FUNCTIONAL SCOPE OF WORK

RELIABILITY SERVICES AGGREGATOR PROGRAMME

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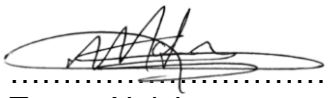		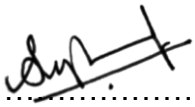
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Date:16/03/2026	Date: 16/03/2026	Date: 17 March 2026

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1. DEFINITIONS

Definition	Explanation
Bid Capacity	Is the capacity in megawatt (MW) indicated by the Participant as available for load reduction/generation during the next Day.
Bid Price	Is the price (in R/MWh) at which the Participant is willing to make energy available to ESKOM or the price (in R/MW} at which the Participant is willing to make demand available to ESKOM.
Business Day	Any day, excluding a Saturday, Sunday or official public holiday in the Republic of South Africa.
Capacity Payment	Is the payment (in R/MW/h) to the Participant by ESKOM for capacity scheduled by ESKOM for relevant products, for which capacity has been or can be successfully load reduced/generated on instruction from ESKOM. Such payment is made irrespective of whether the Participant is required or not to provide load reduction or generation on instruction from ESKOM.
Virtual Power Station (VPS)	A centralised software system, through which Participant's product offerings will be managed and aggregated products offered to the ESKOM System Operator as part of reserves.
Certified Capacity	It is the capacity in megawatt (MW), that the Participant has proved to ESKOM on 2 (two) or more occasions that the participant can reduce/generate as per agreed specifications, and which has subsequently been accepted and certified by ESKOM.
Contract Schedule	Is a schedule provided to the Participant by ESKOM, specifying the capacity (in MW per hour) to be available for reduction or generation
	during each hour of the next Day.
Curtailment Day	A day on which a Participant reduces load on request by ESKOM.
Customer Base Line (CBL)	A daily profile representing the amount of electricity the Participant would have consumed in each Integration Period for Weekdays and Week-end Days.
Demand Response (DR)	DR is an ESKOM initiative through which Participant's contract with (DR) ESKOM to make agreed capacity available for load reduction or generation on instruction from ESKOM System Operator.
DR Installation	Any equipment installed to enable the Participant to participate in a DR Program.
Energy Payment	Is the payment (in R/MWh) to the Participant by ESKOM for energy reduced or generated depended on the product contracted for during an Event.
ESKOM	Eskom Holdings SOC Limited Divisions and Subsidiaries.
Event	A request by ESKOM to provide capacity for an applicable reserve category. It can also be a request by participant to change certified capacity temporarily due to an issue that the participant is experiencing.
Integration Period	Interval metering data

Reliability Services	These are services contracted with Participants to enhance the frequency of the Interconnected Power System (IPS); these include Instantaneous Reserve, Ten-minute Reserve, Supplemental Reserve and Self-Generation
Load Reduction (LR)	It is a reduction in Participant load or consumption on instruction by ESKOM, measured in MW and/or MWh, over the Integration Period or a period as specifically instructed by the RSAS.
Participant	A contracted reliability services provider.
Scheduled Capacity	Is the capacity in MW that ESKOM requires the Participant to have available
Weekday	All days, excluding Week-end Days and public holidays
Week-end Days	Is any Saturday, Sunday, or public holiday.

2. ABBREVIATIONS

Abbreviation	**Explanation**
AS	Ancillary Service
CBL	Customer Base Line
DAS	Data Acquisition System
DR	Demand Response
DRD	Demand Response Department
DSO	Distribution System Operator
FFR	Fast Frequency Response
IDR	Instantaneous Demand Response
LR	Load Reduction
MDMS	Metering Data Management System
NDC	Net Declared Capacity
PSRS	Power System Reliability Services
RoCoF	Rate of Change of Frequency
RSAP	Reliability Services Aggregator Programme
RSAS	Reliability Services Aggregator System
RSDC	Reliability Services Data Collector
RSI	Reliability Services Installation
SDR	Supplement Demand Response System Operator
SFR	Supplemental Fast Response
SO	Transmission System Operator
SR	Supplemental Reserve
TFR	Ten-minute Fast Response
YTD	Year to Date

3. PROGRAMME EXECUTIVE SUMMARY

The Reliability Services Aggregator Programme (RSAP) comprises broadly of the following:

- Reliability Services Aggregator System (RSAS),
- Reliability Services Data Collector/s (RSDC),
- Reliability Services Installations (RSI),
- Various interfaces among the above,
- Services (operations and maintenance) required for the duration of the Programme.

The RSAP solution requires the capability and functionality in place to provide a turnkey solution - from the point of interfacing with the System Operator to determine the required demand response needed, to the point of interfacing with the Participants to achieve the desired outcome.

The contract duration will be 5 years, 1st year will be for design, build, configure (or customise), test, implement etc. to get the complete solution fully operational and ready for operations. The remaining five years will be for the RSAP operations and maintenance.

Below is the high-level summary of the sections required for RSAP:

a) Provision of an RSAS and services: A system customized, configured and maintained to meet all Eskom's requirements with a hot standby capability.
    - System must be capable of handling multiple users with various rights and a customer/participant portal with viewing and information editing rights for their respective sites only.
    - Services must include day-to-day operations (Enrolling Reliability Services Participants, Bidding; Scheduling; Dispatching etc.) and maintenance.
b) Design, build, test, implement, manage, operate and maintain RSI that are installed in Participant sites (normally installed in Customer control room / Substation or the Eskom Substation feeding the Customer).
c) Design, build, test, implement, manage, operate and maintain a RSDC hosted on a virtual server within Eskom with a hot Standby RSDC.
d) Build required interfaces such as, retrieve customer data from specified MDMS's, “push” data to National Control's nominated server, communicate between the RSAS, RSDC and RSI etc.
e) Provide a test environment, with RSAS, RSDC, RSI, and the necessary interfaces. Required for extensive testing before being implemented on the “Live” System.
f) Operate and maintain the existing RSIs.
g) Operate and maintain the existing physical RSDC located in Sunninghill.
h) Modify/upgrade 2 existing spare RSI panels to meet the innovative design requirements.
i) Spares for RSI panels.
j) The RSAP must comply with all necessary Eskom information and Cyber Security policies and standards.

RSAP will comprise of a development phase, implementation phase and operations & maintenance phase with various milestones and deadlines.

4. WHAT ARE RELIABILITY SERVICES

The Distribution System Operator (DSO) and System Operator (SO) are responsible for the reliability and security of the Distribution local and national electricity grids respectively, this by monitoring, controlling and operating it in a safe, economical and reliable manner.

The reliability services play a key role in terms of power system security by providing the System Operator with the much-needed flexibility and reliability to maintain adequate daily operating reserves to cater for unforeseen circumstances that could affect grid stability. Factors that could affect the stability of the electricity supply include:

- System constraints caused by severe weather and/or power line issues.
- Generator malfunctions (unexpected trips — loss of multiple Generation units)

The products for each reliability service are as shown below:

Reliability Service	Product	Response time
Instantaneous	Generator	10 seconds
	Demand Response (IDR)	6 seconds
	Fast Frequency Response (FFR)	0 - 400 milliseconds
Ten-minute	Generator	10 minutes
	Demand Response (DR)	10 minutes
	Ten-minute Fast Response (TFR)	1 - 9 minutes
Supplemental	Generator	1 - 6 hours
	Demand response (SDR)	30 -120 minutes
	Supplemental Fast Response (SFR)	10 minutes
Generation	Self-generation	30 - 120 minutes
Load Reduction	Curtailment	120 minutes
	Critical Peak Day	Day N-1

Reliability services are catered for in the normal daily operations of the SO and are economically dispatched.

The Reliability Services Aggregator Program will enable the System Operator to dispatch reliability service providers and power users to increase generation or reduce demand to maintain balance between supply and demand as required by the power system.

5. WHAT RELIABILITY SERVICES COMPRISES OF

The key reserves needed by the DSO and SO are, but not limited to, are Instantaneous reserves, Ten-minute reserves, Supplemental reserves, Energy imbalance reserves and Emergency demand reduction (curtailment).

- Instantaneous Reserves are Participant loads contracted to respond to a fall/rise in system frequency caused by a sudden change in the balance between supply and demand. The purpose of Instantaneous Reserve is to arrest the frequency at acceptable limits following a contingency, for example a generator trip.
    a. Generator - generators must respond fully to a low or high frequency event within 10 seconds and sustain the response for 10 minutes or until the frequency recovers, whichever occurs first.
    b. Instantaneous Demand Response (- Participant loads must respond fully within 10 seconds and must be sustained for at least 10 minutes for low frequency events.
    c. Fast Frequency Response— is capacity that can be delivered within 400ms and sustained for up to 10 minutes for low and high frequency events.

- Ten-minute reserve is generating capacity (synchronised or not) or demand side managed load that can respond within 10 minutes when called upon. The purpose of this reserve is to restore instantaneous reserve and regulation reserve to the required levels after an incident.
    a. Generator — A generator contracted to provide Ten-minute reserve must respond to a dispatch instruction/notification and fully activate the required capacity within 10 minutes of receiving the notification.
    b. Ten-minute Fast Response Participants contracted to provide TFR must respond to the dispatch instruction/notification by fully activating the required capacity (up to 100%) within 1 minute of acknowledging the request.

- Supplemental reserve is capacity that can be dispatched in 1 to 6 hours, and it is used to reduce the short-term risk. This reserve must be sustained for at least two hours. It is contracted to ensure an acceptable day-ahead risk.
    a. Generator — A generator contracted to provide supplemental reserve must respond to a dispatch instruction/notification and fully activate the required capacity within 10 minutes of receiving the notification. The resource's response must be sustainable for at least 120 minutes.
    b. Supplemental Demand Response— Participant loads that can respond within a notice period of 30 — 120 minutes. This reserve remains utilised for a maximum duration agreed with the Participant. It is contracted annually with the Participant and bid available day-ahead.
    c. Supplemental Fast Response— Participants contracted to provide SFR must respond to the dispatch instruction/notification by fully activating the required capacity (up to 100%) within 10 minutes of acknowledging the request. The response must be sustainable for at least 120 minutes.

- Energy imbalance reserves are participant loads that can be dispatched in advance by the System Operator (as opposed to near real time in the Reserve). The purpose of the energy reduction products is to cater for generation capacity losses in the medium to long term (a day to weeks). The dispatching can be anywhere between a day or weeks in advance, for 2-to-24-hour reductions.

- Emergency load reduction (NRS 048-9 Curtailment) is when loads are dispatched in the event of the System Operator calling a system emergency. These loads are reduced on the day with a two-hour notification prior to the start of the event for the duration of the emergency.

- Self-generation is capacity that can be dispatched in 1 to 6 hours, and it is used to reduce the short-term risk. This reserve must be sustained for at least two hours. It is contracted to ensure an acceptable day-ahead risk.
    a. Self-generation — Participant loads that can respond within a notice period of 30 — 120 minutes. This reserve remains utilised for a maximum duration agreed with the Participant. It is contracted annually with the Participant and bid available day-ahead.

- Critical Peak Day is a specific period when the national electricity network faces severe constraints. During these hours, the demand for electricity surpasses the available supply, leading to potential challenges in maintaining stability and preventing load shedding. These critical peak days are predetermined by Eskom's System Operator, who aims to create “breathing space” in the power system by balancing supply and demand.

6. RELIABILITY SERVICES AGGREGATOR PROGRAMME (RSAP)

The RSAP solution requires the capability and functionality in place to provide a solution - from the point of interfacing with the System Operator to determine the required demand response needed, to the point of interfacing with the Participants to achieve the desired outcome.

RSAP high level workflow:

I. Reliability Services Department
    - System Optimisation
    - Settings changes
    - Contract Change Form (CCF)
    - System data / reports
    - Validate, edit, review events.
    - RS Programme parameters
    - Customer contracting & contract performance management.

II. Participant
    - Submit Bids
    - Receive Capacity schedules.
    - Dispatch accept / decline.
    - Received Reports
    - Log issues

III. Data Sources for Products
    - Panel on site
    - Data collector
    - MDMS, MV90 data or 3rd party data
    - Communication to and from RSAS

IV. System Operator

- Receive aggregated bids.
- Monitor real time data for Instantaneous products.
- CCF data access
- Schedule approval
- Dispatch approval
- Generate a certificate.

V. RSAS Operator (Aggregator)

- Event validation criteria
- Generate reports and stats.
- Send notifications/ reports.
- Enroll participants.
- Bids aggregation
- Scheduling and dispatching
- Access control/ permissions
- Access portal (Eskom and participant)
- Issue management
- Day-to-day operations
- 24/7 helpdesk
- Generate real time system data.
- RS programme customisation
- And panel design, build, test, install and maintain.

Figure 1 illustrates RSAP conceptual architecture.

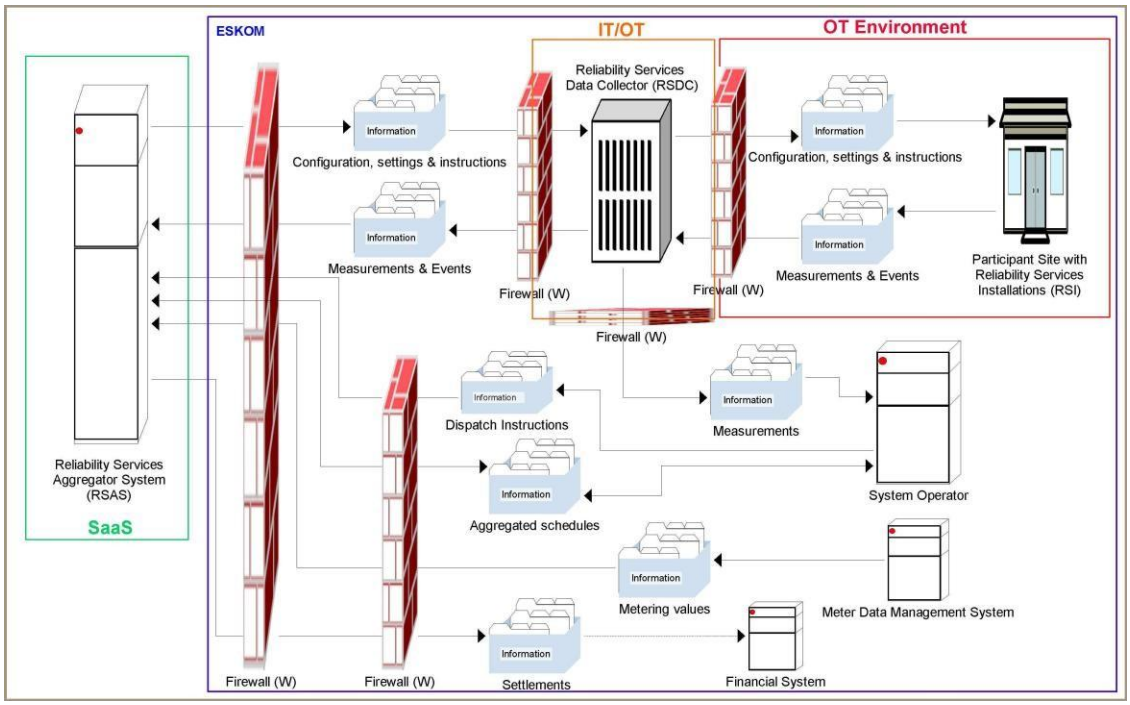


Figure 1: RSAP Conceptual Architecture

The RSAS must be capable of retrieving data from 3rd party MDMS or server in various data formats

and validate data before utilisation.

RSAP comprises of the RSAS (Aggregator), RSDC (Data Collector), RSI (measurement installations) and IT interfaces with various systems. SAP will have the following phases:

- **Development Phase:** the design and development of the new RSAP solution including RSAS, RSDC, RSI and interfaces. The outputs of the phase are Functional Design Specification, Detailed Design Specification, Product & Infrastructure Setup, Eskom IT Governance approvals, RSAS Configuration and customisation to meet Eskom's requirements, Migration of all historical data, RSAS Functional testing (related to Eskom's requirements), RSAS System Integration, & documentation, RSAS Integration and Performance Testing, RSDC/RSI System Integration and FAT, Documentation - Drawings, Instruction Manuals, Building of Prototypes, RSAS Failover and Disaster recovery testing, RSAS Group IT governance approvals (Pre-transfer), Delivery, Installation, Testing and Commissioning of Prototypes, Engineering: Documentation - Application Guide, Configuration Guide, Commissioning Guide, Maintenance Guide, Site Acceptance Tests, RSAP end to end testing (including vulnerability tests and penetration tests).
- **Implementation Phase:** the implementation of the newly developed and accepted RSAP solution in conjunction with the existing Demand Response Aggregator Programme (DRAP) Data Collector and DR Installations in a relationship as per the accepted proposal of the Contractor by the Employer. The Contractor will take over control and operation of the existing Data Collector and DR Installations during this phase in a controlled and planned manner. Priority will be given to the existing IDR and SDR Load providers. The implementation phase is dependent on the successful completion of the development phase.
- **Operational and Maintenance Phase:** the day-to-day running of the RSAP solution. This phase will overlap with the implementation phase to ensure operations continue when the existing DRAP contract concludes (end September 2025).

RSAP additional work that may be required during the contract period.

The following are examples of additional work that may be required by the employer over and above the stated scope:

- Additional RSAP customisations specific for Eskom (new reserve products),
- RSAP Eskom specific new functionality,
- RSAP Eskom specific interfaces,
- Changes to processes and procedures,
- New or changing reporting requirements,
- New site equipment and site installations,
- Spares and replacement equipment,
- Recommissioning of existing sites,
- Upgrades to site equipment,

7. RELIABILITY SERVICES AGGREGATOR SYSTEM

Eskom has adopted a cloud first strategy for IT to enable and leverage the benefits of agility to be more responsive to changing market conditions, cost advantages and high performance. However, as per corporate (including IT) governance requirements, Eskom is obligated to ensure user safety, security and privacy as well as the protection of enterprise information assets (as detailed in the Eskom Information Security Policy).

The scope of work for the Reliability Service Aggregator System (RSAS) is the following:

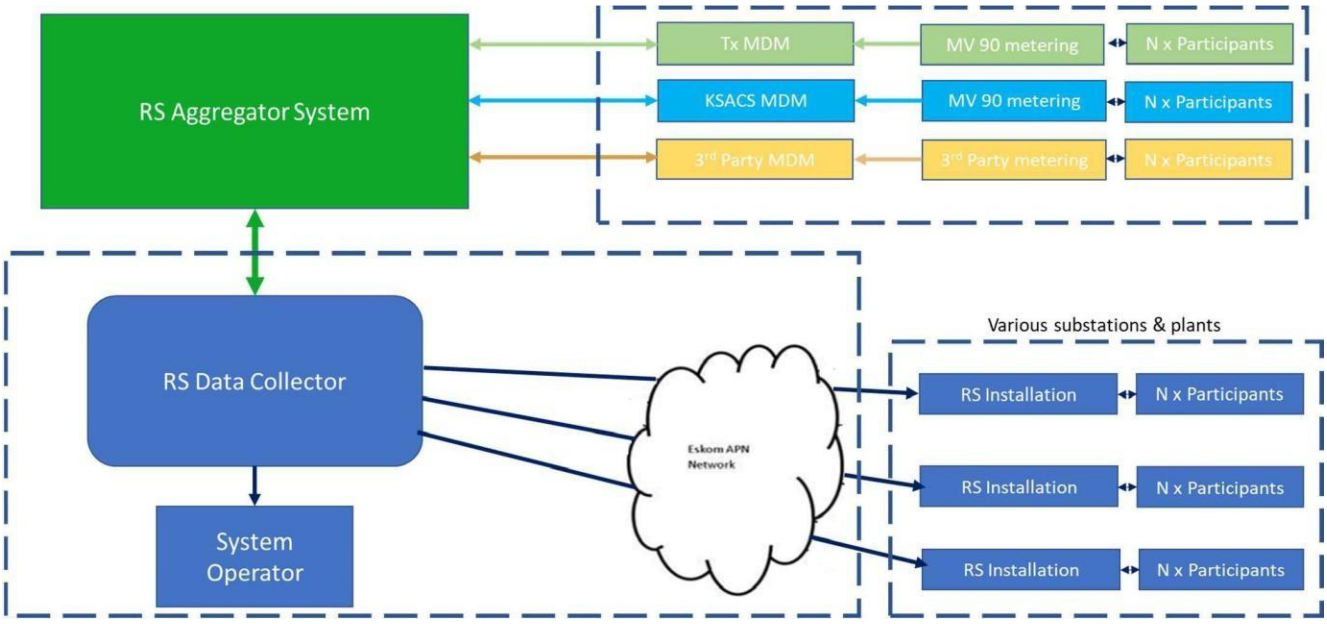
- Design, configuration & customization, testing, commissioning and maintenance of a RSAS that.
    - Is flexible, adaptable, scalable and fully auditable.
    - Manage Reliability Services products based on specific product criteria.
    - Manage up to 500 Participants.
    - Manage notification of system constraints.
    - Manage the bidding process.
    - Announcement of successful bids/offers.
    - Schedule Participants
    - Dispatch as per System Operator requirements
    - Comply with the latest scheduling and dispatch rules as per South African Grid Code
    - Log all calls and track workflow from start to end, record load reduction and generation decline reasons or no answer for audit and Participant queries.
    - Perform customer baseline calculations.
    - Measure and verify load reductions and generation outputs.
    - Report on any anomalies
    - Generate reports.
    - Verify Participants invoices (if required)
    - Submit verified Participant invoices to designated system for payment (if required)
    - Facilitate the payment process to ensure correct and timeous payments to Participants (if required).
    - Migrate all historical data to RSAS.
    - Store, obtain and analyze historical information.
    - Interfaces with other systems
        - Data acquisition system or MDMS or any other Systems (including third party metering interfaces) in different data formats.
        - Provide/push real time system information to System Operator
    - Comply with Eskom Information and Cyber security requirements.
    - Provide Eskom with the necessary statistics regarding participation in the various reserve categories.
    - RSAS Portal for Eskom staff with distinct levels of access and rights.
        - View statistics of the reserve categories and participant
        - Review/audit events
    - Participant portal for
        - Capturing of bids,
        - Viewing schedules, relevant reports and plant information
        - Updating of personnel information
        - Requests for plant status changes
    - Provide disaster recovery and hot standby capability for an availability factor of RSAS to be 99.7% - 24/7/365.

- Store all system data for the duration of the contract and provide an extract of the RSAS database to Eskom. Eskom should be able to query the data in the database for its purposes.

- The services to be provided:
  - Communications Interfacings with System Operator as required.
  - Training and skills transfer to users.
  - Day to day Aggregator operations.
  - Provide 24/7/365 helpdesk capability.
  - Maintenance, support and upgrading of the RSAS.
  - Solution fault finding and ratification.

For details regarding the RSAS requirements refer to the **"RSAS Requirements"** document.

8. RELIABILITY SERVICES DATA COLLECTOR AND RELIABILITY SERVICE INSTALLATIONS



The scope of work for the Reliability Services Data Collector and Reliability Service Installation are the following:

- Design, testing, production, delivery, installation, commissioning and maintenance of Reliability Service Installations necessary for Reliability Service Participant participation as per Eskom's requirements. Supply of these Reliability Service Installations shall be on and as and when required basis.
- The Reliability Service Installations will do the required measurements and record the system parameters by interfacing to the local primary and secondary plant. The Reliability Service Installation will store this data until such time that it can be communicated to the Data Collector.
- The Reliability Service Installations shall provide the necessary interfaces with the Participant to indicate Events based on the dispatched Contract Schedules, system settings and required logic and formulas as dictated by their Contracts.
- Enable communications interface equipment to facilitate remote communication between the Reliability Service Installations and the Data Collector. Eskom Telecommunications are utilized to facilitate the following communication mediums:
    - Cellular GPRS 1 - MTN APN
    - Cellular GPRS 2 - Vodacom APN
    - Eskom Telecoms IP data network (future expansion option for communications between Eskom substations and the RSDC)
- Design, testing, production, delivery, installation, commissioning and maintenance of a Data Collector system. The Data Collector shall poll data from the Reliability Service Installations and push updated settings received from the Reliability Service Aggregator System down to these Demand Response Installations.
- The Data Collector shall be hosted on a virtual machine with hot standby.

- Ensure a successful integration between the Data Collector and Reliability Service Aggregator System.
- Operate and maintain the existing Reliability Service Installations
- Operate and maintain the existing Reliability Service Data Collector located at Eskom Megawatt Park.

The scope of work is for two sub-systems concatenated and connected to the RSAP, namely: Reliability Service Installations and Data Collector/s. The technical requirements for each one of these sub-systems are covered in the following standard: 240-138187946 Reliability Service Data Collector and Reliability Service Installations standard, which must be interpreted as an extension of this document.

9. REFERENCE DOCUMENTS

It is compulsory that this Function Scope document is read in conjunction with:

a. RSAS Requirements document

b. 240-138187946, Reliability Service Data Collector and Reliability Service Installations standard

c. Any documents associated with the above documents

- End -