

Title: **Scope of Works – Arnot
Kendal 400kV T227
Specialised Rock Engineering
Assessment of Undermined
Land**

Unique Identifier: **240 - 98155775**

Alternative Reference
Number: **LES 2604**

Area of Applicability: **Engineering**

Documentation Type: **Report**

Revision: **1.0**

Total Pages: **21**

Next Review Date: **N/A**

Disclosure Classification: **CONTROLLED
DISCLOSURE**

Compiled by
A Simbudayal Pr.Sci.Nat
Senior Engineering
Geologist
Lines Engineering Services
(LES)



Date: 11/03/2026

Supported by
D Dukhan PrEng
Chief Civil Engineer
Lines Engineering Services
(LES)



Date: 11/03/2026

Authorised by
K Molaodi PrEng
Manager (Acting):
Structures, Civil & Hardware
Lines Engineering Services
(LES)



Date: 11/03/2026

Development team

Name & Surname	Designation	Signature	Date
A Simbudayal	Senior Engineering Geologist	11/03/2026	
T. Kekana	Civil Engineer	11/03/2026	
D. Dukhan	Chief Civil Engineer	11/03/2026	
S. Khumalo	Mechanical Engineer	11/03/2026	
L. Puza	Electrical Engineer	11/03/2026	

Revision Control

Revision Number	Date issued	Brief details of updates
0.1	24 February 2026	Draft document for comments
1.0	11 March 2026	Final document for signature

Copy right © of NATIONAL TRANSMISSION COMPANY SOUTH AFRICA SOC LTD

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, NATIONAL TRANSMISSION COMPANY SOUTH AFRICA SOC LTD (Registration number: 2021/539129/30)

CONTENTS

	Page
1. INTRODUCTION	4
1.1 PURPOSE	6
1.2 APPLICABILITY	6
2. NORMATIVE/INFORMATIVE REFERENCES	6
2.1.1 Normative	6
2.1.2 Informative	6
2.2 SAFETY, HEALTH AND ENVIRONMENT	6
3. DEFINITIONS AND ABBREVIATIONS	7
3.1 DEFINITIONS	7
4. ABBREVIATIONS	7
5. LINE DETAILS	8
6. ROLES AND RESPONSIBILITIES	9
7. RECIEVABLES	10
8. PROJECT RISKS	10
9. DETAILED SCOPE OF WORK.....	10
9.1 SITE WALKOVER	10
9.2 SAFE WORKING PROCEDURE	10
9.3 GROUND TRUTHING	11
9.4 DELIVERABLES	13
10. BILL OF MATERIAL (VERY HIGH LEVEL SUBJECT TO RE-MEASUREABLE).....	13
11. APPENDIX A: TOWER DRAWING EXISTING ARNOT KENDAL 400KV T227 (517 A)	14
12. APPENDIX B: TOWER DRAWING NEW PROPOSED STRUCTURES (517F)	15
13. APPENDIX C: INDICATIVE CONCEPTUAL FOUNDATION DRAWING (TYPE 4) – NOT FOR CONSTRUCTION.....	16
14. APPENDIX D: PROPOSED PROFILE	17
15. APPENDIX E: GENERIC RISK ASSESSMENT	18

1. INTRODUCTION

The National Transmission Company South Africa (NTCSA) (referred to hereafter as the *Employer*) requires a specialised rock engineering investigation to be conducted at Arnot Kendal 400kV T227. The Arnot Kendal 400kV T227 is located next to the Eskom Vulcan Substation, eMalahleni; and the underlying area has been subject to historical undermining. The historical undermining map has been received from the current mine owner and indicates the Arnot Kendal 400kV T227 is currently placed on a mine pillar (Refer Figure 1 below).

The historical undermining is suspected to have occurred before or within the 1970's (i.e., more than 50 years ago) and has recently resulted in surface expressions noted as burning sinkholes. At time of compilation of this scope of works, the nearest identified feature was noted at 14 meters to Arnot Kendal 400kV T227.

No details are available on the depth and details of the historically undermined area therefore the extent of the risk to the powerline structures cannot be fully established. The *Employer* intends to remove the impacted Arnot Kendal 400kV T227 and replace the structure with two (2) structures, which aim to be placed off the undermined ground.

The *Employer* requires a professionally registered rock engineer (referred to hereafter as the *Contractor*) to:

- assess the area by means of literature review, intrusive and non-intrusive testing to determine the area and extent of the undermining in and around the Arnot Kendal 400kV T227 area,
- determine the level of risk of failure of Arnot Kendal 400kV T227,
- confirm the sub-surface geological conditions at the two (2) proposed structure positions,
 - recommend alternative structure positions (should the provided structure positions not be feasible),
- confirm if the current recommended foundation system can be applied at the two (2) proposed structure positions,
 - recommend and detail specialised foundation designs which may be required within the area (should the provided foundation system not be feasible) and,
- propose and detail ground rehabilitation methods for the undermined land (where possible)

Figure 1 below indicates the historically undermined area map (as received from the current mine owners).

Figure 2 below indicates the proposed two (2) structure positions.

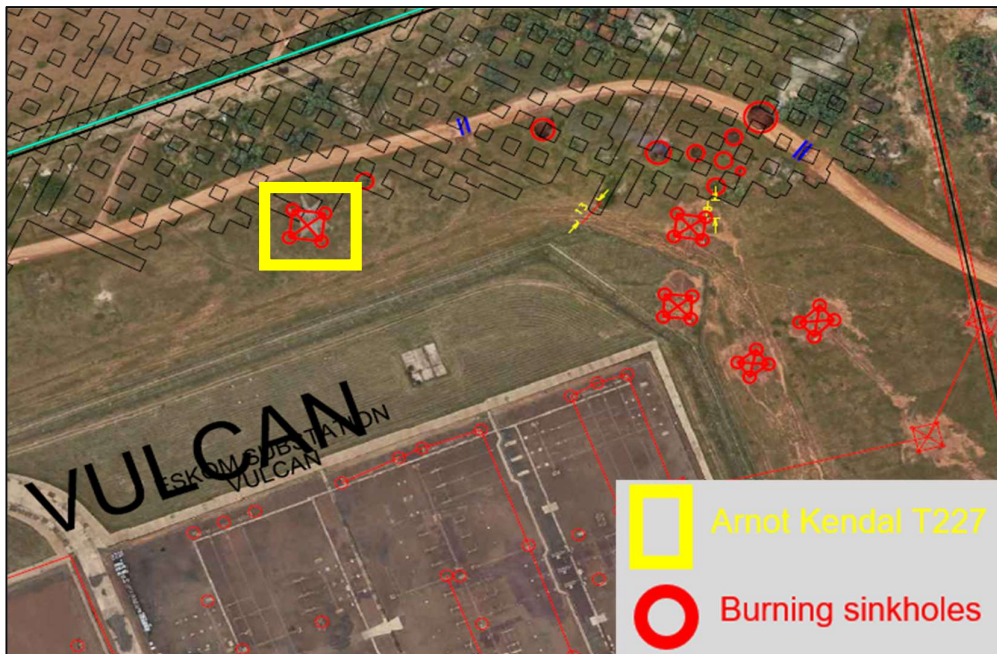


Figure 1. Arnot Kendal 400kV T227 Tower location indicating undermined area and burning sinkholes

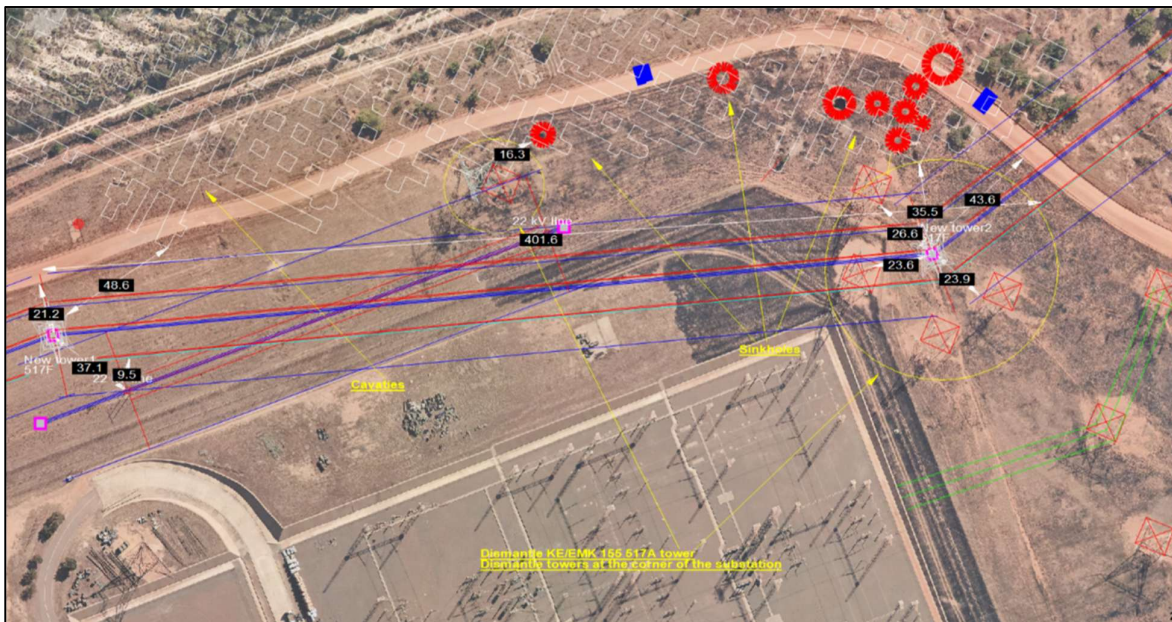


Figure 2. Proposed two (2) new structure positions which are to replace Arnot Kendal 400kV T227

1.1 PURPOSE

The purpose of this scope of works is to outline the minimum assessments to be conducted in and around the Arnot Kendal 400kV T227 area. The assessment aims to determine the feasibility of the proposed two (2) structure positions by determining the risk to the structure positions caused by subsurface coal combustion.

1.2 APPLICABILITY

This document applies to the Arnot Kendal 400kV T227 Relocation Project.

2. NORMATIVE/INFORMATIVE REFERENCES

Parties using this document must apply the most recent revisions of the documents listed in the following paragraphs.

2.1.1 Normative

- [1] 240-47172520 (TRMSCAAC 6.0): “*The Standard for The Construction of Overhead Powerlines*”
- [2] SANS10280: “*Overhead power lines for conditions prevailing in South Africa*”
- [3] ISO 9001 (2015): “*Quality Management System*”
- [4] ISO 14001 (2015): “*Environmental Management System*”
- [5] National Environmental Management Act, 1998 (NEMA) (Act No 107 of 1998)
- [6] Occupational, Health and Safety Act 85 of 1993
- [7] 240-80605256: “*Access to Private Property Standard*”
- [8] 32-846: “*Eskom Operating Regulations for High Voltage System (ORHVS)*”

2.1.2 Informative

- [9] L09482 (June 2025): “*Thermal & Colour Ortho-Imagery Data: METADATA REPORT*”
- [10] PDF/DGN Maps: Undermining (Excelsior Cavities)
- [11] Fenn, D., du Kanda, A., and Dukhan, D. (2015): “*Determining settlement rates and surface stability using in situ density of backfill as a proxy for displacement*”.

2.2 SAFETY, HEALTH AND ENVIRONMENT

- Personal Protective Equipment (PPE) as marked below.
- Risk Assessments with Prevention/mitigation measures.
- Emergency procedures.

- Qualification/training requirements.
- Safety regulations applicable to groundwork under power lines will need to be followed (where applicable).
- Detailed safe work procedures by the contractor required as per Construction Regulations.
- Environmental personnel from NTCSA to advise on all necessary permits as work is in proximity to an active stream.

														
O/all	Pants	Top	Dust coat	Apron	Hard hat	Gum boots	Safety shoes	Safety Glasses	Face shield	Dust mask	Respirator	Ear protection	Safety (harness)	Gloves
X					X	X	X			X		X	X	X

3. DEFINITIONS AND ABBREVIATIONS

3.1 DEFINITIONS

Term	Definition
Construction work	The erection, maintenance, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure
	The installation, erection, dismantling or maintenance of a fixed plant where such work includes the risk of a person falling
	The construction, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system or any similar civil engineering structure
Contractor	An employer who performs scope of work and includes principal contractors
Professionally registered Rock Engineer	Professional Engineer/Scientist working in surface and underground Coal Mining industry with the SANIRE (South African National Institute for Rock Engineering), SAIMM (South African Institute of Mining and Metallurgy) and Chamber of Mines Rock Mechanics/Engineering accreditations.

4. ABBREVIATIONS

Term	Definition
LES	Lines Engineering Services
NTCSA	National Transmission Company South Africa
OHS Act	Occupational Health and Safety Act
ORHVS	Operating Regulations for High Voltage Systems
PPE	Personal Protective Equipment

 Eskom National Transmission Company South Africa™	Scope of Works – Arnot Kendal 400KV T227 Specialised Rock Engineering Assessment of Undermined Land	NTCSA
--	--	--------------

SAIMM	South African Institute of Mining and Metallurgy
SANAS	South African National Accreditation System
SANIRE	South African National Institute for Rock Engineering
SANS	South African National Standards
SHEQ	Safety Health Environment and Quality
SOW	Scope of Work
SWP	Safe Work Procedure

5. LINE DETAILS

The Arnot Kendal 400kV power line was constructed over the years 1971, 1975, 1988, 2002, 2014.

The details of Arnot Kendal 400kV T227 and the proposed two (2) new structures can be found in Table 1 and Table 2 below.

Table 1: Existing Arnot Kendal T227 details summary

Powerline Construction Year	2014
Impacted Line Section Length	920m
Conductor Type	2 x Dino
Conductor Attachment Height	33m
Insulators	Glass cap and pin
Tower Types	517A (suspension)
Earthwire	2 x 9/2.65 Steelwire
Fibre	None
Tower co-ordinates	25°49'34.60"S 29° 6'33.88"E

Table 2: Proposed structure positions

Twr Pref No	Bend?	Type	S_Type	Con d Att.	Tube	Sheet	Deg. Lat	Deg. Long	Height Above MSL
New tower 1	Y	517	F	18			25°49'36.38"S	29°6'27.63"E	1521
New tower 2	Y	517	F	18			25°49'35.68"S	29°6'40.54"E	1514

6. ROLES AND RESPONSIBILITIES

The *Contractor*:

- provides adequate resources including provision of equipment for required *works*,
- sources and reviews existing historical undermining information and confirms the validity thereof,
- ensures all materials and ground checks are conducted timeously and recorded adequately,
- manages cost and a scheduled time frame of *works*,
- ensures the scope is carried out in full,
- manages all works on site and all outputs of sub-contracted works (as needed),
- provides regular feedback on the status of the *works*,
- ensures that all site work is undertaken by and/or supervised by the required professional (i.e., a professionally registered Rock Engineer),
- ensures that prior to any works, all parties working on site familiarized themselves with the *Employer's* safety requirements, Mine safety requirements (where applicable) and the Occupational Health and Safety (OSH) Act (85 of 1993),
- ensures all *works* complies with applicable licenses and authorisations,
- obtains all necessary approvals and acceptances (as needed),
- applies his discretion in conducting works in areas of subsidence and sinkholes,
- ensures that, should the ground conditions exhibit notable changes, the *Employer* is informed promptly,
- notifies the *Employer* as soon as possible, if any impedance or ruptured services is encountered,
- ensures that all work conducted in close proximity to live lines within NTCSA servitude is conducted under the supervision of an Authorised Person,
 - NB. The *Employer* will provide an Authorised Person as/where needed,
- must ensure that all equipment has maintained required height and width clearances as advised by the *Employer* and the Authorised Person (as needed),
- must ensure that all equipment has been earthed to the satisfaction of the *Employer* (see [1] Annexure C) and overseen by the Authorised Person (as needed),
- ensures the successful implementation of ground truthing, structure position feasibility, viable foundation systems and ground rehabilitation (as required).
- **No fieldworks conducted should trigger further ground instability e.g., spontaneous combustion.**

7. RECIEVABLES

The *Contractor* will receive the following documents upon contract award:

- L09482 (June 2025): “Thermal & Colour Ortho-Imagery Data: METADATA REPORT”
- PDF/DGN Maps: Undermining (Excelsior Cavities)
- Conceptual Foundation Drawing
- Tower Drawing/s

8. PROJECT RISKS

The following risks can be encountered on site and must be considered when compiling Safe Work Procedure/s:

- Substation area is regarded as high security risk
- Surface expressions (sinkholes) – burning and smoking
- Ground hot spots caused by underground coal combustion
- Potential space constraints and access for heavy duty equipment for all towers
- Detailed inspection to be done on all impacted towers to identify additional risks before work commences.
- General EA and or WULA for any construction

A generic risk assessment matrix has been attached on Appendix E: Generic Risk Assessment.

9. DETAILED SCOPE OF WORK

9.1 SITE WALKOVER

The *Contractor* (and all necessary team members/sub-contractors):

- conduct a site walkover of the impacted area/s,
- identifies areas of notable ground features and contributing environmental factors,
- identifies areas of notable adjacent and bisecting infrastructure,
- makes notes and observations to ensure that the works are not encumbered by the overall site conditions,
- ensures *works* take into consideration the necessary safety considerations for the stability of the area.

9.2 SAFE WORKING PROCEDURE

The *Contractor* produces a Safe Work Procedure (SWP) prior to commencement of any works on site. The SWP outlines the tasks to be conducted during fieldworks and elaborates on how the tasks will be conducted safely. The SWP is reviewed and accepted by the *Employer* prior to commencement of site works.

9.3 GROUND TRUTHING

- The *Contractor* is required to conduct and collate the site walkover and a desktop empirical analysis of the historical, current and future expected mining works (verification of mine plan and mining forecast). The literature study determines the possible impacts on the proposed future stability of the proposed two (2) new structure foundation/s. The desktop task is expected to include the analysis of the impacted pillar/s stability and scaling, and effect of the roof and floor deterioration.
- Given the prevalent ground conditions. The desktop study is expected to include the incidence and rate of weathering, mining techniques, surcharge loading, spontaneous combustion of coal and current and future probable hydrological conditions (where applicable).
- Following the literature assessment of the area, the *Contractor* employs intrusive and non-intrusive ground investigation methods to confirm the extent and impact of the historical undermining on the Arnot Kendal 400kV T227 area.
- The *Contractor* must conduct intrusive and non-intrusive testing at the areas of the proposed two (2) structures to confirm the feasibility of the positions for new structure. The historical undermining boundary (as sourced from the current mine owner) has been used to position the two (2) structures off the undermined land boundary. Should there be undermining or concerns with the proposed positions, the *Contractor* must highlight the risk of the position/s and propose revised positions for the structure/s. Structure relocation recommendation must have a stable footprint of $\geq 20\text{m}$ from the base of the tower foundation.
- For the intrusive and non-intrusive testing, the *Contractor* conducts the necessary surveys of the affected area. The *Contractor* may also purchase satellite images (where required).
- Due to the uncertainty of the depth and method of historical undermining, the *Contractor* is required to conduct geological drilling (e.g., sonic drilling) to ascertain/ confirm the undermined boundary, the feasibility of the proposed positions, determine the soil profile/ geology of the area, extent of consolidation and the potential for competent load bearing layers as needed for the proposed foundation systems.
 - Suggest provision to be made for a minimum of 12 x 60m depth boreholes
 - Additional drilling *may* be conducted at the discretion of the *Contractor* or the area findings.
 - Any additional drilling required, must be preceded by an accepted written technical substantiation.
- Reasonable estimates will be made of the rock conditions using the Rock Mass Classification (RMR) system. Estimates of current and future stress conditions will be made and observations on the sustainability and longevity of the support systems used will be made.
- Laboratory testing may be conducted at the discretion of the *Contractor*.
 - Any laboratory testing required, must be preceded by an accepted written laboratory testing suite outline.

- The *Contractor* advises on any reasonable interventions that can be performed to reduce the probability and consequence of subsidence/sinkholes or whether the timelines for failure be favourably altered.
- The proposed foundation system to be used for the two (2) structures is a Type 4 conventional foundation system (Refer APPENDIX C: indicative Conceptual foundation drawing (type 4)). Based on the ground investigation findings, the *Contractor* may deem the need for specialised foundation systems. Specialised foundation systems (where specified) must be fully detailed for construction purposed and must be presented to and accepted by the *Employer* prior to finalisation for use.
- The proposed powerline structure to be used at the two (2) locations is the 517F structure. The tower drawing and tower loading can be found in APPENDIX B: TOWER DRAWING NEW PROPOSED STRUCTURES (517F).
- All recommendations are adequately detailed to allow for constructable implementation this includes material specifications and material quantities as well as placement methodologies and Quality Management (QM) items such as e.g., material testing frequencies and strength testing yields.
- The *Contractor* must also assess the area to be traversed by construction plant. The *Contractor* must identify potentially unsafe areas for vehicles, plant and laydowns, and must communicate these areas in writing to the *Employer*.
 - Drilling is required on existing access roads or potential access pathways (where required) to accommodate the investigative works and potential future construction works.
- The *Contractor* determines if the *Employer* is able to perform safe routine maintenance on the two (2) structures in the vicinity of the undermined and subsidence/sinkhole affected areas. The *Contractor* outlines the conditions or procedures to be followed in order execute safe working procedures. This will need to be covered/considered from a geotechnical perspective and would need to be augmented by any site specific SHEQ procedures normally used by the *Employer*.
- **Prior to commencement of works, all drilling and required laboratory/in-situ testing must be accepted by the *Employer*.**

9.4 DELIVERABLES

The *Contractor* report:

- assesses the impacted area by intrusive and non-intrusive methods,
- consolidates all field information and produces a comprehensive technical report of findings,
- **uses the desktop and ground investigation findings to confirm the feasibility of the proposed two (2) structure positions, and/or details proposed structure relocation position/s to more stable ground, and/or ground improvement methods (where possible). The Contractor confirms the use of the proposed foundation system and/or recommends and details special foundations (where needed),**
- includes but is not limited to geotechnical risks/ risk spread due to surface instability and/or depression/features from mining, mining related activities and associated surface damage due to rat-holing and/or subsidence/sinkholes and/or any ground –related failures,
- confirms if the surface expressions of failure are limited to the visible features area,
- provides an explanation of the failure types and warning signs associated with the identification of failure types,
- provides time guidance for the failure/s and/or unreasonably high risk of failure leading to the founding surface being too risky,
- provides clear recommendations on the level of risk of the area and potential structure/s collapse,

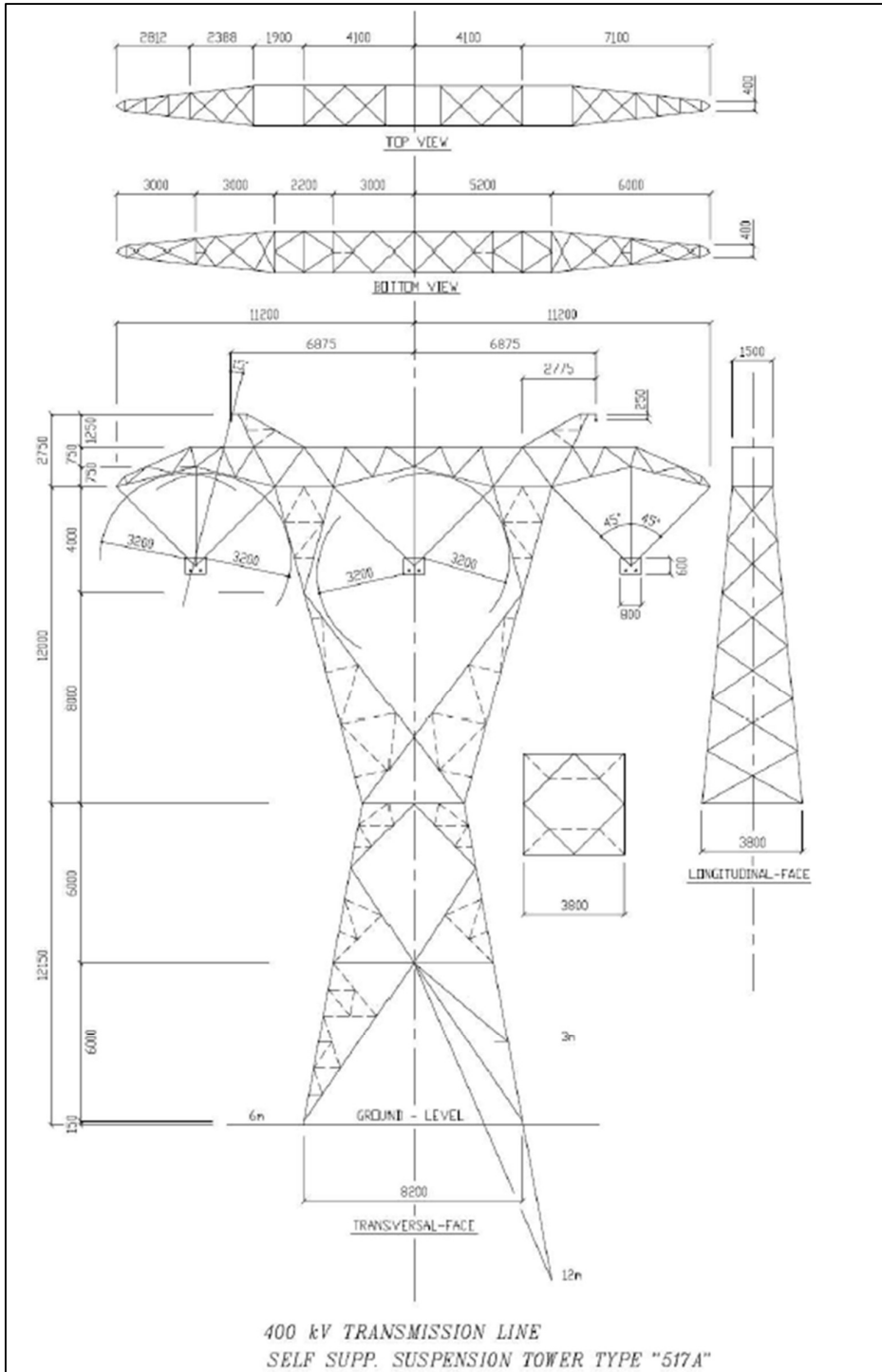
All documentation to be submitted in digital (word-friendly *.pdf format, shape files /Cad files) and hardcopy formats (2 x copies).

NB. Written consent must be received from the Employer for any and all deviations from the works as outlined herein.

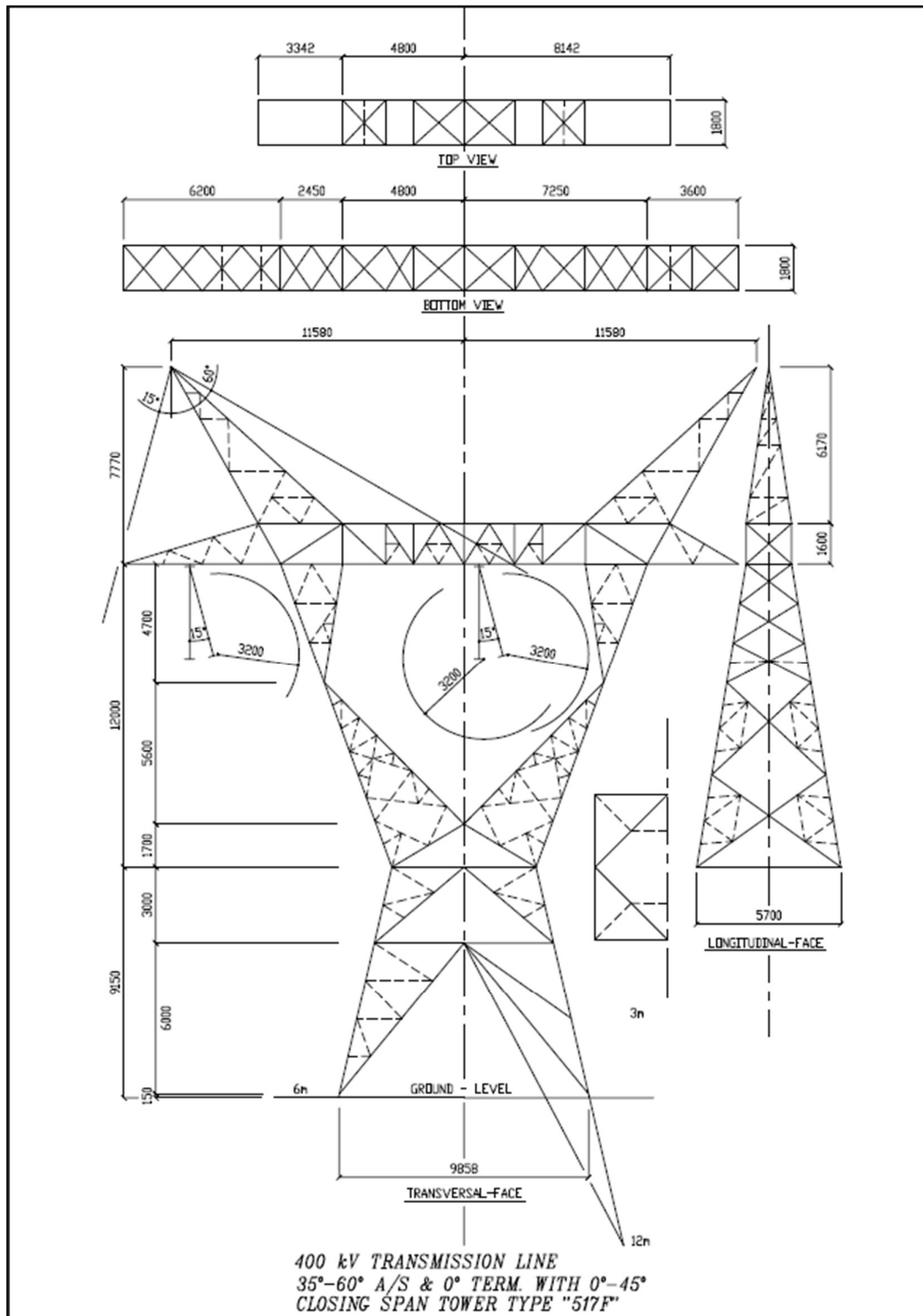
10. BILL OF MATERIAL (VERY HIGH LEVEL SUBJECT TO RE-MEASUREABLE)

Item	Description	Unit	Rate Only
1.1	Survey LIDAR	m ²	-
1.2	Survey Gravity/Topography	m ²	-
1.3	Purchased Literature	Sum	-
1.4	Borehole Sonic Drilling	m	-
1.5	Laboratory testing	Sum	-
1.6	Professional Fees (Desk Study)	Hrs	-
1.7	Professional fees Fieldworks	Hrs	-
1.8	Professional fees Designs, Reporting and Meetings	Hrs	-

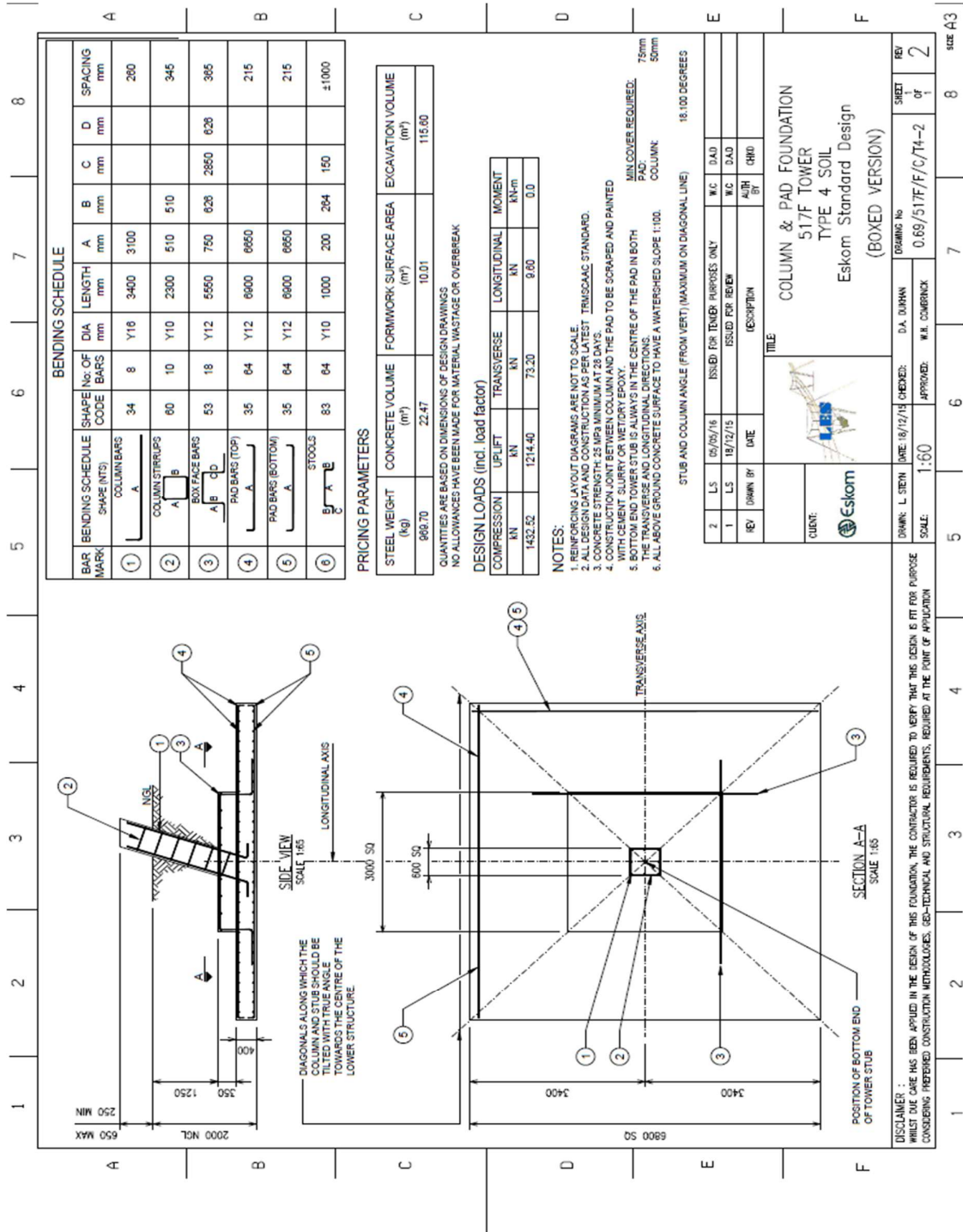
11. APPENDIX A: TOWER DRAWING EXISTING ARNOT KENDAL 400KV T227 (517 A)



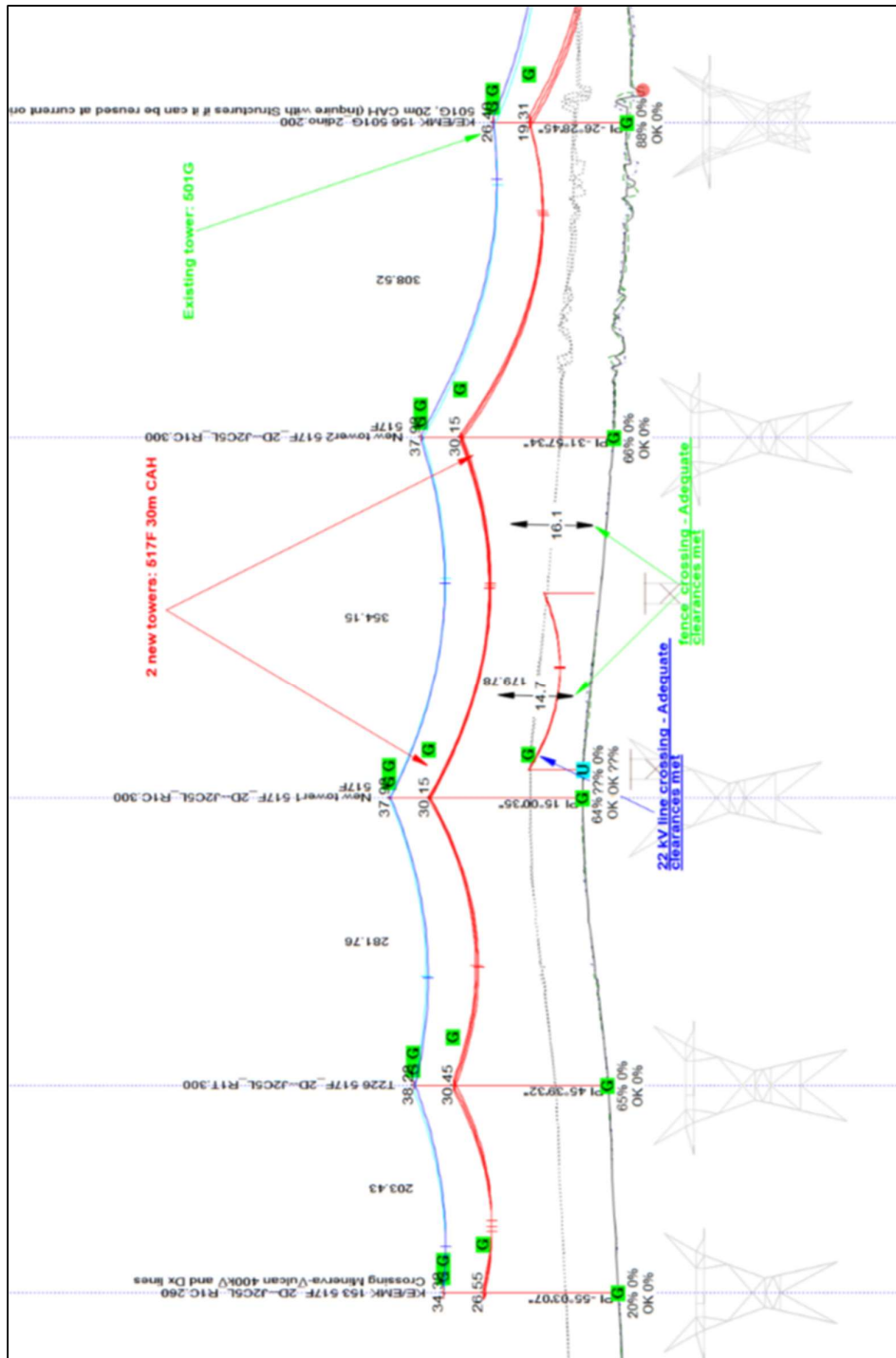
12. APPENDIX B: TOWER DRAWING NEW PROPOSED STRUCTURES (517F)



13. APPENDIX C: INDICATIVE CONCEPTUAL FOUNDATION DRAWING (TYPE 4) – NOT FOR CONSTRUCTION



14. APPENDIX D: PROPOSED PROFILE



15. APPENDIX E: GENERIC RISK ASSESSMENT

Consequence	6	III	II	I	I	I
	5	III	II	II	I	I
	4	IV	III	II	I	I
	3	IV	III	II	II	I
	2	IV	IV	III	II	II
	1	IV	IV	III	III	III
		1	2	3	4	5
		Likelihood				

Informative references:

- Occupational Health and Safety Risk Assessment Procedure, 32-520
- Occupational Health and Safety Act, 1993, Construction Regulations, 2014

Generic risk assessment:	
Risk:	Mitigation:
- Work on an unmonitored / unsupervised structure / excavation / site. - Work under supervision of a construction manager(s) appointed on another site. - Work without the supervision of a safety officer(s).	- Site management and supervision plan in accordance with CR 8.
- Work without a risk assessment performed by a competent person on site which include; - identification of risks, analysis of the risks, documented risk mitigation plan, risk monitoring plan, risk review plan. - Work under impact of ergonomic related and site-specific hazards. - Employees are not trained in mitigating the risks. - Subcontractors are not informed of risks.	- Risk assessment plan in accordance with CR 9.
- Falling into open excavations / from structures / conductors / suspended platforms etc. - On-site deviation from the plan. - Work without the medical fitness records of the employees. - Work without a rescue plan. - Work at height without the appointed supervisor having a copy of the plan. - Work without all unprotected openings being barricaded. - Work with equipment that isn't of sufficient strength or isn't securely attached.	- Fall Prevention plan created in accordance with CR 10.

- Temporary works not inspected / approved on site. - Unsupervised temporary works operations. - Temporary works that are: (a) not adequately braced, supported, erected, maintained. (b) not in accordance with design drawings. (c) detail design drawings aren't on site. (d) incompetently trained employees. (e) equipment used aren't examined / checked. (f) movement of temporary works after placement of concrete / inclement weather or other loads. (g) unauthorized casting of concrete. (h) damaged works are used. (i) release agents cause people to slip.	Temporary works in accordance with CR 12.
(j) people's health is affected by solvents. (k) temporary works is removed from bracing concrete before the concrete can support itself. (l) the foundation conditions cannot support the temporary works and collapse. (m) no access / egress by means of ladders above foundation bearing level. (n) no method statements or SWP's in place. (o) the temporary works designer doesn't have the structural design drawing. (p) a temporary works design is not used for its intended purpose.	Temporary works in accordance with CR 12.
- Unsupervised rope access work. - Rope access work is carried out under an incompetent / unlicensed operator. - Work with equipment that doesn't comply with safety standards. - Work at height without a site-specific fall protection plan developed by a competent person for the specific work and environment.	- Rope access work is done in accordance with CR 18.
- - Inadequate measures in place for rescue procedures after an incident.	
- Non-compliance with the driven machinery regulations on Cranes, incompetent crane operators, upsetting of cranes. - Unsupervised erection of a crane. - Use of a crane without a method statement. - Wind forces aren't considered with the design of the crane. - Cranes are not stabilized with adequate outriggers. - Crane operators are incompetent / untrained. - Crane operators are medically unfit.	- Cranes comply and are operated in accordance with CR 22. - Rope / pilot wire selection in compliance with SANS 4308-1. - Classify cranes / lifting equipment according to SANS 4301-1. - Communicate during lifting with cranes / lifting equipment according to SANS 10296. - Maintenance / operation / training of cranes,

	lifting equipment and operators in accordance with SANS 10307.
- Poor design and construction of construction vehicles. - Poorly maintained construction vehicles. - Construction vehicles used for something they were not designed for. - Inadequately trained construction vehicle operators / medically unfit. - Unsuitable traffic routes and access / egress to sites. - Unorganized and uncontrolled of vehicles in a work situation. - Vehicles aren't prevented from falling into excavations by adequate barriers. - Vehicles aren't fitted with structures protecting the operator from falling material. - Vehicles aren't equipped with acoustic warning reversing alarms.	- Construction vehicles and mobile plant in accordance with CR 23.
- Vehicles aren't inspected by the operator daily. - People ride on a vehicle not intended / equipped for that purpose. - Vehicles left at night next to public roads do not have adequate lights / reflectors to identify its location. - Vehicles don't have buckets / booms fully lowered, motors stopped, brakes set, when not in use. - Vehicles not fitted with adequate lighting. - Vehicles don't comply with the NRT when traveling on public roads.	- Construction vehicles and mobile plant in accordance with CR 23.
- Contact with dangerous electrical potential overhead or underground. - Inadequate steps taken before work to ascertain the presence of dangers to workers by electrical contact. - All temporary electrical installations aren't inspected once a week. - Electrical machinery isn't inspected using a checklist prior to use.	- Electrical Installation and machinery management plan in accordance with CR 24, IEEE 524.
- Fire or explosion on site. - Inadequate fire-fighting equipment on site. - Unearthed metal containers.	- Use and temporary storage of flammable liquids on construction sites in accordance with CR 25.
- Drowning. - Inadequate rescue plans for prevention of drowning when working in proximity of water (dams, water in excavations). - No lifejacket if a person is exposed to drowning.	- Construction over or in close proximity to water according to CR 26.
- Non-compliance with Environmental regulations for workplaces. - Improper storage of material and equipment on sites. - Inadequate access to sites because of obstruction by materials. - Waste and scrap disposed on sites. - Falling of objects from height. - Injury of public due to uncontrolled access / unfenced construction site.	- Housekeeping and general safeguarding on construction sites according to CR 27.

- Damage to lattice steel and galvanizing. - Damage to conductor drums. - Damage to insulators. - Damage to free-issue materials. - Inadequate supervision of storage areas. - Un-demarcated storage areas.	- Stacking and storage on construction sites in accordance with CR 28.
- Fire causing environmental damage. - Inadequate storage for flammable materials. - Inadequate notices prohibiting smoking. - Insufficient fire-extinguishing equipment at strategic locations. - Fire equipment not inspected. - Workers not trained in the use of fire-extinguishing equipment. - No evacuation plan in place.	- Fire protection on construction sites according to CR 29.
- Unsanitary construction sites. - Unsheltered eating areas. - No living accommodation for workers at the sites if they are removed far from their homes.	- Construction employees' facilities according to CR 30.