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Collaborating To Power Up Southern Africa

Eskom National Transmission Company South Africa ™

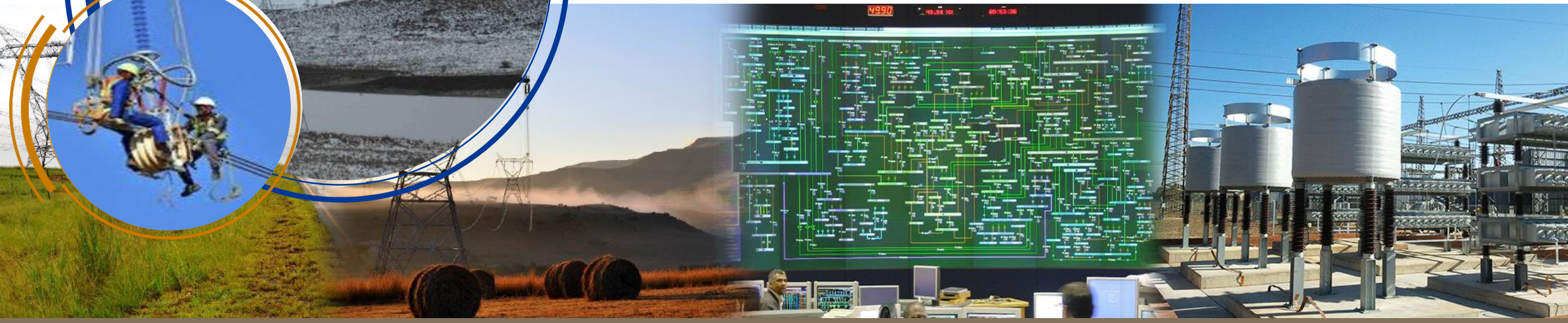
NTCSA Lines Construction Contractor Network & Collaboration Forum

Presented by: NTCSA

Engineering, Projects Delivery & Procurement & Supply Chain Management

Date: 14 July 2025

Time: 08:30-17:00



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Safety, Health, Environment, Quality & Security (SHEQS)

Geoffrey Small: Manager SHEQS

Safety, Health, Environment, Quality & Security (SHEQS)

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Content

- ✓ SHEQS integration into contract lifecycle
- ✓ Owner's Engineer (OE) & Engineer Procure Construct (EPC) Regulatory Requirements – Legal & other requirements
- ✓ RACI – SHEQS Internal Servicing Panels = Procure Construct (PC) Construct (C) and Conventional Procurement (CP) Contractor
- ✓ SHEQS Files & SACPCMP
- ✓ Comparison of Safety Incidents Over the Past Four (4) FY's
- ✓ Continual Improvement – DoEL Changes to Construction Regulations (CR) & Projects Delivery (PD) Initiatives
- ✓ Eskom Life-Saving Rules – Rule 6: Ensure Safe Live Working
- ✓ NTCSA and Environment Social Governance (ESG)
- ✓ Summary of ITP Structure & Approvals Process
- ✓ NCR Management
- ✓ Learning Lessons

SHEQS integration into Contract Life cycle

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Phase 1

Advise on SHEQS requirements based on the scope

Phase 2

SHEQS specification, risks assessment, tender SHEQS criteria and evaluation thereof

Phase 3

SHEQS evaluation and approval

Phase 4

SHEQS audit, inspection, work stoppages

Phase 5

Contractor SHEQS evaluation post contract

.

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Owner's Engineer (OE) & Engineer Procure Construct (EPC) Regulatory Requirements – Legal & other requirements

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Owner's Engineer (OE)

- Contract and Contractor Health and Safety Client issue ONLY Document Identifier_559-256321325 (SHEQS requirements) in an RFQ to all Contractors / Suppliers on the OE Panel.
- Bidder PLEDGE (sign Form A, Section C of 559-256321325) – OE

Engineer Procure Construct (EPC)

- Client issue ONLY Document Identifier_559-256051555 (SHEQS requirements) in a RFQ to all Contractors / Suppliers on the EPC Panel.
- Bidder PLEDGE (sign Form A, Section C of 559-256051555) – EPC Contractor

Engineer Procure Construct (EPC) 559-256051555

- A Contract/Project Quality Plan with important QA deliverables.
- A Project Execution Inspection and Test Plan (ITP) or Quality Control Plan (QCP)

Projects Delivery (PD) Mandate

To support the Transmission network availability and reliability through the development and execution of expansion, new build and refurbishment projects.

Toolkit to drive "Zero Harm & Excellence"

Engineer Procure Construct (EPC) – 559-256051555

Prepare and submit in accordance with the Environmental Authorization Requirements:

- A site file (reference 240-15160800 & 240-110600836).
- An Environmental Management Programme (EMPr).
- A Waste Management Plan.
- An Aspect and Impact Register.
- Environmental Method Statements.
- Appoint an Environmental Officer.
- Lease agreement and the municipality property zoning letter must be obtained prior to the establishment of the site camp for the line and/or substation project.

Owner's Engineer (OE) 559-256321325 & Engineer Procure Construct (EPC) 559-256051555

- STA as part of technical specifications in line with scope of work.
- Proof of criminal records/clearance results of employees shall be valid for 30 days (certified) at the time of submission and/or site readiness.
- Police Clearance Certificates issued by the South African Police Service Criminal Record Centre or the criminal record certificates are issued by a service provider (E.g., MIE) accredited by the South African Police Services.

RACI – SHEQS Internal Servicing Panels = Procure Construct (PC) Construct (C) and Conventional Procurement (CP) Contractor

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SHEQS Activity /Role	Client	PC, C, CP Contractor	Project Manager	Portfolio SHEQS Support	PD SHEQS Department
Client issue Document Identifier_559-586306088 (SHEQS requirements) for Scope / Works Information	A	R	C	R	R
Issue OH&S Specification in Works Information for Site Readiness	A	R	C	R	C
Issue Baseline Risk Assessment In Works Information for Site Readiness	A	R	C	R	C
Apply for Construction Work Permit (CWP)	A	R	C	C	R
Issue Environmental Requirements in Works Information for Site Readiness	A	R	C	R	C
Issue QC & QA requirements In Works Information	A	R	C	R	C
Design Safety & Sustainability Reviews	A	R	C	C	C
Issue STA, PSIRA Requirements (7 mandatory documents) for Site Readiness	A	R	C	R	C
Compliance with Environmental Permitting (EA, WULA, EMP, etc.)	A	R	A	R	C
Procurement of SHEQS-Compliant Materials	A	R	R	C	C
Site Safety, Security & Environmental Controls	A	R	I	R	I
Sustainability & Waste Management	A	R	I	R	I
Quality Inspection & Testing	A	R	I	R	I
Incident Report & Investigation	A	R	A	R	C
Training & Competency Programmes	A	R	I	R	R
Audits & Compliance Monitoring	A	R	I	R	R
Close-out SHEQS Documentation (NCR's, etc.)	A	R	A	R	C

SHEQS Files & SACPCMP

1. Examples of delays in submitting documents for SHEQS file approval prior to work commencing on site include the resubmission of incomplete documents and the appointment of key personnel for e.g., a registered Construction Health & Safety Officer (CHSO) or Construction Managers by contractors due to changes made to the original submitted organograms.

2. Further delay with documents for permit applications – Construction Work Permit.

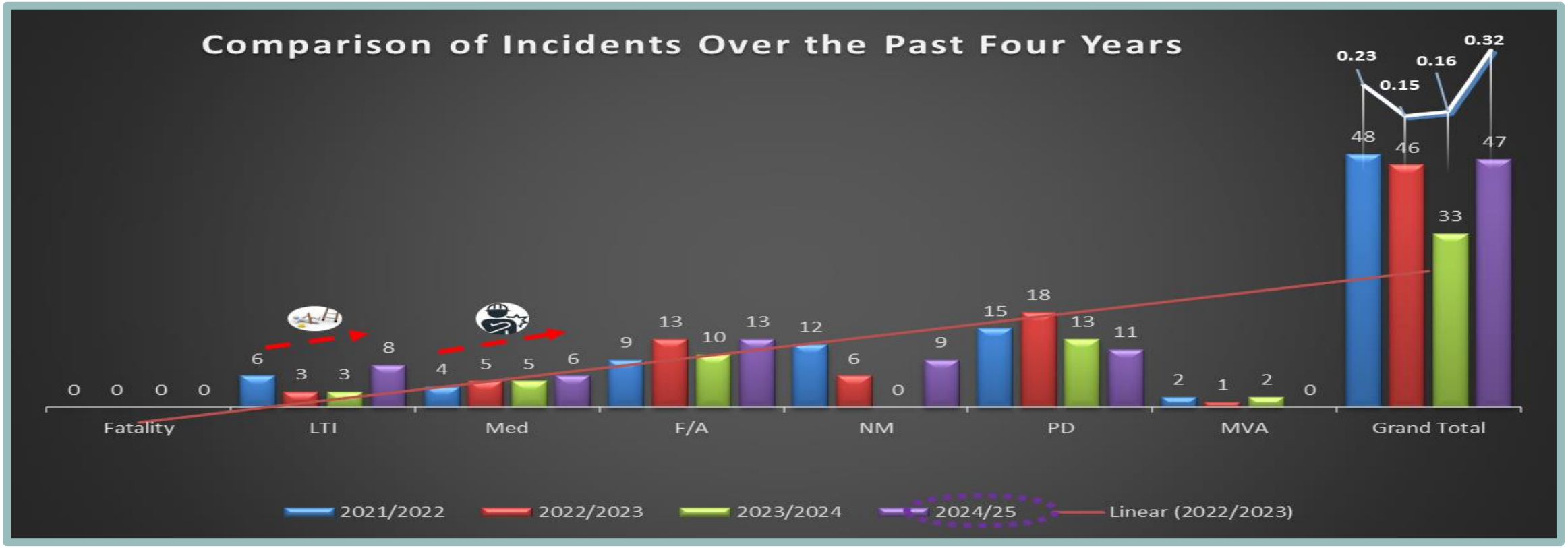
3. Through Project Managers, Portfolio SHEQS Resources provides SHEQS requirements based on procurement strategy.

SACPCMP Personnel

1. Availability of Construction Health & Safety Officer (CHSO) – Tender pricing vs contracts awarded.

2. Availability of Professional Construction Managers – Tender pricing vs contracts awarded.

Comparison of Safety Incidents Over the Past Four (4) FY 's



- The current spate of incidents is approaching the record high of 2021/22 FY incidents, we have acceded it LTIR record of 0.23 and are now sitting at 0.32 LTIR which is a record high in 4 yrs
- Though near-miss incidents reporting increased, but it still low compared to the First Aid incidents
- LTI & Med, were on an upward trend

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Continual Improvement – DoEL Changes to Construction Regulations (CR) & Projects Delivery (PD) Initiatives

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01 **The draft Construction Regulations (CR) are proposed by Department of Employment and Labour (DoEL)** with meaningful changes to take effect once gazetted for implementation. Revised e.g. , *Agent, Client, CHSM, etc.*

02 Time Injury Rate (LTIR) Tolerance Level for Employees, Contractors, and a combination thereof at an Eskom Level. **The LTIR Tolerance Level for Financial Year 2025/26 is 0.30** for all categories of reporting.

03 **PD Turnaround Plan/Safety Improvement Plan & Initiatives,** which places a strong emphasis on six key safety priorities: Accountability in OH&S, Training, Supervision, Design to Construct, Contractor Management, Remote Working.

04 **Rewards & Recognition Competitions** for e.g. individual safety excellence, team safety achievement, most improved safety performance, safety innovation award, safety leadership award.

DEL Draft

Eskom Life-Saving Rules – Rule 6: Ensure Safe Live Working

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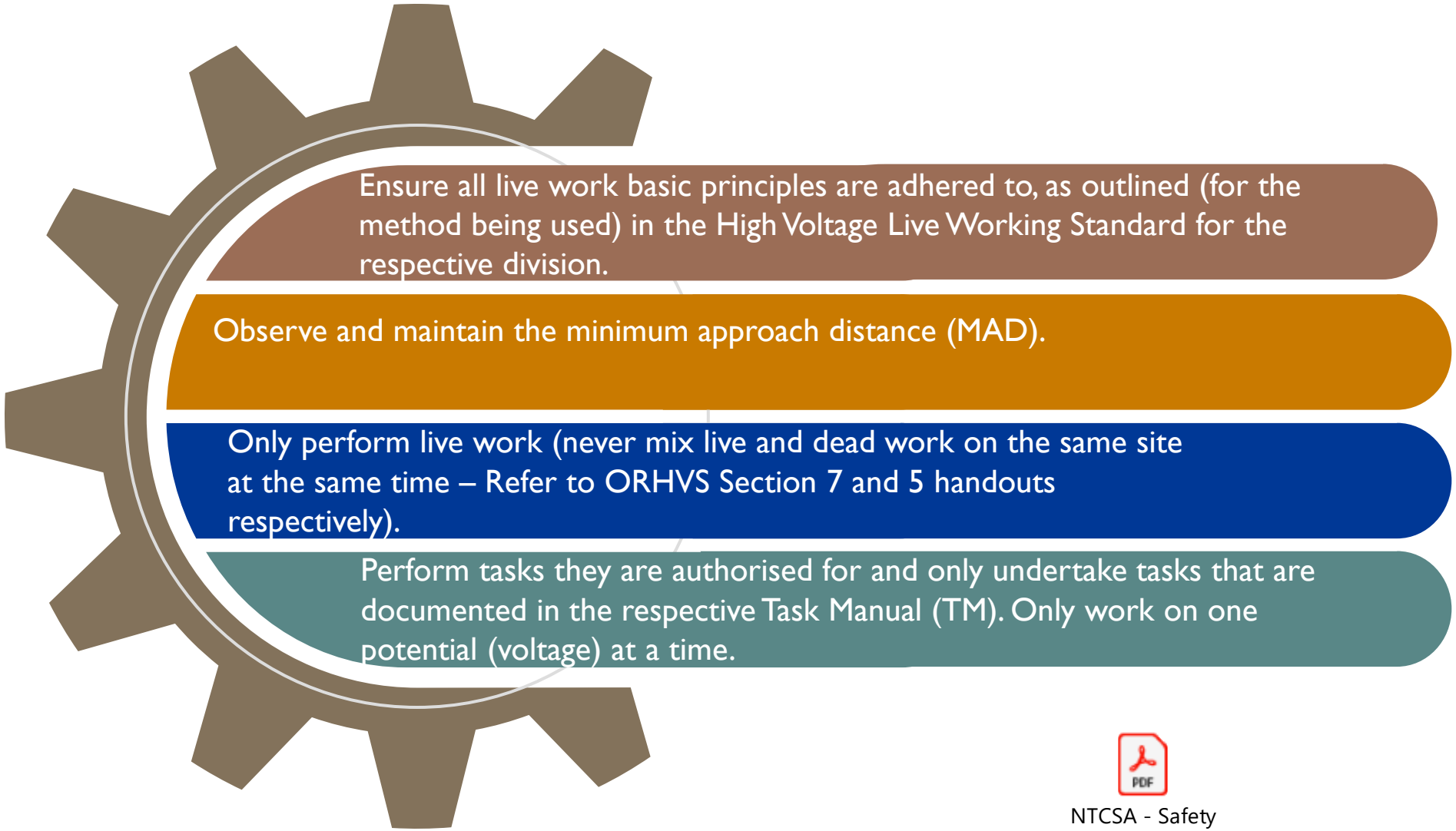

- Ensure all live work basic principles are adhered to, as outlined (for the method being used) in the High Voltage Live Working Standard for the respective division.
- Observe and maintain the minimum approach distance (MAD).
- Only perform live work (never mix live and dead work on the same site at the same time – Refer to ORHVS Section 7 and 5 handouts respectively).
- Perform tasks they are authorised for and only undertake tasks that are documented in the respective Task Manual (TM). Only work on one potential (voltage) at a time.

Consequences of violating a Life-Saving Rule…

Where a contractor employee allegedly violates a Life-Saving Rule, the contractor shall immediately remove the employee from the site and initiate the disciplinary process. The contractor shall investigate any violation of a Life-Saving Rule and initiate the disciplinary process within five (5) working days of the violation. The contractor shall furnish Projects Delivery with a copy of the sanction after the disciplinary process.

PDF

NTCSA - Safety
Earthing Awareness P

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NTCSA and Environment Social Governance (ESG)

Ambition

Eskom

SOCIAL - PEOPLE

1. OHS & Security
2. People Development
3. Supply Chain
4. Socioeconomic Development through CSI (ESDEF) and CSR incl BEE, BWO, Youth, learners etc.

ENVIRONMENT - PLANET

1. Environmental Management
2. Energy efficiency
3. Renewable Energy
4. Climate Change
5. Green energy integration

GOVERNANCE - PROCESS

1. Quality management
2. Risk and resilience
3. Ethical behaviour & Business Practices
4. Regulatory compliance
5. Stakeholder engagement & Communication

Summary of Quality Inspection & Test Plan (QITP) Structure & Approvals Process

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Quality Control - Product / Process Inspection and Test Plan

Company Logo	COMPANY NAME (PTY) LTD	No. ITP 002 Rev. 0 Page 1 of 1

Order No	Project Description	
Item / Process Description	Off loading platform	Section / Unit

	Operational / Activity Number and Description	Instruction Procedure Drawing or Specification Reference	Visual Dimensional Documentation or Non-Destructive Examination Activities				Supplier's Hold (H) Inspection (I), Test (T), Witness (W) or Surveillance (S) Points			Client Hold (H) Inspection (I), Test (T), Witness (W) or Surveillance (S) Points			Remarks, Deficiency or Non-conformance Report numbers
			Vis.	Dim.	Doc.	NDE		Signature	Date		Signature	Date	
1	Clear area	Method 22/10	x				I						
2	Break out concrete	Method 22/10		x			I						
3	Setting out	Method 22/10		x	x		T						
4	Excavation	Method 22/10					W						
5	Compaction	Test Method	x	x	x	x	T						
6	Shuttering	Method 23/9		x			H						
7	Check levels	Method 23/9	x				H						
8	Reinforcing	Method 23/9	x	x			I						
9	Concrete	SANS Refer	x				I						
10	Check levels	Method 23/9	x		x		H						
11	Steel float	Method 23/9	x				I						
12	Curing compound	Supplier Spec			x		I						
13	Remove shutters	Method 23/9	x				I						

Approved by Supplier		Approved by Client QA		Approved by Client Technical		Approved by Client Projects	
Signature		Signature		Signature		Signature	
Name	Tom	Name	Frank Leigh	Name	Dick	Name	Harry
Designation	Quality Manager	Designation	Quality Advisor	Designation	Chief Engineer	Designation	Project Manager
Date	00/00/0000	Date	00/00/0000	Date	00/00/0000	Date	00/00/0000

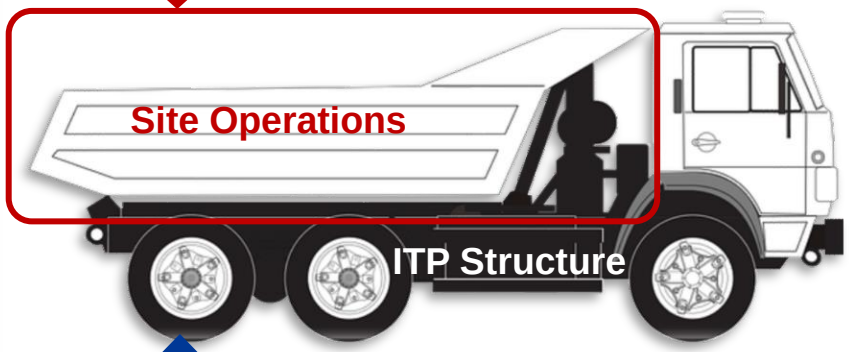
Supplier	All NTCSA		
1st Signatory	3rd Signatory	**2nd Signatory**	4th Signatory

1. ITP structure

The ITP is compiled with all requirements of documentation compliance, filled with project specifics and reviewed internally prior to approval

3. Second set of Approvals (on site)

After the first set of approvals are completed on the structure of the document by the four signatories as shown below, the document is ready for use on sites in which periodic approvals of operations take place.



2. First set of Approvals

The ITP document is reviewed for compliance and its readiness of listed operations on site

How should we manage non-conformities?

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Maintaining high standards

Adopting industry best practice and implementing the Eskom Control of Non-conformity Outputs Procedure 240-44175038, as well as using the SAP QIM system effectively, will lead to improved operational excellence and enhanced customer satisfaction.

Enhancing staff skills

Ensure that all employees are trained in the importance of reporting deviations, regardless of their severity. Continuous employee training improves team skills, ensuring they can identify and address operational issues effectively.

Audits/Risk assessments

Conducting thorough risk assessments and regular audits allows our business to identify potential issues before they escalate, enhancing overall safety and compliance.

Continual improvement for operational efficiency

Improved operational efficiency is achieved through continuous monitoring and implementation of preventive measures, ensuring smooth operations.

TASK	RESPONSIBLE	ACCOUNTABLE	CONSULTED	INFORMED
Send NCR to relevant recipient	• NC originator (E.g. Engineer)	• Project Manager (PM)	• None	• Management system representative (Advisor/ Officer Quality)
Acknowledge NCR	• Recipient (E.g. Contractor/Supplier)	• Project Manager (PM)	• Subject matter experts	• Management system representative (Advisor/ Officer Quality)
Capture NCR	• NC originator (E.g. Engineer)	• Project Manager (PM)	• None	• Management system representative (Advisor/ Officer Quality)
Define & Implement Immediate Actions	• Recipient (E.g. Contractor/Supplier)	• Project Manager (PM)	• Subject matter experts	• Management system representative (Advisor/ Officer Quality) • NC originator (E.g. Engineer)

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Quality Culture
Changing Hearts, Minds, and Attitudes

Learning Lessons From Non-conformities (NCs)

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Analysing NCs and learning from previous incidents helps Eskom avoid similar issues in the future, leading to significant cost savings. (e.g. the Duvha Unit 2 fire)

Quantifying costs of non-conformities (e.g. the Sumitomo 133.3 MVA 765 kV shunt reactor overturned, costing Eskom **R21,700,258.27** and delays due to another reactor having to be built by a supplier in Japan.

Building zero-rework into all our business processes by conforming to all business, statutory and legal requirements.

Continual improvement of processes, procedures and key performance areas will reduce non-conformities

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Engineering requirements and the NTCSA contractor training initiatives

Sifiso Zikhali: Chief Engineer Lines Engineering

Collaborating to power up Southern Africa – EPC & Training Content

- EPC (Engineering, Procurement and Construction) Panels
  - Mandate and Strategy
  - Evaluation Criteria Summary
  - Tender outcome and Lessons Learnt
  - Task Order stages
  - New OEM suppliers and Acceptance Process

- Training & Initiatives
  - Continuous Improvement
  - Audience and Initiatives
  - ESKOM Academy of Learning (EAL) contact person and details

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EPC Panels and Lessons Learnt for continuous improvement – Mandate and Strategy

EPC – NTCSA Mandate & Strategy

- To establish three panels to assist in fast-tracking the build of the transmission line kilometers as indicated in the Transmission Development Plan (TDP)
  - Voltage covered AC (132 kV, 220 kV, 275 kV, 400 kV and 765 kV) and DC (533 kV)
  - Benefits: Time (Task-order shorter than Open-Tender) and Cost (Ring-fence cost to concentrate on the tender SoW)
  - Advantages: To upskill and assist in contractor/supplier development for small and upcoming contractors

- Panel A: Full EPC (Engineering Procurement and Construction)
  - Engineering (Input - Route and Basic Design Output - Detailed Design and Specification)
  - Procurement (Use list of accepted HV Equipment from OEM (Original Equipment Manufacturer) and other Suppliers)
  - * Construction (Construct and Test the given asset to be handed over to NTCSA)

- Panel B: Procurement and Construction of the Line as per NTCSA Design and Specification
  - Procurement (Use list of accepted HV Equipment from OEM and other Suppliers to purchase line Equipment)
  - * Construction (Construct and Test the given asset to be handed over to NTCSA)

- Panel C: Construction of the powerline as NTCSA Design and Specification (Some materials will be free-issue)
  - * Construction (Construct and Test the given asset to be handed over to NTCSA)

* All Steelworks and Foundations will be designed and procured by the contractor

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EPC Panels and Lessons Learnt – Engineering Functions and Resources



EPC – Engineering: Studies and Outputs

Electrical	• Insulator Selection • Earthing Design • Line Performance studies • Ground wire selection • Telecommunication designs
Structural	• Tower design (in special cases) • Telecommunication tower and related design
Hardware	• Design and selection
Foundations	• Geotechnical studies • Foundation design • Soil nominations
Profiles	• Tower spotting and line optimisation on PLS CADD • Creation and review of PLS CADD seed files
Corrosion protection	• Towers, hardware, conductors

EPC – Engineering: Studies and Outputs (cont.)

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Specialist Studies

- Surveying
- Uprating or upgrading of existing lines
- EMF measurements and analysis
- Coupling studies
- Cathodic protection studies
- Insulation co-ordination
- Quality Assurance at construction sites
- Other specialised studies

Constructability

- Constructability assessment
- Construction sequence
- Outage requirements

EPC – Engineering: Studies and Outputs

The outputs for the design phase of the projects will be presented in the following formats:

1. Detailed design report
2. Line specification report
3. Drawings (where applicable)
4. Construction profiles
5. Bill of Materials
6. Bill of Quantities
7. OPGW Scope of Works and Bill of Materials

EPC – Engineering: Evaluation Criteria

- Resources
  - Qualification
  - Professional Registration
  - Relevant discipline years of experience
  - Number of Transmission projects completed
  - References

- Company Capability (Project History)
  - Last 10-years of relevant transmission projects
  - Principal or Sub-contractor projects
  - Time on execution
  - Cost of projects executed

- Sustainability
  - Replacement of key personnel
  - Formal training
  - Skill transfer
  - South-African based office resources

NTCSA Requirements		
Key Recourses		
Design Leader		10%
Electrical Engineer		10%
Mechanical & Structural Engineer		10%
Civil & Structural Engineer		10%
Geotechnical Engineer		10%
Land Surveyor		10%
Company Capabilities		30%
Sustainability		10%
Total		**100%**
Threshold is 70 %		

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EPC Panels and Lessons Learnt – Procurement of HV Equipment



EPC – Procurement: Evaluation Criteria

- Procurement of a minimal of the following HV Equipment listed below
  - Earthwire conductors
  - Phase Conductors
  - Insulators (Glass, Composite and Post)
  - Line hardware (including steelwire and ACSR earthwires)
  - OPGW Conductors
  - OPGW hardware
  - Line labels
  - Miscellaneous hardware
    - Aircraft warning speres
    - Bird diverters
    - Anti-bird perch devices
    - Spacer dampers
    - Vibration dampers
    - Anti-vandal mitigations and fasteners
- Submission qualification
  - Signed letter from proposed supplier (OEM – Original Equipment Manu
  - Product specification
  - Type tests confirmation
  - Previously been used or have an existing contract with NTCSA
  - Drawings of the proposed items (hardware)

	Procurement Requirements	%
1.1	Earthwire	15%
1.2	Phase Conductors	15%
1.3	Insulators	15%
1.4	Line Hardware	15%
1.5	OPGW conductors or cable	15%
1.6	OPGW Hardware	15%
1.7	Miscellaneous Items	5%
1.8	Labels	5%
	Total	**100%**
Threshold is 70 %		

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EPC Panels and Lessons Learnt – Construction & Testing of the powerline



EPC – Construction: Evaluation Criteria

- Resources
  - Land Surveyor
  - Soil Profiler
  - Foundation Designer & supervisor
  - Temps work designers
  - Earthing and Authorized personnel
  - Tower assembly and erection supervisor
  - Dressing, Stringing and regulating supervisor
- Safe work procedures
  - Foundations
  - Steel assembly and erection
  - Crossings
  - Stringing and regulation
  - Earthing
- Company Capability (Project History)
  - Last 7-years of relevant transmission projects (275 kV and above)
  - Principal or Sub-contractor projects
  - Steel supplier commitment letter
- Project execution
  - Principal contractor Project Manager (SACPCMP registered)
  - Principal contractor Site Manager (SACPCMP registered)
  - As-built documentation procedure

Construction Requirements		
1	Land Surveyor	5%
2	Foundations	
	Soil Profiler	5%
	Foundation Designer	5%
	Safe work procedure	10%
	Foundation site supervisor	4%
3	Tower Assembly & Erection	
	Site supervisor	4%
	Temps work Designer	5%
	Safe work procedure	7%
	Supply of steel	3%
4	Earthing and Authorized personnel	
	Site supervisor	4%
	Safe work procedure	5%
5	Dressing, Stringing and Regulation	
	Site supervisor	4%
	Temps work Designer	5%
	Safe work procedure	5%
6	Structures to be used for crossings	7%
7	Project execution	
	7-year experience	7%
	Project Manager	5%
	Site Manager	5%
	As-built procedure	5%
	Total	100%
	Threshold is 70 %	

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EPC Panels and Lessons Learnt – Summary



EPC – Tender Outcome & Lessons Learnt

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- Phase A: Suppliers could choose which panels they would be tendering for, so the pass threshold was for the **APPLIED PANEL** only.
- ECSA/Similar registration for **international suppliers** was rejected as **no letter from ECSA** was received.
- **Structural, Mechanical and Civil engineers** with no direct **appointment as the responsible engineer** for projects.
- Geotechnical Engineer with no qualification/registration or Civil Engineer with no soil profiling experience.
- **Transmission project list** done by the **COMPANY** and **NO** evidence that the **individual resource was appointed** to the project.
- Engineering resources with no **Transmission line Experience** and or no list of transmission line projects conducted (275 kV and above).
- List of approved suppliers and OEMs where suppliers couldn't get **signed confirmation letters**.
- No indication that the **products the OEM** can supply have valid type test and meet NTCSA requirements.
- No **official drawings** from the OEM supplier for Hardware and Labels.
- No letters/type tests/drawings from OEM suppliers of the insulators **(glass, composite and post).**
- Land surveyors are submitted as companies, and **no individual work** indicated for the accountable personnel.
- Temps work designer **not appointed for the project** (either a supervisor or project/site manager).
- Project and Site manager not registered **(SACPCMP registration),** no evidence of mentee and mentor forms for candidates.
- Suppliers submitting CVs but no direct employment with resources.
- Suppliers of the three Panels:

Number of Suppliers or Contractors:		
Panel A	**Panel B**	**Panel C**
5	**9**	**17**

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EPC Panels and Lessons Learnt – Task Order Stages



EPC – Task Order Stages

- Threshold of 70% during tender stage (in **Execution** and for **Project Work Permit** and **Formal Designs, 100%** compliance required.)
- OEMs not Accepted pose a challenge as the products need to be evaluated by NTCSA.
- Evaluation of OEMs during Task order stage is **NOT** allowed; as timelines for project considers orders and acceptance of drawings only.
- Engineering and Construction resources cannot obtain the experience and or get the experience within the task-order stage.
- Supplier to ensure they have resources that meet the evaluation criteria and can get 100% on the criteria upon review.
- All resources not available for the project should be replaced with an equivalent resource qualifications, registration and experience as required by NTCSA.

Tender Stage

- Task orders sent to the correct panel suppliers
- Panel A
- Panel B
- Panel C
- Ensure all resources are compliant
- OEMs meet NTCSA requirements.

Task Order Stage - Commercial

- Meet commercial mandatory requirements.
- Meet all the requirements for the Invitation To Tender (ITT) requirements.

Task Order Stage - Functionality

- Meet 100% functional criteria.
- Send you proposed resources that meet all requirements.
- Submitting resources that are not contracted to you is a RISK to NTCSA – delays in time and cost of the resources.
- Ensure the CHECKLIST is signed.
- Resources are individually checked for COMPETENCY.
- Suppliers are checked for meeting NTCSA requirements.
- Engineering professional registration and experience verified.
- Supplier to ensure resources are available on contract signing.

Task Order Stage – Financial analysis

- Ensure BOQ is in line with NTCSA.
- Pricing is inline with industry rates for services provided.
- ENSURE compliance and company in good standing.
- Proposed project schedule and BOQ match.

Negotiations

- Contractor capabilities.
- Construction machinery compliance.
- Engineering resources confirmation.
- Construction personnel confirmation.
- BOQ pricing rates.
- Contractors' requirements.
- Declaration of long-lead HV equipment.
- Schedule variables
- SDL&I Requirements and execution plan.
- Stakeholder management plan

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EPC Panels and Lessons Learnt – New OEM and supplier



EPC – Procurement: New OEM Acceptance

- **NO EVALUATION** of new OEMs will be done on Task order stage.
- Panel Suppliers to send a request to NTCSA via the PMO office to propose new OEM.
- Suppliers to issue NTCSA requirements (standards, specifications and procedures) to the proposed OEM.
- All schedules to be filled in and submitted to NTCSA as part of the new OEM application.
- Written confirmation and self evaluation to be done by the Supplier on the Panel.
- Desktop analysis is conducted by the NTCSA SME (Subject Matter Experts)
- Upon satisfactory desktop analysis, Factory evaluation is conducted.
- Upon satisfactory factory evaluation, delivery and transportation to site requirements and Quality checks are confirmed.
- Samples are requested for further testing and verification of the product.
- Upon Quality Inspection Test Plan (QITP) acceptance supplier may ship the product.
- Equipment is inspected onsite for all requirements (transportation, installation and maintenance procedures).
- A letter from NTCSA indicating acceptance of the product is issued to the supplier.
- All equipment not meeting NTCSA requirements to be quarantined and removed from site. (Product recall process followed).

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Training initiatives for continuous improvements - Objectives and Different activities

Training – Objectives

- The aim is to issue students on successful completion of the training with an “Overhead Linesman Trade Certificate”
- Fast track skills transfer and to create a pool of expertise that NTCSA and contractors can source.
- Improve competence in line construction in South Africa.
- Maintain high safety standards and reduce fatalities.
- Efficient construction rate and less incident delays.
- Improve the quality of newly commissioned NTCSA assets (lines).
- Create a facility for new technology testing.

Training – Foundation Section (Tower Test Station & EAL)

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Conventional foundation system training will consist of:

- Stub setting out
- Training on steel placement (reinforcing and stubs, cleats etc.)
- Slump tests – setup and procedure
- Concrete finishing and curing process
- Concrete testing – concrete laboratory on-site
  - making of cubes, curing and testing
- Proof load testing – setup and procedure

Micropile foundation system installation demonstration training:

- Rig setup
- Material overview (rods, coupler, spacer, bit etc)
- Flushing of the test hole (geotech parameters)
- Installation of a rod
- Guy connection

Training – Foundation Section (Setup and Testing)

Training – Foundation Section (Micropiles and technologies)

Grouting

Rod

Drill bits for different soil types

Coupler joins two rods (each rod is 3m)

Training – Tower Assembly and Erection Section (EAL)

Tower erection methods:

- Single crane
- Double crane
- Spreader beam
- Gin Pole method
- New potential methods

518J – 400 kV self-supporting structure

Training – Tower Assembly and Erection Section (EAL)

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- 529A – 400 kV cross-rope structure
- 705C – 765 kV cross-rope structure

Training – Stringing and Regulating 520B, 528C, 528D (EAL)

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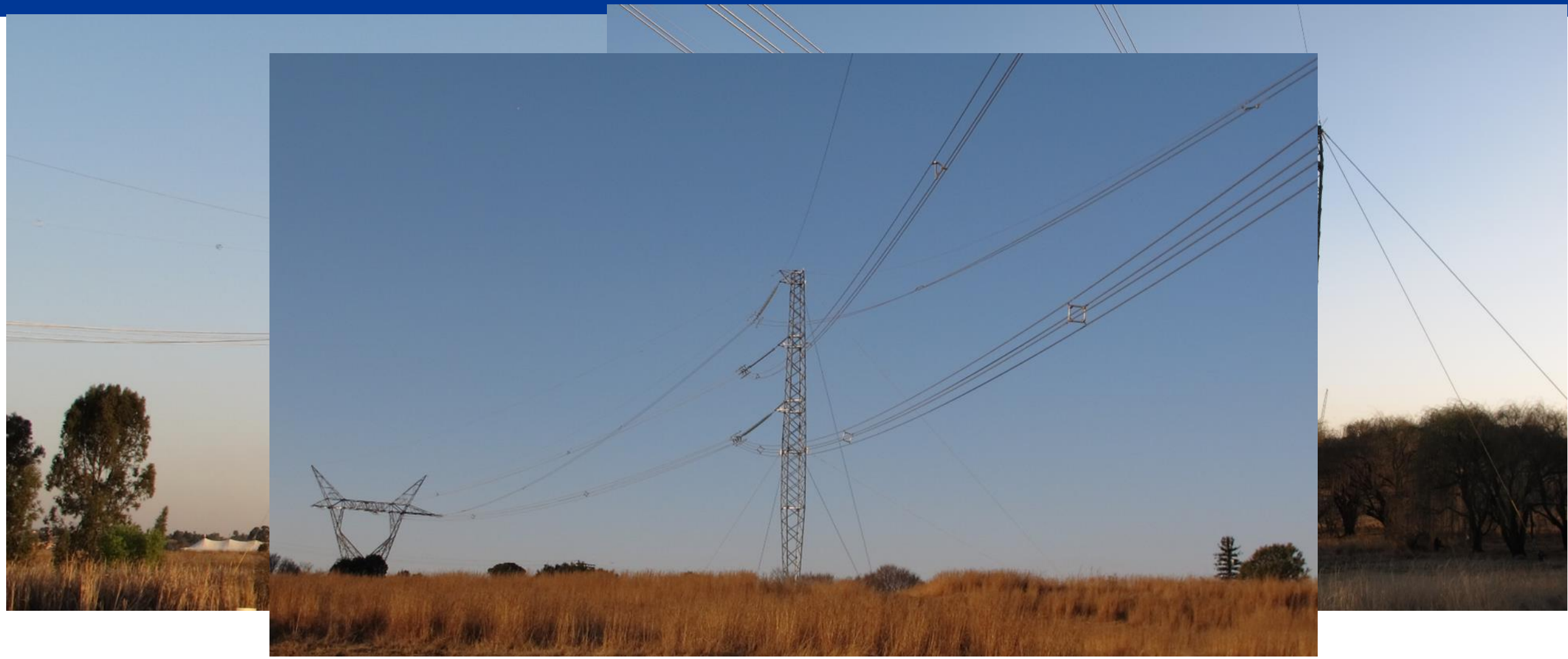

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Training Audience and Initiatives

Training – TARGET AUDIENCE

External

- Line construction contractors - site foreman level and above.
- Commodity manufacturers – for testing new products
- Institutions of higher learning – Master and Doctorate tests

Internal - Eskom employees

- Live line teams
- Grid ops and maintenance personnel
- Existing Eskom construction teams e.g. MEW
- Line designers (In-training or for further development)
- Project management and execution team's staff
- Learners-in-training
- Emergency restoration teams

Training – Audience and Initiatives: Current training OFFERED

1. Practical facility for current Line Inspection and Defects Identification modules at EAL

- The line is used for practical assessments of those attending EAL training modules.
- Grids have a unique opportunity to perform and standardise inspection training on variety of towers, conductors, hardware and insulators all in a central location at the facility which is not available in the field.

2. On-site TRMSCAAC training

- Training provided by LES for line construction contractors for every project, grids and MEW, which is currently done on MS Teams.
- The training focuses on the standard for powerline construction (TRMSCAAC) in Transmission and highlights the “do’s and don’ts” based on previous experience.
- The facility offers a practical environment to compliment the theoretical TRMSCAAC training material.

- Drone Inspection Training - Plans

Training – Audience and Initiatives: Current training OFFERED

- 3. Enhancement of current construction skills
- The facility is available for practical training to enhance current construction skills (e.g. MEW). The team will be responsible to bring in the relevant tools, equipment and safety requirements for the activity. LES will be technical observers / advisors.
- The practical aspect consist of the following activities as per the initial training objective.

Foundation construction	Using the facilities available in the foundation section – open excavations, stubs for leg setting out, steel placement for a foundation, slump and concrete cube apparatus, concrete strength testing apparatus. Separate installed guy anchor that can be used for proof load testing. Micropile rig and material for demonstration
Tower assembly and erection	Using the designated self-supporting and cross-rope structures
Tower dressing	To be done on a variety of structures (7 different 400 kV structures). Insulators and hardware available for each structure.
Stringing and regulating	Training on the non-energised line with a variety of structures, conductors, hardware and insulators.
Fitting of line accessories	Installation on a variety of conductors on the non-energised line. Line accessories are available.

Training – Audience and Initiatives: Current training OFFERED

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4. Live line maintenance training and testing of new tools/procedures

The variety of towers, conductors, hardware and insulators all in a central location provides a unique opportunity to perform live line maintenance training and the testing of new tools and procedures in a safe (non-energised) environment.

5. Optical ground wire (OPGW) live stringing

Prior to the construction of the facility there was no full scale line available to demonstrate new stringing techniques of OPGW under “live” conditions with hardware installation. The facility fills this gap.

6. Live line crossing techniques

Similar to point 5, new technologies to cross live lines are constantly sought out and can now be demonstrated at the facility.

7. Drone inspection methods

The non-energised line can be used to demonstrate and guide drone pilots on the correct approach and camera angles during line inspections.

Training – Audience and Initiatives: Current training OFFERED

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8. Drone applications

- There are many construction and maintenance activities on the lines that can be done efficiently with the use of drones eg. bird flapper installation and spray washing of insulators. The non-energised line can be used to demonstrate and perfect these activities.

9. New technology demonstrations

- New tower erection methods
- Steel member/conductor theft technologies
  e.g. alarms sensor systems etc

EAL Contact person

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PANEL Q&A – AND RECOMMENDATIONS

- Date: 14 July 2025

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LEGSTRETCH & REFRESHMENTS

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Construction Challenges: Project Management

Ravindran Naidoo: Programme Manager Projects Delivery

Construction Challenges: Project Management

Content
✓ Background
✓ Performance Bonds
✓ SHEQ files & SACPCMP
✓ Site Stability (Locals/ Game farms)
✓ Key Resources/Subcontractors
✓ Steel Supply
✓ Contractor`s Cashflow/Execution Plan
✓ Constructability
✓ Industry Best Practice

Background

1. EPC/PC Panel incorporates contractors who have worked on major lines and substations and some who have only worked on smaller scale projects.

2. Objective of the challenges experienced are to ensure that all contractors mitigate these on future projects so that minimum time is lost prior to work commencing on the ground.

3. New contractors on the Panel may not be familiar with the Eskom requirements which would cause time loss over the project duration.

Performance Bonds

1. All contracts require either a 5% or 10% performance bond on the contract value.

2. Some contractors struggle to secure acceptable bonds. Taking into consideration that you will be now managing EPC/PC contracts, this item can delay the starting of the project.

3. Eskom provides a list of bond originators acceptable to us. Contractors are urged make use of either one of them. Take note that there are credit limitations on guarantors as well.

4. Another setback is the “Wording” on the bonds submitted for acceptance.

5. Contractor`s to engage appointed Eskom Project Manager`s for most recent list.

Performance Bonds continued….

Local

Absa Bank Limited

Development Bank of South Africa

FirstRand Bank Limited

Industrial Development Corporation of SA

Investec Bank Limited

Land and Agricultural Development Bank of South Africa

Nedbank Limited

Standard Bank of South Africa Ltd

Bryte Insurance	Available Limit	393 238 695.69
Centriq Insurance	Available Limit	135 000 000.00
Constantia Insurance	No Available Limit	
Credit Guarantee Insurance Corporation	Available Limit	48 117 366.00
Guardrisk Insurance	Available Limit	201 554 469.71
Hollard Insurance	Available Limit	991 866 359.33
IDC	No available Limit	
Lombard Insunce	Available Limit	97 197 862.17
Mutual & Federal Risk Financing	No Available Limit	
Renasa Insurance	No Available Limit	
Santam Limited	Available Limit	4 413 746 699.33
Old Mutual	Available Limit	5 971 202 000.00

SHEQ Files & SACPCMP

1. Delays in SHEQ documentation submission and key personnel appointments.

2. Further delay with documents for permit applications – Construction Work Permit

SACPCMP Personnel

1. Availability of Professional Project Managers – Tender pricing vs contracts awarded

2. Availability of Professional Construction Managers – Tender pricing vs contracts awarded

Site Stability (Locals/Game farms)

1. Engage stakeholders early and establish Project Steering Committees for the project.

2. Unclear plans for onboarding of local work force. Deviations not clearly communicated with all affected parties involved early.

3. Unrest due to unmet commitments and poor stakeholder engagement.

4. Game farm agreements not adhered too and landowners not consulted. Construction activities not aligned to hunting schedules provided.

5. Construction Mafia or construction extortionist on sites

Key Resources and Subcontractors

1. Usually when contractors are awarded a project, skilled resources are not available
2. Key plant required to execute the scope is another challenge. Projects are under resourced.
3. Substandard plant utilized on sites extending the initial planned durations per activity
4. Team sizes not usually large enough to execute the activity
5. Poor sub-contractor performance resulting in poor workmanship
6. Subcontractors not sustaining themselves over the duration of the project.

Steel Supply

1. Tower steel supply not completely delivered as complete towers -Shortage of steel members on a towers

2. Delays in tower legs delivery

3. Impact on tower erection and stringing

4. On-site improvisation (e.g., borrowing steel members further down the line) that causes downstream delays.

5. This remains a problem across many projects

Cashflow and Execution Plans

1. Contractors battling to stay afloat and manage cashflow.

2. Forecast of invoicing vs actual works executed on the ground, no alignment

3. Not enough planning conducted especially on Transmission line projects.

4. Schedules not adequately resourced against activities experienced on the ground.

5. Contractors plan high level and miss the details which becomes a problem during the execution phase.

Constructability

1. Not all projects are the same, some line projects face serious terrain challenges.

2. Planning for these project becomes a major challenge, and difficult portions are usually left as late as possible

3. Contractor proposals on difficulty terrain conditions outside conventional construction methods not usually forth coming in the early stages of the project.

4. Challenging foundation construction left to late stage of project – Resource and plant requirements

Industry Best Practice

1. Draft SHEQ files prepared early and updated once projects are awarded. Use Eskom checklist for guidance

   New TX 240-75248969 Construction Audit Template.pdf

2. Make use of pre-vetted guarantors to avoid rejection delays.

   LIST OF PREVETTED GUARANTOR.pdf

3. Identify and appoint all SACPCMP personnel at the earliest stage to avoid delays in permit applications.

4. Spend time understanding the project's environmental and surrounding conditions. Perform background research to ensure site stability and preparedness

5. Take legal action through established procedures to assist contractors. Open cases against individuals or entities that obstruct project progress. Strictly adhere to demobilization strategies as per agreement.

Industry Best Practice

6. Subcontractor resourcing productivity aligns with master schedule targets. Select subcontractors with proven track record

7. Co-ordination with Steel supplier regularly to avoid steel shortages/incomplete tower delivery. Assign people at the factory for steel monitoring purpose

8. Line contractors to assign key resources prior to contract award.

9. Strategy plan conducted early on project with most senior management.

10. In cases where advance bonds were granted , project cash flows were managed better. However, in cases where no advance bonds granted on projects, milestone targets were planned earlier than contractual dates.

11. Anticipate difficult terrain and propose innovative construction methods early in the planning phase

PANEL Q&A – AND RECOMMENDATIONS

- Date: 14 July 2025

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Construction Challenges: Technical

Sibonelo Nzama: Chief Engineer Lines Engineering

Introduction

- Power line construction faces numerous technical challenges, including navigating challenging terrains, managing logistics, dealing with weather conditions, ensuring safety, and addressing potential environmental and social impacts.
- Technical challenges are discussed below:

Terrain and Access

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access

- Constructing power lines often involves traversing rugged, mountainous, or swampy areas, making transportation of materials and equipment difficult and costly.

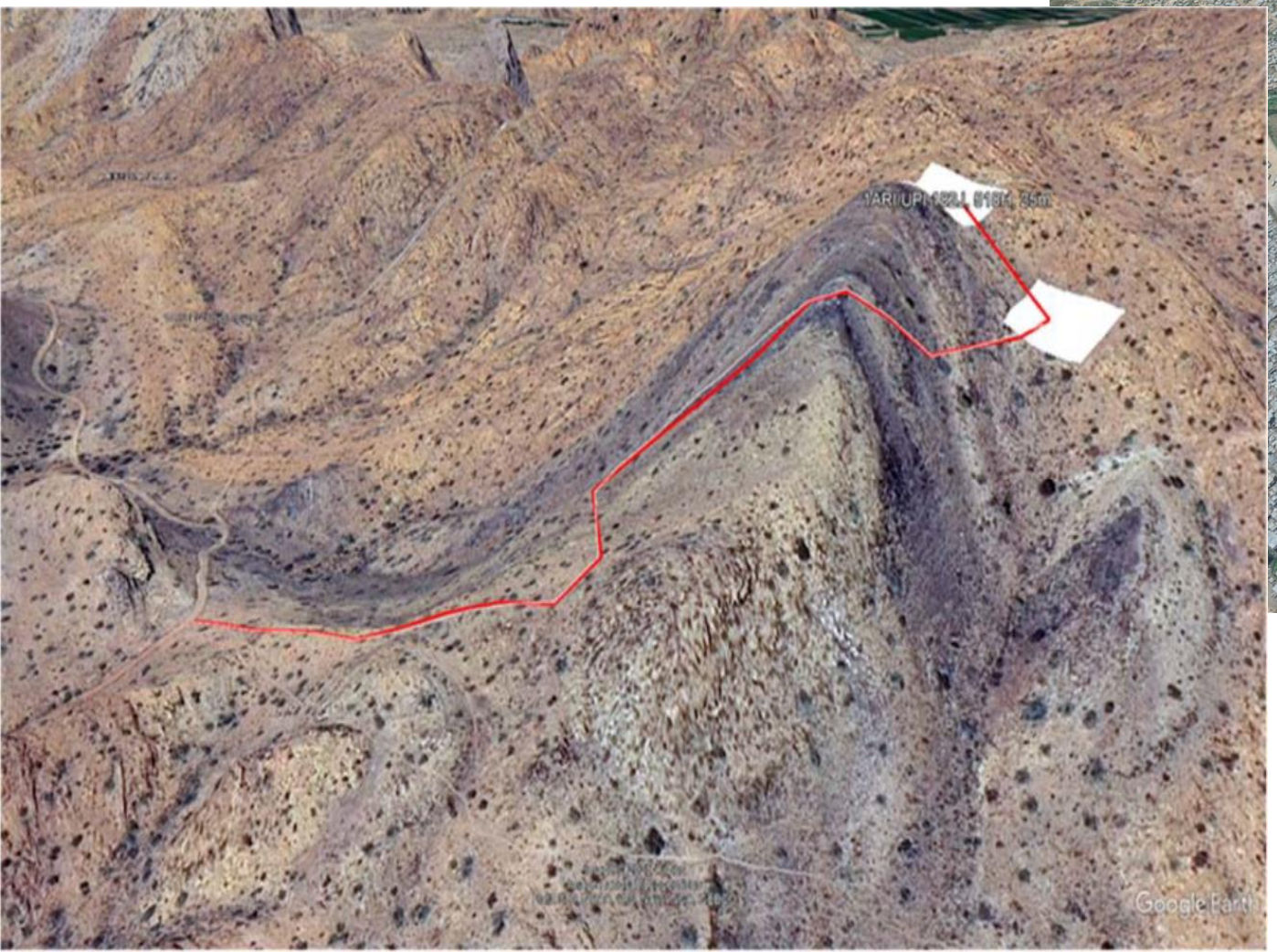
Terrain

- In most cases a power line will end up in an undesirable terrain
- Competing for space with, roads, farming, developments, etc.

cost

- Cost of placing a power line in flat and good terrain Vs Cost of the land
- Preplanning, construction methods becomes very important

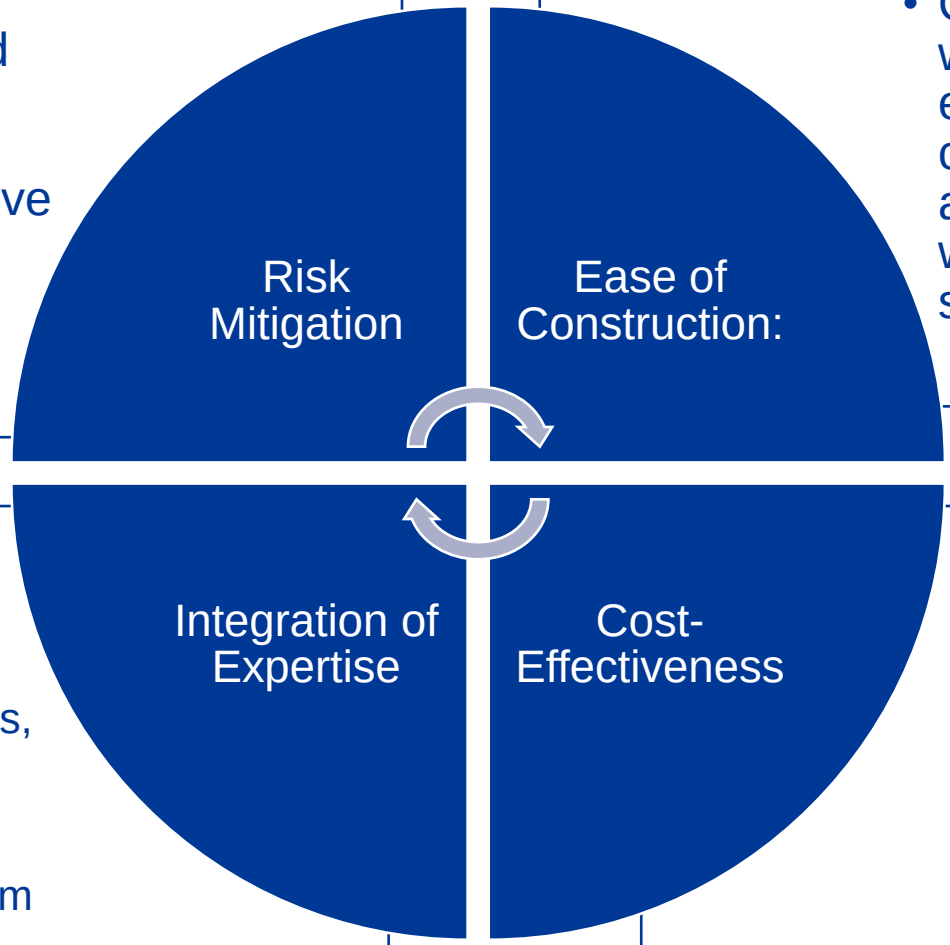
Access and Terrain



Constructability

The degree to which a project's design facilitates efficient and cost-effective construction of a power line

- Constructability reviews can identify potential risks related to site conditions, material availability, or construction methods, allowing for proactive mitigation strategies.

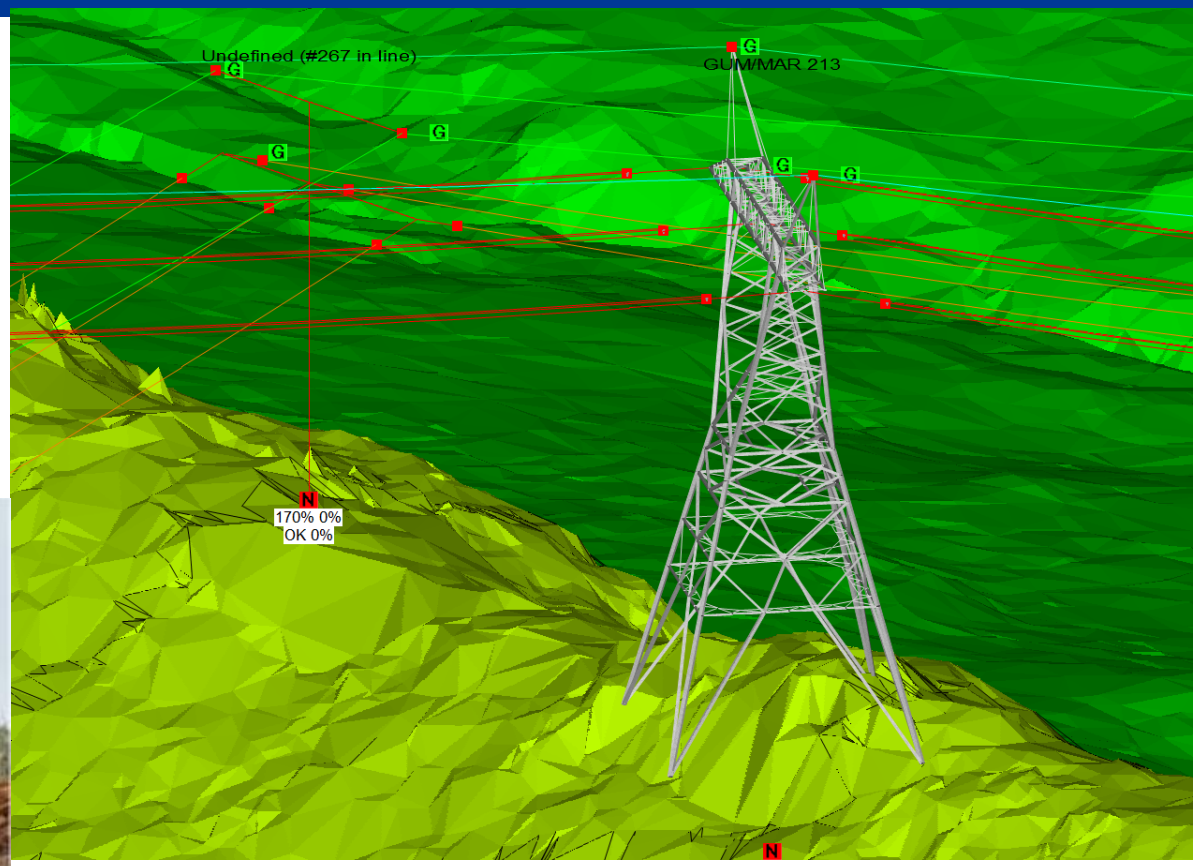


- Constructability assesses how well the design allows for the efficient assembly of components, access for workers and equipment, and the overall workflow on the construction site.

- Constructability involves collaboration between designers, contractors, and other stakeholders to ensure that construction considerations are incorporated into the design from the outset.

- By identifying potential construction challenges early on, constructability reviews can help minimize costly rework, delays, and material waste, ultimately reducing project expenses.

Constructability



Technical Concessions

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Design changes refer to modifications made to the project's plans and **specifications**, while construction changes encompass alterations to the actual **building process**, including methods, **materials**, or **sequencing**

A concession is a compromised or an allowance to deviate from the standard

Should be from unforeseen circumstances and not from poor planning

"Installing ant-vandalism bolts after stringing"

Done in time so the alternative can be evaluated.

Drawings and Prototyping

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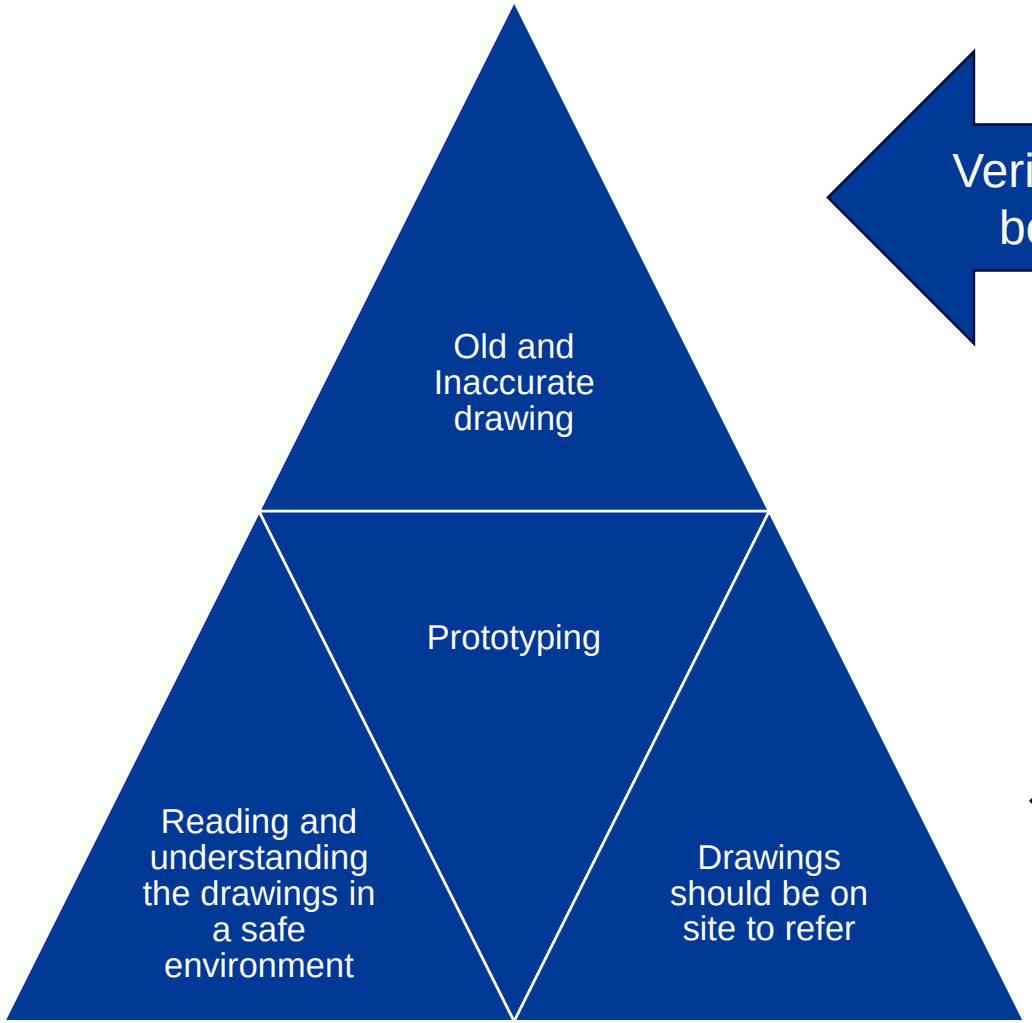
Verification may be required before mass production



Clarity upfront.
Potential issues identified

To quickly identify the problem source

First of inspections and SWPS

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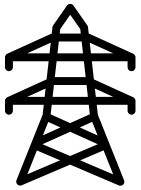
It is Part of **design assurance** and responsibility of the client or the appointed agent. This step cannot be omitted.

Late inspection notification will cause delay and will increase the cost. It takes time to arrange recourses/equipment to site therefore there is always enough time to communicate.

Remote inspection can be done only when circumstances do not allow physical, but it's not a norm. It limit the ability of the engineer and destructs the supervisor

Safe working procedures that are not detailed enough and con not be understood by the supervisor



Closing

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- **No line can be built without a design and management team (Client)**
- **No Line can be built without construction contractors (construction expects)**
- **This means that for a line to come to existence the two parties must work together otherwise we will fail**

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New Construction Methods and Technologies

Dr Bertie Jacobs: Chief Engineer Lines Engineering

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Content

- ✓Introduction
- ✓Good old days
- ✓New construction practices:
  - Safety
  - Efficiency and Innovation
  - Sustainability
- ✓Last Thoughts

Introduction

- Construction practices and methodologies did not change much over the past decades in comparison to new technologies utilised in the general construction space.
- Virtually all combinations of for example tower erection has been explored, researched and implemented – this include hand erection, gin pole erection, mobile crane erection, helicopter erection etc, on complete towers, sections of towers, individual members or combinations of it all.
- Technology however, in the general construction sector, has advanced rapidly, with noticeable advancements made in materials, AI (Artificial Intelligence), automation and robotics, drones etc.

Good Old Days

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New construction practices for overhead lines prioritise safety, efficiency and sustainability. [Google AI]

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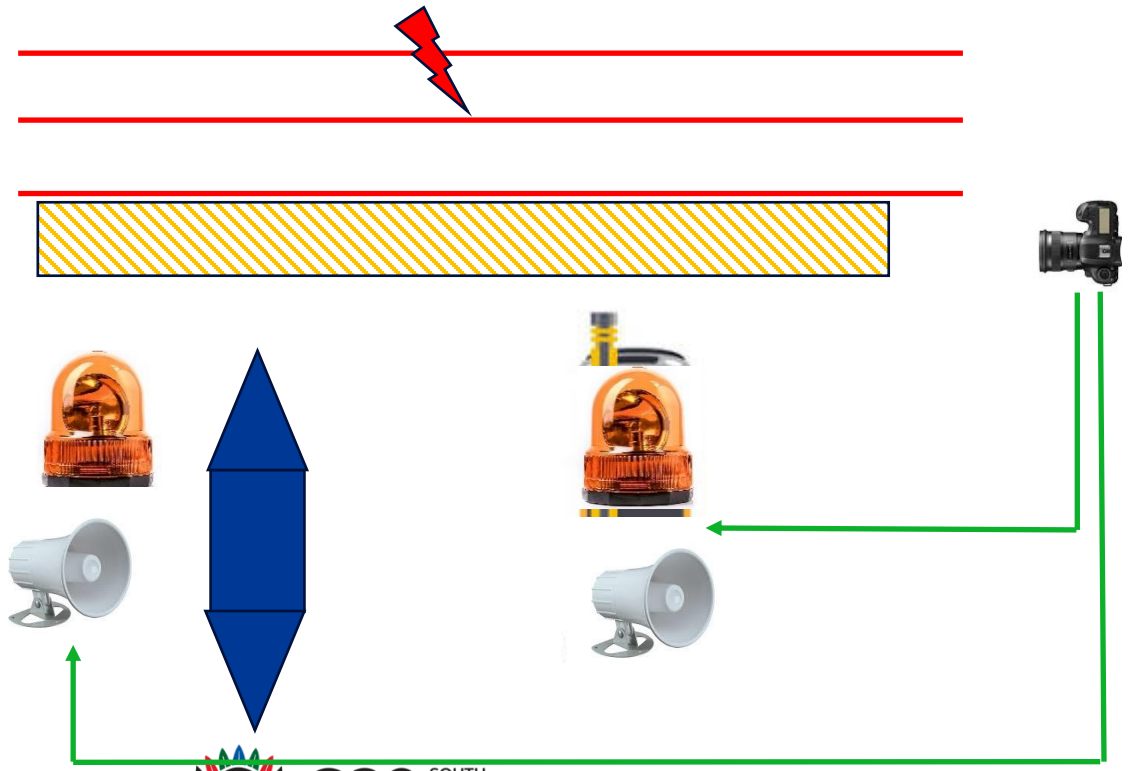
Working near energised lines:

- Camera Detection Exclusion Zone



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Advanced Materials:

- Coal ash geopolymer concrete materials. [Dr. Kelley Reynolds-Clausen]
  - Fly ash and slag inexpensive raw materials (wastes, non-hazardous)
  - High Silica (40 – 60%) and aluminium contents (20-30%)
  - Tests conducted on 1m laboratory trial cast pole formulation:
    - Day 1 = 18.6 MPa
    - Day 3 = 33.4 Mpa
    - Day 7 = 42.8 Mpa
    - Day 28 = 61.8 Mpa

    } Compressive Strength

    - Flexural Strength = 12.6 MPa (28 days)

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Sonic Drilling – can we unlock wastelands for development?:

- Using Sonic drilling, soil core samples can be extracted without the need to flush or even rotate.

Core recovery in progress

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Sonic Drilling – can we unlock wastelands for development?:

- High-frequency mechanical oscillations, developed in a special drill head, are transmitted as resonant vibrations, along with a rotary action, through the tooling to the bit.

- Sonic core drilling has proven to be a successful technique in geotechnical investigation in open-cast mining areas with 95% success in core recovery.

- The application of this technique can unlock vast amounts of wastelands for infra-structural developments specifically on previously mined areas.

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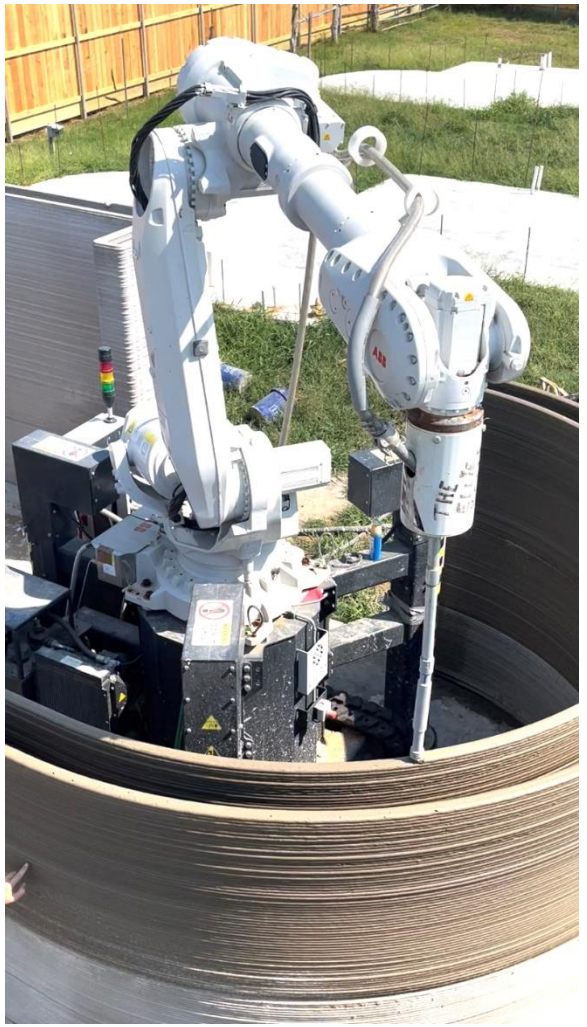
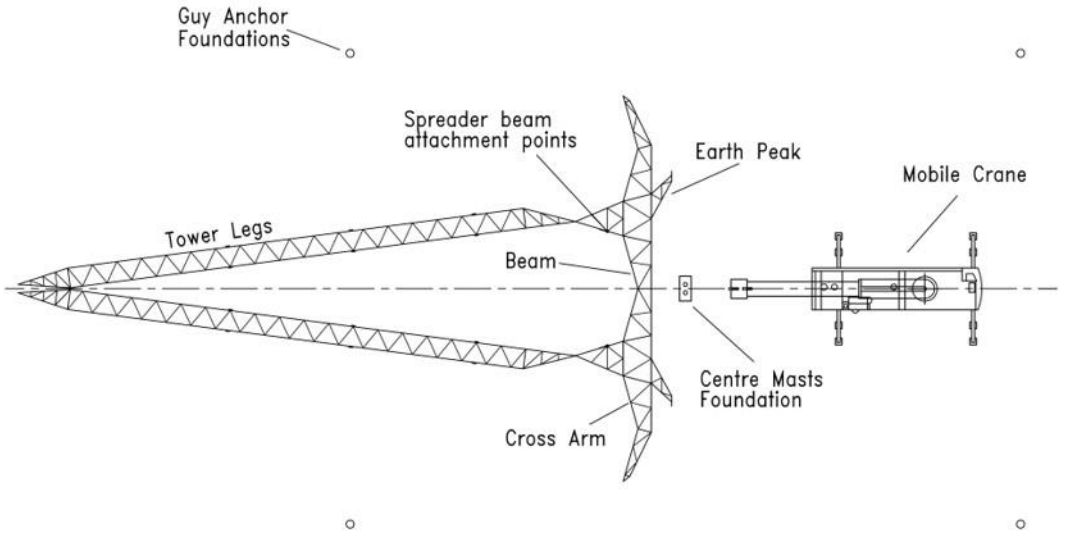
Concrete 3D printing:

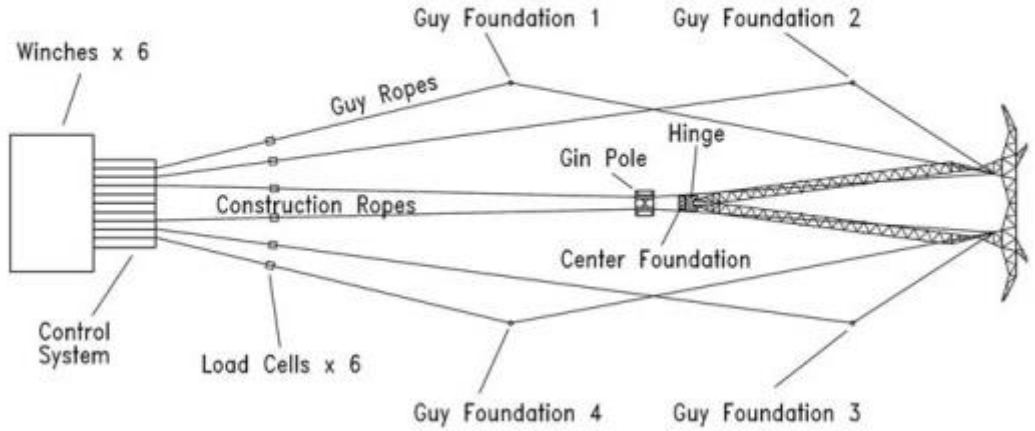
- Positioned in centre of tower, all four foundations can be printed over night?



Tower erection using gin pole and winch:

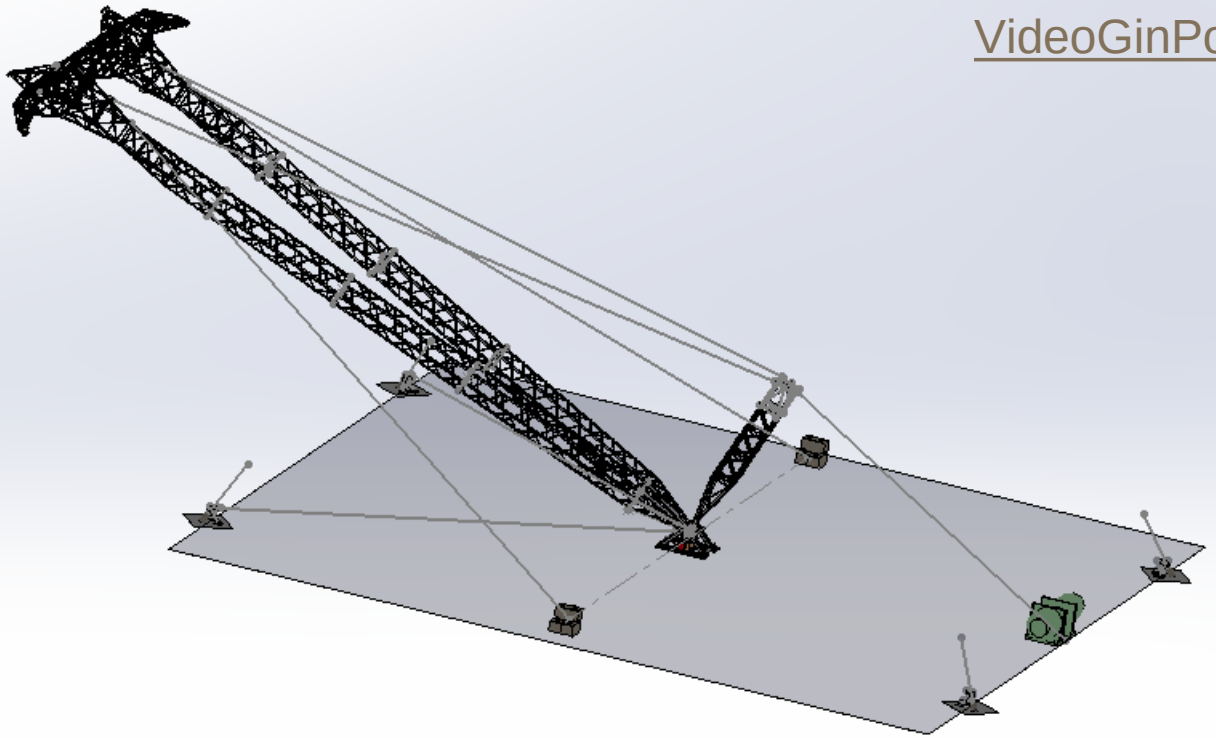


Conventional erection method



Alternative erection method

Tower erection using gin pole and winch:



VideoGinPole

Advantages:

- Equipment required is lightweight (easy transportable etc.)
- Equipment is readily available (can be duplicated many times)
- Increase productivity, cost effective

Disadvantages:

- High longitudinal loads (depending on gin pole height and winch position)
- Requires hinge mechanism else use built-in hinge.

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Tower erection using air cushion:

Equipment can be duplicated many times, thereby increasing efficiency and saving costs.

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Line construction using helicopters:

RFI Helicopter construction (2017):

- Juno-Gromis (282 km, 590 towers; 529A, 517A,E,&F, 518 D,E&H).
- Erickson: Duration approx. 73 days (Foundation and Twr Erection only – excluding materials). Cost $5.92 M [R118.4 M @R20/$]
- Local 1: Duration approx. 60 weeks. Cost R200.3 M
- Local 2: ?

Way Forward:

- DX 132 kV monopole line.

Line construction using Drones:

Video: Drone Size 1

Video: Drone Size 2

Video: Drone Construction 1

Video: Drone Construction 2

Disclaimer / Reminder:

- Pilot needs to be licensed
- Drone needs to be registered

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Definition:

Sustainability refers to the ability to maintain something over the long term without causing harm to the environment, society or the economy.

Standardisation:

Using known tower series, conductors, hardware configurations etc. Design for live-line maintenance.

Construction:

According to design specifications and be of high quality workmanship, while maintaining cost effectiveness.

Efficiency and Innovation

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Realtime monitoring:

Systems that track the temperature and conditions of conductors can help optimise maintenance and prevent outages.

Last Thoughts

- By embracing modern technologies and practices, construction firms can more effectively address their own customers' key pain points and challenges—including building on budget, on schedule, and in ways that are sustainable—while also improving their own business efficiency, accuracy, sustainability, competitiveness and profitability.

- Over the next 10 years, we need to build 14 494 km of overhead lines and transformer capacity of 133 GVA to be installed in order to integrate 56 000 MW of new generation on our network.

- The time is **now** to embrace new technologies and construction practices!

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Evaluation Form - NTCSA Lines Construction Contractor Network & Collaboration Forum

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Collaborating To Power Up Southern Africa

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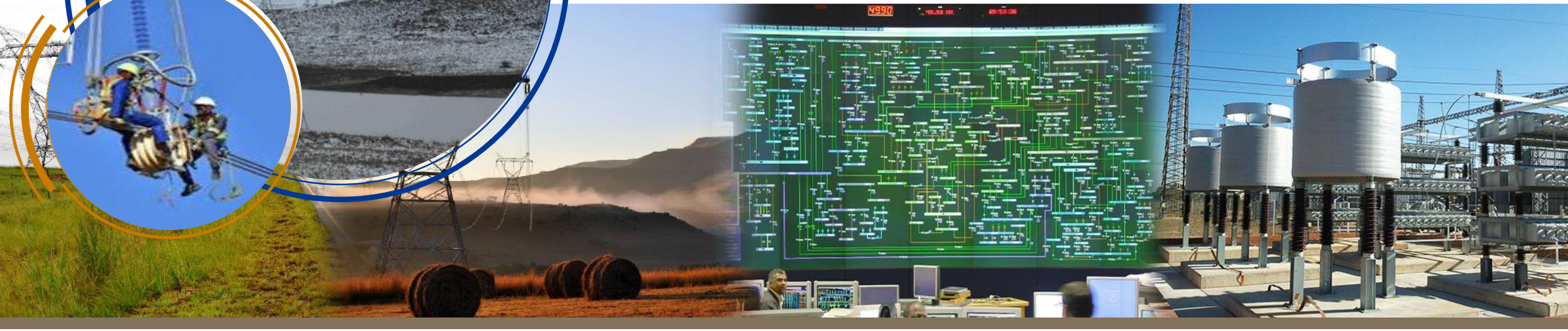
NTCSA Lines Construction Contractor Network & Collaboration Forum

Presented by: NTCSA

Engineering, Projects Delivery & Procurement & Supply Chain Management

Date: 15 July 2025

Time: 08:30-14:35



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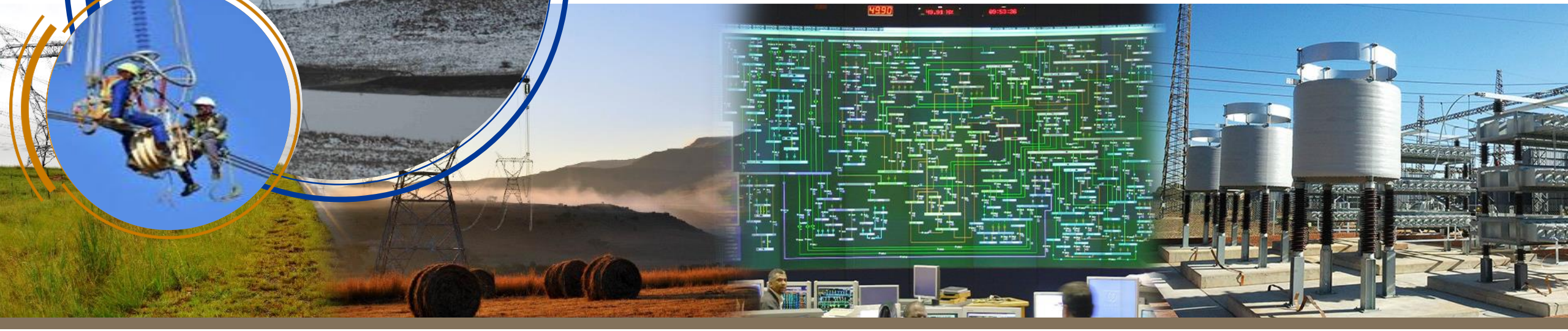
NTCSA Lines Construction Contractor Network & Collaboration Forum

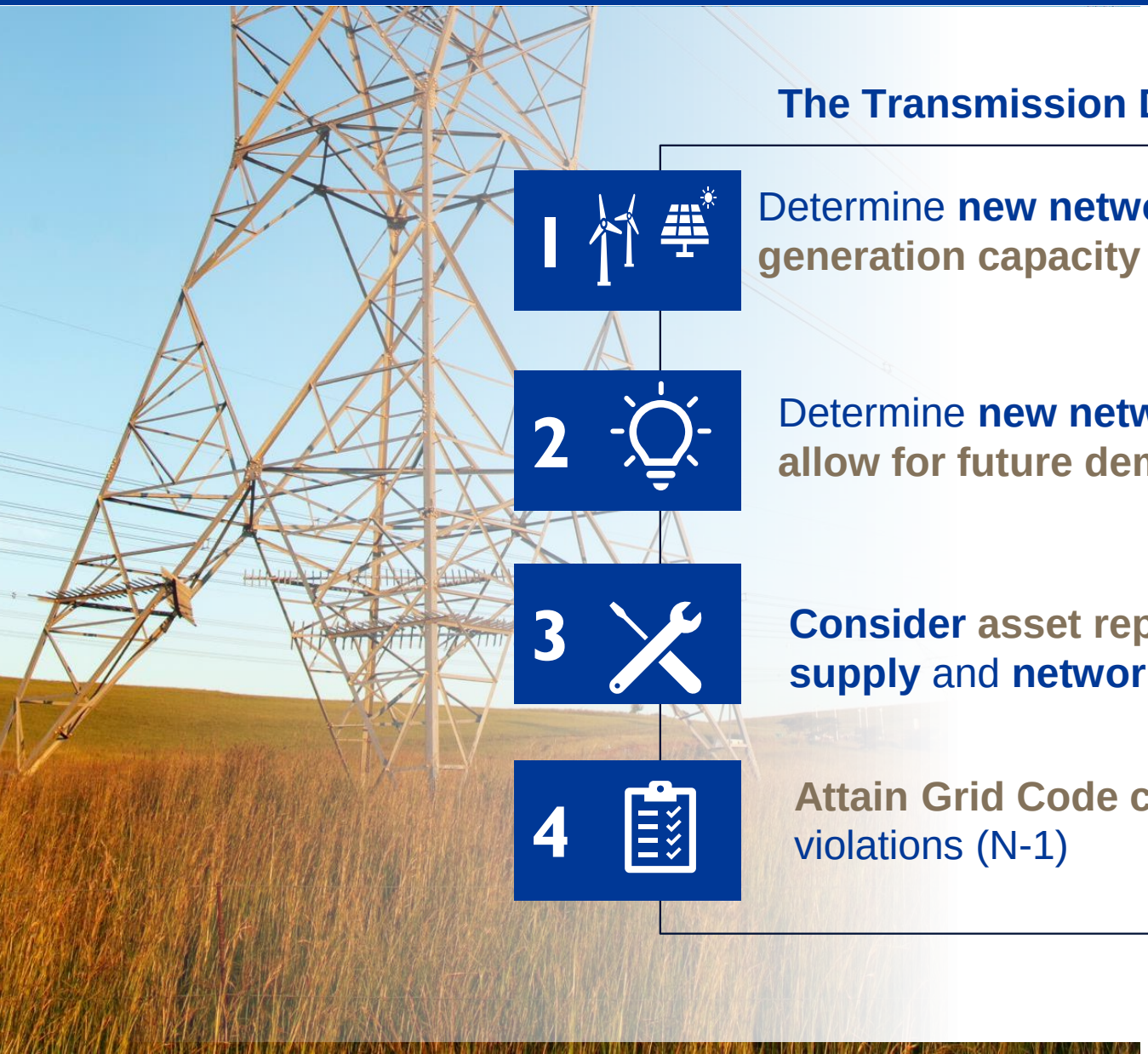
TDP Implementation Progress

Presented by: Zizo Mkhize

15 July 2025



Transmission Development Plan (TDP)



The Transmission Development Plan has four main objectives

1. Determine **new network infrastructure requirements** to **integrate new generation capacity** and **address system stability requirements**
2. Determine **new network infrastructure requirements** to sustain and **allow for future demand growth**
3. **Consider asset replacement requirements** to ensure **reliability of supply** and **network optimisation**
4. **Attain Grid Code compliance** by resolving both substation and line violations (N-1)

TDP 2024 Summary of infrastructure requirements

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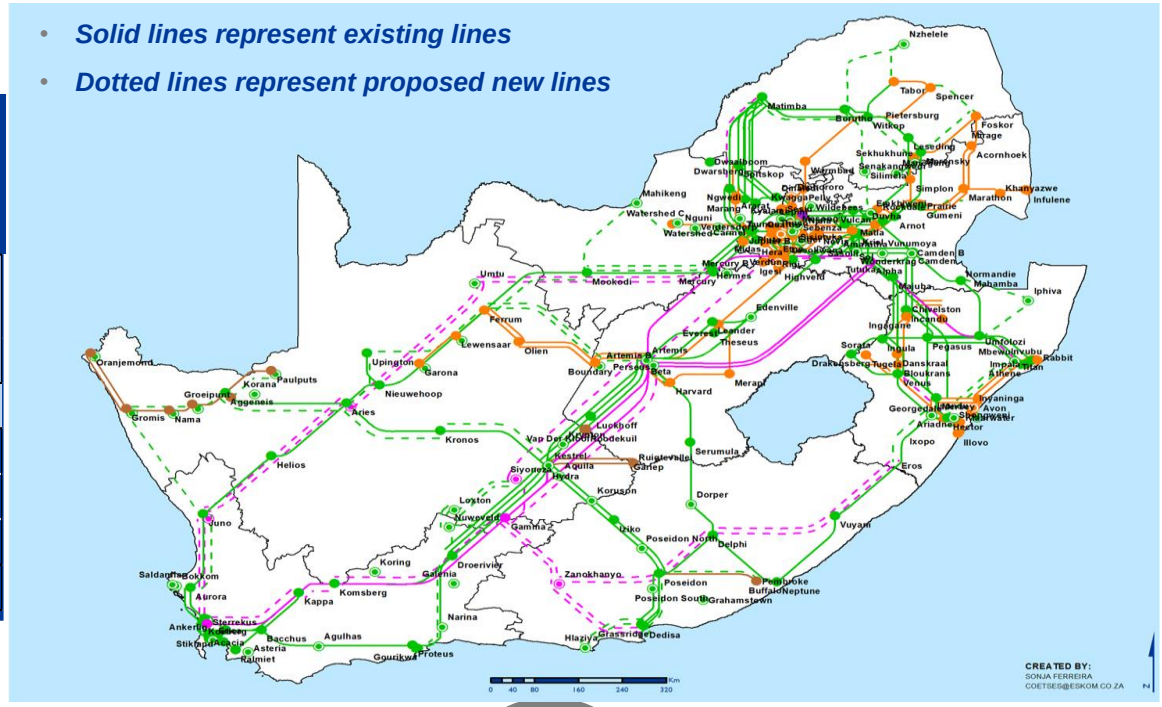
Power Lines (km)

Transmission Assets Nationally	Planned New Assets: 2025 - 2029	Planned New Assets: 2030 - 2034	Total New Assets: 2025 - 2034
Power lines (km)			
765 kV	767	6190	6957
400 kV	4251	3226	7477
275 kV	26	34	60
Total length (km)	5044	9450	14494

- *Solid lines represent existing lines*
- *Dotted lines represent proposed new lines*



Transformers

Transmission Assets Nationally	Planned New Assets: 2025 - 2029	Planned New Assets: 2030 - 2034	Total New Assets: 2025 - 2034
Transformers			
Number of Units	87	123	210
Capacity (MVA)	41325	91325	132650

Reactors

Transmission Assets Nationally	Planned New Assets: 2025 - 2029	Planned New Assets: 2030 - 2034	Total New Assets: 2025 - 2034
Reactors			
Number of Units	14	45	59
Capacity (MVar)	3260	13000	16260

Synchronous Condensers

Synchronous Condensers to be to installed at 7 substations

Capacitors

Transmission Assets Nationally	Planned New Assets: 2025 - 2029	Planned New Assets: 2030 - 2034	Total New Assets: 2025 - 2034
Reactors			
Number of Units	15	25	40
Capacity (MVar)	1032	1660	2692

The transmission grid is central to security of supply and advancing the just energy transition

TDP Targets ~ 14 494 kms of transmission line and 132 650 MVAs of transformation by 2034

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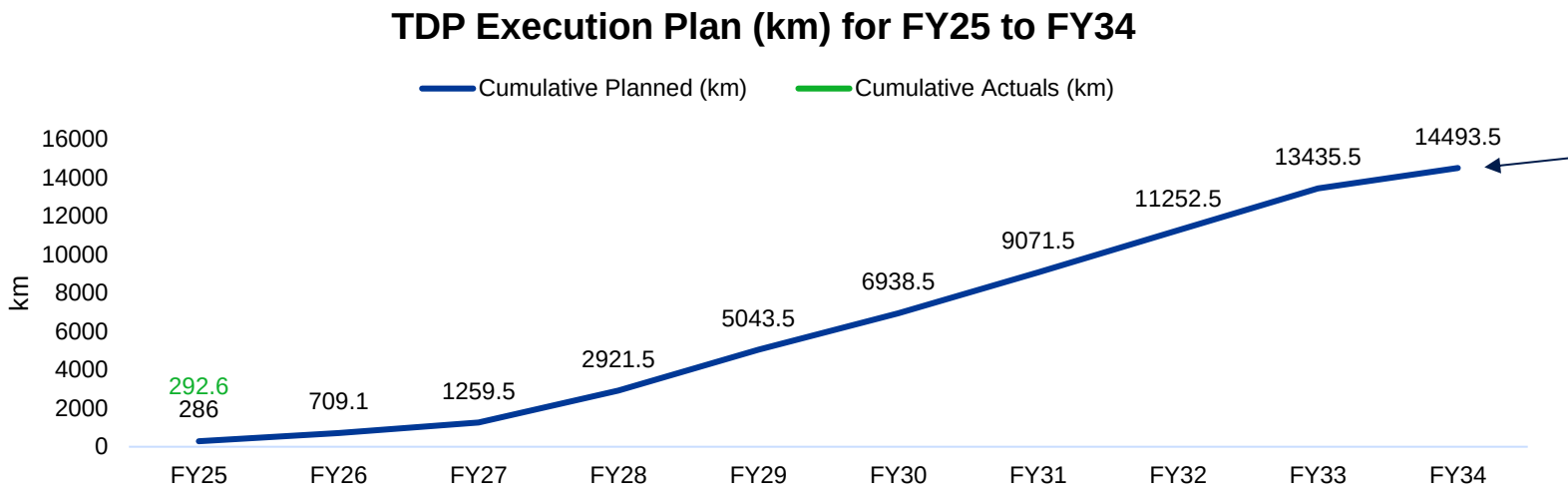

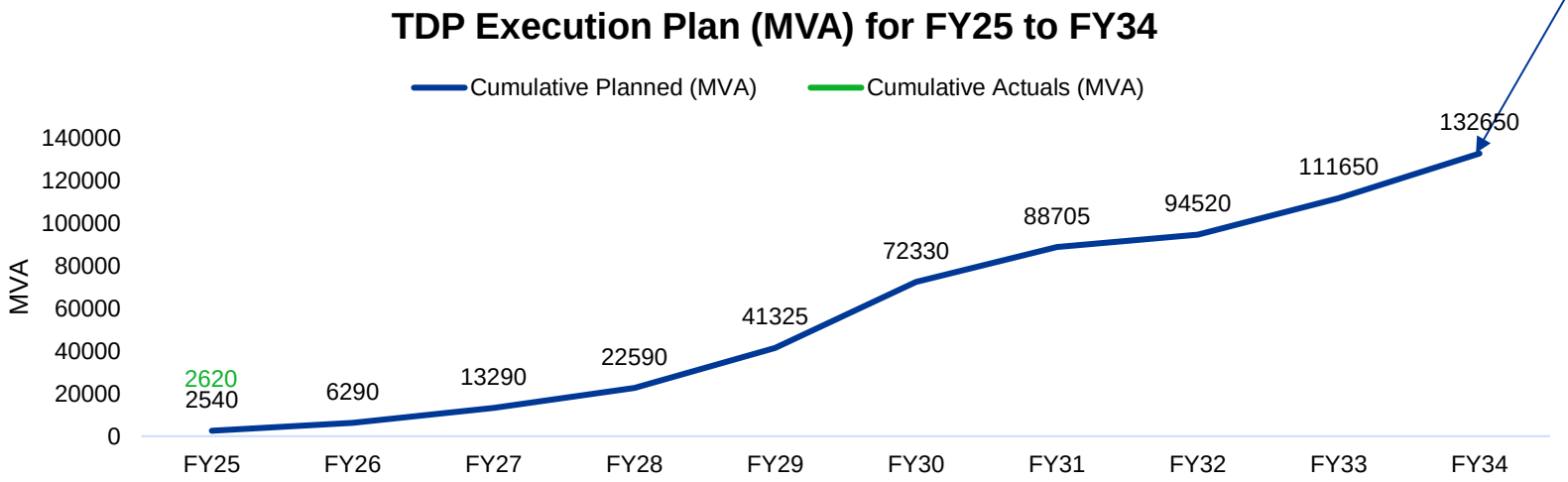

Transmission Development Plan (TDP) to deliver 14 494 km and 132 650 MVA by 2034

NTCSA Capital Budget:

1. R155 Bn Capital Budget allocated over 5 years
2. Private Sector Participation (PSP) has been identified as one of mechanisms to explore to assist with implementing the TDP

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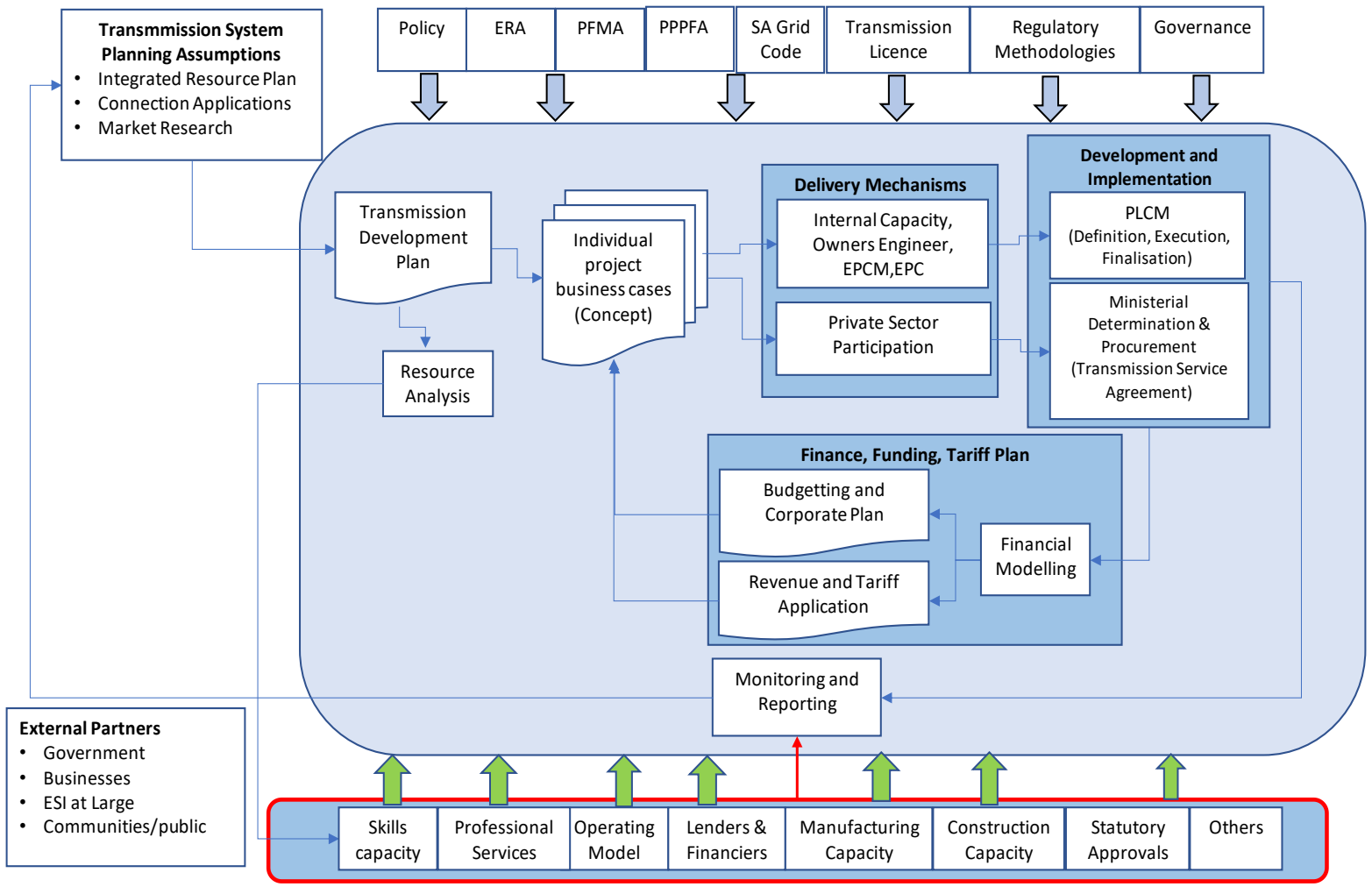
Framework for Planning and Rollout of TDP Projects



- The outcome of the TDP is a list of projects with a high-level scope, cost, and time for the new infrastructure.
- Each project then goes through an individual detail technical / economic analysis and culminates with a business case.
- The execution of individual projects follows the project life cycle model (PLCM) and the NTCSA's governance approval process prior to development and implementation.
- Current implementation practices involve internal engineering, procurement and construction management (EPCM) and recently introduced owner's engineer (OE) and engineering, procurement and construction (EPC) panels to supplement internal capacity.
- Working closely with the DoEE to develop a framework to introduce private sector participation (PSPs) / independent transmission projects (ITPs) as an alternate model to develop and fund infrastructure roll-out for the NTCSA.

Expanded TDP Delivery | Initiatives Progress

Planning
Focus on project development

Owners' Engineer (OE) & EPC
Owners' Engineer (OE) - contracts **awarded Dec '23**
Lines EPC – contract **awarded Jun '24**
Substation EPC – contract **awarded Jul '24**

Capital Budgets
Funding to deliver TDP

Integrated Reporting
Systems and Tools to report TDP

Line Contractor Incubation
Line contractor incubation programme, **2 Suppliers** completed the program in **Oct '24**.

Resource Planning
Workforce plan revised and approved

Environmental Approvals
DFFE improved turnaround – from 107 to 57 days

Servitudes Acquisition & Consent to Occupy
NECOM and other government structures / entities

Government Depts
Engagements with Government departments and NatJoints for additional support needed to deliver the program

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The transmission infrastructure expansion projects will stretch across all provinces in South Africa

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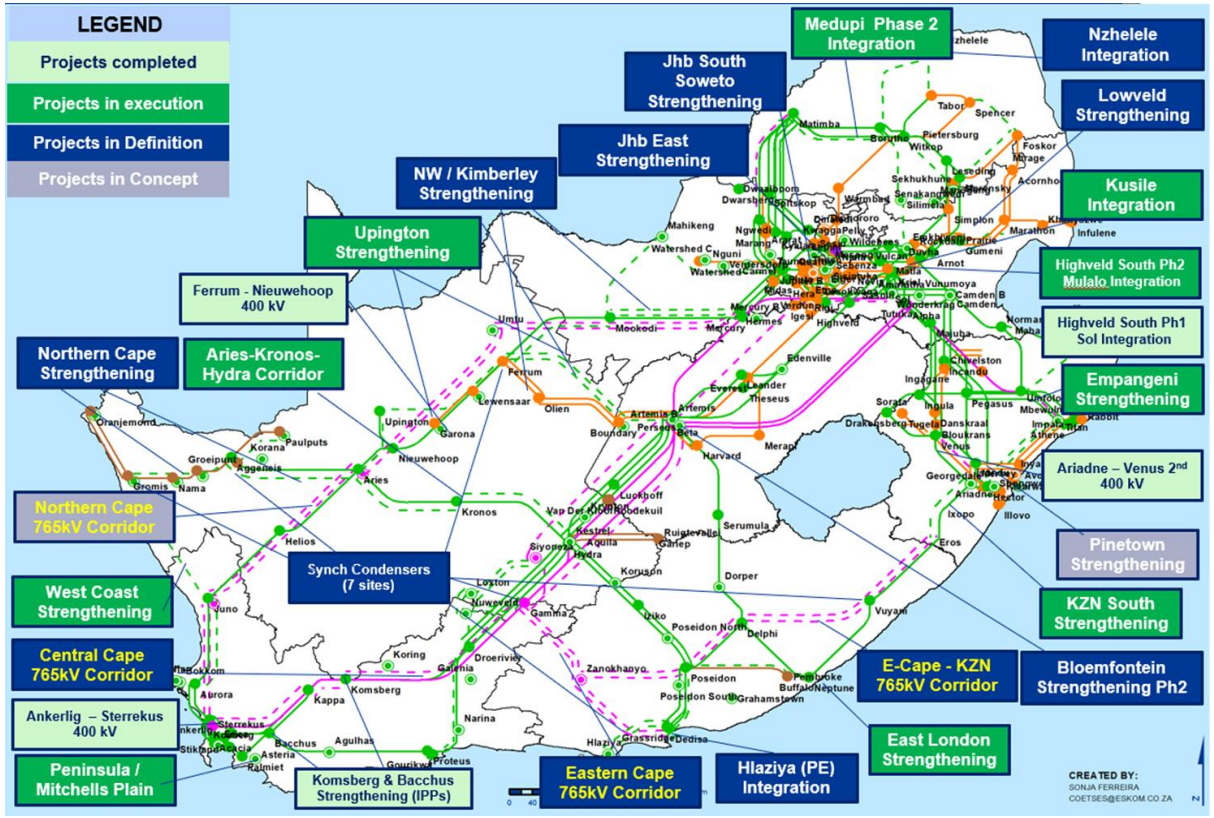
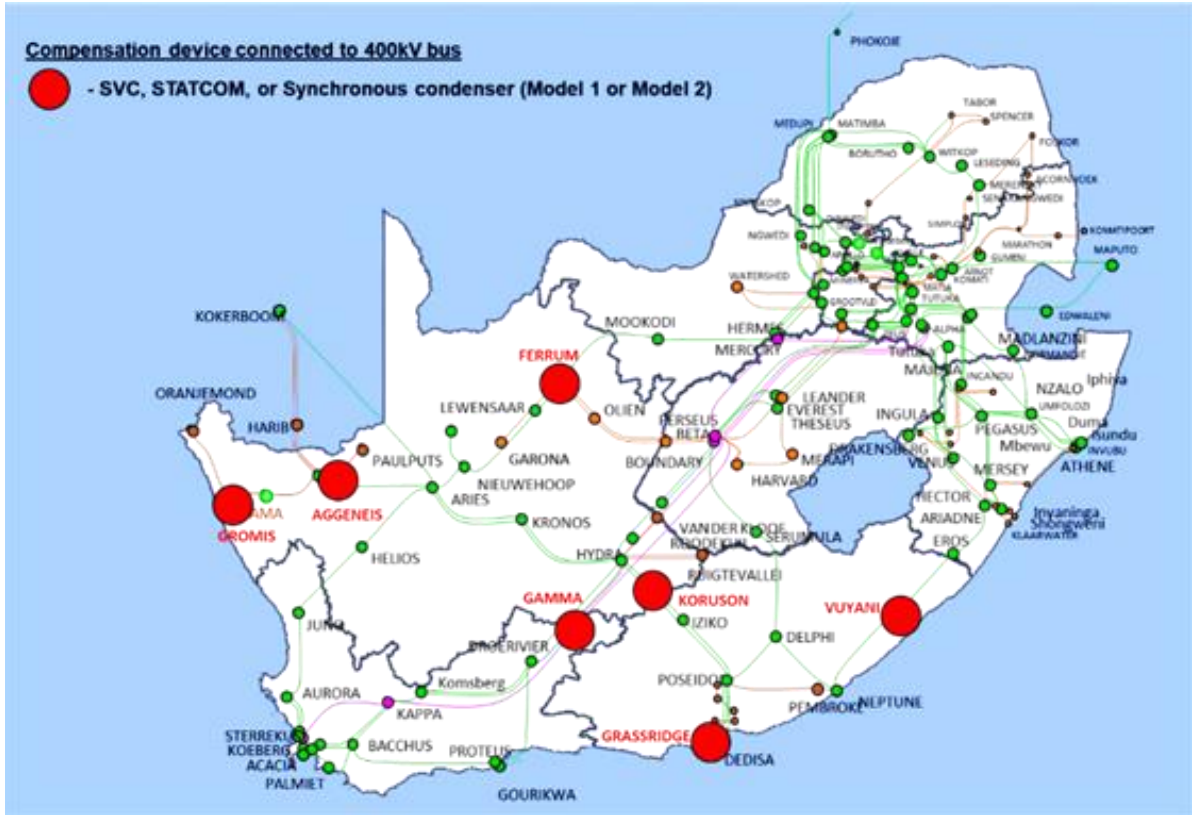
Spatial overview of transmission capacity expansion projects within a scheme



Spatial overview of Synchronous Condenser requirements



Expansion Project Status | NTCSA has a pipeline with projects at various stages of development to deliver the TDP 2024 targets

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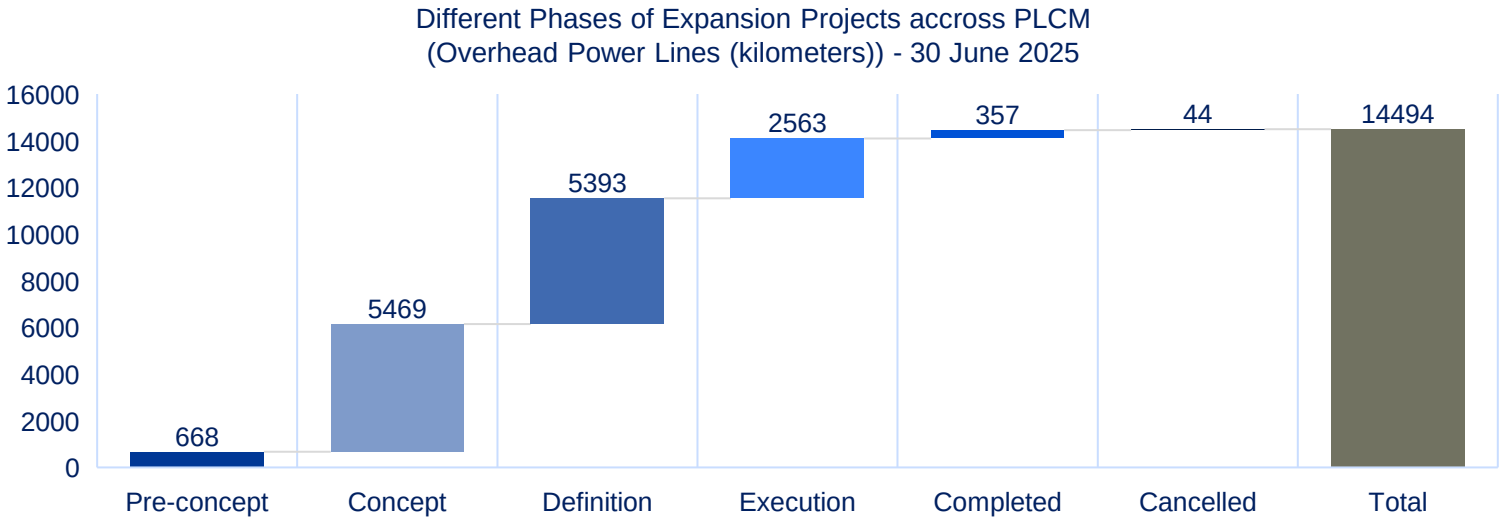

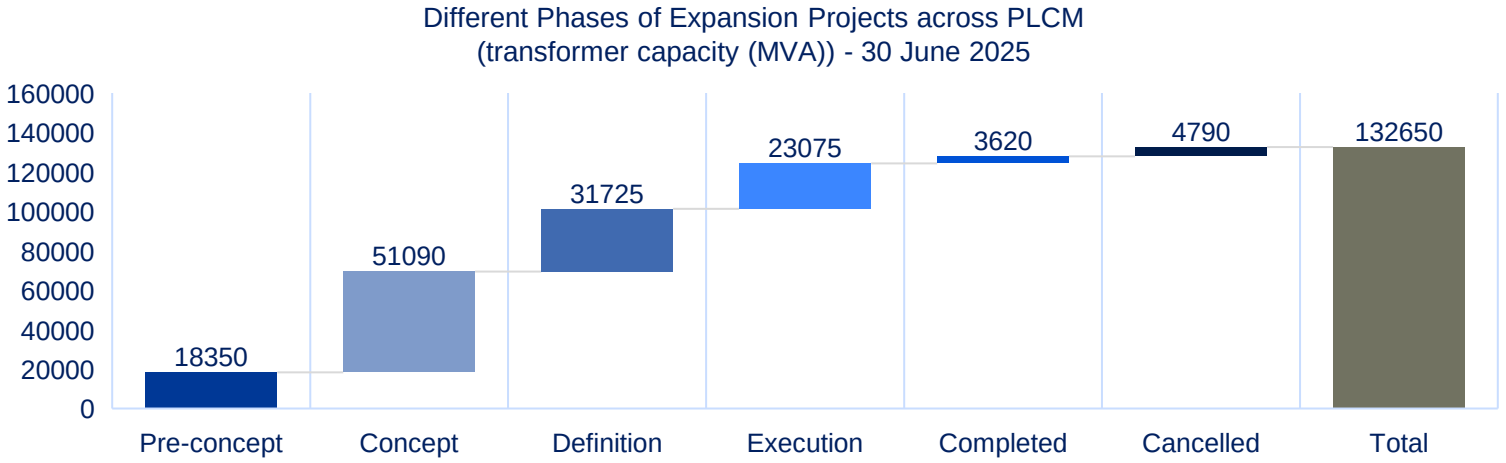

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Expansion Projects Progress

Transmission Lines

- Project Development (11 530 km)
- Procurement (2 211 km)
- Construction (351 km)

Transformers

- Project Development (101 165 MVA)
- Procurement (16 325 MVA)
- Construction (6 750 MVA)

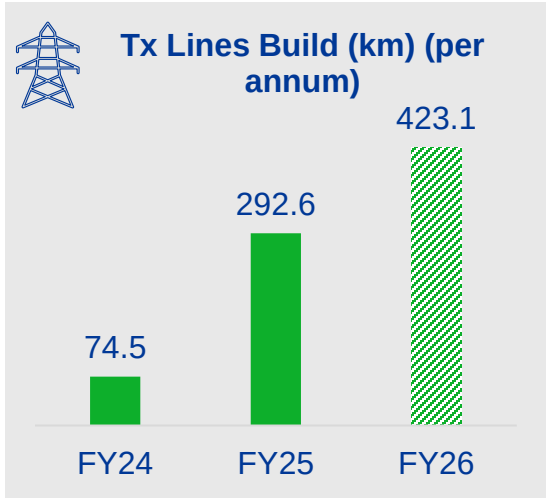
Priority Program

- 41 priority projects have been identified to accelerate 34 GW of new connection capacity by 2034

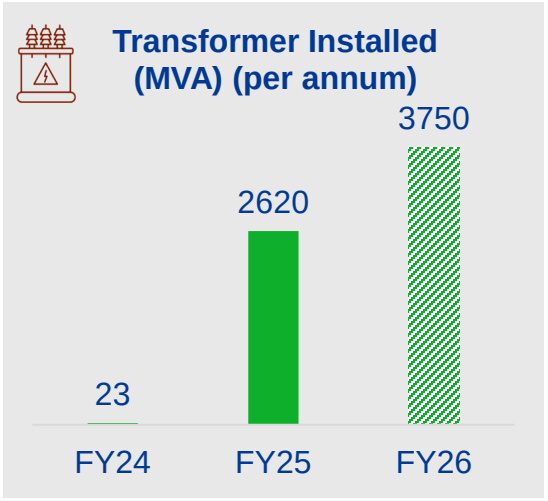
TDP Implementation | NTCSA has progressed on the delivery of the TDP

Physical Installation

km

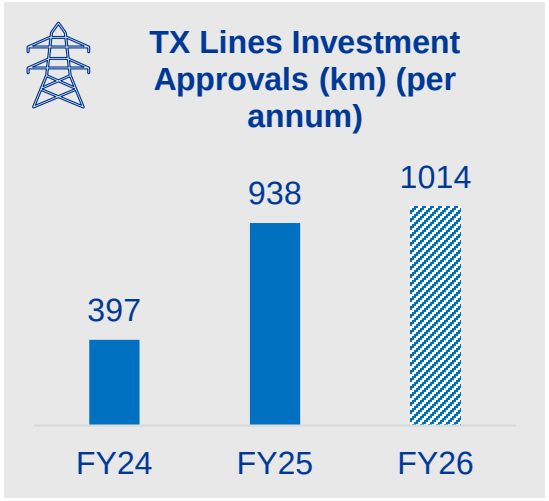


MVA

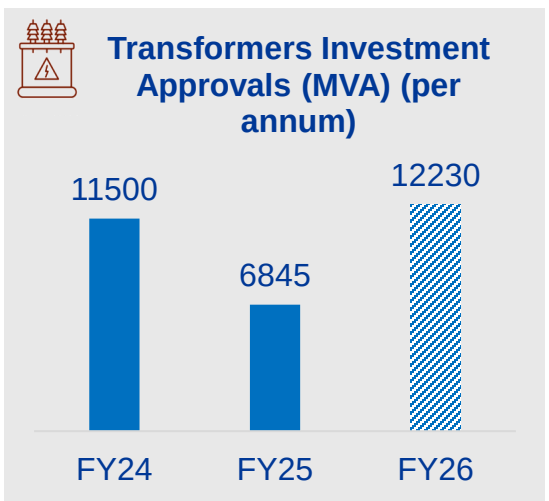


Project Development

km

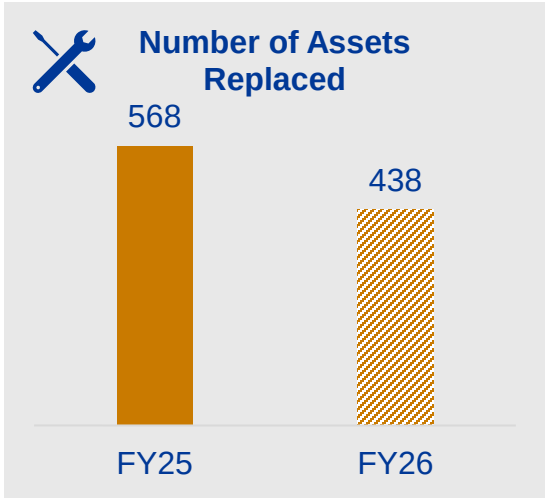


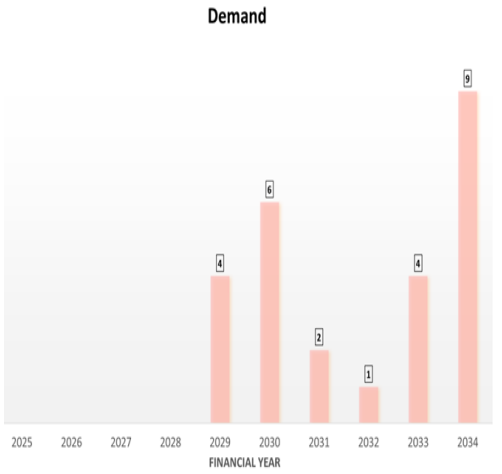
MVA



Number of Asset Replaced

Number





- Significant progress has been made on key enablement initiatives and delivery of the TDP.
- NTCSA is continuing to implement the identified medium to long-term strategies to unlock grid infrastructure i.e., Additional Transformers and Expedited Program.
- TDP Strategic and Operational forums have been established for implementing decisions and improving the speed of infrastructure delivery.

List of projects in execution, procurement and development planned ERA's for FY26 and FY27

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No	Project Name	Line Length (km)	Status
1	Greater East London Strengthening Ph 3	50	Construction
2	Waterberg GX Integration: 400kV Stability	203	Construction
3	Highveld South Reinforcement Ph2 Sol B	86	Construction
4	Ariadne Eros 2nd 132/400kV line	224	Construction
5	NAMPOWER 2nd Interconnector	1.1	Construction
6	Emkhiweni 400/132kV S/S Integration Phase 1A	8	Procurement
7	Upington Str: Aries-Upington	144	Construction
8	Erica MTS + Phillipi-Erica 400kV Line	5	Procurement
9	Asteria 400/132kV S/S integration	3.4	Procurement
10	Aggeneis-Paulputs 220kv line	93	Construction
11	Upington Str: Ferrum-Upington 400kV line 1 - IPP	260	Procurement
12	Hydra-Kronos-Aries 400kV line 2 - IPP	352	Procurement
13	Cape Ph4: Perseus–Zeus 765 kV line 1	430	Procurement
14	Emkhiweni 400/132kV S/S Integration Ph 1B	107	Procurement
15	Krypton 400/132kV S/S Int Ph 1	25	Procurement
16	Ferrum - Mookodi 400kV Line 2	260	Procurement
17	Kimberley Str Ph4: Boundary 400kV Str	98	Procurement
18	Korana 400/132 kV S/S Int	2	Procurement
19	Marathon 400 kV Integration	101	Procurement
20	Nzhelele 400/132kV S/S Int	97	Procurement
21	KZN Str Empangeni: Umfolozi Mbewu line	97	Procurement
22	KZN Str Empangeni: Mbewu Invubu	30	Procurement
	Total	**2 677**	

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No	Project Name	Line Length (km)	Planned ERA Financial Year
1	Aurora-Juno 400 kV line 2	165	FY2026
2	Greater East London Str Ph4	162	FY2026
3	Waterberg Stbl: Borutho-Silimela 400kV	150	FY2026
4	Bokkom 400/132kV S/S Int Ph1	50	FY2027
5	Brenner Ph2B: Lesokwana 275/88kV MTS	6	FY2027
6	Brenner Ph2A: Matla-Jupiter loop-ins	5	FY2027
7	Cape Ph4: Kappa-Sterrekus 765kV line 2	150	FY2027
8	Cape Ph4: Gamma–Perseus 765kV line 2	420	FY2027
9	JHB East Str: Jupiter B Int	240	FY2027
10	Sesiu 400/88kV S/S Integration	20	FY2027
11	SGS - 2xGamma-Grassridge 765kV lines	710	FY2027
12	Sisimuka Ph1B 275/88kV integration	6	FY2027
13	Nzhelele Phase 2: Borutho Nzhelele 400kV line	205	FY2027
14	West Rand Ph2B:Westgate-Pluto 400kV line	55	FY2027
15	West Rand Ph2C:Taunus 400kV Int	5	FY2027
16	Cape Ph4: Gamma-Kappa 765kV line 2	400	FY2027
17	Hlaziya 400/132 kV S/S Int	239	FY2027
18	East Coast Gas	48	FY2027
	Total	**3 036**	

NTCSA identified 7 potential projects for the ITP Phase 1

- The Department of Electricity and Energy promulgated 1 164 km of 400kV lines, transformation 2 630 MVA and 3 222 MW capacity to be executed as ITPs
- Request for Qualification (RFQ) – planned for July 2025
- Request for Proposals (RFP) – planned for Nov 2025

Delivery challenges | There are five delivery risks to the overall program

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Acquiring Land and servitude rights

- Landowner holdouts prevent projects from being commenced or energized; Projects are being escalated to Ministry and NECOM for increased focus

Servitude encroachment & access

- Land parcels that are secured on the route may have formal and informal housing encroaching, creating both a safety risk and preventing project teams from accessing Tx lines
- Projects are being escalated to NECOM-Presidency for increased focus

Line construction capacity

- Local industry - construction capacity to deliver TDP
- Incubation program - 2 companies graduated

Transformers

- Local supply capacity is adequate for Class 1 & 2
- One single supplier for Class 3b. No local supplier for Class 4
- 101 transformer panel contract has been established (Class 3b transformers)

Steel

- The country has one supplier of fabricated structural steel
- RFI issued to the market for structural steel for powerlines to determine the capability and capacity of the local industry
- 6 Steel suppliers invited to prepare prototype towers

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PANEL Q&A – AND RECOMMENDATIONS

- Date: 14 July 2025

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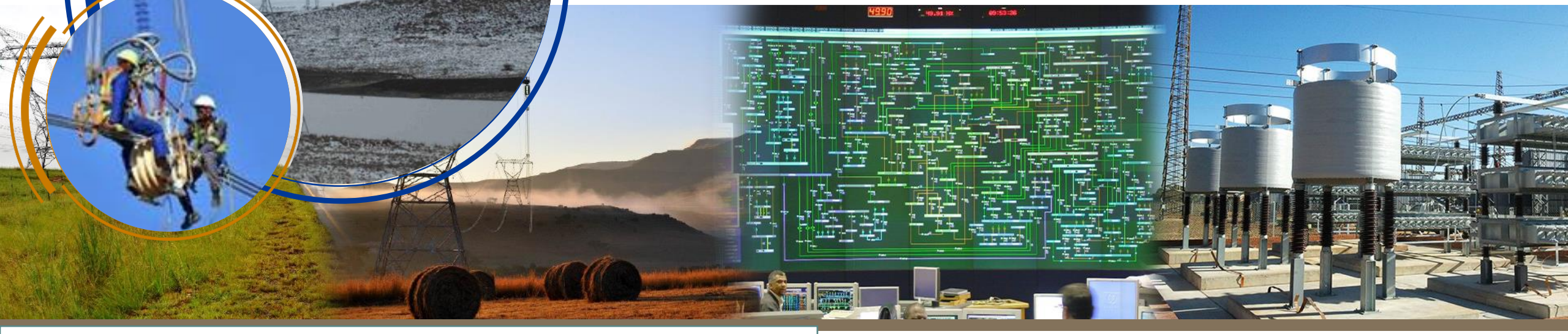
NTCSA PROCUREMENT & SUPPLY CHAIN MANAGEMENT (P&SCM)

Presented By: Frans Pooe

Date: 15 July 2025



Disclaimer: This is only awareness for Induction purposes, and not to be used as formal training.

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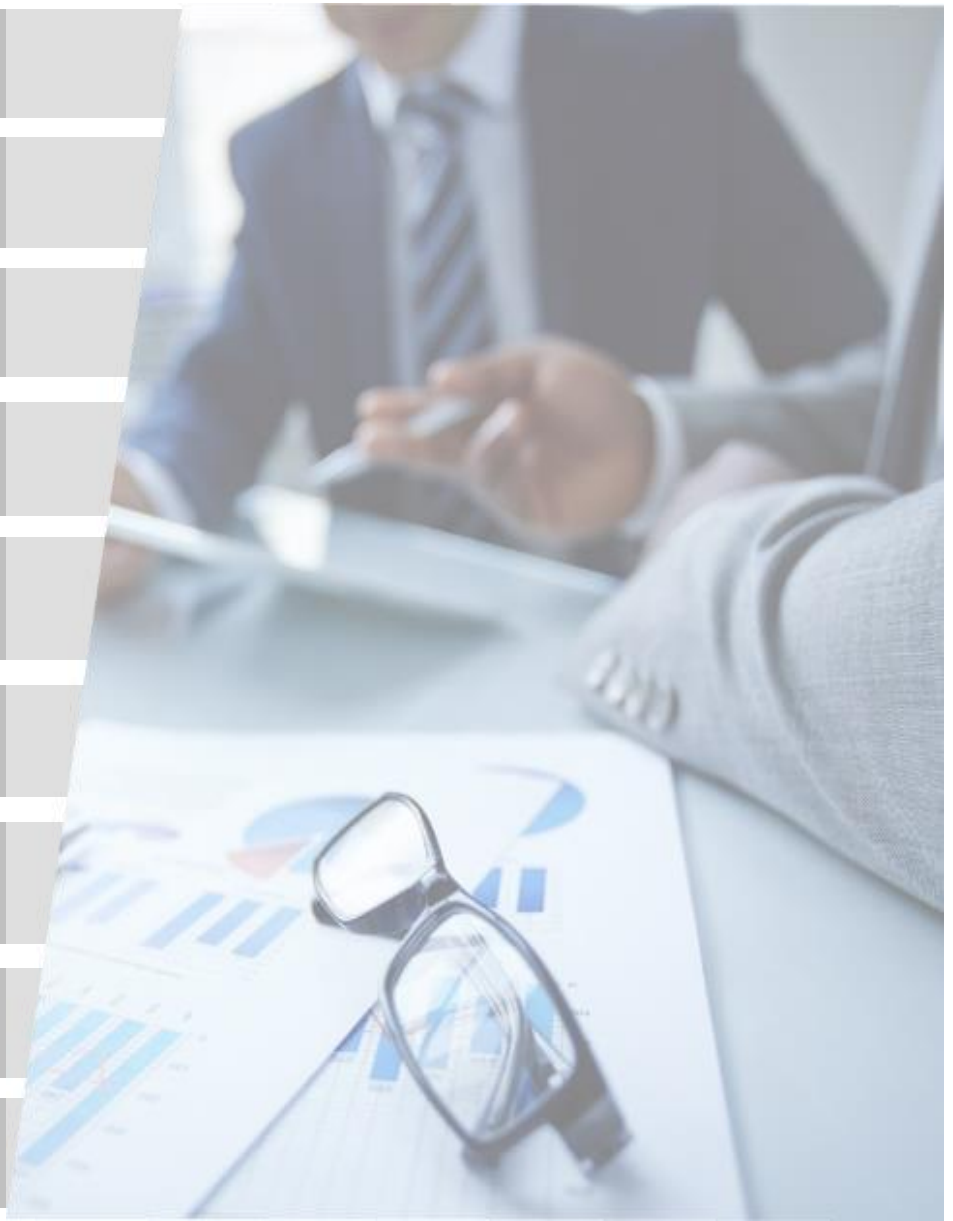


Introduction

Introduction & expectations

Procurement Governance Overview

Governance Overview

- Constitution
- Preferential Procurement Policy Frame-work Act
- Eskom Procurement and Supply Chain Policy – 32-1033
- Eskom Procurement and Supply Chain Procedure – 32-1034

Law
Prescripts

National
Treasury
Notes

Regulations

Etc…

Mandate

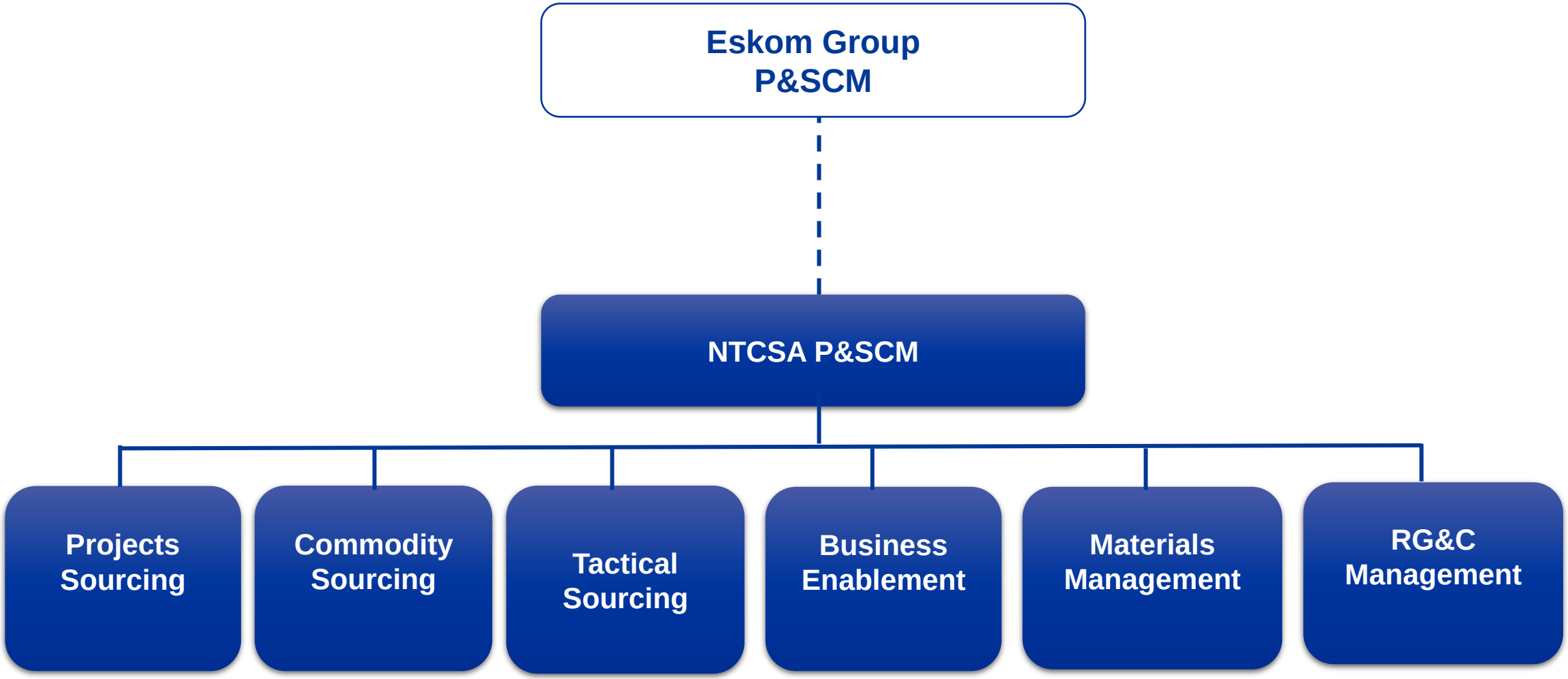
Mandate:

The NTCSA Procurement and Supply Chain Management function's mandate is to **optimally**, **cost effectively and safely procure** goods, services, and works for the NTCSA with **best class capabilities** and performance in the area of procurement, inventory management, warehousing, supplier management and development as well as **compliance to relevant regulatory and legislative framework**.

The function is comprised of the following areas:

- ❑ Project Sourcing (Projects Delivery)
- ❑ Commodity Sourcing
- ❑ Tactical Sourcing (including Grids);
- ❑ Business Enablement (including SDL&I)
- ❑ Materials Management and Logistics
- ❑ Risk Governance and Compliance

High Level Structure



Procurement decisions & compliance..

Constitutional principles:
(1) Fairness, (2) Equitability, (3) Transparency, (4) Competitiveness & (5) Cost-effectiveness.

Procurement Hierarchy & Mechanisms

- Once Purchase Requisition (PR) received Procurement Practitioner must establish where the requirements can be met – as per below:

a) From Existing Framework Agreement (Is there existing Contracts or Panel within BU or Divisional/National Contracts..)

- Must have similar Scope, enough funds, and time.
- Appointed official to be contacted to assist with drawdowns.

b) From Transversal Contracts (contracts established by National Treasury (NT) for use by any SOC)

- To be able to use transversal contract NT must be contacted, and NTCSA will have to use agreed rates by NT.

c) From External Suppliers / Market at Large using:

- Formal tendering (Open tender process)
- Informal tendering
- Sole or Single Source Procurement
- Multiple Sourcing (Closed list)
- Emergency procurement
- Urgent procurement

Procurement Process

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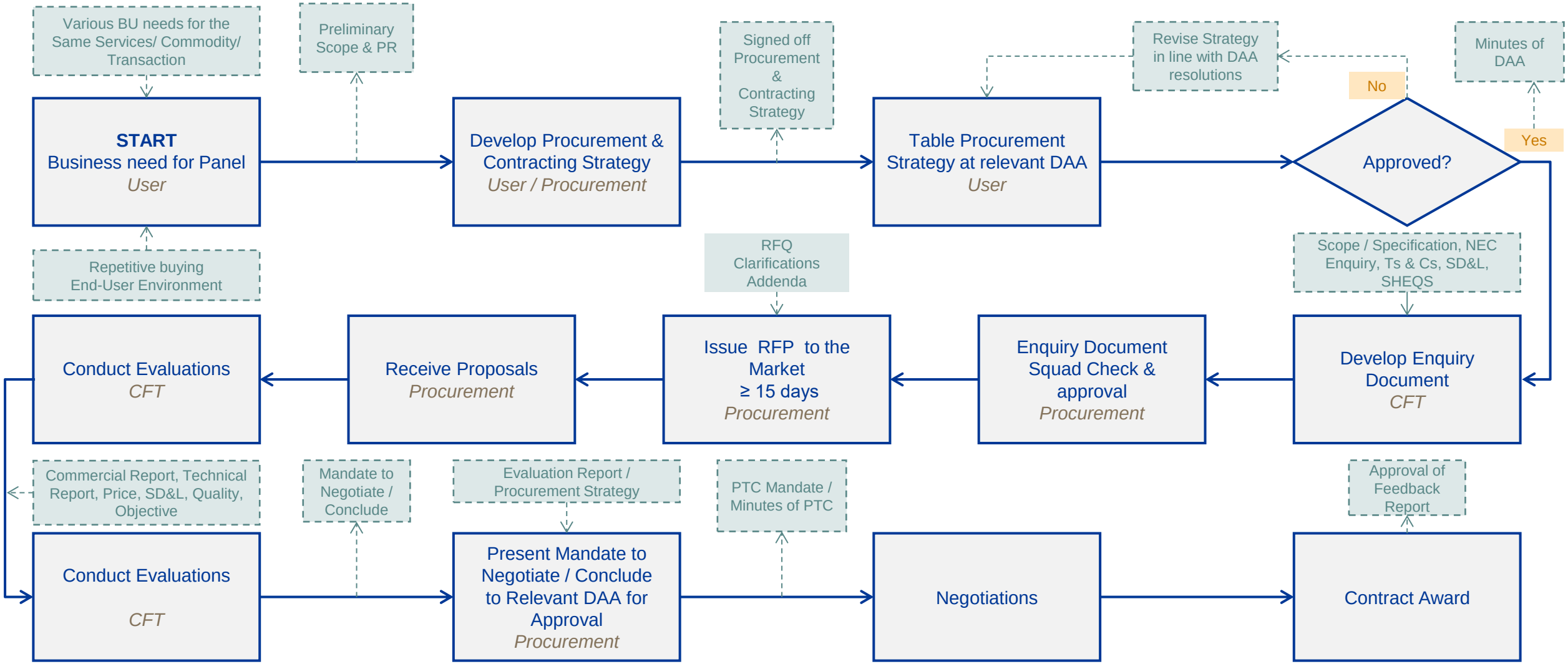

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Tender Process & Requirements

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Generally Tender pack consist of the followings section:

Description	
Commercial Requirements 	Key commercial returnable documents outlined on Invitation to Tender (ITT) and if not adhered to may result in disqualifications (e.g. valid CIDB registration, Supplier Declarations, JV documents, COIDA, Tax compliant; etc) --- Be an eligible company to submit tenderers. (No restrictions, no suctions by National Treasury or elsewhere, no conflict of interest, anti competitive behavior etc. (Section 2.1 of ITT) --- NB: Non-Compulsory / Compulsory Clarification & Site meetings.
Contract 	Mainly NEC but other forms of contracts may be used depending on the nature of works/services and risks. --- To be filled in and offer price(s) to be clear and aligned to the BOQ/Price Schedule / Activity schedule. --- Any deviations must be clearly stipulated.
Technical Requirements 	To be read and understood well by the tenderers as it may contain multiple documents such as detailed specifications, drawings, standards etc. --- Contains clear evaluation criteria, and at times mandatory / gatekeeper requirements which leads to disqualifications if not adhered to.

Tender Process & Requirements continues…

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CONTRACTUAL REQUIREMENTS: Mainly not a disqualification until contract award stage.

Description	
Supplier Development and Localization& Industrialization (SDL&I) 	Key requirements includes valid BBBEE certificates; Job Creation targets; Skills Developments targets; Local Contents requirements as prescribed by DTiC; Subcontracting, National Industrial Participation Programme (NIPP) --- Over & above some projects may include Corporate Social Investment (CSI) and sustainability requirements to promote lasting legacy in some of the communities where projects are executed.
Safety, Health Environmental & Quality (SHEQ) 	These are very critical requirements as health and safety of NTCSA employees; Contractors and public at large, are equally important. No work is too important to anyone's life. --- The goods and services being proposed must be aligned to all the SHEQ's NTCSA requirements and also to the laws of the country. All relevant standards must be adhered to before contract can be awarded to any company.
Financial Statement 	Latest Audited Financial Statement (AFS) must be provided. Where the AFS have not been audited, ITA34C tax submission will be required and the Public Interest Score as completed by the accountant / reviewer as required by the Companies Act, 2008. --- Where a new company is unable to provide audited financial statements for the last 18 months, it may, at NTCSA's discretion, be permitted to provide audited financial statements for the most recent twelve-month operating period.

Key Tender Guidance & Evaluation Process

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Tender is evaluated in line with the tender requirements and criteria issued out to the market, and key principles to note of during the tender process are as follows:

1. All clarification matters pertaining to a specific tender **must be addressed to NTCSA assigned Procurement Practitioner/ Buyer as stated on the ITT.**

2. NTCSA does not accept any late submission of tenders, and as such any **late submission is automatically disqualified.**

3.
   - All costs incurred in preparing tender proposals are for the tenderer's account.
   - The tender and any supporting documents as pat of the response to tender becomes NTCSA property.

4. It is imperative to note that NTCSA does business with companies that are legally sound and observe the rule of law, as such all companies must comply all statutory requirements such as: Being registered on National Treasury Central Supplier Database (CSD), and being Tax Complaint, COIDA compliant etc..

Key Tender Guidance & Evaluation Process continues..

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5

Evaluation Process:

- **Basic commercial compliance** to the tender requirements is the first step of the evaluation. Generally, Eligibility and any applicable Mandatory requirements are evaluated and **any tenderer who does not meet the mandatory requirements is disqualified**.
- **Functionality**: Tenderers are evaluated in line with technical functionality criteria requirements. **Any tender who does not meet the criteria is disqualified and not evaluated any further.**
- Generally NTCSA uses **the 80/20 or 90/10 principles in evaluating price and BBBEE level for ranking purposes.** As such it is key that suppliers BBBEE certificate is valid at tender closing and cost-effective prices are offered in the proposals.
- The highest ranked tenderer who passes commercial, technical, and financial criteria is then advanced for potential contract award / negotiations. It is not mandatory that the highest ranked tenderer always wins the tender.
- Once approval has been obtained and negotiations concluded by both parties, then a contract is signed and loaded on the SAP system (46xxxx) for execution.

Informative websites:

NTCSA: www.ntcsa.co.za

ESKOM: www.eskom.co.za

SARS: www.sars.gov.za

NATIONAL TREASURY: www.treasury.gov.za

CIDB: www.cidb.org.za

DTiC: www.thedtic.gov.za

Department of Employment & Labour: www.labour.gov.za

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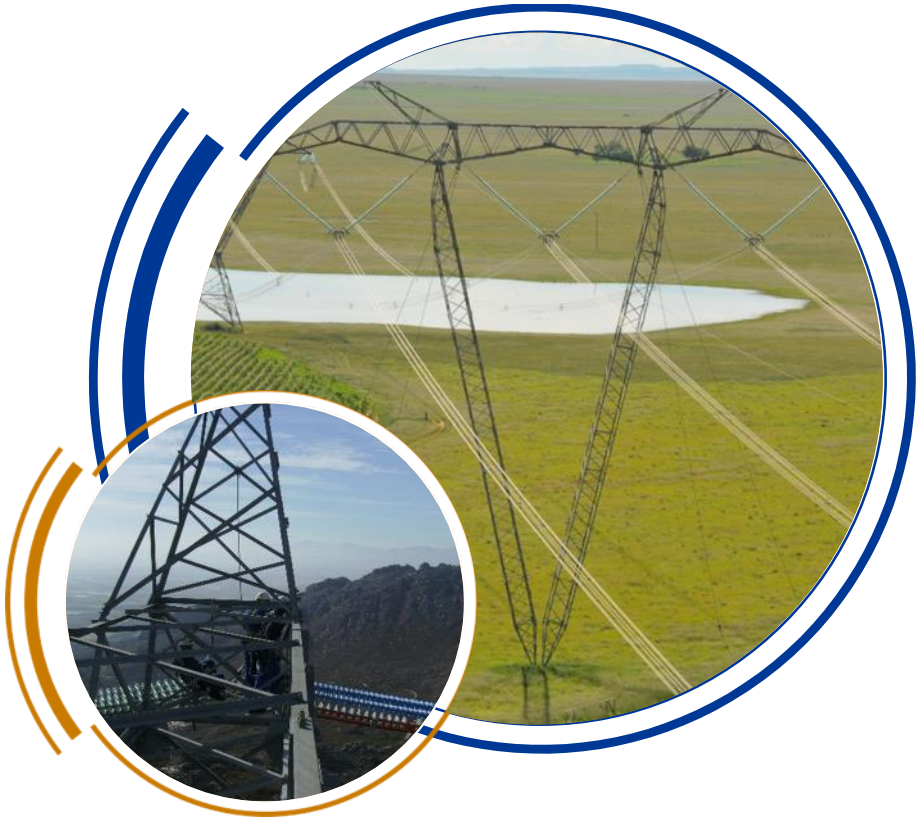

Thank You.

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NTCSA Lines Construction Contractor Network & Collaboration Forum.

Presented by: Martin Sabelo

Date: 14 July 2025

Eskom Supplier Development and Localisation Mandate

Eskom National Transmission Company South Africa ™

Mandate

Our mandate is to achieve **maximum and sustainable local development impact** through leveraging Eskom's **procurement spend** in a manner that allows flexibility within the business in order to accommodate **government local development initiatives and policies**

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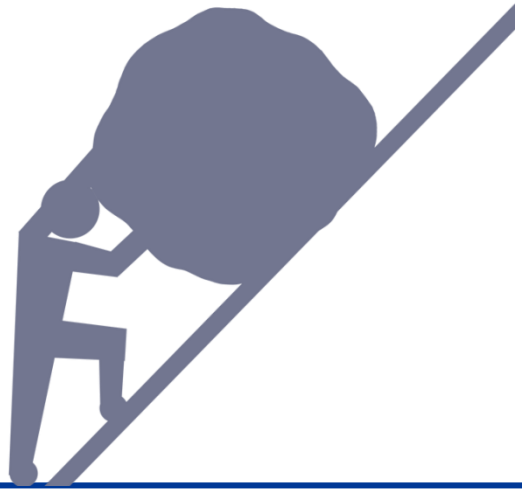
SD&L Measures Impact Along 5 Key Performance Areas

Key performance areas	Definition
Skills development	Increasing the skill base (number and skill level) of South African workers in areas relevant to the energy sector and where there is a national scarcity of skills
Local content	Utilisation of NTCSA spend to develop South African based manufacturers/suppliers by ensuring that local content in line with DTIC designated commodities is adhered to and advanced
Industrialisation	Utilisation of NTCSA and suppliers' spend to foster the establishment of new competitive industries in the NTCSA sector
Employment and job creation	Creation of ***new*** jobs by suppliers as a direct result of NTCSA business
Supplier development	Providing a platform to develop emerging suppliers, and further contribution to local developmental opportunities for national and international suppliers

Tenderer Challenges In Tender Submissions

A number of **challenges** have been identified whereby suppliers fail to meet the following **SD&L tender requirements**:

- Local Content Declarations
- B-BBEE Certificate/Affidavit
- Key elements on affidavits
- Subcontracting requirements



Objective of Local Content Policy (by DTCIC)

To leverage **public expenditure** (both CAPEX and OPEX) made by **organs of state** to:

- **Develop and enhance** local manufacturing capability and capacity
- Support industrial **innovation** and technological **developments**
- Create **employment** and sustain jobs
- Boost **exports** and ensure suppliers are integrated into OEM's global value chains
- Support broader **economic empowerment** through the creation of black industrialists

Supplier Non-Compliance/Challenges In The Tendering Process

In terms of the tendering process, tenderers are required to fill in the following documents to meet local content:

1. SBD 6.2
2. Annexure C
3. Annexure D
4. Annexure E

All forms must be filled in detail and signed

SBD 6.2

LOCAL CONTENT DECLARATION
(REFER TO ANNEX B OF SATS 1286:2011)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. .....

ISSUED BY: (Procurement Authority / Name of Institution):
.....
NB

1 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

2 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thdti.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, ... (full names), do hereby declare, in my capacity as ..... of .....(name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.

(b) I have satisfied myself that:

(i) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011; and

(c) The local content percentage (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C:

Bid price, excluding VAT (y)	R
Imported content (x), as calculated in terms of SATS 1286:2011	R
Stipulated minimum threshold for local content (paragraph 3 above)	
Local content %, as calculated in terms of SATS 1286:2011	

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above.

Annexure C

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SATS 1286.2011

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.				
(C2)	Tender description:				
(C3)	Designated product(s)				
(C4)	Tender Authority:				
(C5)	Tendering Entity name:				
(C6)	Tender Exchange Rate:	Pula		EU	GBP
(C7)	Specified local content %				

Note: VAT to be excluded from all calculations

Calculation of local content								Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)

(C20) Total tender value	R 0	
(C21) Total Exempt imported content		R 0
(C22) Total Tender value net of exempt imported content		R 0
(C23) Total Imported content		R 0
(C24) Total local content		R 0
(C25) Average local content % of tender		

Signature of tenderer from Annex B

Date:

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Annex D

Imported Content Declaration - Supporting Schedule to Annex C

(D1)	Tender No.	
(D2)	Tender description:	
(D3)	Designated Products:	
(D4)	Tender Authority:	
(D5)	Tendering Entity name:	
(D6)	Tender Exchange Rate:	Pula

EU R 9.00 GBP R 12.00

Note: VAT to be excluded from all calculations

A. Exempted imported content

Tender item no's	Description of imported content	Local supplier	Overseas Supplier	Calculation of imported content: Forign currency value as per Commercial Invoice	Tender Exchange Rate	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Summary: Tender Qty	Exempted imported value
(D7)	(D8)	(D9)	(D10)	(D11)	(D12)	(D13)	(D14)	(D15)	(D16)	(D17)	(D18)

(D19) Total exempt imported value R 0

This total must correspond with Annex C - C 21

B. Imported directly by the Tenderer

Tender item no's	Description of imported content	Unit of measure	Overseas Supplier	Calculation of imported content: Forign currency value as per Commercial Invoice	Tender Rate of Exchange	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Summary: Tender Qty	Total imported value
(D20)	(D21)	(D22)	(D23)	(D24)	(D25)	(D26)	(D27)	(D28)	(D29)	(D30)	(D31)

(D32) Total imported value by tenderer R 0

C. Imported by a 3rd party and supplied to the Tenderer

Description of imported content	Unit of measure	Local supplier	Overseas Supplier	Calculation of imported content: Forign currency value as per Commercial Invoice	Tender Rate of Exchange	Local value of imports	Freight costs to port of entry	All locally incurred landing costs & duties	Total landed cost excl VAT	Summary: Quantity imported	Total imported value
(D33)	(D34)	(D35)	(D36)	(D37)	(D38)	(D39)	(D40)	(D41)	(D42)	(D43)	(D44)

(D45) Total imported value by 3rd party R 0

D. Other foreign currency payments

Type of payment	Local supplier making the payment	Overseas beneficiary	Calculation of foreign currency payments: Foreign currency value paid	Tender Rate of Exchange	Summary of payments: Local value of payments
(D46)	(D47)	(D48)	(D49)	(D50)	(D51)

(D52) Total of foreign currency payments declared by tenderer and/or 3rd party

(D53) Total of imported content & foreign currency payments - (D32), (D45) & (D52) above R 0

This total must correspond with Annex C - C 23

Signature of tenderer from Annex B

Date:

Annexure E

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Annex E

Local Content Declaration – Supporting Schedule to Annex C

(E1)	**Tender No.**	
(E2)	**Tender description:**	
(E3)	**Designated products:**	
(E4)	**Tender Authority:**	
(E5)	**Tendering Entity name:**	

Note: VAT to be excluded from all calculations

Local Products (Goods, Services and Works)	Description of items purchased	Local suppliers	Value
	(E6)	*(E7)*	*(E8)*
	(E9) **Total local products (Goods, Services and Works)**		R 0

(E10)	**Manpower costs**	(Tenderer's manpower cost)	R 0
(E11)	**Factory overheads**	(Rental, depreciation & amortisation, utility costs, consumables etc.)	R 0
(E12)	**Administration overheads and mark-up**	(Marketing, insurance, financing, interest etc.)	R 0
		(E13) **Total local content**	R 0
		This total must correspond with Annex C – C24	

Signature of tenderer from Annex B

Date:

B-BBEE Certificate / Affidavit Non-Compliance (1/3)

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In term of the B-BBEE Codes of Good Practice and the BEE Commission guidelines:

“It is illegal for a measured entity to trade with an invalid/inconclusive or incorrect B-BBEE Verification Certificate. The procurement spend as a result of such an invalid document cannot be recognised during B-BBEE measurement, therefore, it is critical to determine the validity of B-BBEE certificates measured entities present in order to access an economic opportunity”.

B-BBEE Certificate / Affidavit Non-Compliance (2/3)

- Valid B-BBEE Certificate or an Affidavit
- Joint Ventures must submit a consolidated B-BBEE certificates

B-BBEE Certificate / Affidavit Non-Compliance (3/3)

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Problems Identified with submission of invalid B-BBEE Certificates/Affidavits:

- **B-BBEE Certificates**
  - Some tenderers still submit B-BBEE Certificates which are issued by Auditors or Accounts
  - In terms of the communication of 31 December 2016, issued by both DTI and IRBA, No auditor/accountant is allowed to issue B-BBEE certificates unless accredited by SANAS
- **Affidavits**
  - The legal dictionary (https://legal-dictionary.thefreedictionary.com/Affadavit) defines a sworn affidavit as a written statement of facts voluntarily made by a person under an oath or affirmation administered by a person authorized to do so by law
  - REGULATIONS GOVERNING THE ADMINISTERING OF AN OATH OR AFFIRMATION under clause:
    - ❑ 3 (1), state that “The deponent shall sign the declaration in presence of the Commissioner of Oath”.
    - ❑4 (1) Below the deponent's signature or mark the commissioner of oaths shall certify that the deponent has acknowledged that he knows and understands the contents of the declaration and he shall state the manner, place and date of taking the declaration

Key Elements Of B-BBEE Sworn Affidavits

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Tenderers submitting B-BBEE Sworn Affidavits must ensure that the affidavits meet the following key pointers to ensure their validity:

a) Name/s of deponent as they appear in the identity document and the identity number.

b) Designation of the deponent as the director, owner or member must be indicated in order to know that person is duly authorized to depose of an affidavit. **(Underline or circle Whichever is applicable).**

c) Name of enterprise as per enterprise registration documents issued by the CIPC, where applicable, and enterprise business address.

d) Percentage of black ownership, black female ownership and designated group. In the case of specialised enterprises as per Statement 004, the percentage of black beneficiaries must be reflected. (**No blank spaces to be left**).

e) Indicate total revenue for the year under review and whether it is based on audited financial statements or management account. **(Underline the applicable option).**

f) Financial year end as per the enterprise's registration documents, which was used to determine the total revenue. (Financial year end to be stipulated by **day/month/year).**

g) B-BBEE Status level. An enterprise can only have one status level.

h) Empowering supplier status must be indicated. For QSEs, the deponent must select the basis for the empowering supplier status.

i) Date deponent signed and date of Commissioner of Oath must be the same. **(The sworn Affidavit must be signed in the presence of the Commissioner of Oath).**

j) Commissioner of Oath cannot be an employee or ex officio of the enterprise because, a person cannot by law, commission a sworn affidavit in which they have an interest

K) Sworn Affidavits attested / signed by a Commissioner of Oaths as a true copy **stamp** will not be accepted

Objective Criteria – 30% Sub-Contracting

Mandatory subcontracting on contracts above R30 million as a condition for contract award
If feasible to subcontract for a contract above R30 million, Eskom:
a) must apply subcontracting to previously designated groups.
b) must advertise the tender with a specific condition for contract award that the successful tenderer must subcontract a minimum of 30% of the value of the contract to:

i. An EME or QSE which is at least 51% owned by black people.
ii. An EME or QSE which is at least 51% owned by black people who are youth.
iii. An EME or QSE which is at least 51% owned by black people who are women.
iv. An EME or QSE which is at least 51% owned by black people with Disabilities.
v. An EME or QSE which is 51% owned by black people living in rural or underdeveloped areas or townships.
vi. A cooperative which is at least 51% owned by black people.
vii. An EME or QSE which is at least 51% owned by black people who are military veterans;

Tender Returnable if the above element is a requirement;

- Proof of a sub-contract agreement/s must be submitted.
- CSD report of subcontractors
- Sub-contractor/s B-BBEE certificate / sworn affidavit must be submitted.

Subcontracting, in this instance, will be treated as a condition for contract award. A supplier awarded a contract may not subcontract more than 25% of the value of the contract to any other entity that does not have an equal or higher B-BBEE status level of a contributor than the supplier concerned unless the contract is subcontracted to an EME that has the capability and ability to execute the subcontract.

Subcontracting (2/2)

Non Compliant with subcontracting

- Tenderers tend to not submit the following documents as part of their tender submissions:
  - Subcontracting agreement or a letter of intent to subcontract to the designated groups as stipulated under PPPFA regulations
  - Proof of the subcontractor being an EME/QSE Affidavit or B-BBEE Certificate
  - Proof of the subcontractor being registered with the National Treasury database(CSD)
  - Some tenderers, subcontract to their own subsidiary companies or companies related to owners/directors of the company, thus sabotaging the noble idea of spreading broader economic participation to deserving designated groups as espoused by the PPPFA

Skills Development

- Skills development will form part of the localisation evaluation criteria.
- Tenderers will be required to propose Skills development initiatives in terms of skills required for a project.
- Skills will have an entry requirement and an exit qualification i.e. (Electrical Artisan - N3 =Trade Certificate - CETA accredited)
- Suppliers will be encouraged to give preference to local to site candidates.
- Focus will be on youth from previously disadvantaged backgrounds.

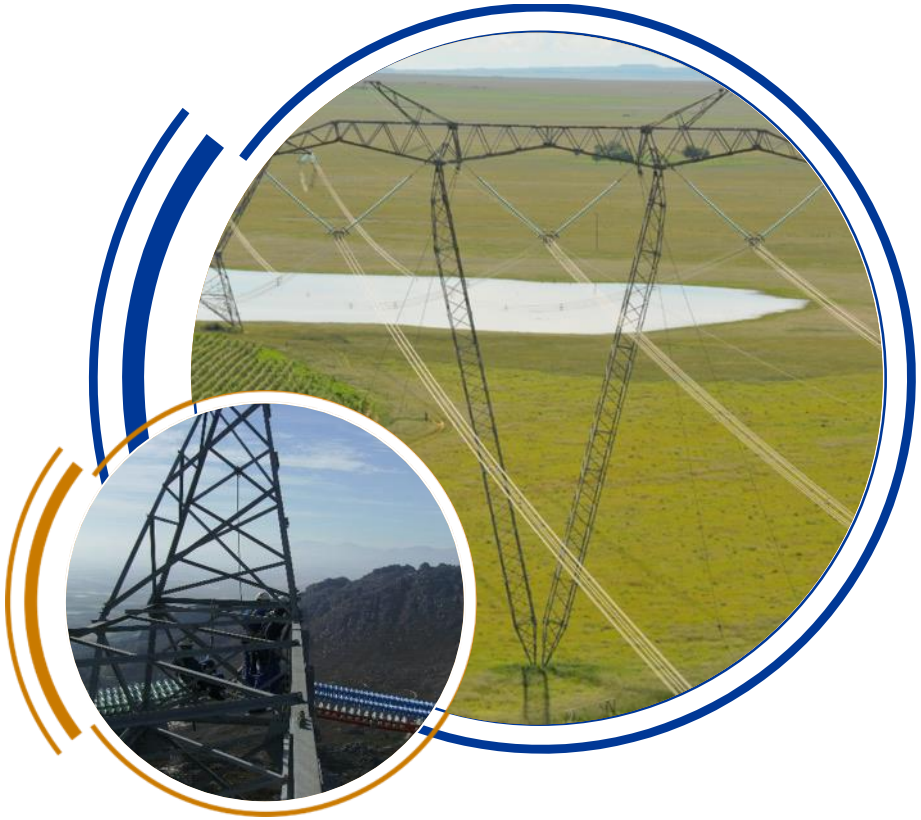
Job Creation – (Not a Weighted Criteria)

- Suppliers will be required to propose the number and type of jobs to be created as a result of a project.

- The requirements with regard to job creation will be as follows:

  ❖ Core team which will be made up of specialised skills should comprise of supplier's in house staff.

  ❖ Semi skilled and unskilled labour that will be used in executing the works to the extent that is possible should be sourced from areas local to the site where the substation is located.



Conclusion

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EVALUATION FORM

Evaluation Form - NTCSA Lines Construction Contractor Network & Collaboration Forum

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Thank you

Travel safe