Road Traffic
Management Corporation

APPOINTMENT OF A SERVICE PROVIDER TO SUPPLY AND DELIVER PRODUCTION HARDWARE AND SOFTWARE FOR THE RTMC

RTMC BID NO: 20/2020/21

CONDITIONS AND UNDERTAKINGS BY BIDDER IN RESPECT OF THIS BID

1.   Proprietary Information

Road Traffic Management Corporation (RTMC) considers this bid and all related information, either written or verbal, which is provided to the bidder, to be proprietary to RTMC. It shall be kept confidential by the bidder and its officers, employees, agents and representatives. The bidder shall not disclose, publish, or advertise this specification or related information to any third party without the prior written consent of RTMC.

2.   Enquiries

2.1 All communication and attempts to solicit information of any kind relative to this bid should be channelled to the email below, however the cut-off date will be the 04 December 2020

Name	**RTMC**
Email Address	**Bidadmin@rtmc.co.za**

2.2 All the documentation submitted in response to this bid must be in English.

2.3 The RTMC may respond to any enquiry in its sole discretion and the bidder acknowledges that it will have no claim against the RTMC on the basis that its bid was disadvantaged by lack of information, or inability to resolve ambiguities.

3.   Validity Period

Responses to this bid received from bidders will be valid for a period of **120 days** counted from the closing date of the bid.

4.   Supplier Performance Management

4.1 Supplier Performance Management is viewed by the RTMC as critical component in ensuring value for money acquisition and good supplier relations between the RTMC and all its suppliers.

4.2 The successful bidder shall upon receipt of written notification of an award, be required to conclude a Service Level Agreement (SLA) with the RTMC, which will form an integral part of the agreement. The SLA will serve as a tool to measure, monitor and assess the supplier's performance level and ensure effective delivery of service, quality and value-add to RTMC business.

5. Instructions on submission of Bids

5.1 Bids should be submitted as follows:

5.1.1 Technical envelopes

> ➤ Five (5) copies for technical responses/functional evaluation (1 Original and 4 copies)
> ➤ PDF soft copy in a memory stick of the technical responses/functional (to be enclosed in the envelope which contains the original document)

5.1.2 Financial envelopes

NB: Due to different pricing models, shortlisted bidders will be invited to develop standard templates jointly with the RTMC team to be used for this stage.

Once the template has been developed, closing date and time for submission of the financial proposal will be agreed upon in a joint sitting with RTMC and all shortlisted bidders.

5.2 All envelopes to be sealed and endorsed, **RTMC BID 20/2020/21:** Appointment of a service to supply and deliver production hardware and software for the RTMC

5.3 The sealed envelope must be placed in the bid box at the Main Reception area of the **RTMC Eco Origin Office Park, Block F, 349 Witch-Hazel Street, Highveld, Centurion Ext 79, 0157 by no later than 11:00 am on 11 December 2020**

5.4 **Compulsory briefing**

The compulsory briefing session will be held on **23 November 2020** at the venue and address indicated in 5.3 above, wherein a briefing session certificate will be issued to bidders who would have attended the briefing session.

NB: The mentioned briefing certificate must be attached on the bid documents upon submission on the closing date of the bid. (Failing which will invalidate the bid)

Due to Covid-19 regulations, the Compulsory Briefing Session will be held through different sessions in order to comply with regulations of social distancing. The session will be held as follows:

SESSIONS	MAXIMUM NUMBER OF ATTENDEES	TIME SLOT
Session 1	35 Attendees	09h00-11h00
Session 2	35 Attendees	11h30-13h30

Session 3	35 Attendees	14h00-16h00

Bidders are required to register for a session by submitting necessary information to bidadmin@rtmc.co.za by not later than **18 November 2020**. In case a session is over subscribed, the RTMC reserves the right to reallocate potential bidders to different session at its own discretion. The following information is required to register for a briefing session:

- Company Name
- CSD Registration
- Name and Surname of the Representative

NB: Bidder/s who fail to comply with the above requirement will not be considered

5.5   The bidder's company name, closing date and the return address must also be endorsed on the envelope.

5.6   All bids submitted must be signed by a person or persons duly authorised thereto.

5.7   If a courier service company is being used for delivery of the bid document, the bid description must be endorsed on the delivery note/courier packaging to ensure that documents are delivered into the bid box. The RTMC will not be held responsible for any delays where documents are not placed in the bid box before closing time.

5.8   Bid received by email, facsimile or similar medium will not be considered.

5.9   Where a bid document is not placed in the bid box at the time of the bid closing, such a bid document will be regarded as a late bid. **Late bids will not be considered**.

5.10 Amended bids may be sent in an envelope marked **"Amendment to Bid"** and should be placed in the bid box before the closing time.

5.11 Bidders should check the numbers of the pages to satisfy themselves that none are missing or duplicated. No liability will be accepted by RTMC in regard to anything arising from the fact that pages are missing or duplicated.

6. Undertakings by the Bidder

6.1 The bidder accepts that all costs incurred in preparation, presentation and any demonstration in relation to this bid shall be for the account of the bidder.

6.2 The bidder hereby offer to render all or any of the services described in the attached documents to the RTMC on the terms and conditions and in accordance with the specifications stipulated in this bid documents (and which shall be taken as part of, and incorporated into, this proposal at the prices inserted therein).

6.3 The bidder shall prepare for a possible presentation should RTMC require such and the bidder shall be notified thereof no later than 4 (four) days before the actual presentation date. Such presentation may include demonstration of products or services as called for by the RTMC in relation to this bid.

6.4 The successful bidder hereby accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on him/her under this agreement as the principal(s) liable for the due fulfilment of this contract.

6.5 The bidder furthermore confirm that he/she has satisfied himself/herself as to the correctness and validity of his/her bid response that the price(s) and rate(s) quoted cover all the work/item(s) specified in the bid response documents and that the price(s) and rate(s) cover all his/her obligations under a resulting contract and that he/she accept that any mistakes regarding price(s) and calculations will be at his/her risk

7. RTMC's Rights

7.1 The RTMC reserves the right not to accept the lowest bid or any bid in part or in whole. RTMC normally awards the contract to the bidder who proves to be fully capable of handling the contract and whose bid is technically acceptable and/or financially advantageous to the RTMC.

7.2 The RTMC also reserves the right to award this bid as a whole or in part without furnishing reasons.

7.3 The RTMC reserves the right to conduct a site visit at the premises of the offices or at any client sites if so required.

7.4 The RTMC reserves a right to amend any bid conditions, validity period, specifications, or extend the closing date of bid prior to the initially stated closing date. Bidders will be advised in writing of such amendments in good time.

7.5 The RTMC reserves the right to request all relevant information, agreements and other documents to verify information supplied in the bid response. The bidder hereby gives consent to the RTMC to conduct background checks on the bidding entity and any of its directors/trustees/shareholders/members.

8. Supplier Development and Promotion of Emerging Black Owned Service Provider

8.1 The RTMC promotes enterprise development in this regard, successful bidders are encouraged to mentor SMME's and/or Youth owned businesses. The implications of such arrangement will be subject to negotiations between the RTMC and the successful bidder.

8.2 It is also the objective of the RTMC to promote transformation of the South African economy and as such, bidders are encouraged to partner with a black owned entity (being 50%+1 black owned and controlled). Such partnership may include the formation of a Joint Venture and/ or subcontracting agreement etc., where a portion of the work under this bid would be undertaken by black owned entities.

8.3 To give effect to this requirement, bidders are required to submit a partnership/ subcontracting proposal detailing the portion of work to be outsourced, level of involvement of the black owned partner and where relevant, submit a consolidated B-BBEE scorecard in-line with the provisions of the PPPFA Regulations which will be considered as part of the B-BBEE scoring.

9. SPECIAL INSTRUCTIONS TO BIDDERS

9.1 Bidders shall provide full and accurate answers to the questions posed in this document.

9.2 Bidders **must** substantiate their response to all questions, including full details on how their proposal/solution will address specific functional/technical requirements. All documents as indicated must be supplied as part of the bid response.

9.3 The RTMC reserves the right to sign a Service Level Agreement (SLA) with the service provider to supplement services in an agreement in this regard;

9.4 RTMC reserves the right to include any additional related items on the contract that are currently not part of the bid document.

9.5 The RTMC will not be held responsible for any costs incurred in the preparation and submission of bid documents

9.6 The bidder/s who scores the highest points will be appointed

NB: RTMC reserves the right to verify information provided by bidders and any misrepresentation will lead to disqualification of the bidder.

SECTION: 2

SPECIFICATION DETAILS AND FUNCTIONALITY REQUIREMENTS

SECTION 2: TECHNICAL REQUIREMENTS/ SPECIFICATION

1.Definition of Terms

Term	Definition
Application	A custom designed programme for a specific purpose
Backbone	The main network connections that comprise the NaTIS network
CISC	Complex Instruction Set Computer
Client	A program or computer that connects to and requests information from a server
CPU	Central processing unit; the part of a computer that oversees all operations and calculations
DAS	Direct Attached Storage
Data centre	A data centre (DC) is a facility used to house computer systems and associated components, such as telecommunications and storage systems. It generally includes redundant or backup power supplies, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression) and security devices.
Database	A collection of information organized so that a computer application can quickly access selected information; it can be thought of as an electronic filing system. Traditional databases are organized by fields, records (a complete set of fields), and files (a collection of records). Alternatively, in a Hypertext database, any object (e.g., text, a picture, or a film) can be linked to any other object.
Disaster Recovery Centre	A disaster recovery centre (DRC) is a facility an organisation can use to recover and restore its technology infrastructure and operations when its primary data centre becomes unavailable.

Term	Definition
Firewall	A method of preventing unauthorized access to or from a particular network; firewalls can be implemented in both hardware and software, or both
Itanium Processor	Itanium is a family of 64-bit Intel microprocessors that implement the Intel Itanium architecture and developed by HP and Intel.
Local Area Network	Local area network (LAN) is a network that extends over a small area (usually within a square mile or less). Connects a group of computers for the purpose of sharing resources such as programs, documents, or printers. Shared files often are stored on a central file server.
NAS	Network Attached Storage
PDU	Power Distribution Unit
Private Cloud	Private cloud is cloud infrastructure operated solely for a single organization, whether managed internally or by a third party, and hosted either internally or externally.
Public Cloud	Public Cloud is when the cloud infrastructure operated for public use and are rendered over a network that is o NaTIS pen for public use.
RISC	Reduced Instruction Set Computer
SLA	Service Level Agreement
SPARC	Scalable Processor Architecture is a reduced instruction set computing (RISC) instruction set architecture (ISA) originally developed by Sun Microsystems. Sun Microsystems was purchased by Oracle Corporation.
SSD	Solid State Drive

Term	Definition
Storage Area Network	A storage area network (SAN) is a dedicated storage network that provides access to consolidated, block level storage. SANs primarily are used to make storage devices (such as disk arrays, tape libraries, and optical jukeboxes) accessible to servers so that the devices appear as locally attached to the operating system. A SAN typically has its own network of storage devices that are generally not accessible through the regular network by regular devices.
Virtual Private Network	A virtual private network (VPN) extends a private network across a public network, and enables users to send and receive data across shared or public networks as if their computing devices were directly connected to the private network
Wide Area Network	Wide Area Network (WAN) is a group of networked computers covering a large geographical area
x86 Processor	CISC processor produced by Intel
OEM	Original Equipment Manufacturer

2. PURPOSE

The Road Traffic Management Corporation (RTMC) requires a service provider to supply, configure and support:

- Enterprise, High Availability Hardware for the Road Traffic Information Systems Environment.

- Application server software and database management software

- The support should be for a 5-year period.

3. BACKGROUND AND DISCUSSION

- The technology is actively being used but is end of life support. The following must be noted with regards to the technology that is currently installed.

- The technology consists of Itanium/HP-UX processors and the HP-UX operating system.

- The database is currently growing at approximately 300GB per month due to new functions. The current storage system needs to be upgraded to absorb this growth current and future growth from new system integrations. We are currently backing up data to slower disk drives which is not efficient in the event of a system recovery exercise.

Finance Options

The Corporation is funded from revenue collected on a monthly basis and therefore places a premium on cash flow. The Corporation is amenable to a finance arrangement or hybrid model (combination of outright purchase and lease) over the period (5 years) that minimises the opportunity cost of its cash reserves.

Item	Preferred Finance Option
Compute (Application Servers)	Indifferent
Storage	Lease
Network/Peripherals/Support	Indifferent

4. SPECIFICATIONS / SCOPE OF WORK

Road Traffic Information Systems Requirements

Current Environment

The Corporation considers the Facilities infrastructure separate and independent to the Road Traffic Information Systems (DC, DRC and Development environments). As such the Facilities storage in this requirement cannot be shared with Road Traffic Information Systems hardware.

The Road Traffic Information Systems is based on a three-tier architecture hosting. There are application servers, database servers and a Storage Area Network (SAN). The Corporation has data centre (DC) and disaster recovery centre (DRC).

The following instances are currently provided for Production, Disaster Recovery, Reference (an exact copy of production), Development, Quality Assurance (Testing), Pre-production External Interfaces, and Training-Tutorial.

Production is replicated to the DRC. The Corporation requires a high-availability and resilient architecture as the infrastructure is for an online production system which requires optimal operational performance, even at times of high loads.

Application Servers

The current application servers are a combination of Itanium and X86 and the Corporation requires the latest processors available. For the new hardware, the capacity at the DC and DRC must be identical for Production. The Corporation requires high performance processors for production application servers.

Database Servers

The current database service run on HP-UX Itanium servers. The Corporation requires Intel X86 servers. For the new hardware, the capacity at the DC and DRC must be identical for Production. The Corporation requires high performance processors optimised for Oracle licensing for production servers.

Database System Version

The Oracle Database version is 11g. It is currently outdated but still supported. The version will be upgraded once the new hardware is installed. The current production database Current Environment.

SAN Storage

The Corporation currently has two XP24000 storage devices for production. The Corporation requires enterprise grade, mission critical storage devices. The Corporation must be protected from data loss and therefore the highest availability and resilience The Corporation considers the Facilities infrastructure separate and independent to the Road Traffic Information Systems (DC, DRC and Development environments). As such the Facilities storage in this requirement cannot be shared with Road Traffic Information Systems hardware.

The Road Traffic Information Systems is based on a three-tier architecture hosting. There are application servers, database servers and a Storage Area Network (SAN). The Corporation has Data Centre (DC) and Disaster Recovery Centre (DRC).

The following instances are currently provided for Production, Disaster Recovery, Reference (an exact copy of production), Development, Quality Assurance (Testing), Pre-production External Interfaces, and Training-Tutorial.

The Corporation requires a high-availability and resilient architecture as the infrastructure is for an online production system which requires optimal operational performance, even at times of high loads.

Application Servers

The current application servers are a combination of Itanium and X86 and the Corporation requires the latest processors available. For the new hardware, the capacity at the DC and DRC must be identical for Production and X86. The Corporation requires high performance processors for production application servers.

Database Servers

The current database service run on HP-UX Itanium servers. The Corporation requires Intel X86 servers. For the new hardware, the capacity at the DC and DRC must be identical for Production. The Corporation requires high performance processors optimised for Oracle licensing for production servers.

Database System Version

The Oracle Database version is 11g. It is currently outdated but still supported. The version will be upgraded once the new hardware is installed. The new servers proposed need to be certified on Oracle RAC by hardware OEM.

Webserver

The JBOSS application servers are integrated with the Nginx web application.

Data Refresh

Data from production is periodically copied to the development environments and a database recovery is performed. This is a major challenge for the Corporation as each environment in development is unavailable for a few days while the restore is done. The current production database is 24TB.

Architecture and Environments

The Corporation has NaTIS Data Centre (DC) and Disaster Recovery Centre (DRC). The sites have redundant 100mb/s layer 2 point to point link between each other. The database is replicated via Oracle data guard from the database at the DC to the standby database at the DRC. Application servers are duplicated at the DRC and do not require any replication.
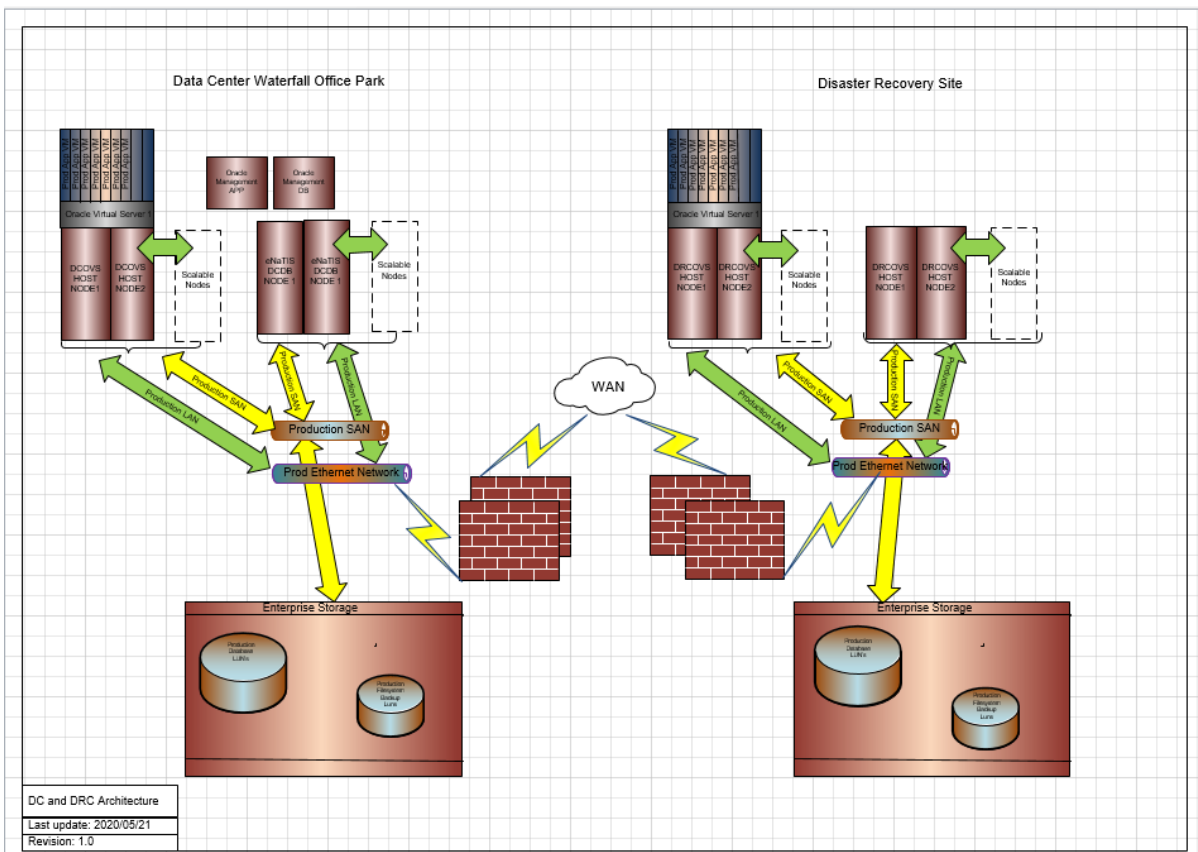
Production is replicated to the DRC. All other environments operate at the DRC. The Corporation requires a high-availability and resilient architecture as the infrastructure is for an online production system which requires optimal operational performance, even at times of high loads. The Intel Platinum Processors are envisaged for these workloads.

The system consists of 3 environments:

- Production Environment.

- Disaster Recovery Environment.

- Development Environment.

Production Environment

The system consists of a three-tier architecture which includes an application layer, database layer and a storage layer.

Data Center Waterfall Office Park

Disaster Recovery Site

Oracle Virtual Server 1

Oracle Management A/P

Oracle Management DB

DCOVS HOST NODE1 | DCOVS HOST NODE2 | Scalable Nodes

eNaTIS DCDB NODE 1 | eNaTIS DCDB NODE 1 | Scalable Nodes

DRCOVS HOST NODE1 | DRCOVS HOST NODE2 | Scalable Nodes

DRCOVS HOST NODE1 | DRCOVS HOST NODE2 | Scalable Nodes

Production LAN

Production SAN

Production SAN

Production LAN

Production SAN

Prod Ethernet Network

WAN

Prod Ethernet Network

Enterprise Storage

Production Database LUNs

Production Filesystem Backup Luns

Enterprise Storage

Production Database LUNs

Production Filesystem Backup Luns

DC and DRC Architecture
Last update: 2020/05/21
Revision: 1.0

Production Application Layer Requirements

The applications currently reside on OVS hypervisors and boots off the SAN except for Oracle Enterprise Manager. The production Oracle Enterprise Manager must reside on bare metal servers.

Production Application Specification Required per Hypervisor

- 42u Racking including required PDU's

- Suitable Intel Gold grade CPU's with highest available core count

- Suitable redundant Ethernet interfaces cards for 6 networks

- Suitable Ethernet network switching

- Suitable storage switching

- Suitable redundant interfaces cards to connect to storage (OS Boot)

- A 24x7, 4-hour response support or equivalent level on-site support included which will include replacement parts for a period of 5 years

- **Production Application Server Capacity Requirements**

Application Servers OVS					
No.	Application Name	Cores	Memory GB	Storage TB	Filesystem Storage TB
1	dcapp01	4	128	0.2	0.3
2	dcapp02	4	128	0.2	0.3
3	dcapp03	4	128	0.2	0.3
4	dcapp04	4	128	0.2	0.3
5	dcapp05	4	64	0.3	0.3
6	dcapp06	4	64	0.3	0.3
7	dcapp07	4	64	0.3	0.3
8	dcapp08	4	64	0.3	0.3
9	dcapp09	2	64	0.3	0.3
10	dcapp10	4	64	0.3	0.3
11	dcapp11	4	128	0.3	0.3
12	dcapp12	4	128	0.3	0.3
13	dcapp13	2	128	0.2	0.3
14	OMS App	6	32		0.5
15	OMS DB	6	32		0.5
	Totals	60	1344	3.4	4.9

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Enterprise manager 13c Cloud Control Server				
	Cores	CPU	Memory	Storage
OMS			GB	TB
App	6	Intel Xeon Silver	24	2 x 146GB SSD
DB	6		20	2 x 146 GB SSD

Production Database Layer Requirements

The databases must run on bare metal services with and Oracle RAC.

DB Server Specification

- 42u Racking including required PDU's

- Suitable Intel Platinum grade CPU's with highest frequency

- Suitable redundant Ethernet interfaces cards for 4 subnets

- Suitable redundant interfaces cards to connect to storage

- Suitable mirrored 15k 146gb OS disks for each server

- Sufficient capacity is required for all client connections to failover to 1 surviving node. (Approximately 8 000 concurrent connection at 3mb per connection)

- Suitable Ethernet network switching

- Suitable storage switching

- At 6-hour call to repair or equivalent level on-site support included which will include replacement parts for a period of 5 years

Production DB Server Capacity Required per Node

Production DB Server Capacity Required per Node

Production Server			
Node	**Instance**	**Cores**	**Memory (GB)**
3	NAT	36	768
2	TUT	12	96
3	CRASHM	12	108
2	NATON	12	72
2	Other	8	72
2	Data Warehouse	12	64
	Sub Total	**92**	**1180**
	Non-Oracle DB (Totals are for 3 nodes cluster together)		
2	Mapping	12	96
	Totals	**104**	**1276**

Production Storage Layer Requirements

Storage Specification

- Redundant Industrial 16Amp Single Phase power connectors

- 42u Racking including required PDU's

- Redundant Storage Controllers

- Minimum of 8 x 16gb/s FC ports with transceivers

- Minimum of 8 x 10gb/s iSCSI ports with transceivers

- Minimum of RAID 0, 1, 5, 6 capability

- Clone and or Snapshot functionality and software compatible with Oracle databases

- Remote copy functionality

- Auto tiering functionality

- Site replication software

- All required software licensing must be included

- Suitable Ethernet network switching

- Suitable storage switching

- 24x7 mission critical support or equivalent level on-site support included which will include replacement parts for a period of 5 years

- **Storage Capacity Required**

Production Storage Required (TB)				
Nodes	**Instance**	**Storage Y1**	**Storage Y5**	**File system Storage**
1	NAT	120	264	200
1	TUT	26.4	110	70
1	CRASHM1	33.6	160	120
1	NATON	38.4	60	50
2	Other	50.4	60	40
1	Data Warehouse	81.6	160	40
	Sub Total	**350.4**	**814**	**520**

Production Storage Required (TB)				
Nodes	**Instance**	**Storage Y1**	**Storage Y5**	**File system Storage**
Non-Oracle DB (Totals are for 2 nodes cluster together)				
1	Mapping	25	30	20
Totals		**375.4**	**844**	**540**
File system and DB Storage		**915.4**	**1384**	

Disaster Recovery Environment

The requirements for the disaster recover Redundant Industrial 16Amp Single Phase power connectors

- 42u Racking including required PDU's

- Redundant Storage Controllers

- Minimum of 8 x 16gb/s FC ports with transceivers

- Minimum of 8 x 10gb/s iSCSI ports with transceivers

- Minimum of RAID 0, 1, 5, 6 capability

- Clone and or Snapshot functionality and software compatible with Oracle databases

- Remote copy functionality

- Auto tiering functionality

- Site replication software

- All required software licensing must be included

- Suitable Ethernet network switching

- Suitable storage switching

At 6-hour call to repair or equivalent level on-site support included which will include replacement parts for a period of 5 years environment are identical to the production environment.

Development Environment

A major challenge faced by the Corporation is to refresh the development environments with current data from production. The proposed solution should propose technologies that would allow for the development databases to be refreshed individually and within a time period of not more than 2 hours.

The proposed solution must define how this will be achieved and if required, must include any additional software to automate.
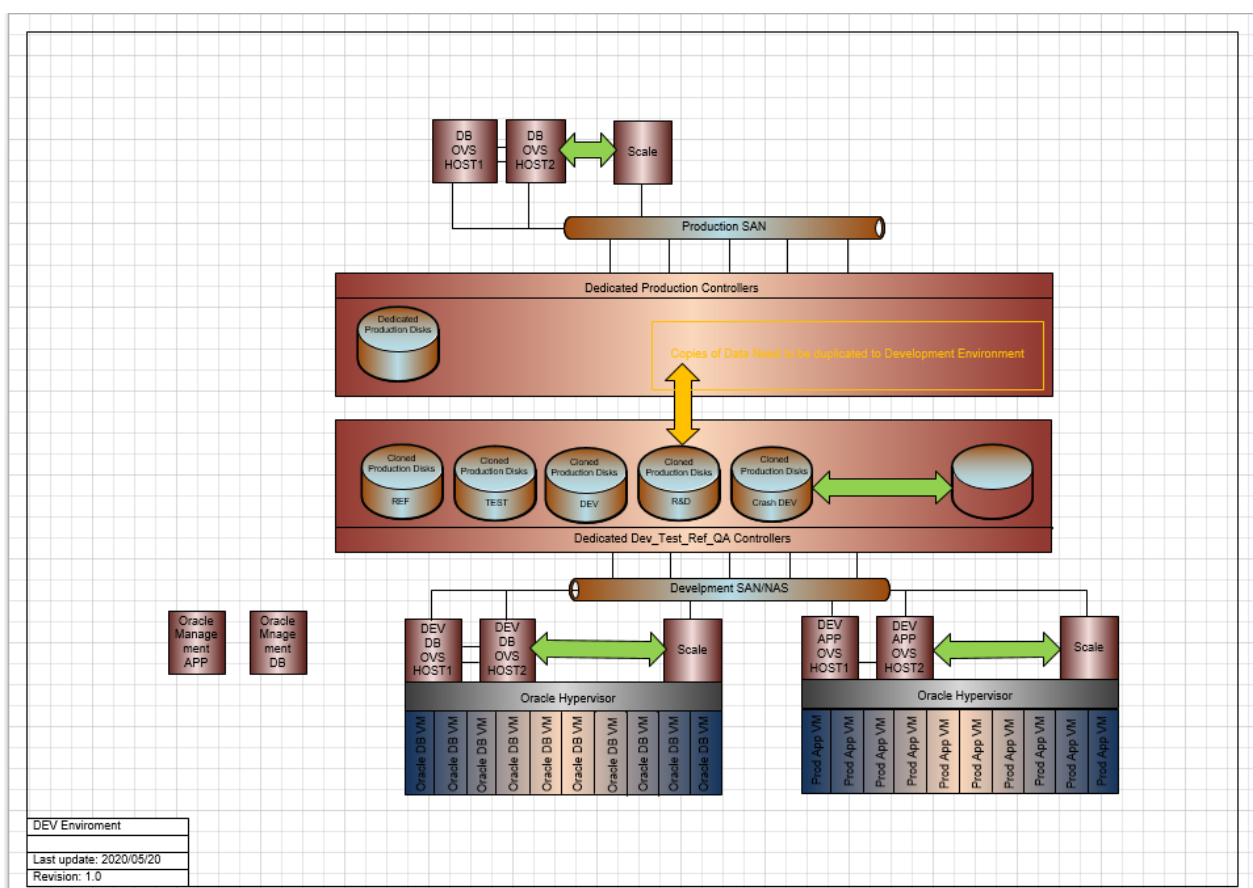
Development Application Layer

The development applications currently resides on OVS hypervisors which boot off the SAN. The development environment should cater for a Ref, Dev, Test and QA environment for all production instances (NAT, Crash, Naton, TUT, Data warehouse and Mapping). Additional "R&D", DevOps and "other projects" environments are also required.

The development environment resides on separate hardware to production at the datacentre.

Development Application Server Specification Required per Hypervisor

- 42u Racking including required PDU's

- Gen10 Hypervisor servers

- Suitable Intel Gold grade CPU's

- Suitable redundant Ethernet interfaces cards to cater for 10 subnets

- Suitable redundant Fibre SAN or Ethernet interfaces cards to connect to storage

- Development infrastructure could be shared with production but would need to logically separated and not affect production performance

- Suitable Ethernet network switching

- A 24x7, 4-hour response support or equivalent level on-site support included which will include replacement parts for a period of 5 years

  ◦ **Development Application Capacity Required**

Development Application Server OVS				
Applications	**Cores**	**Memory**	**Storage**	**File System Storage**
		GB	**TB**	**TB**
REF refapp01	4	64	0.2	0.3
REF refapp02	4	64	0.2	0.3
Ref reftut01	2	32	0.2	0.3
REF refcrash01	4	64	0.2	0.3
REF refnaton01	2	32	0.2	0.3
REF refapp03	4	64	0.3	0.3
REF non-Oracle app01	4	64	0.3	0.3

Development Application Server OVS				
Applications	Cores	Memory	Storage	File System Storage
		GB	TB	TB
TEST tstapp01	4	64	0.3	0.3
DEV devapp01	2	32	0.3	0.3
TEST tstcrash01	2	32	0.3	0.3
DEV devcrash01	2	32	0.3	0.3
R&D rndapp01	2	32	0.2	0.3
EXT extapp01	4	64	0.2	0.3
DEV devnaton01	2	32	0.2	0.3
DEV non-Oracle app02	2	32	0.2	0.3
DEV non-Oracle app03	2	32	0.2	0.3
DevOps	4	64	0.3	0.3
Total	**50**	**800**	**4.1**	**5.1**

Development DB layer

The development database environment should consist of a Master, REF, Test, Dev, R&D and External.

The development environment requires 8 bare metal servers as per below:

- 2 x server for master to be installed in a 2 node Oracle RAC
- 2 servers for R&D to be installed in a 2 node Oracle RAC
- 1 x servers for REF
- 1 x server for TST
- 1 x server for DEV
- 1 x server for External (PEI)

Development DB Server Specifications

- 42u Racking including required PDU's

- Suitable Intel Gold grade CPU's

- Suitable redundant Ethernet interfaces cards for 4 subnets

- Suitable redundant Fibre SAN or Ethernet interfaces cards to connect to storage

- Development infrastructure could be shared with production but would need to logically separated and not affect production performance

- Suitable mirrored 15k 146GB OS disks for each database server

- Suitable Ethernet network switching

- A 24x7, 4-hour response support or equivalent level on-site support included which will include replacement parts for a period of 5 years

  ◦ **Development DB Server Capacity Requirements**

Development database and non-Oracle Nodes		
Instance	Cores	Memory (GB)
Master	48	**520**
REF NAT	24	520
REF TUT	4	34
REF CRASH	8	64
REF ENATON	4	36
REF WAREHOUSE	8	72
REF Non-Oracle	8	72
TEST NAT	8	120
DEV NAT	4	120

Development database and non-Oracle Nodes		
Instance	Cores	Memory (GB)
TEST CRASH	4	32
DEV CRASH	4	32
R & D	12	248
Other Projects	18	128
TEST ENATON	2	32
DEV ENATON	2	32
External	8	86
DEV Non-Oracle	16	128
Sub Total	**182**	**2276**

Development Storage Layer

Storage Specification

- Redundant Industrial 16Amp Single Phase power connectors

- 42u Racking including required PDU's

- Redundant Storage Controllers

- Minimum of 8 x 16gb/s FC ports with transceivers

- Minimum of 8 x 10gb/s iSCSI ports with transceivers

- Minimum of RAID 0, 1, 5, 6 capability

- Clone and or Snapshot functionality compatible with Oracle databases

- Remote copy functionality

- Auto tiering functionality

- Site replication software

- Suitable Ethernet network switching

- Development infrastructure could be shared with production but would need to logically separated and not affect production performance

- A 24x7, 4-hour response support or equivalent level on-site support included which will include replacement parts for a period of 5 years

- Accommodation should be made for 30% worth of deltas per snapshot

- **Storage Capacity Required**

Development database and non-Oracle Nodes					
Instance	**Cores**	**Memory**	**Storage Year 1**	**Storage Year 5**	**Filesystem Storage**
		GB	**TB**	**TB**	**TB**
Master		520	40	270	
REF NAT	24	520	40	270	300
REF TUT	0	34	21	70	
REF CRASH	8	64	19.2	133	10
REF ENATON	4	36	13.2	49	
REF WAREHOUSE	0	72	40.8	126	
REF Non-Oracle	8	72	5	30	20
TEST NAT	8	120	60	220	
DEV NAT	4	120	60	150	
TEST CRASH	4	32	16.8	112	
DEV CRASH	4	32	16.8	112	
R & D	12	248	36	336	
Other Projects	18	128	15	81`	
TEST ENATON	2	32	5	20	
DEV ENATON	2	32	5	30	
External	8	86	40.8	110	
DEV Non-Oracle	16	128	20	40	
Sub Total	**122**	**2276**	**454.6**	**2078**	**330**
Grand Total storage					**2408**

Disk-Based Backup and Tape Library

Disk backup, or disk-based backup, is a data backup and recovery method that backs data up to hard disk storage. Disk backups are widely used and can be supplemented by methods such as tape or cloud backup for archiving or disaster recovery (DR). Backups to disk often employ data reduction methods such as deduplication and compression to maximize storage capacity when protecting large amounts of data.

Disk backup is a crucial part of most organization's data protection plans. Organizations rely on backup to preserve critical files and data, guarding against the loss of files through human error, technology failures or natural disasters.

The Corporation requires one disk-based backup system for the Production DC and one for DRC environments. The supplier is required to recommend a disk-based backup solution that would integrate with this Oracle based environment. The backup solution should make use of available technologies to achieve efficient disk space utilisation.

- Solution must achieve data protection across a variety of environments both physical and virtual.

- Solution should support deduplicated direct backup from Client to Deduplication appliance for all workloads to reduce the backup infrastructure requirements

- Solution must feature a small footprint while still being powerful in its comprehensive coverage, performance, and cloud readiness

- Solution must provide advanced backup and restore capabilities such as Change block restore, Instant access, and Granular recovery for Virtual Infrastructure, use of changed block tracking for both backup and restore is mandatory to minimize both backup and restore time from and to the original data store

- Solution shall support SEC 17a-4(f) certified WORM protection for backups against emerging threats

- Solution must support data-in-flight and data-at-rest encryption

- Solution must provide converged, integrated data protection for long term data retention and disaster recovery.

- Solution must be simple to deploy and scale and support a diverse application ecosystem.

- Proven zero RTO for critical DBs

- Utilisation of Direct Database backups and recovery to backup appliance

In addition a tape library of appropriate capacity is required at the DRC to create backups for offsite storage. Integration between the backup solution and tape library would be advantageous.

Firewalls

Bidder must supply 3 x Active/Pasive Datacentre grade high available firewall clustered appliances consisting of the following:

a) Support High Availability

b) Dual power supplies per appliance

c) Firewall throughput of at least 30Gbps

d) Next Generation Firewall (NGFW) throughput of at least 7 Gbps

e) IPS/ Threat Prevention throughput of at least 6Gbps

f) IPSec VPN Throughput of at least 6Gbps

g) Sandblast support for protection against zero-day attacks

h) The appliance must at least consist of 24 GB of memory with expansion slots for upgrade

i) The appliance must at least consist of 2x SSD HDD's in a Raid 1 configuration with a minimum capacity of 480GB per disk

j) The appliance must at least be rack mountable and include least 30'' slide/mounting rails per appliance

k) At least 2 or more power supplies per appliance with sufficient C14 cable power cords

l) At least 2 or more hot-swappable fans per appliance

m) Support at least 8 or more 1Gbps UTP interfaces per appliance, including at least 5 modules per appliance (30 usable interfaces in total across all firewalls)

n) Support at least 2 or more 10Gbps interfaces per appliance, including at least 2 modules (12 usable interfaces in total across all firewalls) The 10G modules must at least support up to 300m link lengths using OM3 and up to 400m using OM4 MMF.

o) Threat Defense, Malware and URL subscription/licensing for a period of at least 5 years

p) The appliances must include at least a 5-year business day warrantee 24 x 7 x 4

q) A redundant centralised management system (Virtual or physical) capable of managing all the firewalls, including software support for 5 years.

r) A redundant centralised reporting system (Virtual or physical) capable of providing in depth reporting on firewall events

Application delivery controller / Load Balancer

Supplier must supply 3 of the following Appliances:

- Support high availability

- Appliance should be in a hot swappable chassis consisting of at least 2 modular performance blades

- Support HTTPs header insertion

- Support at least 1 million layer 7 requests per second

- Support at least 400K Layer 4 connections per second

- Support at least 7 million Layer 4 HTTP requests per second

- Support at least a maximum throughput of 40 Gbps on layer 4 and a maximum throughput of 18 Gbps on Layer 7

- Support at least 400 Mbps in terms of compression

- At least 2 power supply per blade chassis with sufficient C14 cable power cords

- Support SSL/elliptical curve cryptography (ECC) hardware acceleration

- High SSL encryption performance

- Supports hardware compression

- Supports high performance of protection on Denial of Service attacks to inside applications

- Support clustering communication between blades across chassis fabric backbone to minimize latency across blades

- The chassis must at least be rack mountable and include least 30'' slide/mounting rails per appliance

- Support at least 4 or more 1Gbps UTP interfaces per blade

- Support 1 management port

- Support at least 2 or more 10Gbps interfaces per blade. The 10G modules must at least support up to 300m link lengths using OM3 and up to 400m using OM4 MMF.

- Each Blade should at least consist of 32GB of memory

- Each Blade should at least consist of 8 hyper threaded logical processor cores

- Each Blade should consist of at least 1x 400GB SSD

Software Licenses

- The Corporation requires Red Hat JBoss Enterprise Application Platform (JBoss EAP) for production application servers with support for a period of 5 years.

- Backup and clone/snapshot management software, if required.

- The Corporation requires NGINX Plus with Enterprise support for a period of 5 years.

- The Corporation requires the following Database add-on licences:

  ◦ Oracle Database Enterprise Edition x 42 150 NUPS – Processor Perpetual with 5 years support

  ◦ Oracle Real Application Cluster x 42 – Processor Perpetual with 5 years support

  ◦ Oracle Advanced Security x 42 – Processor Perpetual with 5 years support

  ◦ Oracle Data Masking and Subsetting Pack x 42– Processor Perpetual with 5 years support

  ◦ Oracle Audit Vault and Database Firewall x 42 – Processor Perpetual with 5 years support

  ◦ Oracle Partitioning x 31 – Processor Perpetual with 5 years support

  ◦ Oracle Diagnostics Pack x 31 - Processor Perpetual with 5 years support

  ◦ Oracle Tuning Pack x 31- Processor Perpetual with 5 years support

  ◦ Oracle Active Data Guard x 31 - Processor Perpetual with 5 years support

  ◦ Oracle Database Vault x 42 – Processor Perpetual with 5 years support

Mandatory Services

The Corporation requires the initial configuration and 5-year premium support on hardware.

The Corporation requires vendor support for the endian conversion.

OEM Certification must be supplied for solution provided

Oracle OPN Member Principle Certification to be provided with at least 2 Oracle Database Certified CV's

RedHat skill mandatory – CV's to be provided

Bidder shall have at least one (1) reference letter from customer for a project of similar environment and similar size.

Lease option of a minimum of the Storage Layer Hardware

A datacentre architecture diagram for the solution must be included in the bid response depicting the components

General Conditions

The RTMC reserves the right to sign a service level agreement (SLA) with the service provider to supplement services in an agreement in this regard.

The RTMC will not be held responsible for any costs incurred in the preparation and submission of bid documents.

Fees must be in South African Rands (ZAR) and must include VAT.

Exchange rate of R18.00 to the $ and/or other applicable currencies will be used for evaluation purposes.

SECTION: 3

EVALUATION CRITERIA

1. EVALUATION CRITERIA

The bid will be evaluated in the following stages:

(a) Stage 1 - <u>Standard Compliance Requirements</u>

Bidders are expected to submit and comply with all the required Standard Compliance Requirements. Failure to comply with these requirements; bidders will be disqualified from evaluation. Below are Standard Mandatory requirements

- Bidders are required to submit 5 copies [One (1) Original plus four (4) Copies].
- All standard bidding documents must be duly completed and signed by authorised official. In case of a JV, Consortium or similar relationship/arrangements; bidders must submit standard bidding documents for entities in an arranged business relationship and accompanied by an agreement.
- Bidders must be registered with National Treasury Centralised Supplier Database.
- Compulsory briefing session certificate.

(b) Stage 2 – <u>Mandatory Requirements</u>

Bidders who fail to meet the mandatory requirements will be disqualified from further evaluation.

(c) Stage 3 – <u>Functionality Evaluation</u>

This process will be used which comprises of two steps

<u>Step 1</u> will be assessed on written proposals and bidders are expected to score at least a minimum of **20 points** to qualify for the next step

<u>Step 2</u> will be based on presentations. Bidders are expected to score minimum of **50 points.**

NB: Bidders will be required to score at least 70 points on functional evaluation in order to qualify for stage 4.

(d) **Stage 4 – <u>Price and Preference Points Evaluation</u>** Bidders will be evaluated on a 90/10 Preference Point System (i.e. 90 points on Price and 10 points on B-BBEE).

NB: Due to different pricing models envisaged, shortlisted bidders will be invited to develop standard templates jointly with the RTMC team to be used for this stage.

Once the template has been developed, closing date and time for submission of the financial proposal will be agreed upon in a joint sitting with RTMC and all shortlisted bidders.

1.1 STAGE 1 – STANDARD COMPLIANCE REQUIREMENTS

NOTE: BIDDERS WHO FAIL TO COMPLY WITH BELOW STANDARD COMPLIANCE REQUIREMENTS WILL BE DISQUALIFIED FROM FURTHER EVALUATION.STANDARD COMPLIANCE REQUIREMENTS	Comply (Yes / No)
ENVELOPE ONE (1)	
Total Number of copies submitted – Five (5) (1 original and 4 copies) PDF soft copy in a memory stick	
Compulsory Briefing Session Certificate	
Proof of CSD Registration (CSD number or CSD report). Registration on CSD (available on www.csd.gov.za)	
SBD1: Invitation to bid and company information	
SBD4: Declaration of interest	
SBD8: Declaration of bidder's past supply chain management practice	
SBD9: Certificate of independent bid determination	
SBD6.1: Preference points claim form	

1.2 STAGE 2 – MANDATORY REQUIREMENTS

NOTE: A BIDDER WHO FAILS TO MEET THE ABOVE MANDATORY REQUIREMENT WILL BE DISQUALIFIED FROM FURTHER EVALUATION

ITEM	DESCRIPTION	YES	NO
1.	Provide OEM Channel partner Certification as part of the response **Compliance requirement:** If Bidder is not the OEM then OEM Channel partner Certification must be attached. OR If Bidder is the OEM a letter confirming they are the OEM signed by duly authorised person must be attached.		
2.	Agree to provide OEM sign-off by OEM Certification as part of the response – **Compliance requirement:** If Bidder is not the OEM then provide letter from OEM confirming adherence. OR If Bidder is the OEM a letter confirming adherence signed by duly authorised person must be attached.		

1.3 STAGE 3 – FUNCTIONALITY CRITERIA

NB: FUNCTIONAL EVALUATION WIL BE ON WRITTEN RESPONSE

STEP 1: This process comprises of written responses/ proposals.

DESCRIPTION	POINTS
A. References of Similar Work Done	**30**
A1 The bidder to demonstrate experience in similar work done Bidder shall be required to provide reference letter/s from customer for a project of similar environment • 1 similar assignment = **20 points** • 2 similar assignments= **25 points** • 3 and more similar assignments= **30 points** **COMPLIANCE REQUIREMENT** Bidders are expected to attach copies of reference letters from Organisations/entities where similar services are currently and previously rendered. The following details must at least be reflected in the content of the reference letter/s: - • Name and short description of similar service rendered /involved in • Duration of involvement, • Value of the contract, • Contactable References. (letter of references in letterhead of the clients signed by authorized persons)	
STEP 1: FUNCTIONALITY	**30**

NB: BIDDERS ARE EXPECTED TO SCORE MINIMUM OF TWENTY (20) POINTS IN ORDER TO QUALIFY FOR STEP 2.

STEP 2: PRESENTATION

BIDDERS WILL BE REQUIRED TO SCORE A MINIMUM OF 50 POINTS

PRESENTATION	70
The bidder/s is expected to make presentation to RTMC to demonstrate the overall solution with reference to the following: **1. Total solution to RTMC requirements = 10 points** **Compliance requirements:** Based on the understanding and diagnosis, the bidder is expected to give a total solution to RTMC requirements as stated on the scope of work: - **NB: List any critical variables and provide a narrative for each.** **2. Financial model = 30 points** The Corporation is funded from revenue collected on a monthly basis and therefore places a premium on cash flow. The Corporation is amenable to a finance arrangement or hybrid model (combination of outright purchase and lease) over the period (5 years) that minimises the opportunity cost of its cash reserves. **Compliance requirements:** ➢ Bidder to propose the funding model/s to the RTMC and to reflect the following: - ✓ Pros and Cons of each model points (highlight two key points for each) = 9 (3 point for each –the assumption is that the response will be	

based on three finance models)

- ✓ Motivate the choice of the preferred model (Cost benefit analysis) = 6 points

- ✓ Sources of funding (Bidder is expected to give detailed information, i.e., profile, credibility and interest rates/financial benefits funder can give) = 15 points

NB: Kindly note that at this stage pricing is not required however should the bidder wish to motivate the above, hypothetical costing should be used for the purpose of presentation.

3. **Subcontracting = 10 Points**

➢ Bidder is encouraged to subcontract emerging enterprises as part of empowerment SMMEs especially those from Historically disadvantage communities to at least ensure participation in the bid

- ✓ 5 to 10 percent subcontracting = 2 points

- ✓ Above 10 to 15 percent subcontracting = 5 points

- ✓ Above 15 percent subcontracting = 10 points

Compliance requirements:

- ✓ Letter of commitment confirming subcontracting of any part of the contract to QSE or EME which is at least 51% black owned

4. **Implementation Strategy and Methodology = 20 points**

Compliance requirements:

➢ Bidder is required to give an indication on how to phase in the project without impacting on the existing operations

- ✓ Business continuity model = 10 points

- ✓ Implementation Plan =10 points

The following variables should be used when responding to the above: -

i) Endian Conversion

ii) Support for a period of 5 years

➢ time of call-to-repair

iii)   Automatic equipment reporting / Call out

	iv)	Oracle DB Licence/Core Ratio	
	v)	Ability to ensure High Availability of Core Services to prevent SPOF	
	vi)	Redundancy/Duplication (Component level)	
	vii)	Recoverability (Fault-tolerant engineering methods)	
	viii)	Hot Swappable Components or Peripherals	

Storage

i)   Auto-tiering on storage

ii)   Copy on Write Technology

iii)   Clone and or Snapshot functionality compatible with Oracle databases

iv)   Site replication software

v)   Support Hardware or software compression

The values on the table below will be used to evaluate the above.

VALUE	DESCRIPTION
5- Excellent	Meets and exceeds the functionality requirements
4- Very Good	Above average compliance to the requirements
3- Good	Satisfactory and should be adequate for stated element
2- Average	Compliance to the requirements
0- Non-Compliant	Does not comply to the requirements

STEP TWO SUB TOTAL	**70**

OVERALL TOTAL FOR FUNCTIONALITY	**100**

NB: BIDDERS WILL BE REQUIRED TO SCORE A MINIMUM OVERALL SCORE OF 70 POINTS IN ORDER TO QUALIFY FOR STAGE 4.

1.4 STAGE FOUR – PRICE AND B-BBEE (PREFERENCE POINTS EVALUATION)

CRITERIA	MAXIMUM POINTS

Price	90
B-BBEE Rating	10
Grand Total	**100**

NB: Due to different pricing models, shortlisted bidders will be invited to develop standard templates jointly with the RTMC team to be used for this stage.

Once the template has been developed, closing date and time for submission of the financial proposal will be agreed upon in a joint sitting with RTMC and all shortlisted bidders.

SECTION: 3
ANNEXURE AND STANDARD BIDDING DOCUMENTS

See the attached SBD forms (All SBD forms must be signed)

BIDDING DOCUMENTS : GENERAL INFORMATION

1. The bidding forms are drawn up so that certain essential information is to be furnished in a specific manner. Any additional particulars shall be furnished in the enclosed questionnaire(s) or in a separate annexure.

2. The bidding forms should not be retyped or redrafted but photocopies may be prepared and used. Additional offers may be made for any item, but only on a photocopy of the page in question. Additional offers made in any other manner may be disregarded.

3. Bidding forms not filled in using a computer and printer shall be completed in black ink.

4. Bidders shall check the numbers of the pages and satisfy themselves that none are missing or duplicated. No liability shall be accepted in regard to claims arising from the fact that pages are missing or duplicated.

5. The forms in respect of Preference Points Claim, if attached, shall be completed and submitted with the completed Bid.

6. Firm bid prices and delivery periods are preferred. Consequently, bidders shall clearly state whether prices and delivery periods will remain firm for the duration of the contract or not.

7. If non-firm prices are submitted, this fact should be clearly stated in the bidding documents.

8. Where items are specified in detail, the specifications from an integral part of the bidding document and bidders shall indicate in the space provided whether the items offered are to specification or not.

9. In respect of the paragraphs where the items offered are strictly to specification, bidders shall insert the words "as specified".

10. In cases where the items are not to specification, the deviations from the specifications shall be indicated.

11. The bid prices shall be given in the units shown.

12. All prices shall be quoted in South African currency.