



NEC3 Professional Services Contract (PSC3)

**Contract between Eskom Holdings SOC Ltd
(Reg No. 2002/015527/30)**

**and
(Reg No.)**

**for The Procurement of Load Forecasting Tool and
licenses for Distribution and National Transmission
Company of South Africa (NTCSA) for a period of
five (05) years**

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CONTRACT No.

PART C1: AGREEMENTS & CONTRACT DATA

Document reference	Title	No of pages
C1.1	Form of Offer & Acceptance [to be inserted from Returnable Documents at award stage]	[•]
C1.2a	Contract Data provided by the <i>Employer</i>	[•]
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C1.1 Form of Offer & Acceptance

Offer

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

The Procurement of Load Forecasting Tool and licenses for Distribution and National Transmission Company of South Africa (NTCSA) for a period of five (05) years

The tenderer, identified in the Offer signature block, has

<i>either</i>	examined the documents listed in the Tender Data and addenda thereto as listed in the Returnable Schedules, and by submitting this Offer has accepted the Conditions of Tender.
<i>or</i>	examined the draft contract as listed in the Acceptance section and agreed to provide this Offer.

By the representative of the tenderer, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance the tenderer offers to perform all of the obligations and liabilities of the *Consultant* under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the *conditions of contract* identified in the Contract Data.

The offered total of the Prices exclusive of VAT is	R
Value Added Tax @ 15% is	R
The offered total of the Prices inclusive of VAT is	R
(in words)	

This Offer may be accepted by the *Employer* by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document including the Schedule of Deviations (if any) to the tenderer before the end of the period of validity stated in the Tender Data, or other period as agreed, whereupon the tenderer becomes the party named as the *Consultant* in the *conditions of contract* identified in the Contract Data.

Signature

Name

Capacity

**For the
tenderer:**

Name &
signature of
witness

Date

Acceptance

By signing this part of this Form of Offer and Acceptance, the *Employer* identified below accepts the tenderer's Offer. In consideration thereof, the *Employer* shall pay the *Consultant* the amount due in accordance with the *conditions of contract* identified in the Contract Data. Acceptance of the tenderer's Offer shall form an agreement between the *Employer* and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

Part C1	Agreements and Contract Data, (which includes this Form of Offer and Acceptance)
Part C2	Pricing Data
Part C3	Scope of Work: The Scope

and drawings and documents (or parts thereof), which may be incorporated by reference into the above listed Parts.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Returnable Schedules as well as any changes to the terms of the Offer agreed by the tenderer and the *Employer* during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Form of Offer and Acceptance. No amendments to or deviations from said documents are valid unless contained in this Schedule.

The tenderer shall within two (2) weeks of receiving a completed copy of this agreement, including the Schedule of Deviations (if any), contact the *Employer's Agent* (whose details are given in the Contract Data) to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the *conditions of contract* identified in the Contract Data at, or just after, the date this agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed and signed original copy of this document, including the Schedule of Deviations (if any).

Signature

Name

Capacity

**for the
Employer**

Eskom Holdings SOC Limited

Name &
signature of
witness

Date

Schedule of Deviations

Note:

1. To be completed by the Employer prior to award of contract. This part of the Offer & Acceptance would not be required if the contract has been developed by negotiation between the Parties and is not the result of a process of competitive tendering.
2. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
3. A tenderer's covering letter must not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid be the subject of agreement reached during the process of Offer and Acceptance, the outcome of such agreement shall be recorded here and the final draft of the contract documents shall be revised to incorporate the effect of it.

No.	Subject	Details

By the duly authorised representatives signing this Schedule of Deviations below, the Employer and the tenderer agree to and accept this Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules, as well as any confirmation, clarification or changes to the terms of the Offer agreed by the tenderer and the Employer during this process of Offer and Acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Form shall have any meaning or effect in the contract between the parties arising from this Agreement.

For the tenderer:

For the Employer

Signature

Name

Capacity

On behalf
of

.....
(Insert name and address of organisation)

(Insert name and address of organisation)

Name &
signature
of witness

Date _____

C1.2 PSC3 Contract Data

Part one - Data provided by the *Employer*

Clause	Statement	Data
1	General	
	The <i>conditions of contract</i> are the core clauses and the clauses for main Option	
	dispute resolution Option	A: Priced contract with activity schedule
	and secondary Options	W1: Dispute resolution procedure
		X1: Price adjustment for inflation
		X2 Changes in the law
		X3 Multiple currencies
		X7 Delay damages
		X9 Transfer of rights
		X10 <i>Employer's Agent</i>
		X11: Termination by the <i>Employer</i>
		X7 Limitation of Liability
		Z: <i>Additional conditions of contract</i>
	of the NEC3 Professional Services Contract (April 2013) ¹	
10.1	The <i>Employer</i> is (Name):	Eskom Holdings SOC Ltd (reg no: 2002/015527/30), a state owned company incorporated in terms of the company laws of the Republic of South Africa
	Address	Registered office at Megawatt Park, Maxwell Drive, Sandton, Johannesburg
	Tel No.	011 800 8111
11.2(9)	The <i>services</i> are	Provision of Documentation Collection, The Procurement of Load Forecasting Tool and licenses for Distribution and National Transmission Company of South Africa (NTCSA) for a period of five (05) years

¹ Available from Engineering Contract Strategies Tel 011 803 3008 Fax 011 803 3009 and www.ecs.co.za

11.2(10)	The following matters will be included in the Risk Register	None
11.2(11)	The Scope is in	Part 3: Scope of Services
12.2	The <i>law of the contract</i> is the law of	the Republic of South Africa
13.1	The <i>language of this contract</i> is	English
13.3	The <i>period for reply</i> is	one (01) week
13.6	The <i>period for retention</i> is	4 weeks following Completion or earlier termination.

2 The Parties' main responsibilities

25.2	The <i>Employer</i> provides access to the following persons, places and things	access to	access date
		1 Eskom premises country wide	as and when required

3 Time

31.2	The <i>starting date</i> is.	TBA		
11.2(3)	The <i>completion date</i> for the whole of the <i>services</i> is.	TBA		
11.2(6)	The <i>key dates</i> and the <i>conditions</i> to be met are:	Condition to be met		key date
		1	To be determined for Eskom Instruction	TBD
31.1	The <i>Consultant</i> is to submit a first programme for acceptance within	Not applicable		
32.2	The <i>Consultant</i> submits revised programmes at intervals no longer than	Not applicable		

4 Quality

40.2	The quality policy statement and quality plan are provided within	Not applicable
42.2	The <i>defects date</i> is	Four (4) weeks after Completion of the services related to each Task Order

5 Payment

50.1	The <i>assessment interval</i> is	the 25 th day of each successive month.
50.3	The <i>expenses</i> stated by the <i>Employer</i> are	N/A
51.1	The period within which payments are made is	30 days from receipt of a valid Tax Invoice.
51.2	The <i>currency of this contract</i> is the	South African Rand

51.5 The *interest rate* is the publicly quoted prime rate of interest charged by the Standard Bank of South Africa Limited at the time an amount payable in SA Rand was due.

6	Compensation events	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.		
7	Rights to material	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.		
8	Indemnity, insurance and liability			
81.1	The amounts of insurance and the periods for which the <i>Consultant</i> maintains insurance are			
	Event	Cover	Period following Completion of the whole of the <i>services</i> or earlier termination	
	Liability for failure by the <i>Consultant</i> to use the skill and care normally used by professionals providing services similar to the <i>services</i>	Whatever the <i>Consultant</i> deems necessary in respect of each claim, without limit to the number of claims	See Notes to Consultants in Annexure A	
	death of or bodily injury to a person (not an employee of the <i>Consultant</i>) or loss of or damage to property arising from or in connection with the <i>Consultant's</i> Providing the Services.	Whatever the <i>Consultant</i> deems necessary for any occurrence or series of occurrences arising out of one event without limit to the number of claims.	See Notes to Consultants in Annexure A	
	death of or bodily injury to employees of the <i>Consultant</i> arising out of and in the course of their employment in connection with this contract	As prescribed by the Compensation for Occupational Injuries and Diseases Act No. 130 of 1993 and the <i>Consultant's</i> common law liability for people falling outside the scope of the Act with a limit of indemnity of not less than R500 000-00 (five hundred thousand) in respect of each claim, without limit to the number of claims	As <i>Consultant</i> deems necessary	

81.1	The <i>Employer</i> provides the following insurances	Refer to Annexure A for details of insurance provided by the <i>Employer</i>.
82.1	The <i>Consultant's</i> total liability to the <i>Employer</i> for all matters arising under or in connection with this contract, other than the excluded matters, is limited to	The total amount of the Purchase Order
9	Termination	There is no reference to Contract Data in this section of the core clauses and terms in italics used in this section are identified elsewhere in this Contract Data.
10	Data for main Option clause	
G	Term contract	
21.4	The <i>Consultant</i> prepares forecasts of the total Time Charge and <i>expenses</i> at intervals no longer than	Four (4) weeks.
50.4	The <i>exchange rates</i> are those published in	Not applicable
11	Data for Option W1	
W1.1	The <i>Adjudicator</i> is	the person selected from the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering Panel of Adjudicators by the Party intending to refer a dispute to him. (see www.ice-sa.org.za). If the Parties do not agree on an Adjudicator the Adjudicator will be appointed by the Arbitration Foundation of Southern Africa (AFSA).
W1.2(3)	The <i>adjudicator nominating body</i> is:	the Chairman of the ICE-SA Division (or its successor body) of the South African Institution of Civil Engineering. (See www.ice-sa.org.za).
W1.4(2)	The <i>tribunal</i> is:	arbitration
W1.4(5)	The <i>arbitration procedure</i> is	the latest edition of Rules for the Conduct of Arbitrations published by The Association of Arbitrators (Southern Africa) or its successor body.
	The place where arbitration is to be held is	South Africa
	The person or organisation who will choose an arbitrator	
	• if the Parties cannot agree a choice or • if the <i>arbitration procedure</i> does not state who selects an arbitrator, is	the Chairman for the time being or his nominee of the Association of Arbitrators (Southern Africa) or its successor body.
12	Data for secondary Option clauses	

X1	Price adjustment for inflation	
X1.1	The index is	The Consumer Price Index (CPI) and will apply on the anniversary of the contract.
		Fixed for the first twelve (12) months of the contract
X2	Changes in the law	
X2.1	The law of the project is	South African Law
X9	Transfer of rights	There is no reference to Contract Data in this Option and terms in italics used in this Option are identified elsewhere in this Contract Data.
X10	The <i>Employer's Agent</i>	
X10.1	The <i>Employer's Agent</i> is Name: Address The authority of the <i>Employer's Agent</i> is	To carry out all obligations in the contract on behalf of the <i>Employer</i>
X11	Termination by the <i>Employer</i>	There is no reference to Contract Data in this Option and terms in italics used in this Option are identified elsewhere in this Contract Data.

Z1 Cession delegation and assignment

- Z1.1 The *Consultant* does not cede, delegate or assign any of its rights or obligations to any person without the written consent of the *Employer*.
- Z1.2 Notwithstanding the above, the *Employer* may on written notice to the *Consultant* cede and delegate its rights and obligations under this contract to any of its subsidiaries or any of its present divisions or operations which may be converted into separate legal entities as a result of the restructuring of the Electricity Supply Industry.

Z2 Joint ventures

- Z2.1 If the *Consultant* constitutes a joint venture, consortium or other unincorporated grouping of two or more persons or organisations then these persons or organisations are deemed to be jointly and severally liable to the *Employer* for the performance of this contract.
- Z2.2 Unless already notified to the *Employer*, the persons or organisations notify the *Employer* within two weeks of the Contract Date of the key person who has the authority to bind the *Consultant* on their behalf.
- Z2.3 The *Consultant* does not alter the composition of the joint venture, consortium or other unincorporated grouping of two or more persons without the consent of the *Employer* having been given to the *Consultant* in writing.

Z3 Change of Broad Based Black Economic Empowerment (B-BBEE) status

- Z3.1 Where a change in the *Consultant's* legal status, ownership or any other change to his business composition or business dealings results in a change to the *Consultant's* B-BBEE status, the *Consultant* notifies the *Employer* within seven days of the change.
- Z3.2 The *Consultant* is required to submit an updated verification certificate and necessary supporting documentation confirming the change in his B-BBEE status to the *Employer* within thirty days of the notification or as otherwise instructed by the *Employer*.
- Z3.3 Where, as a result, the *Consultant's* B-BBEE status has decreased since the Contract Date the *Employer* may either re-negotiate this contract or alternatively, terminate the *Consultant's* obligation to Provide the Services.
- Z3.4 Failure by the *Consultant* to notify the *Employer* of a change in its B-BBEE status may constitute a reason for termination. If the *Employer* terminates in terms of this clause, the procedures on termination are those stated in core clause 91. The payment on termination includes a deduction of the forecast of the additional cost to the *Employer* of completing the whole of the services in addition to the amounts due in terms of core clause 92.1.

Z4 Confidentiality

- Z4.1 The *Consultant* does not disclose or make any information arising from or in connection with this contract available to Others. This undertaking does not, however, apply to information which at the time of disclosure or thereafter, without default on the part of the *Consultant*, enters the public domain or to information which was already in the possession of the *Consultant* at the time of disclosure (evidenced by written records in existence at that time). Should the *Consultant* disclose information to Others in terms of clause 23.1, the *Consultant* ensures that the provisions of this clause are complied with by the recipient.
- Z4.2 If the *Consultant* is uncertain about whether any such information is confidential, it is to be regarded as such until notified otherwise by the *Employer*.
- Z4.3 In the event that the *Consultant* is, at any time, required by law to disclose any such information which is required to be kept confidential, the *Consultant*, to the extent permitted by law prior to disclosure, notifies the *Employer* so that an appropriate protection order and/or any other action can be taken if possible, prior to any disclosure. In the event that such protective order is not, or cannot, be obtained, then the *Consultant* may disclose that portion of the information which it is required to be disclosed by law and uses reasonable efforts to obtain assurances that confidential treatment will be afforded to the information so disclosed.
- Z4.4 The taking of images (whether photographs, video footage or otherwise) of the *Employer's* project works or any portion thereof, in the course of Providing the Services and after Completion, requires the prior written consent of the *Employer*. All rights in and to all such images vests exclusively in the *Employer*.

Z5 Waiver and estoppel: Add to core clause 12.3:

- Z5.1 Any extension, concession, waiver or relaxation of any action stated in this contract by the Parties, or the *Adjudicator* does not constitute a waiver of rights, and does not give rise to an estoppel unless the Parties agree otherwise and confirm such agreement in writing.

Z6 Provision of a Tax Invoice. Add to core clause 51

- Z6.1 The *Consultant* (if registered in South Africa in terms of the companies Act) is required to comply with the requirements of the Value Added Tax Act, no 89 of 1991 (as amended) and to include the *Employer's* VAT number 4740101508 on each invoice he submits for payment.

Z7 Notifying compensation events

- Z7.1 Delete from the last sentence in core clause 61.3, "unless the *Employer* should have notified the event to the *Consultant* but did not".

Z8 *Employer's* limitation of liability

- Z8.1 The *Employer's* liability to the *Consultant* for the *Consultant's* indirect or consequential loss is limited to R0.00 (zero Rand)

Z9 Termination: Add to core clause 90.1, at the second main bullet point, fourth sub-bullet point, after the words "against it":

- Z9.1 or had a business rescue order granted against it.

Z10 Delay damages: Addition to secondary Option X7 Delay damages (if applicable in this contract)

- Z10.1 If the *Consultant's* payment of delay damages reaches the limits stated in this Contract Data for Option X7 or Options X5 and X7 used together, the *Employer* may terminate the *Consultant's* obligation to Provide the Services.
- Z10.2 If the *Employer* terminates in terms of this clause, the procedures on termination are those stated in core clause 91. The payment on termination includes a deduction of the forecast of the additional cost to the *Employer* of completing the whole of the *services* in addition to the amounts due in terms of core clause 92.1.

Z11 Ethics

For the purposes of this Z-clause, the following definitions apply:

Affected Party	means, as the context requires, any party, irrespective of whether it is the <i>Consultant</i> or a third party, such party's employees, agents, or Subconsultants or Subconsultant's employees, or any one or more of all of these parties' relatives or friends,
Coercive Action	means to harm or threaten to harm, directly or indirectly, an Affected Party or the property of an Affected Party, or to otherwise influence or attempt to influence an Affected Party to act unlawfully or illegally,
Collusive Action	means where two or more parties co-operate to achieve an unlawful or illegal purpose, including to influence an Affected Party to act unlawfully or illegally,
Committing Party	means, as the context requires, the <i>Consultant</i> , or any member thereof in the case of a joint venture, or its employees, agents, or Subconsultants or the Subconsultant's employees,
Corrupt Action	means the offering, giving, taking, or soliciting, directly or indirectly, of a good or service to unlawfully or illegally influence the actions of an Affected Party,
Fraudulent Action	means any unlawfully or illegally intentional act or omission that misleads, or attempts to mislead, an Affected Party, in order to obtain a financial or other benefit or to avoid an obligation or incurring an obligation,
Obstructive Action	means a Committing Party unlawfully or illegally destroying, falsifying, altering or concealing information or making false statements to materially impede an investigation into allegations of Prohibited Action, and
"Prohibited Action"	means any one or more of a Coercive Action, Collusive Action Corrupt Action, Fraudulent Action or Obstructive Action.

- Z 11.1 A Committing Party may not take any Prohibited Action during the course of the procurement of this contract or in execution thereof.
- Z 11.2 The *Employer* may terminate the *Consultant's* obligation to Provide the Services if a Committing Party has taken such Prohibited Action and the *Consultant* did not take timely and appropriate action to prevent or remedy the situation, without limiting any other rights or remedies the *Employer* has. It is not required that the Committing Party had to have been found guilty, in court or in any other similar process, of such Prohibited Action before the *Employer* can terminate the *Consultant's* obligation to Provide the Services for this reason.
- Z 11.3 If the *Employer* terminates the *Consultant's* obligation to Provide the Services for this reason, the amounts due on termination are those intended in core clauses 92.1 and 92.2.
- Z 11.4 A Committing Party co-operates fully with any investigation pursuant to alleged Prohibited Action. Where the *Employer* does not have a contractual bond with the Committing Party, the *Consultant* ensures that the Committing Party co-operates fully with an investigation.

Annexure A: Notes to Consultants

This is guidance to Consultants to assist their decision making about what cover to arrange in the insurance to be provided by the Consultant. The guidance is not part of the contract and the Employer carries no liability for it. The Consultant must obtain its own advice.

1. For the purpose of works contracts, insurance provided by Eskom (the *Employer*) has been arranged on the basis of “project” or “contract” value, where the value is the total of the Prices at Completion of the whole of the works including VAT.

A “project” is a collection of contracts or work packages to be undertaken as part of a single identified capital expansion or refurbishment of a particular asset or facility.

A “contract” is a single contract not linked to or being part of a “project”.

2. There are three main “formats” of cover and deductible structure; Format A, Format B and Format Dx.

Format A is for a project or contract value less than or equal to R350M (three hundred and fifty million Rand) inclusive of VAT.

Format B is for a project or contract value greater than R350M (three hundred and fifty million Rand) inclusive of VAT.

In the case of contracts / packages within a project:

- For a contract / package of R50M which is part of a R400M project, Format B will apply
- For a contract / package of R250M which is part of a R6 billion project, Format B will apply;
- For a contract / package of R120M which is part of a R350M project Format A will apply;

For a contract which is not part of a project the same limits apply:

- For a contract of R50M, Format A will apply
- For a contract of R355M, Format B will apply.

Format Dx applies only to Distribution Division projects and contracts. If a Distribution Division project or contract exceeds the Format A limit, the Eskom Insurance Management Services [EIMS] need to be contacted for advice on how to formulate the insurance cover. Cover and deductibles for Distribution Division are per the relevant policy available on the internet web link given below.

Format A generally applies to Transmission Division projects and contracts. If a Transmission Division project or contract exceeds the Format A limit, the Eskom Insurance Management Services [EIMS] need to be contacted for advice on how to formulate the insurance cover.

3. Further information and full details of all Eskom provided policies and procedures may be obtained from:

http://www.eskom.co.za/Tenders/InsurancePoliciesProcedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx

4. The Insurance which the *Consultant* is to provide against his liability for claims made against him arising out of his failure to use reasonable skill and care (first row in the Insurance Table of clause 81.1 in the PSC3) should also indemnify the *Consultant* for those sums which he could become legally liable to pay as damages arising from any claim first made against him and reported to Insurers some time after Completion of the whole of the *services*. Hence the *Consultant* needs to ensure that his cover is in place at least until all his liabilities under the contract have expired. Such claims could arise out of any negligent act, error or omission committed or alleged to have been committed by the *Consultant* in the conduct of professional services in connection with the contract.

C1.2 Contract Data

Part two - Data provided by the *Consultant*

Clause	Statement	Data	
10.1	The <i>Consultant</i> is (Name): Address Tel No. Fax No.		
22.1	The <i>key people</i> are: 1 Name: Job: Responsibilities: Qualifications: Experience: 2 Name: Job: Responsibilities: Qualifications: Experience:		
11.2(3)	The <i>completion date</i> for the whole of the <i>services</i> is	TBA	
11.2(10)	The following matters will be included in the Risk Register	None	
11.2(13)	The <i>staff rates</i> are:	name/designation	rate
	Either complete here or cross refer to a schedule in Part C2.2		
25.2	The <i>Employer</i> provides access to the following persons, places and things	access to	access date
		1	
		2	
		3	

31.1	The programme identified in the Contract Data is		
50.3	The <i>expenses</i> stated by the <i>Consultant</i> are	item	amount
A	Priced contract with activity schedule		
11.2(25)	The <i>task schedule</i> is in		

PART 2: PRICING DATA
PSC3 Option A

Document reference	Title	No of pages
C2.1	Pricing assumptions: Option A	[•]
C2.2	The <i>activity schedule</i>	[•]

C2.1 Pricing assumptions: Option A

1. How work is priced and assessed for payment

How work is priced and assessed for payment

Option A is a lump sum form of contract where the work to be done is broken down into well defined activities each listed in the *activity schedule* and priced by the tendering consultant as a lump sum. (See clause 11.2(18)).

Only completed activities which are without Defects are assessed for payment at each assessment date; no part payment is made if the activity is not completed by the assessment date. (See clause 11.2(15)).

The *activity schedule* may change after the Contract Date as a result of compensation events. (See clause 11.2(14))

Function of the Activity Schedule

The Activity Schedule is only a pricing document. Clause 53.1 in Option A states: "Information in the Activity Schedule is not Scope". Specifications and descriptions of the service or any constraints on how it is to be done are included in the Scope and per Clause 21.1, "The *Consultant* Provides the Services in accordance with the Scope" and therefore not in accordance with the Activity Schedule.

Link to the programme

Clause 31.4 states that "The *Consultant* provides information which shows how each activity on the Activity Schedule relates to the operations on each programme which he submits for acceptance". Ideally the tendering consultant will develop a high level programme first then resource each activity on the programme and thus arrive at the lump sum price for that activity both of which can be entered into the *activity schedule*.

Preparing the activity schedule

Generally it is the tendering consultant who prepares the *activity schedule* by breaking down the work described within the Scope into suitable activities which can be well defined, shown on a programme and priced as a lump sum.

The description of each activity must be sufficient to determine exactly what work is included within it and to know when it has been completed.

The *Employer*, in his Instructions to Tenderers or in a Tender Schedule, may have listed some items that he requires the *Consultant* to include in his *activity schedule* and be priced accordingly.

It is assumed that in preparing his *activity schedule* the *Consultant*:

- Has taken account of the guidance given in the PSC3 Guidance Notes;
- Understands the function of the Activity Schedule and how work is priced and paid for;
- Is aware of the need to link the Activity Schedule to activities shown on each programme which he submits for acceptance by the *Employer*;
- Has listed and priced activities in the *activity schedule* which are inclusive of everything necessary and incidental to Providing the Service in accordance with the Scope, as it was at the Contract Date, as well as correct Defects except correcting a Defect for which the *Consultant* is not liable;
- Has priced work he decides not to show as a separate activity within the Prices of other listed activities in order to fulfil the obligation to complete the service for the tendered total of the Prices.
- Understands there is no adjustment to the lump sum Activity Schedule price if the amount, or quantity, of work within that activity later turns out to be different to that which the *Consultant* estimated at time of tender. The only basis for a change to the Prices is as a result of a compensation event.

However, the *Consultant* does not have to allow in his Prices for matters that may arise as a result of a compensation event.

Expenses

Expenses are not included in the *activity schedule* items and are assessed separately at each assessment date, unless an additional condition of contract (Z clause) is included which requires that expenses be included within activity Prices and not paid separately.

Expenses associated with employing a staff member in Providing the Services are listed separately either by the *Employer* in Contract Data provided by the *Employer* or by the *Consultant* in Contract Data provided by the *Consultant*. As only the *expenses* listed may be claimed by the *Consultant*, all other cost to the *Consultant* associated with Providing the Services must be included within the activity schedule prices or *staff rates*.

Rate adjustment for inflation of *expenses* is explained in the PSC3 Guidance Notes.

Staff rates

When a compensation event occurs changes to the affected Activity Schedule item or new priced items in the Activity Schedule are assessed as the actual Time Charge for work already done and the forecast Time Charge for work not yet done. (See clause 63.1 and 63.14 in Option A)

The Time Charge is the sum of the products of each of the *staff rates* multiplied by the total staff time appropriate to that rate properly spent on work in this contract. (Clause 11.2(13))

Tendering consultants are advised to consult the NEC3 Professional Services Contract Guidance Notes and Flow Charts before entering *staff rates* into Contract Data, or in C2.2 below.

This is because *staff rates* can be established in one of three ways:

- rates for named staff,
- rates for categories of staff or
- rates related to salaries paid to staff.

Rate adjustment for inflation, if necessary, can be based either on actual salary adjustments or by using Option X1: Price adjustment for inflation. See pages 13 and 14 in the PSC3 Guidance Notes.

C2.2 the *activity schedule*

Use this page as a cover page to the *Consultant's activity schedule* or include here in this format:

Item No.	Programme Reference	Activity description	Price (excl VAT)
		Total of the Prices	

This section can be used when the *staff rates* and *expenses* are considerable in number and more conveniently located here than in the Contract Data. Entries in the Contract Data should refer to this section of Part 2.

Remember to state whether the *staff rates* and *expenses* exclude or include VAT.

The *staff rates* are:

No.	Designation (or category) or name of staff member	Rate per {hour, day, month} excluding VAT

The *expenses* are:

No.	Expense item	Amount / rate excluding VAT

Document reference	Title	No of pages
C3.1	This cover page	1
	<i>Employer's Scope</i>	3
	Total number of pages	4

C3.1: *EMPLOYER'S SCOPE*

High level background

Eskom requires load forecasting application software for grid and network planning to predict the future electrical demand for its entire area of supply. Load forecasting is performed by both the Distribution (bottom-up forecast) and Transmission (top-down forecast) divisions.

The tool must operate in a centralised environment that will seamlessly integrate all the nine (09) Eskom Operating Units (OU) forecast into an aggregated national forecast to support both the grid planning department and the network planning departments within Transmission and Distribution.

The load forecasting tool must be able to integrate with the current and the future technologies within Eskom. The forecast tool must also have the functionality to consider the impact of Distributed Generation resources on the forecast.

Detailed description and volumes of the product requested

Distribution and Transmission are currently using a load forecasting tool that is not supported. The two divisions are now looking for a solution to replace the current system and provide new capabilities to the business.

The following requirements should be provided for, breakdown or decomposition of the functionalities of the Load Forecasting tool. The bidders should provide the high-level solution architecture diagram with descriptions. The bidders should provide cost decomposition as per the pricing schedule template, also provide an implementation approach and timelines (Timelines must be in MS Projects/Excel and PDF).

For all selected vendors a further demonstration of the solution will be required which will need to align to the use cases or Customer journeys as per the business requirements. The demonstrated solution should not be any alpha or beta versions but must be an officially released stable version. The solution can include Free and Open Source (FOSS) products.

The technology changes will be covered in the contract, this also includes scalability of data usage, future cloud migration and any platform changes. The bidders should provide a 5 – 10 year technology roadmap.

Scope Diagram

The work package scope provides the high-level target architecture components that are expected to be impacted by the architecture engagement. It links the work package to the relevant business, information, application, and technology components that may be impacted:

- Add: New component to be added to the target architecture.
- Remove: Existing component to be removed from the target architecture.

- Change: Existing component to be modified in the target architecture.
- Re-use: Existing component to be re-used in its current format in the target architecture.

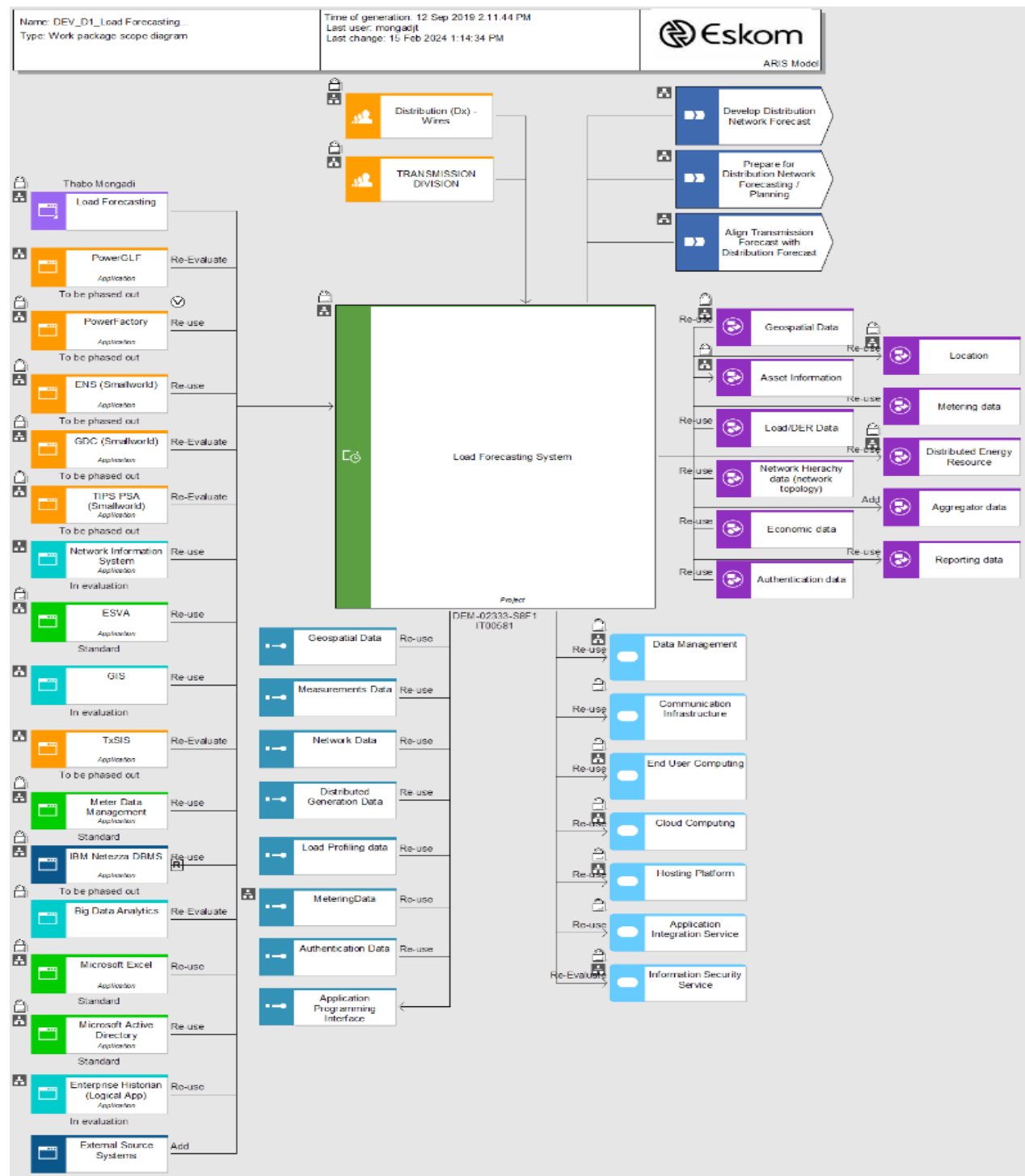


Figure 1: Application Flow Diagram

The application communication flow context provides a description of the flow of data between the Load Forecasting tool and other applications.

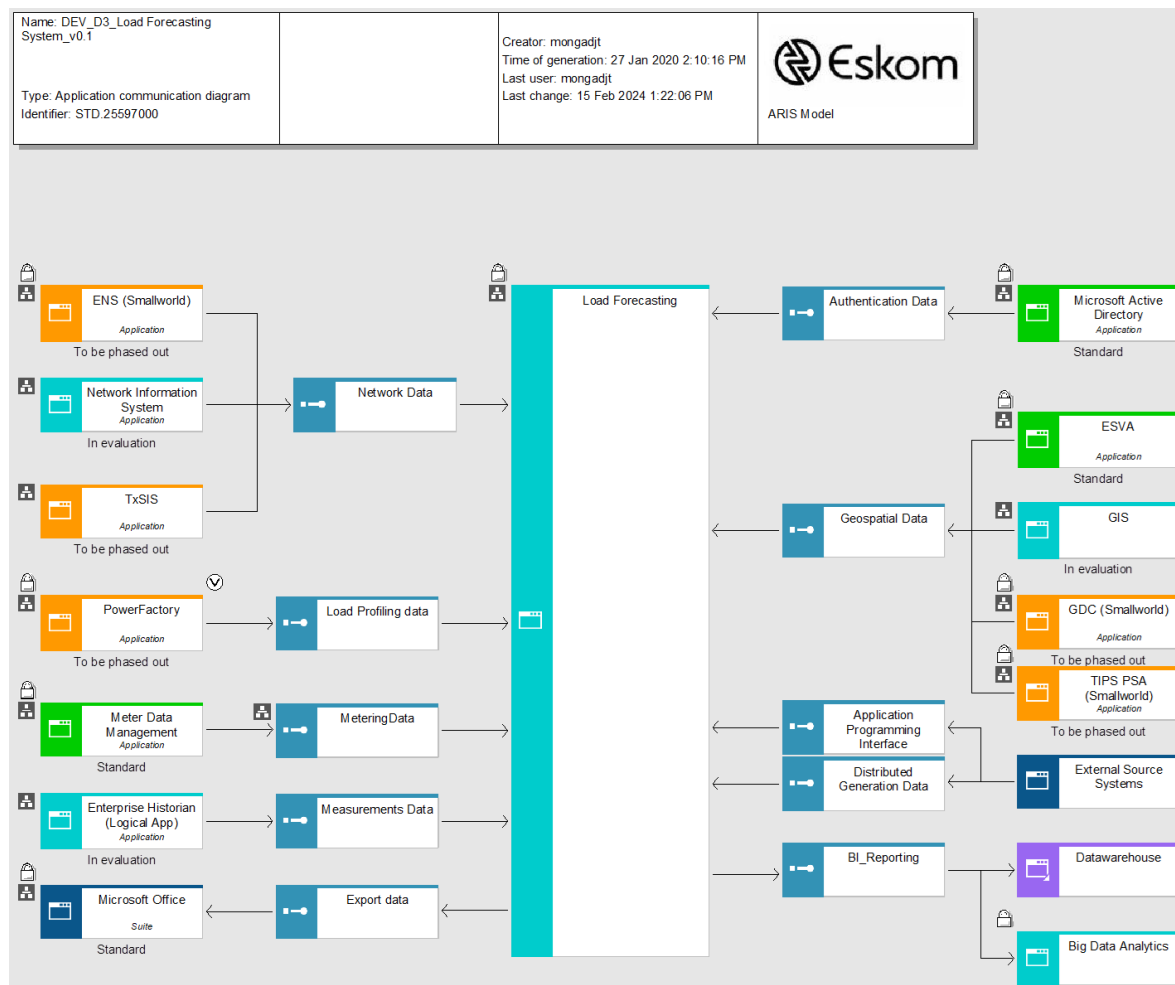


Figure 2: Application Flow diagram

The scope shall include:

Deliverable	Description
Functional Specifications and Detailed Design	Deliver Functional Specifications and Detailed (Physical) design based on the User Requirement Specification and Logical Design provided as part of this RFP.
	Facilitate review and approval of the design as required by Eskom methodology and governance. Ensure cyber security compliance and integration end points. The Tenderer is required to render solution architect services to this project which includes making sure that architecture approval is gained before build and again before go-live.
Integration	Analyse,

	design, develop, test, and deploy integration solutions based on the designs. External interfaces to integrate using Oracle Fusion 12c and IBM WebSphere (Data Power), thus the vendor should be well skilled to work with the mentioned technologies. The Integration Centre of Excellence (ICOE) governance process must be followed for all approvals. Kindly reference "SOA Workgroup artefacts". All diagrams and processes are to be captured in the Sparx Enterprise Architect (EA). All CIM message artefacts (including Mapping Document) to be placed in the Eskom defined CIM SVN. All code to be placed in Eskom defined Code SVN repository All artefacts to be placed in the Eskom share point.
	Sparx Enterprise Architecture and Altova XMLSpy licences are to be provided by the Vendor for the staff that will be executing the formulation or updating of the Diagrams and Process during the Design
	The following are the integration and Testing activities and artefacts to be produced and presented at the committee for approval and sign off:
	Business test case document. Integration specification document. Mapping Document. CIM message artefacts including WSDL's and XSD's. Code and unit testing review. Deployment Guide. SIT testing

	review of results in ALM. SIT test case sign-off. Performance testing review of results in ALM. Performance testing sign-off. Pre-transfer documents for go-live approval. Test requirements in ALM. Test cases and results in ALM. Defects managed in ALM. Test plan Document. Non-functional Test plan document. Test closure reports documents. Performance test scripts and results.
	Provide an Integration message modeller to complete the following: Analysis of message requirements. Model or update integration message which follow a Common information model. Create payloads and envelopes. Generate xsd, message model and model dictionary.
	All testing requirements must cover all identified interfaces that have been identified.
Build and Deploy	Provide test cases, Unit Testing on the Development (DEV) environment, deploy base solution to the Development,

	Quality Assurance, Pre-Production, Production, and Disaster Recovery environments prior to go-live.
	Ensure all environments are updated following successful test conclusion. Compile go-live plan. Ensure the solution obtains the necessary governance approvals:
	Architecture Design Review Committee for pre-transfer, Change Review Management Committee (CRMC), Go/No-Go pack and decision by Group IT General Manager and Data take-on and Go-Live in PROD environment. Code to be checked into Eskom's code repository. Any development or APIs exposed outside the integration platform will be developed using Eskom software development technology standards such as .NET technologies, JAVA, Python.
Test	All testing activities will be managed in the Eskom approved testing tools. (ALM, UFT and Loadrunner) The testing team must provide unit test results before resuming the next cycle/level of testing as per defined entry and exit criteria. A signed off test closure report is required before a test milestone is completed. The following testing and testing milestones must be completed: • Unit Testing – test results from the Tenderer's team. This cycle of testing must be done on the development environment. • System Integrated Testing, Functionality testing (in QA – end to end functional testing and integration testing. That means testing with other systems and ensuring that all requirements have been successfully configured). This testing must be driven & executed by the Vendor

	but must include Eskom staff for completeness & authenticity. This cycle of testing must be done on the QA (testing) environment • Non-Functional Testing (performance testing and disaster recovery testing). This testing must be driven & executed by the Vendor but must include Eskom staff for completeness & authenticity. This cycle of testing must be done on the pre-production environment • User Acceptance Testing (Testing by the Eskom customer team that the system is working and meets requirements). This testing must be driven by the Tenderer but must be executed by Eskom staff for completeness & authenticity. This cycle of testing must be done on the pre-production environment
	The testing team must complete Disaster Recovery Testing on the Disaster Recovery (DR) environment and complete and Vulnerability Testing.
	The testing team must adhere to the Eskom's TCoE testing standard to be provided as part of the RFP document.
	All the levels will require an internal Eskom resource unless communicated otherwise. The vendor will be required to sign-off knowledge transfer acceptance certificate as part of every deliverable to ensure knowledge is transferred throughout the process and does not need to wait until the end of the project.
Stabilise and handover	Ensure adoption and good performance of the solution. Provide support to stabilise the solution. Conclude handover to business. Conclude handover to support. Close-out the project.
Monitoring	The solution to be monitored using Eskom systems monitoring tools for support.
Project Management	Deliver project documentation required by the Eskom Group IT PMO. This includes but is not limited to:
	Detailed integrated schedule. Weekly progress reports. Payment

	schedule forecast and actuals tracking against it. Delivery Acceptance Certificates with supporting approved test details. Provide information required by Eskom team members in order to facilitate governance of the project and its deliverables. Integrate the current application support teams into the project delivery team. Deliverable Breakdown Structure indicating all fixed cost deliverables with the cost of each deliverable and the total cost of all deliverables.
	List of deliverables and responsibilities that the Tenderer view as being excluded from their scope of delivery. Payment schedule for all deliverables in the Deliverable Breakdown Structure. A payment schedule must be provided for all deliverables on a fixed-cost basis. During execution deliverables will be evaluated by Eskom and a Deliverable Acceptance Certificate issued when approved. Approved deliverables can then be invoiced. Projected monthly cash flow. Summarise the payment schedule provided per month.
	A Project schedule in MS Project format OR Excel format that contain all costed deliverables as milestones and also include activities to deliver such milestones. The top level work breakdown in the schedule must reflect the Software Delivery Life Cycle stages (Design; Build, Test, Train, Deploy, Stabilise – after go-live support).
Other Responsibilities	Dependencies and pre-requisites on Eskom must be clearly stipulated. Total man-hours and skill of all Tenderer resources combined. An organogram and a list of all the team members of the Tenderer that will deliver the proposed project including the following information for each and every team member:
	Name and surname, Confirmation that person is a current employee of the Tenderer. Role of person on the proposed team, Description of Education with supporting certificates as proof. Relevant Experience and Skills. Relevant product certification/s achieved with supporting certificates as proof.

	Explanation of Tenderer's experience on Eskom's current environment where relevant and motivation why Tenderer is best positioned to deliver on this project. Indicate all other pre-requisites and, or exclusions that must be addressed before the start of the project with clear timelines.
	All deliverables produced on this contract shall become the property of Eskom with Eskom holding sole rights to it. All deliverables shall be provided in maintainable format for each evaluation (i.e. editable documents; source code and scripts).
	Project change control refers to the changes in project Scope, Time and Cost. Changes will follow the process below. Changes must be approved by the Requester, Business Owner, Impacted Project Manager, Project Delivery Portfolio Manager, and Project Sponsor. Depending on the scale of the change, other approvals external to the project may be required. Guidance in this regard will be provided by the Project Portfolio Manager. Approved changes must be noted in steering committee minutes.
	The Tenderer must include the response to this request the applicable resource cost rate/s that shall be used to calculate cost of such changes.
Security	Refer to the "240-170007584 Rev 2 - Web Services Security Standard.pdf" Document.
	Account Registration and verification of users. Authentication security capability for administration, support and management need to use Eskom username standard. Employees can use same org credentials. Input verification and validation should be supported for all the credentials.
	Property-Role based authentication. Authentication should be token based. Authentication Token e.g. OAuth2 and SAML2, etc. Threat Protection
	E2E Encryption: Data must be

	encrypted in transit Data must be encrypted at rest Data must be protected while in use.
	Strict adherence to the Protection of Personal Information Act, No 4 of 2013
Cloud	Cloud infrastructure provisioning for QA, Pre-prod, Development Production and Disaster Recovery. Service provider to ensure provisioning is done for QA, and other environments which will be needed for development, testing, training, and go-live as and when required. Eskom is going to continue with changes as and when needed by Business so the provisioning of these environments when required is important.
	ALL CLOUD SERVICE PROVIDERS to adhere to Eskom ITO-Schedule Q – SUPPLEMENTARY TERMS FOR CLOUD COMPUTING

High level Requirements

Load/DER forecasting tool is to be used in Distribution (Dx) network planning as the primary demand forecasting tool also used by Transmission (Tx) grid planning and energy forecasting departments. This makes use of the Dx Planning Outputs as a Grid Code requirements for this purpose.

The following are High level requirements:

- Represent the existing and planned network in a form of a hierarchy
- Represent load and Distributed Generation geographically and geospatially
- Handling of load profile and day type
- Calculate the load forecast
- Display the forecast results
- Input data and data exchange
- GIS capabilities
- View/Edit object attributes data
- Copy and Paste data
- Display multiple screens
- Display object forecast horizon
- Update the next base year
- Technical Requirements
- Forecasting Algorithm

- Access control

Detailed Requirements below:

Functionality grouping	BRS Number	Functionality	Business Rule No and Description	Weight
Represent the existing and planned network hierarchy	BRS 1-1	Ability to represent both the existing and planned network in a hierarchy tree from feeder T-off (sub-feeder level) summing to the substation busbar which summate to the main transmission substation, to the Eskom region (Operating Unit) and to the national level.		Show Stopper (P1 C6)
	BRS 1-2	Ability to incorporate both the load profile and the Distributed Generation inputs (including variable renewable energy) in the network hierarchy.		Show Stopper (P1 C6)
	BRS 1-3	Ability to incorporate elements such as battery storage, electric vehicle, energy efficiency, Demand Side Management etc. in the forecast		Critical (P1 C5)
	BRS 1-4	The system must enable the network hierarchy to be disaggregated into separate study areas for separate load forecasting capabilities.		Show Stopper (P1 C6)
	BRS 1-5	The network summation hierarchy must represent the electrical network topology in the form of a parent-child association.		Show Stopper (P1 C6)
	BRS 1-6	The network summation hierarchy's parent-child association must allow nodes to have both loads/DER and nodes as children.		Show Stopper (P1 C6)
	BRS 1-7	In the network summation hierarchy, loads/DER must have one or more load/DER portion depending on the category.		Show Stopper (P1 C6)
	BRS 1-8	Load/DER portions must be viewable and editable.		Show Stopper (P1 C6)
	BRS 1-9	The network summation hierarchy must enable the user to customise its structure and elements (Transformers, Feeders, Lines, Substations, Load/DER)		Show Stopper (P1 C6)
	BRS 1-10	There must be a unique identifier for each element. The unique Identifier used in the		Show Stopper (P1 C6)

		NIS (Network Information System) Functional Location must also be used on the load forecasting application software tool.		
	BRS 1-11	Ability to identify the element type (i.e., Transformer/Line etc) in the network summation hierarchy		Show Stopper (P1 C6)
	BRS 1-12	The summation hierarchy must show status icons for every object. Status: "calculated" or "not calculated" / "no results".	BR 1: A clear indication of an object status is required.	Show Stopper (P1 C6)
	BRS 1-13	The network summation must be done at all levels of the network. The summation of demand forecasts at load/DER portion level must be available for the Daily, Seasonal and annual profiles at all hierarchy levels.		Show Stopper (P1 C6)
	BRS 1-14	The ability to set the granularity of the profiles selected. (Minutes, Hourly etc)		Show Stopper (P1 C6)
	BRS 1-15	The network node summation must be done in real-time as and when updates are done, and calculations must always include annual maximum demand and annual daily profile (for each day type) of both real and apparent power.		Critical (P1 C5)
	BRS 1-16	The network node summation must store and display the calculated load/DER portion make-up per node.		Important (P1 C3)
	BRS 1-17	The network summation hierarchy's default display year must always be the base forecast year.		Show Stopper (P1 C6)
	BRS 1-18	The network summation hierarchy must enable the user to select the display year.		Show Stopper (P1 C6)
	BRS 1-19	The network summation hierarchy must enable the user to customize the network hierarchy for any year in the forecast horizon by dragging and dropping or cutting and pasting loads and nodes or any appropriate mechanism. This is to be done to emulate future network topology changes in corresponding future years.		Show Stopper (P1 C6)
	BRS 1-20	During customization, the network summation hierarchy must enable the movement of elements and all its children to	BR 2: The network summation hierarchy must prompt the user prior to executing a	Show Stopper (P1 C6)

		the new parent for all years from the selected year to the end of the forecast horizon.	move.	
BRS 1-21		The network hierarchy must enable the user to navigate its structure.		Show Stopper (P1 C6)
BRS 1-22		The network hierarchy must enable the user to manually zoom to an elements associated GIS representation or to use an auto zoom function.		Show Stopper (P1 C6)
BRS 1-23		The network hierarchy must enable the user to toggle an auto zoom function.		Show Stopper (P1 C6)
BRS 1-24		When selecting an element in the hierarchy, its associated details must be displayed.		Show Stopper (P1 C6)
BRS 1-25		The load/DER portion makeup view must be accessible for a selected element in the summation hierarchy.		Show Stopper (P1 C6)
BRS 1-26		The network hierarchy must enable the user to create new unlinked (not linked to a GIS polygon) load/DER.		Show Stopper (P1 C6)
BRS 1-27		The network hierarchy must enable the user to create new elements.	BR 3: An element must always be assigned a distinct name	Show Stopper (P1 C6)
BRS 1-28		The network hierarchy must enable the user to link and/or unlinked GIS polygon load/DER		Show Stopper (P1 C6)
BRS 1-29		The network hierarchy must enable the user to create alternative views (portfolios). The alternative views can be study areas such as Network Development Plans area, which are not necessarily aligned to a Main Transmission Subsystem.		Show Stopper (P1 C6)
BRS 1-30		The network hierarchy must enable the user to find items through smart searching of all name and description attributes		Show Stopper (P1 C6)
BRS 1-31		Ability to represent the load/DER forecast both geographically as well as according to the different load/DER profiles.		Show Stopper (P1 C6)
BRS 1-32		Load/DER must be modelled at customer level and be able to summate via the network hierarchy (The forecasting application system must allow users to calculate the load/DER forecast at any level on the hierarchy).		Show Stopper (P1 C6)
BRS 1-33		Distributed Energy Resource (including variable renewable		Show Stopper

		energy) profiles need to be represented as part of the network hierarchy. Information should contain Load profiles, Generation profiles, Resource profile (wind and solar profiles) Battery storage charges and discharged cycles and have the ability to provide the net outcome per element.		(P1 C6)
Handling of load profile and day type	BRS 2-1	Capability to import perspectives from PSA and other tools to portray Geospatial overlays		Show Stopper (P1 C6)
	BRS 2-2	Capability of translating forecast information into Geospatial overlays. Such information as, power factor, growth rate, Load/DER, Load/availability factor, Energy densities etc.		Show Stopper (P1 C6)
	BRS 2-3	Spatial granularity of load/DER representation must be defined at customer level.		Show Stopper (P1 C6)
	BRS 3-1	Ability to use the Eskom load/DER profile information when modelling the load behaviour considering daily, seasonal and weather variations.	BR 4: load/DER Classes/entities/clusters must refer to sector specific collections (for an example: residential, commercial, industrial) of subclasses only.	Show Stopper (P1 C6)
	BRS 3-2	Ability to customise the load subclasses to reflect customer behavioural and technology changes.		Show Stopper (P1 C6)
	BRS 3-3	Ability to enable the user to view and edit attributes created for generic classes and subclasses.		Show Stopper (P1 C6)
	BRS 3-4	Ability to enable user to view class and subclass information.		Show Stopper (P1 C6)
	BRS 3-5	The system must only allow system administrators to add and edit class and subclass data. Access control must be implementable.		Show Stopper (P1 C6)
	BRS 3-6	Detailed profiles and forecast attributes must be defined at load/DER subclass level		Show Stopper (P1 C6)
	BRS 3-7	Load/DER profiles and growth curves must be re-useable		Show Stopper (P1 C6)
	BRS 3-8	The load/DER profiles must be defined for each subclass for a variety of timeframe.		Show Stopper (P1 C6)
Calculate the load/DER forecast	BRS 4-1	The tool response time must provide an efficient algorithm to run forecast calculations real-		Show Stopper (P1 C6)

	time at all levels of the network hierarchy fast and effectively.		
BRS 4-2	Due to the nature of the large amount of data that will be needed the solution should have the capacity to handle large data sets effectively		Show Stopper (P1 C6)
BRS 4-3	Ability to implement Mathematical growth models (Including but not limited to): • Gompertz-curve (s-curve), • Hierarchical Recursive Gompertz-curve fit (HRGF), • Historical trending/curve fitting, • Percentage growth, • Fixed annual increment, • End customer number (Electrification). These are all required at small-area level (spatial forecasts)		Show Stopper (P1 C6)
BRS 4-4	The system must have the ability to continuously update Element level summations for uncalculated Elements and provide results.	BR 5a: The load/DER forecasting calculations must be performed real-time as and when updates are made. BR 5b: The calculation must still take place even when there is an uncalculated Element, and the results must be returned.	Show Stopper (P1 C6)
BRS 4-5		BR 6: The load/DER forecasting calculations must be performed real-time as and when updates are made	Show Stopper (P1 C6)
BRS 4-6	Where a load/DER portion has invalid forecast parameters the load/DER summation must still take place and must set the parent summation levels as calculated (remove "no-results" flag), but the specific load/DER objects which have portions with invalid forecast parameters must remain marked as uncalculated. The above approach must be done to ensure time is not wasted on recalculating these	BR 7: The load /DER forecasting calculations must be performed in real-time as and when updates are made	Show Stopper (P1 C6)

Display the forecast results		"no-results" branches.		
	BRS 4-7	When summing nodes in the network hierarchy daily load/DER profiles should be used. When different conditions (Summer, Winter. Low load, peak load etc) are summated, appropriate factoring should be applied (coincident factor etc) between different load classes and profiles.		Show Stopper (P1 C6)
	BRS 4-8	The tool should be capable of calculating the energy at any given node/element in the network hierarchy for any specified time (day, week, month, year)		Show Stopper (P1 C6)
	BRS 5-1	The tool must allow flexibility to show and analyse forecast in terms of: • raphs – forecast to be visualized using graphs. • rofiles – there must be flexibility to view the load/DER profile for a selected part of the network. • rofiles – there must be flexibility to view the energy resource profile for a selected part of the network. • patial view – users must have an option to view results for a selected spatial area (like a municipality, network development area, etc). • ational view – the results must be viewable at all network/spatial levels including the national view. • tudy area view – the results must portray		Show Stopper (P1 C6)

	the forecast for the disaggregated area under review.		
BRS 5-2	The graph and data view must be a combined floating window. The window must be a dockable window and give the user an option to dock, undock or close.	BR 8: When the user is working on the data view window, the graph views must not close but rather display the changes currently made from the data view.	Show Stopper (P1 C6)
BRS 5-3	The graph and data view must have a default display of the demand growth forecast, base year profile and underlying annual demand growth data.		Show Stopper (P1 C6)
BRS 5-4	The user must have the ability to customize the graph style		Show Stopper (P1 C6)
BRS 5-5	The underlying data series must be expandable to show the results at load/DER class and load/DER subclass level.		Show Stopper (P1 C6)
BRS 5-6	The result data view can be customised to show apparent power Kilo-Volt-Ampere (kVA) or real power (kW), Power factor, Energy(kWh). The default power is the apparent power (kVA).		Show Stopper (P1 C6)
BRS 5-7	Ability to enter external forecast at levels such as MTS, Provincial (Operating Unit) and national for alignment and validation purposes (Municipality forecast, Integrated Resource Plan (IRP) forecast). To be displayed in the same window adjacent to each other to enable comparison.		Show Stopper (P1 C6)
BRS 5-8	Capability to present forecasting information system in a "Dashboard" format.		Show Stopper (P1 C6)
BRS 5-9	The forecasting tool must be able to take such relationships that will be provided in a form of regression models. Based on the developed relationships, the forecasting tool must provide for scenarios such as impact of increased population growth, increased mortality rate, etc on the forecasted demand. The ability to model the effect of such external influences on the forecast such as: • conomy,		Show Stopper (P1 C6)

		• olitical decision making • nd climate influences		
	BRS 5-11	The ability to perform and provide model validation functionality		Show Stopper (P1 C6)
	BRS 5-12	Capability to provide comprehensive data analysis and reporting including the following: • ustom forecast reports (selectable per network equipment or economic sector), • eographic data export (shapefiles), scenario definition based on spatial, economic and trending data, graphical display of results, Forecast reporting (.doc, .pdf, .csv, .xlsx) for any defined network object, geographical area or sector.		Show Stopper (P1 C6)
	BRS 5-13	Capability to enable scenario-based modelling or interface with the existing scenario-based modelling applications, to display the effect introduced by: • SM (Demand Side Management and Energy Efficiency), • G (Distributed • eneration), • PV (Solar Photo-voltaic), • V (Electrical Vehicles), • E (Renewable energy), Alternative energy sources, and disruptive energy efficiency measures.	BR 9: should be implemented on a small area basis (zone level).	Show Stopper (P1 C6)
Input data and data exchange	BRS 6-1	Ability to take geo-spatially referenced input data manually/imported, as well as Microsoft Excel data from the following sources (but not limited to): • easured data (MV90 or		Show Stopper (P1 C6)

		STAT Metering, MDMS, SCADA and EMS TEMSE) • easured data for all Distributed Generation (including variable renewable energy) resources. (The data will be sourced from EMS TEMSE) • ffile maps (such as Shape files) (such as Town and Regional Planning information and including economic (e.g., Gross Domestic Product (GDP), Gross value add, population growth, Inflation, Consumer Price Index (CPI), Commodities, etc) • nline maps (Web-based maps) in a geo-spatial format available on the internet		
	BRS 6-2	Capability of data integration such as hourly metering and generation data to obtain network behaviour.		Show Stopper (P1 C6)
	BRS 6-3	Ability to exchange data with the following systems (but not limited to): • ower System Simulation tool (DigSilent PowerFactory) • ntegrated Planning Solution (SmallWorld TIPS) • IS (Eskom Enterprise GIS) • icrosoft Excel • nline map • eticMaster • AWS for climate monitoring • EMSE (EMS /MDMS)		Show Stopper (P1 C6)

		Enterprise Spatial Viewer and Analysis (ESVA), • CADA • V90 • Active Directory		
	BRS 6-4	Ability to export load/DER profile, spatial data and load/DER forecast to power system simulation tools (PowerFactory and ReticMaster).		Show Stopper (P1 C6)
	BRS 6-5	Ability to import the existing network information from Integrated Planning Solution (SmallWorld TIPS).		Show Stopper (P1 C6)
	BRS 6-6	Ability to import the network information from SmallWorld TIPS to match it with planned network hierarchy to enable write-outs for Power Systems Simulation Tool (PSST).		Show Stopper (P1 C6)
	BRS 6-7	The system must enable the user to import/export data from/to a GIS system.	BR 10: The load forecasting tool must be able to read the following file formats but not limited to: • shp, • jpg, • png, • tiff, • dgn, • wfs, • wms, • gpk , • gdb, • DO Geometry, • Oracle GeoRaster • tc	Show Stopper (P1 C6)
	BRS 6-8	The GIS environment must enable a user to export load/DER polygons in the GIS view window to spatial datasets with various demand profiles.		Show Stopper (P1 C6)

GIS Capabilities	BRS 6-9	The GIS environment must enable a user to export load/DER polygons in the form of spatial data appropriate to the required system.		Show Stopper (P1 C6)
	BRS 6-10	Ability to import/export Excel spreadsheets files to/from the load forecasting tool.		Show Stopper (P1 C6)
	BRS 6-11	Ability to interface with web map services or web feature services.		Show Stopper (P1 C6)
	BRS 7-1	The GIS interface must provide a spatial interface to the user.		Show Stopper (P1 C6)
	BRS 7-2	The GIS interface must enable the user to create and select polygons that are linked to elements or element collections.		Show Stopper (P1 C6)
	BRS 7-3	The GIS interface must provide basic GIS Navigation functionality.	BR 11: Coordinate must be entered in one of the two formats: Decimal Degree: 24.4254677999343 - 25.5812394074721 or Degrees, Minutes Seconds: 24° 25' 32"E - 25° 34' 52"N	Show Stopper (P1 C6)
	BRS 7-4	The GIS styling for all generic items must be preconfigured for all users.	BR 12: The GIS styling must conform to the Eskom standards	Show Stopper (P1 C6)
	BRS 7-5	The initial styling setup for all GIS objects must include load/DER polygons, element geometry, Web map services and Web feature services.	BR 13: Each user must be able to customise their initial styling setup to suit their own preferences.	Show Stopper (P1 C6)
	BRS 7-6	Labelling of load/DER polygons must be preconfigured for all users.	BR 14: This functionality must provide full customization and be performed by the system administrator.	Show Stopper (P1 C6)
	BRS 7-7	Users must have the ability to toggle the labelling of load/DER polygons		Show Stopper (P1 C6)
	BRS 7-8	Spatial datasets must be available in the GIS interface.		Show Stopper (P1 C6)
	BRS 7-9	The GIS editor must enable the user to manually create and split load/DER polygons.		Show Stopper (P1 C6)
	BRS 7-10	The GIS editor must enable the user to merge load/DER polygons.		Show Stopper (P1 C6)
	BRS 7-11	The GIS editor must enable the user to edit load/DER polygons by moving, adding, or deleting polygon vertices.		Show Stopper (P1 C6)
	BRS 7-	The GIS editor must have a	BR 15: Wall-to-wall	Show

View/Edit object attributes data	12	snapping functionality to prevent users from having gaps between adjacent polygons.	representation of the load/DER polygons is required for the forecasted area.	Stopper (P1 C6)
	BRS 7-13	The GIS editor must include a data information tool that enables a “pop-up” that contains attribute data.		Show Stopper (P1 C6)
	BRS 7-14	The GIS environment must include a measuring tool.		Show Stopper (P1 C6)
	BRS 7-15	The GIS interface must have the functionality to create and explode multipart polygons.		Show Stopper (P1 C6)
	BRS 7-16	The GIS interface must support the creation of load/DER polygons based on imported spatial data.		Show Stopper (P1 C6)
	BRS 7-17	The GIS interface must have functionality to count the number of objects from an external shape file that falls within a selected load zone.		Show Stopper (P1 C6)
	BRS 8-1	An attribute information editor must provide the standard interface through which the user is enabled to edit element, load/DER object or load/DER portion attributes.		Show Stopper (P1 C6)
	BRS 8-2	An attribute editor must be populated with the data associated with the object selected in the summation hierarchy.		Show Stopper (P1 C6)
	BRS 8-3	If the user selects a linked load /DER polygon in the GIS, the linked load/DER object must be selected in the network summation hierarchy and the related load/DER object data must be loaded in an attribute editor.		Show Stopper (P1 C6)
	BRS 8-4	An attribute editor must enable the user to view and update forecast data for elements, load/DER objects and load/DER portions.		Show Stopper (P1 C6)
	BRS 8-5	The solution must enable the user to view the load/DER forecast data in the form of a table and the graph.		Show Stopper (P1 C6)
	BRS 8-6	A load/DER portion must always have at least one set of forecast parameters applicable for the forecast horizon.		Show Stopper (P1 C6)
	BRS 8-7	An attribute editor must enable the user to insert additional forecast parameters in a chosen period.		Show Stopper (P1 C6)

	BRS 8-8	An attribute editor must initiate a forecast recalculation real-time whenever a load/DER portion attribute is changed.		Show Stopper (P1 C6)
	BRS 8-9	An attribute editor must enable the user to select, if subclass parameters from the library or manual input forecast parameters are to be used		Show Stopper (P1 C6)
	BRS 8-10	An attribute editor must enable the user to select from the following forecast methods (but not limited to): • Fixed Increment - Fixed increment (in kVA or kW) • Fixed Percentage - Fixed percentage • Customer - After Diversity Maximum Demand (ADMD) per customer (kVA/customer) per unit growth curve • Customer - Small Scale Embedded Generation (SSEG) per customer(kW) per customer per unit growth curve • Spatial - Saturation load/DER per hectare (kVA/hectare. kW/hectare) per unit growth curve • Trend - Number of historical year data to use for trend • Annual - Enter annual demand/Generation data (kVA or kW) for every year in forecast horizon		Show Stopper (P1 C6)
	BRS 8-11	The load/DER object and higher-level elements to which an edited load/DER portion summates must be marked as uncalculated upon a portion edit. It shall remain flagged until it gets calculated by the tool automatically or by the user.		Show Stopper (P1 C6)
	BRS 8-12	When a user changes forecast parameters and are not valid (a		Show Stopper

Copy and Paste data		forecast cannot be calculated), the user must be warned that the forecast could not be completed.		(P1 C6)
	BRS 8-13	Ability to access the historical data from the load forecasting tool.		Show Stopper (P1 C6)
	BRS 8-14	In the forecasting tool, elements and load/DER object editors must include a functionality to maintain a unique identifier Plant Slot ID (PSID) for external datasets.		Show Stopper (P1 C6)
	BRS 9-1	It must be possible for a user to copy the data range from the forecasting tool to the Windows clipboard for all application components where a range of data is available.		Show Stopper (P1 C6)
	BRS 9-2	It must be possible for a user to paste a range copied from MS Excel or similar applications, into the forecasting tool attribute range for all application components where a range of data is used.		Show Stopper (P1 C6)
Display multiple screens	BRS 10-1	It must be possible for the forecasting tool to open multiple screens which must be linked to the same underlying data. This implies that selecting an object on the forecast tool interface will select the same object (and related data) in all other interfaces.		Show Stopper (P1 C6)
Display Object forecast horizon	BRS 11-1	Functionality must be available to a user to indicate visually the element and its location in the network hierarchy over the forecast horizon. This includes changes in network topology.		Show Stopper (P1 C6)
	BRS 11-2			Show Stopper (P1 C6)
Update the base forecast year	BRS 12-1	Ability to update the next base year.	BR 16: When updating the base forecast year, the following updates must be done: • ase load values at load portion level • hift of customer numbers for customer-based forecasts • hift of load portion make-	Show Stopper (P1 C6)

			- up corresponding to base year shift • hift of measured values (if implemented) in correspondence to base year shift • hift of measured values (4 series – installed, firm, Transmission forecast, another forecast) • hift of trend data • hift of custom % growth curve data • hift of manual forecast data The 'new' last year of the forecast horizon can be generated by means of extrapolation.	
Technical Requirements	BRS 13-1	Ability to interface with free service maps e.g., Google maps, Open Service Maps (OMS)	BR 17: All data and information shall comply with the organisational data integrity and information security policies.	Show Stopper (P1 C6)
	BRS 13-2	Ability to source wind and solar resource profiles from published sources such as the Wind Atlas and other reputable solar irradiation sources. Wind and solar resources' profiles must be available at a minimum of 15 minutes resolution with an option increase to an hour, month, season or year		Show Stopper (P1 C6)
Forecasting Algorithm	BRS 14-1	The system must have a capability to forecast spatially, what is likely to happen in an area based on some known information that will be provided by the user. Such information will be provided by means of spatially refenced data (offline, online or both). Example: there is a small airport that the government is planning to upgrade to an international airport. Currently,		Show Stopper (P1 C6)

	there are no developments around this airport. To the east of the airport, there is a dam that extends over 400 hectares. The tool must be able to take such information and give spatial predictions of the future developments in this area, such as these: • he road linking airport to town will be widened from single lane to two lanes, street lights and traffic lights. • arehouse developments around the airport. • ccommodation and conference facilities around the dam. • More accommodation along the road that links the airport and town.		
BRS 14-2	Quantities: The system must be able to forecast quantities based on the space available, learning from similar set-ups in the country, etc.		Show Stopper (P1 C6)
BRS 14-3	Time: The system must be able to phase forecast developments over a period of time		Show Stopper (P1 C6)
BRS 14-4	Converting to kVA and kW: Based on the subclass data and using similar developments as source of information, the system must convert the development information into electrical demand.		Show Stopper (P1 C6)
BRS 14-5	Scenario Analysis: Scenario Requirement 1: The system must provide more than 1 probable scenario with the probability/ranking of such scenarios. Such scenarios may be based on spatial: e.g.: no developments allowed around the dam, more accommodation & conference facilities to take place further away from town, etc.		Show Stopper (P1 C6)
BRS 14-6	Scenario Requirement 2: The system must allow the user to apply/activate alternative		Show Stopper (P1 C6)

Access Control		energy <i>behind the meter</i> scenarios (e.g., Photovoltaic (PV), gas, wind, Battery Energy Storage System (BESS), energy efficiency.		
	BRS 15-1	The solution should enable a forecast workflow mechanism that includes change monitoring and forecast approval. The forecast approver must be able to see the changes they are approving. Such changes must be accompanied by a system-generated summary of what is to be approved.		Show Stopper (P1 C6)
	BRS 15-2	Users must be assigned login credentials to use the system. The credentials must be the same ones used when logging into the Eskom IT system		Show Stopper (P1 C6)
	BRS 15-3	The system must have capability to allocate different access levels to the users: read only, read, and write for the whole database, read, and write for selected areas/collection of elements		Show Stopper (P1 C6)
	BRS 15-4	The system must keep a log of all changes made by the logged in user.		Show Stopper (P1 C6)

Training/Transfer of skills:

The table below shows the number of Eskom employees that must be trained:

Training	Training module	Number
End-users	Demand Load Forecasting	205
Support	Admin Training	6
Advanced	Business Admin Training	7

After contract award EAL will be informed of the training requirements and will be expected to manage the training process. (check the TEC doc) Advanced and End-User training for the first year quarterly, thereafter twice a year End-User training. Preferably in a classroom, booked in a centralised place (Gauteng, BUs to arrange). Vendor to provide comprehensive training material predominantly videos with supporting documents. Support training will be conducted online, there won't be any site visits.

Service Level Agreement requirements

The current load forecasting application software is classified as a business-critical system (Monday to Friday, 8x5) and therefore it will follow the business continuity plan.

The time it should take to recover the load forecasting system is 48 hours (Return to Service) and the time it should take to restore the data in case of a disaster is 2 days (Data loss).

Defect Category	Description	Acknowledgement and solution scoping	Resolution
Code defect	Are defect in code that result in the software not functioning properly or operating as designed. Code defect refer to software errors.	24hrs / 1 day	48 hrs / 2 days
Product defect	Third party software product anomalies, interoperability, and integration. Product defect refer to improper system operations	24 hrs / 1 day	48 hrs / 2 days
System defect	is a configuration fault, error or failure associated with embedded system software or custom build	16 hrs	16 hrs
Operation defect	defect related to user misunderstanding or incorrect use of the software and/or operational end-user error	Case by Case	Based upon agreed scope