	29 55 14.6	Yes	Yes	Yes	No	No
R103 Corridor										
35	Mooi Alt South (Both Directions)	P1-7	1.7	29 17 48.8	29 58 48.7	Yes	No	No	Yes	No
M13 Corridor										
36	Stapleton Road (Northbound)	P1-1	8.2	29 49 58.8	30 53 9.75	Yes	Yes	Yes	No	No
37	Shongweni (Both Directions)	P400	6.48	29 47 15.48	30 43 50.19	Yes	No	No	Yes	Yes
38	St Johns (Both Directions)	P1-1	11.7	29 49 2.03	30 51 14.94	Yes	No	No	Yes	Yes
R102 Verulam										
39	R102 Verulam (Northbound)	P 02-1	13.44	29 38 54.2	31 02 33.2	Yes	Yes	Yes	No	No
40	R102 Verulam (Southbound)	P 02-1	13.47	29 38 53.3	31 02 34.1	Yes	Yes	Yes	No	No

Table 5 - Existing WIMS sites

Site Number	Site Name	Site Description	Road	Km	GPS Coordinates	Num. of lanes
1	1061 Polly Shorts	Between Ashburton & Mkondeni	Route : R102 Road : P001 Section : 05	Distance : 0.0km	30 26 45.4E -29 39 54.4S	2
2	1103 Eston	MR21 (Between Umbumbulu & Pietermaritzburg	Route : R 603 Road : MR 21 Section :	Distance : 17.9km	30 36 02.0E -29 56 02.4S	2
3	1106 Thornville	Between Thornville & PMB	Route : 56 Road : MR 5 Section : 4	Distance : 28.4km	29 40 42.1E -30 22 47.2S	2
4	1107 Gingindhlovu	Between Dokodweni & Eshowe	Route : R66 Road : MR47 Section :	Distance : 16.7km	31 34 23.5E -28 59 21.6S	2
5	1262 Ellingham	West of N2 Park Rynie I/C	Route : R612 Road : P022-02 Section :	Distance : 2.0km	30 43 06.3E -30 18 54.0S	2
6	1264 Merrivale	Between Merrivale & Boston	Route : R 617 Road : MR 7 Section :	Distance : 4.1km	30 13 20.0E -29 31 32.0S	2
7	1267 Balgowan	Balgowan N - Between Midmar & Nottingham Road	Route : R 103 Road : MR 1 Section :	Distance : 0.0km	30 10 31.0E -29 28 34.0S	2
8	1268 Kwa Dukuza	100 Metres North of Chief Albert Luthuli Drive	Route : R74 Road : MR 20 Section : 1	Distance : 0.0km	31 17 18.0E -29 20 05.0S	2
9	3601 Utrecht	2.3km from N11 junction	Route : R34 Road : MR37 Section :	Distance : 2.3km	29 59 08.0E -27 38 52.0S	2
10	3604 M4 NB	Between Umhlanga and Umdloti	Route : M004 Road : M004 Section :	Distance : 11.7km	31 06 14.7E -29 40 07.2S	2
11	3605 M4 SB	Between Watson Highway and Umdloti	Route : M004 Road : M004 Section :	Distance : 12.8km	31 06 32.3E -29 39 34.7S	1
12	3607 M13 NB *	Between Crompton Street Josiah Gumede Road (M31)	Route : M013 Road : M013 Section :	Distance : 11.8km	30 51 13.9E -29 49 01.7S	4
13	1416 Shongweni West *	West of Shongweni I/C	Route : R103 Road : P400 Section :	Distance : 6.2km	30 43 49.5E -29 47 15.6S	4
14	1465 KZN Bayhead Road NB	Between Langeberg Rd & Wagtail Rd (NB Only)	Route : Road : Bayhead Rd Section :	Distance : 0.0km	31 00 25.7E -29 54 17.5S	2
15	3610 KZN Bayhead Road SB	Towards Harbour Entrance	Route : Road : Bayhead Rd (SB Only) Section :	Distance : 9.1km	31 00 14.1E -29 54 00.9S	2
16	3055 Midway	North of Estcourt South I/C	Route : N003 Road : N003 Section : 05	Distance : 13.3km	29 52 58.5E -29 02 42.2S	2
17	3091 New England	Between New England Road & Durban Road	Route : N003 Road : N003 Section : 03	Distance : 8.8km	30 24 27.8E -29 37 09.7S	2
18	3028 Westmead *	Westbound between Queensburgh & Richmond Rd	Route : N003 Road : N003 Section : 01	Distance : 23.8km	30 49 59.6E -29 49 38.5S	3

Site Number	Site Name	Site Description	Road	Km	GPS Coordinates	Num. of lanes
19	3608 KZN Empangeni NB	South Side of the R34 Empangeni I/C (NB Only)	Route : N002 Road : N002 Section : 29	Distance : 6.6km	31 55 33.7E -28 46 58.1S	1
20	3609 KZN Empangeni SB	North Side of the R34 Empangeni I/C (SB Only)	Route : N002 Road : N002 Section : 29	Distance : 9.1km	31 55 59.2E -28 45 40.7S	1

* Existing sites that are included with ASD

Annex G : Road Furniture details

Figure 14 provides specification details for cantilever poles.
Figures 15 and 16 provide signage specifications for ASD zones.

Annexure F

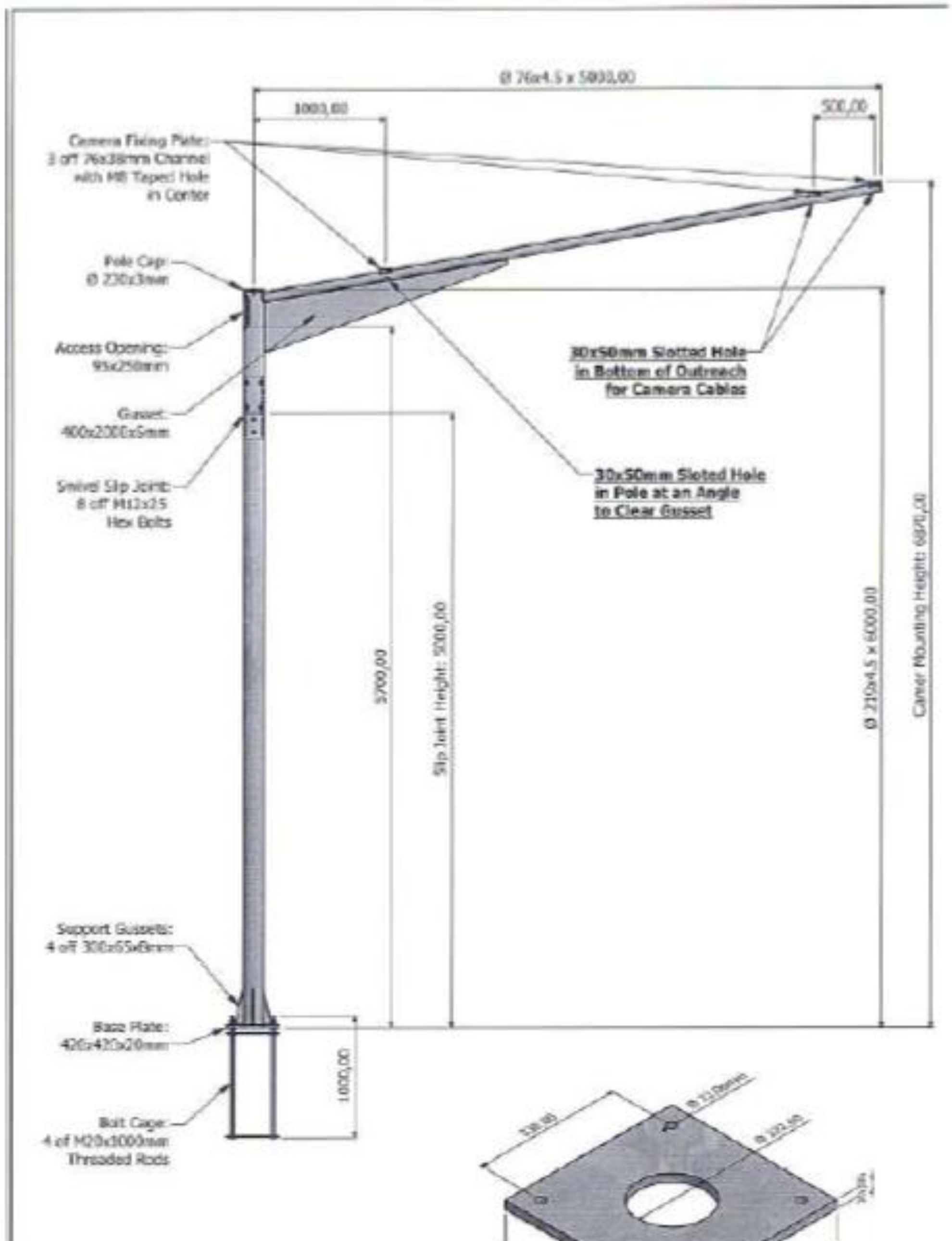
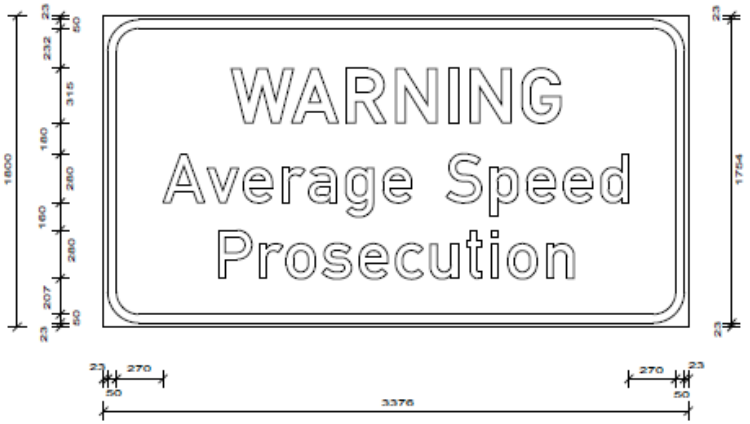

Ø 76x4.5 x 5800,00
1000,00
500,00
Camera Fixing Plate:
3 off 76x38mm Channel
with M8 Taped Hole
in Center
Pole Cap:
Ø 230x3mm
Access Opening:
95x250mm
Gusset:
400x2000x5mm
Swivel Slip Joint:
8 off M12x25
Hex Bolts
30x50mm Slotted Hole
in Bottom of Outreach
for Camera Cables
30x50mm Sloted Hole
in Pole at an Angle
to Clear Gusset
5700,00
Slip Joint Height: 5000,00
Ø 219x4.5 x 6000,00
Camer Mounting Height: 6870,00
Support Gussets:
4 off 300x65x8mm
Base Plate:
420x420x20mm
1000,00
Bolt Cage:
4 of M20x1000mm
Threaded Rods

Figure 14 - Cantelever Pole specifications

Annexure G



SCALE : 1:25
BORDER RADIUS : 180 mm

BORDER COLOUR : BLACK CLASS : SEMI MATT
PANEL COLOURS AND ARROW TYPES
STACK TOP BACKGROUND : WHITE CLASS : 1 ARROW TYPE : NONE
LENGTH : 3376 mm HEIGHT : 1800 mm AREA : 6.08 sq.m
ALL MATERIALS TO COMPLY WITH SABS 1519 STANDARDS

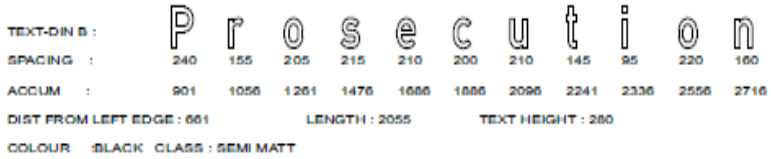
TEXT-B MOD : W A R N I N G
SPACING : 349 315 287 309 121 298 225
ACCUM : 1085 1400 1687 1996 2117 2415 2640
DIST FROM LEFT EDGE : 736 LENGTH : 1904 TEXT HEIGHT : 315
COLOUR :BLACK CLASS : SEMI MATT

TEXT-DIN B : A v e r a g e S p e e d
SPACING : 255 210 220 155 215 215 165 200 255 210 215 215 160
ACCUM : 598 808 1028 1183 1398 1613 1778 1978 2233 2443 2658 2873 3033
DIST FROM LEFT EDGE : 343 LENGTH : 2690 TEXT HEIGHT : 280
COLOUR :BLACK CLASS : SEMI MATT

DRAWING NO. : Ave speed
SIGN ID NO. : GL
DATE :6-9-2010

Figure 15 - ASD Signage specifications - part 1

Annexure G



DRAWING NO. : Ave xpead
SIGN ID NO. : GL
DATE : 6-9-2010

Figure 16 - ASD Signage specifications - part 2

Annex H : Sites where information system (and users) will be deployed

Table 6 – Distribution of RTI Users

#	RTI STATIONS (27)	DATA LINK SIZE	#	WEIGH BRIDGES (15)	DATA LINK SIZE
1	Dundee	**64k Diginet**	**1**	Dundee (N11 One Tree Hill)	**No data link**
2	Empangeni (link shared with Regional Office)	**384k Diginet**	**2**	Empangeni – same as RTI link	
3	Eshowe	**64k Diginet**			
4	Gingindlovu	**128k Diginet**	**3**	Gingindlovu – same as RTI link	
5	Greytown	**64k Diginet**	**4**	Greytown - separate Weigh Bridge link	**128k Diginet**
6	Groutville		**5**	Groutville – same as RTI link	(***No RTI Link listed***)
7	Ixopo	**128k Diginet**			
8	Jozini (link shared with Area Office)	**64k Diginet**			
9	Kokstad	**64k Diginet**			
10	Ladysmith	**128k Diginet**	**6**	Ladysmith – same as RTI link	
11	Midway	**256k VSAT**	**7**	Midway – same as RTI link	
12	Mtubatuba	**64k Diginet**			
13	Newcastle	**128k Diginet**	**8**	Newcastle – same as RTI link	
14	Nongoma	**64k Diginet**			
15	Nqutu	**64k Diginet**			
16	Park Rynie		**9**	Park Rynie – same as RTI link	(***No RTI Link listed***)
17	Pietermaritzburg (Braid Street)	**256k Diginet**	**10**	Pietermaritzburg (Mkondeni), separate Weigh Bridge link	**128k Diginet**

			11	Pinetown – separate Weigh Bridge link	**128k Diginet**
18	Port Shepstone		**12**	Port Shepstone – same as RTI link	(***No RTI Link listed***)
19	Rossburgh	**64k Diginet**			
20	Ulundi (link shared with Cost Centre Office)	**384k Diginet**			
21	Umdloti		**13**	Umdloti – same as RTI link	(***No RTI Link listed***)
22	Umzimkhulu (link shared with Area Office)	**128k Diginet**			
23	Vryheid	**128k Diginet**	**14**	Vryheid – same as RTI link	
24	Winkelspruit		**15**	Winkelspruit – same as RTI link	(***No RTI Link listed***)
25					
26					
27					