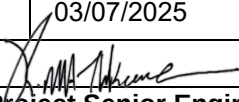
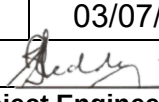


 Eskom Distribution CAPE COASTAL CLUSTER NETWORK ENGINEERING AND DESIGN	TYPE B: SUB-TRANSMISSION HV LINE FINAL DESIGN PACKAGE (OPGW)				
	Project Title:	Ruigtevallei - Dreunberg 132kV Line		Rev.	0
	Project No.	C.DS01146			
1.1.1.1 PROJECT OVERVIEW The section of the line between structure RUT-DRN 1 – 59 and RUT-DRN 344 – 367 has been partially constructed. The contractor is required to complete the portion of the optical ground wire on the line from structure RUT-DRN 59 – 344, including testing the already installed OPGW cable. The Ruigtevallei - Dreunberg 132kV Line will be constructed with monopole structures, Chickadee conductor and fully fitted with OPGW system.					
Compiled By		Checked By		Approved by	
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Date:	03/07/2025	Date:	03/07/2025	Date:	03/07/2025
					
Project Engineer		Project Senior Engineer		Project Engineering Manager	
Design Package Handing Over Certificate					
Herewith all the applicable design documentation and drawings. The design package is a comprehensive document complete with; Scope of Works, Technical Specifications, Bill of Material, and other relevant documentation. The Design Package provides the Capital Program Office with sufficient information to successfully implement this project. Signing of the Design Package Handover Certificate will confirm the completion of the Design Phase of the project and the receipt of the complete design outputs as requested. Further we trust that this design package will be formally handed over to each discipline. (Please note that no additional copies will be provided).					
Handed Over from Network Engineering Design			Received by Programme Management		
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Date:			Date:		
Project Engineering Manager			Project Manager		

	Cape Coastal Cluster
	Final Design Package (FDP)
	Index Cover Sheet
Job Title:	Ruigtevallei – Dreunberg 132kV Line
Job ID	
	INDEX

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Design Philosophy

1. Design Philosophy

1.1 Executive Summary/Motivation

The Hydra 400/220kV trfrs are unfirm. The Hydra/Ruigtevallei 1 220kV line is performing poorly as it is constructed for 132kV operation. The Ruigtevallei/Valleydora 132kV line overloads during an outage on one of the Hydra/Ruigtevallei 220kV lines. The Ruigtevallei/Valleydora 132kV line also overloads during max generation at Gariep PS. There are high network losses on the Ruigtevallei/Valleydora 132kV line. Supply to Dreunberg s/s is non-firm (not meeting reliability criteria). The preferred solution is to build a 132kV line between Ruigtevallei and Dreunberg substations and downrate the Hydra/Ruigtevallei 1 220kV line to 132kV operation.

This document presents the design of the 132kV line between Ruigtevallei and Dreunberg substations. The section of the line between structure 1 – 59 and 344 – 367 has been built using Chickadee conductor, which covers ± 35 km of the line. It is required to build the remaining ± 50 km 132kV line between Ruigtevallei and Dreunberg substations using Chickadee conductor fully fitted with OPGW system. The line will be constructed using monopole structures.

This project shall be carried out in full accordance with this Detailed Technical Specification, referred Eskom Specifications and the relevant drawings and documentation provided by Eskom. All work shall be carried out in strict accordance with TRMSCAAC 6: the standard for the construction of overhead powerlines SANS 1200 series of documents and Eskom Standards.

1.2 132kV Network Diagram

The 132kV Network Diagram is as given in Figure 1 below.



Figure 1: 132kV Network diagram

Powerline Route

The shortest route was selected for the 132kV line rerouting while taking constructability, access, environmental impact and multiple 22kV lines into consideration.

The line runs in privately owned farms along Gariep, Venterstad and Kaffelskraal area.

The site is situated in a remote area with a few existing access tracks within the construction area to access the structures. **Figure 2** below shows the aerial view of the approved line route for the Ruigtevallei – Dreunberg 132kV line.

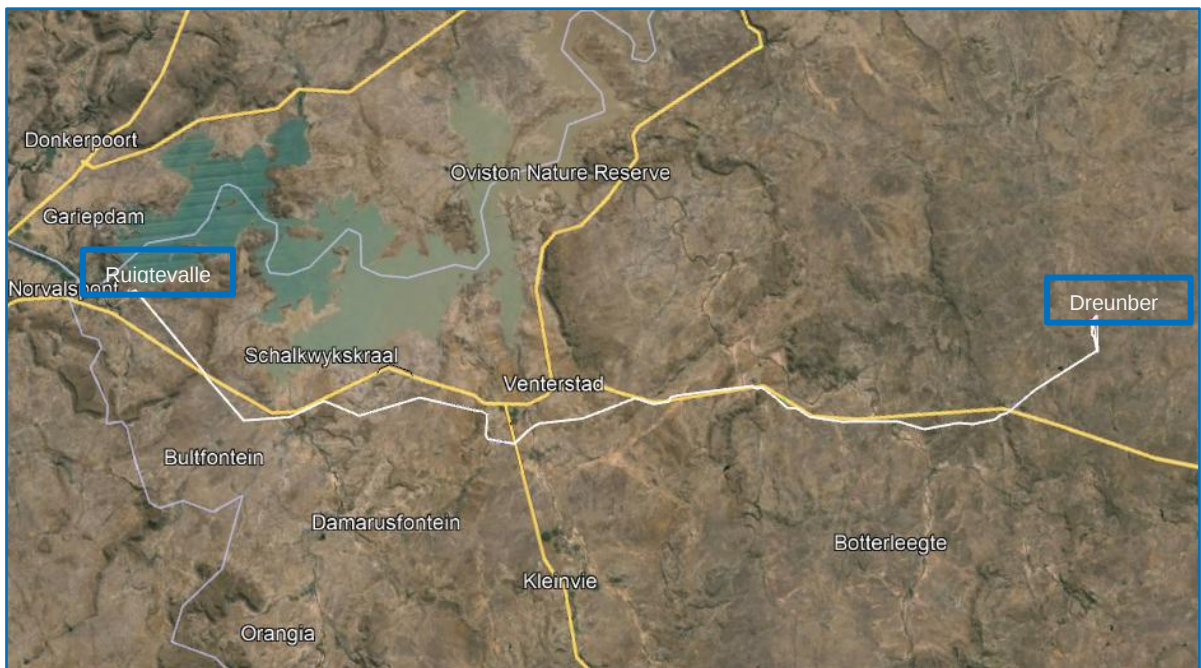


Figure 2: Approved line route for the line between Ruigtevallei and Dreunberg Substation

Access to work on the line is provided in terms of the "Deed of Servitude" or "Permission to Occupy" in respect of each property. However, the contractor shall visit and advise each property owner of the proposed activities prior to any work commencing. The contractor shall maintain an accurate record (nature and extent) of all damages to crops and other physical features. Where required, a schedule shall be compiled indicating the following details:

- Date of damage
- An accurate area of measurement of the damage
- The signature of the land owner/farm manager agreeing to the measurement of the damaged area

The above mentioned schedule of damages must be submitted to Project Management.

1.3 Scope of Works

The line is to be built from a combination of D-DT-7645 (Angle and Inline Strain), D-DT-7649 (Suspension) and D-DT-7618 (Terminal) monopole structures. The slack span from the terminal structures positioned outside the substation terminates on to the gantry located within the substation.

The contractor must **install, test and commission** the **OPGW system** on all parts (from Str. RUT – DRN – 1 to Str. RUT – DRN – 367) of the line, and seamlessly connect to each structure earthing system and substation Gantry. The contractor needs to collect hardware/structures, insulators and OPGW drums from Riebeeck Substation (30°45'25.02"S, 27°8'1.187"E), ESKOM Colesberg CNC (30°42'59.86"S, 25°7'42.03"E) and ESKOM Colesberg Warehouse (30°43'10.29"S, 25° 7'56.24"E).

Install aviation spheres between:-

- Str. RUT-DRN-1 and RUT-DRN-11,
- Str. RUT-DRN-75 and RUT-DRN-80.

Install bird flight diverters between:-

- Str. RUT-DRN-11 and RUT-DRN-75,
- Str. RUT-DRN-80 and RUT-DRN-84,
- Str. RUT-DRN-94 and RUT-DRN-120,
- Str. RUT-DRN-135 and RUT-DRN-167,
- Str. RUT-DRN-172 and RUT-DRN-194,
- Str. RUT-DRN-230 and RUT-DRN-234,
- Str. RUT-DRN-237 and RUT-DRN-245;
- Str. RUT-DRN-252 and RUT-DRN-257,
- Str. RUT-DRN-261 and RUT-DRN-272,
- Str. RUT-DRN-277 and RUT-DRN-286,
- Str. RUT-DRN-302 and RUT-DRN-310,
- Str. RUT-DRN-314 and RUT-DRN-327,
- as well as between Str. RUT-DRN-331 and RUT-DRN-344, as per Eskom standard **240-93563150**.

1.4 Conductor

1.4.1 Ruigtevallei – Dreunberg 132kV Line

- i) The existing Ruigtevallei – Dreunberg 132kV line is built using “Chickadee” ACSR phase conductor.
- ii) The physical characteristics of Chickadee conductor are as follows:
 - Overall Diameter – 18.87 mm
 - UTS – 44.90 kN
 - Current carrying capacity @ 70° - 625 A

1.4.2 Ruigtevallei – Dreunberg 132kV Line

- iii) The 24 core optic fibre greased OPGW with a fault rating of 12kA (Str. RUT-DRN-1 & Str. RUT-DRN-150) and 5 kA (Str. RUT-DRN-150 & Str. RUT-DRN-367) shall be used as the shield wire.
- iv) The physical characteristics of 5kA OPGW are as follows:
 - Number of Fibres - 24
 - Number of tubes ~ active – 1
 - Cable – Weight - 444
 - Overall Diameter – 11.5 mm
- v) The physical characteristics of 12kA OPGW are as follows:
 - Number of Fibres - 24
 - Number of tubes ~ active – 1
 - Cable – Weight - 461
 - Overall Diameter – 15mm

1.5 Earthing

The earthing of the overhead line consists of the following:

- Structure earthing.
- OPGW earth wire/Shield wire; and
- Steel rope shield wires at closings spans and direct, underground copper connections to substation gantries.

The earthing of the overhead line is designed with reference to Eskom standard **240-75880946** Rev 2. OPGW terminations should be done as indicated on **240-46264031**.

The structure footing resistance must be measured for all structures and if any structures have more than 20 Ohms, the concerned structure shall be further earthed in strict accordance to Eskom's

earthing standard: **240-75880946**. The terminal shall be bonded to the main substation earthmat using a bonding strap.

Tests shall be undertaken prior to the installation of the shield wire/OPGW in accordance with Eskom standard **240-75880946** Rev 2. If the test results confirm the need for supplementary earth electrodes, then threepoint star (crow's foot), or counterpoise earth electrodes will be installed at the relevant structures. The earth electrode will be fabricated from annealed copper bars and be connected to the structure via the dedicated lug point. Straps and leads must be installed such that it is concealed, thus preventing theft.

1.6 Insulators

The regions is classified as very heavy pollution, hence insulators with 31 mm/kV creepage shall be used. Long rod 120kN insulators with 31mm/kV creepage distance to be used on strains and suspension structures. Suspension structures will also use Long rod insulators which must also be fitted with drop eyes and all associated hard wares as well as AGS units.

1.7 Fitting of Vibration Dampers and Bird Diverters

Vibration dampers are to be fitted in accordance with the referred specification **240-98155879**. Multi frequency Vibration Dampers are to be fitted to all phase conductors that is on all conductors. The earth wire or OPGW to be fitted with spiral vibration dampers; each damper to be installed exactly one hand width (across the knuckles = 10cm) from end of hardware and if more than a set dampers to be used the spacing must also be one hand width from each other. See on project Staking table for the number of dampers in this line in relation to the span length and damper types.

SPIRAL

MAX SPAN (m)	QTY	No. of Sets
250	2	1
500	4	2
751	6	3
752	8	4

M/F - Dogbone

Loop Length - 2.16m			Loop Length	Damper Placement
MAXSPAN (m)	QTY	No. of Sets	Multiplier	From Damper (m)
370	2	1	0.7	0
550	4	2	0.6	0
730	6	3	0.9	0
1000	8	4	1.2	0
1250	10	5	1.5	0
1500	12	6	1.8	0

1.8 Structures

The powerline is designed using ESKOM approved self supporting monopole suspension structures (**D-DT-7649**), angle strain monopole structures (**D-DT-7645**) and triple pole structures (**D-ECOU-7618**) designed to suit the particular line deviation angle. Figure-3 shows a typical self supporting suspension monopole structure. Planted pole design is used for all intermediate structures. Figure-4 shows a typical angle strain monopole structure used in the design. Figure-5 shows a typical triple monopole structures used in the design. Table 1 below specifies the list of structures that will be used on the specified area to be worked in the Ruigtevallei – Dreunberg 132kV Line and the portion of the Dreunberg – Melkspruit 132kV Line.

Table 1: Ruigtevallei – Dreunberg and Dreunberg - Melkspruit Substation 132kV Line structure list

Structure List		
PROJECT NAME: Ruigtevallei - Dreunberg 132kV Line		
Job ID		
Gantry		
Corresponding to Line Profile		
Intermediates / Suspension		
Corresponding to Line Profile		
Str Type	Qty	Structure number
7649	288	4,7,8,9,10,11,13,14,15,16,17,18,19,20,21,22,23,25,26,27,28,29,30,31,32,33,34,35,36,37,39,42,43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,60,61,62,63,64,65,66,67,69,70,71,72,73,75,76,77,79,81,82,83,84,85,86,88,89,91,92,93,96,97,99,100,101,102,103,104,105,106,108,109,110,111,112,113,114,115,116,118,119,120,121,122,123,124,125,126,127,128,129,130,131,132,133,134,136,139,140,142,143,144,146,148,151,152,153,154,155,157,158,159,160,161,163,165,168,169,170,171,172,174,175,176,177,178,180,181,183,184,185,186,187,188,189,190,191,192,193,194,195,197,198,200,201,202,204,205,206,207,209,211,213,214,215,216,217,218,220,221,222,223,224,225,226,227,228,229,230,231,233,234,239,240,241,242,243,245,246,247,248,250,251,253,255,256,258,259,260,261,262,263,264,265,266,267,269,270,271,272,273,274,276,277,278,279,280,281,282,283,284,286,287,288,289,290,291,292,294,295,296,297,298,299,300,301,304,305,306,307,309,310,311,312,313,314,316,317,322,323,324,325,326,327
Total:	288	
Strains		
Corresponding to Line Profile		
Str Type	Qty	Structure number
7645	76	1,2,3,5,6,12,24,28,30,31,59,68,74,78,80,87,90,94,95,98,107,117,135,137,138,141,145,147,149,150,156,162,164,166,167,173,179,182,196,199,203,208,210,212,219,232,235,236,237,238,244,249,252,254,257,268,275,285,293,302,303,308,315,318,319,320,321,331,342,353,357,358,359,360,361,364
7618	1	RUT-DRN 366
7818	2	RUT-DRN RUT-DRN 365, RUT-DRN 367
Total:	79	
Total Intermediate structures:		288
Total Strain structures:		79
TOTAL STRUCTURES:		367
		Ratio
		0.784741144
		0.215258856

1.8.1 Monopole suspension structure D-DT-7649.



Figure 3: Self supporting monopole suspension structures (D-DT-7649)

Self-supporting monopoles will be used along the line.

1.8.2 Angle strain monopole structures D-DT-7645

Strain monopole will be used as at angle.



Figure 4 : Guyed monopole strain structure (D-DT-7645)



Figure-5 : Steel Trips monopole strain structure (D-DT-7618)

NB: Prospective contractors should note for all poles for the Steel Trips monopole strain structures (**D-DT-7618**) required for the 132kV line should have an equal height (18m poles) with tie strap.

All structures used on this line belong to the Distribution Technology and Line Engineering Services (LES) and the designer has no design influence over them whatsoever and therefore takes no responsibility when the structure fails. However, all precautionary measures have been taken to ensure responsible design. The contractor must also adhere to proper construction principle. Important care must be exercised in terms of stay orientation and should the contractor be uncertain, he should request clarity from Network Engineering and Design.

1.9 Foundation

The contractor will be accountable for nominating the correct soil and foundation types for the specific structures. On completion of the required soil nominations, the foundation drawings for the soil type shall be obtained from the Eskom Project Manager. The contractor shall compile a schedule indicating the specific foundation type for each tower and submitted to Eskom's Project Engineer for approval prior to any foundation work commencing.

The contractor shall appoint a Civil Engineer. A geotechnical survey specialist (preferably a Civil Engineer), should be consulted on all foundation matters, irrespective of what construction route has been taken. The Civil Engineer appointed shall take responsibility for all civil works or the contractor with this type of competence can provide this service. The civil engineer shall advise the Project Engineer and the contractor with respect to soil erosion and mitigation thereof. A geotechnical design report and

DCP results shall be compiled and submitted to Project Engineering once the studies have been conducted to form part of this document and it is the project manager's duty to ensure this happens.

1.10 Stays

The permanent stays are stays which form a coherent part of the structure and must keep the structure upright for the entire life span of the line. Whereas the temporary stay is a typical stay used for temporary purposes during the stringing of the line. Typically the temporary stay will be used on the strain to give it a temporary support to ensure the pole will take the longitudinal load induced by conductor being tensioned (strung).

Where required, it is expected that such temporary stays will be connected directly opposite to the conductor being strung and it can either be two stays or one per phase conductor depending on the angle of deviation. The load balancing the temporary stay must take into account safety factors or else if foundations are used proper permanent stay foundation installation principles must be adhered to. The 120kN UTS stay cable shall always be used to avoid issues of incorrect load calculations and omission of a use of safety factor. Stay construction is to be done in accordance with **240-75883148**.

1.11 Execution Plan

Contractor to submit Execution Plan to the Eskom Project Manager for approval in the form of method statements prior executing the construction activities.

1.12 Dismantling and Re-configuration Existing line

Dismantle and remove the existing line from **Str. 2DRN-MLK 1A** upto gantry. Plant a new steel structure as per stacking table and terminate conductor, and shield wire. Dismantle bases near Str. **RUI-DRN 87**. Replace damaged bases for Str. **RUI-DRN 135 and RUI-DRN 136**.

All decommissioned material shall be collected and stacked at the site camp. The decommissioned material should be sorted and stored separately according to the different type of material removed from the line, e.g. glass insulator, silicone insulators, aluminium, steel, wood etc.

1.13 Construction Notes

- The construction shall take place in accordance to the Eskom standard for construction of overhead power lines "TRMSCAAC6"
- Prior outage work must be prepared and carried out as such. Site establishment, site access work & access permission requests, land owner engagement, possible excavation and laying of foundations, assembling of steel poles etc. shall be done as much and as soon as possible to reduce and minimize outage time.

- Engagements with farmers and land owner should be done prior and in advance to avoid challenges that could put the project in jeopardy. Such areas shall be identified and pro-active action to be taken.
- Where the lines are crossing; all safety measures to be taken in carrying out the work (special reference shall be made to **Eskom Standard: Unique Identifier: 34-600**).

Line crossings

There are thirteen (13) crossings of the existing 22kV Lines in that area. The crossing for these medium voltages crossing may require Goal-posts (H Poles) and netting in order to facilitate stringing if outages cannot be arranged. The line crossing will occur at the following sections of the line:

Crossing	Description	Applicable line	HV Towers	Special precautions
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-69 & Str. RUT-DRN-70	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-162 & Str. RUT-DRN-163	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-131 & Str. RUT-DRN-132	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-133 & Str. RUT-DRN-134	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-156 & Str. RUT-DRN-157	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-173 & Str. RUT-DRN-174	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-209 & Str. RUT-DRN-210	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-281 & Str. RUT-DRN-282	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-296 & Str. RUT-DRN-297	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-320 & Str. RUT-DRN-321	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-364 & Str. RUT-DRN-365	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-366 & Str. RUT-DRN-367	Suitable clearances has been allowed. Goal posts will be needed.
MV Line	22kV Line	Ruigtevallei – Dreunberg 132kV	Str. 2DRN-MLK-1A & Str. 2DRN-MLK-1	Suitable clearances has been allowed. Goal posts will be needed.

Road and Telkom crossings

There are five (5) crossing on existing road and Telkom lines along the line route. The crossing for these roads and Telkom lines require Goal-posts (H Poles) in order to facilitate stringing. The line crossing will occur at the following sections of the line:

Crossing	Applicable line	HV Towers	Special precautions	Line clearance (m)
Road and Telkom Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-40 & Str. RUT-DRN-41	Goal posts will be needed.	9.8
Road and Telkom Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-156 & Str. RUT-DRN-157	Goal posts will be needed.	10.4
Road and Telkom Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-208 & Str. RUT-DRN-209	Goal posts will be needed.	9.9
Road and Telkom Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-235 & Str. RUT-DRN-236	Goal posts will be needed.	9.3
Road and Telkom Line	Ruigtevallei – Dreunberg 132kV	Str. RUT-DRN-320 & Str. RUT-DRN-321	Goal posts will be needed.	8.1

Pole and Stay hole compaction

Stay holes are dug away from the pole position as indicated on **D-DT-0350-3-1-13**. The pegged stay position marks where the stay rod comes out of the ground. A slot is cut in that side of the hole for the stay rod (the top end should stick out a distance of 300mm) and the stay plate is bedded against the undisturbed soil at the bottom of the hole. All backfilling of foundations should be done in accordance with 4.6 of TRMSCAAC 6. The material to be utilised for compacted backfill shall be moistened to optimum moisture content (OMC) $\pm 10\%$, and deposited in horizontal layers, having a thickness of not more than 300 mm before being compacted. In backfilling, the pad of the foundation shall be covered, first with a 200 mm layer of well-graded material containing no pieces larger than 20 mm, before any coarse material is deposited.

If the excavated soil has clay characteristics it cannot be compacted and must be replaced with suitable material. Any stones or rocks are to be removed and not used in the returned material. Cement has been included in the Bill of Quantities, where non-cohesive soils are encountered **240-75883148** should be consulted.

Conductor Stringing

It is preferred that tension-stringing be used in order to avoid contact of the conductor with the ground. Alternative (possibly labour-intensive) methods may be used to achieve the same purpose. The conductors (which are greased) will be damaged if they are dragged along the ground during installation. Contamination with grit from the ground will cause eventual damage during the life of the conductor. The conductor is to be supported on pulleys during running out and tensioning.

Care and Handling of Insulators

The general rule for all insulators is for them to be kept in their packaging until they are about to be installed. They should be transported in their packaging to the structure where they are to be installed and only then installed directly from their packaging.

Insulators must never be placed on bare ground; particularly for silicone rubber insulators as this will roughen, distort or tear the skirts. Ceramic insulators should never be laid on their sides on bare ground. If the insulators have been removed from their packaging they can be placed on a smooth surface (e.g. a clean board or thick blanket of some sort). The silicone insulators are light enough for a carrying rack (e.g. holding 6) can be made and used for transport to site.

Insulators of any kind must NEVER be placed loose on the back of a vehicle.

Steel

Tower steel in storage shall be blocked off the ground with sufficient number of wooden blocks to prevent bending or warping off individual members. Steel members shall be handled with the use of nylon or fabric slings. Material shall not be dumped or dropped from truck, but be carefully unloaded and stacked. Contractor representative shall witness all material delivery to confirm quantity, handling and storage, this shall be achieved by liaising with the Project Manager for material delivery dates

Environmental considerations

Land rehabilitation shall be done to cover all damages done on the ground surface due to construction work. All efforts of rehabilitation shall be exercised by the construction contractor where the aftermath of construction may exacerbate to soil erosion.

1.13.1.1 General Outline of the Activities

1. The centreline of the surveyed new power line route shall be pegged and pegs should be placed at each bend point.
2. An access plan is developed and agreed, rehabilitation measures agreed by the landowner, Eskom and the contractor. Access road will be established through recurring use (i.e. there will be no blading or scraping of new road).
3. The appointed surveyor shall set out the footing of pylons and report back to the contractor if anything odd is found and tower will be moved accordingly.
4. Soil types are checked to determine correct soil nomination for each foundation. On completion of the required soil nominations, a schedule indicating the specific foundation type for each tower is to be compiled and submitted to Eskom's Project Engineer for approval prior to any foundation work commencing.
5. The Contractor shall obtain all steel from Eskom approved suppliers. The steelwork delivered in sections to site are fitted together, assembled on ground and nuts punched. A non corrosive paint is placed on nuts. Cranes used for final assembly.
6. Cable drums are placed next to each other within the servitude stringing takes place in both directions from the drum stations. A pilot tractor will place the pilot cable on the ground which is then pulled up through the use of a pulley. To avoid damage, conductors are never to touch the ground.

7. The line is tensioned from each cable station to ensure minimum ground clearance heights are achieved as per the OSH Act 1993 and Eskom Standards and Specifications.
8. All outage requirements shall be approved by the Eskom Project Manager in consultation with the relevant Eskom Field Services personnel. The construction of the new line have been designed to minimise the length of the unavoidable required outage(s).

1.14 Line Labeling

All work to be done in strict accordance with the specifications Section 3.3 of STANDARD FOR THE LABELLING OF ELECTRICAL EQUIPMENT WITHIN ESKOM WIRES NETWORKS **240-120804300**. The labels shall be manufactured to standard Eskom drawing as advised by the Eskom Project Manager.

1.14.1 Line designation labels

1. 120mm wide x 1,0mm thick (Length of label will vary to suit relevant line description) "Line designation" labels shall be fitted vertically and below the lowest conductor attachment on the second structure from the terminal structure at each end of the line. The label shall face towards the substation.
2. The line number, line description and voltage information must be specified on the label;
3. Each label shall be properly strapped to the pole structure with 12mm x 1,7mm thick heavy-duty bandit strapping.

1.14.2 Structure identification labels

1. 120mm x 1 220mm 1,0mm thick "Structure identification" labels shall be fitted vertically
2. Midway between the lowest conductor attachment and ground level on every structure on the line. The label shall face towards the substation first mentioned on the label code.
3. The line number, 3 coded abbreviation of the line description and the structure number information must be specified on the label;

Each label shall be strapped to the pole structure with 12mm x 1,7mm thick heavy-duty bandit strapping.

1.14.3 Line crossing labels

1. 406 x 900mm x 1,0mm thick "Line crossing" labels shall be installed at all major line crossings.
2. The first, second and third structures away from intersection point in all four directions must be provided with line crossing labels.
3. The label must be installed at the top of the structure, below the earth wire attachment and facing away from the point of intersection, on the new line, and On the transverse face of the cross-arm, facing away from the point of intersection, on existing lattice steel towers.

4. Line crossing labels shall be supported by a 15mm x 15mm x 1,6mm aluminium square tube frame.
5. Each label shall be properly strapped to the pole structure with 12mm x 1,7mm thick heavy duty bandit strapping.

LABEL SCHEDULE

STRUCTURE NO.	SUBSTATION NAME	LINE DESIGNATION LABEL	POLE DESIGNATION LABEL
RUT-DRN 1	RUIGTEVALLEI	RUI - DRN 132kV	RUT-DRN 1
RUT-DRN 2		RUI - DRN 132kV	RUT-DRN 2
RUT-DRN 3		RUI - DRN 132kV	RUT-DRN 3
RUT-DRN 4		RUI - DRN 132kV	RUT-DRN 4
RUT-DRN 5		RUI - DRN 132kV	RUT-DRN 5
RUT-DRN 6		RUI - DRN 132kV	RUT-DRN 6
RUT-DRN 7		RUI - DRN 132kV	RUT-DRN 7
RUT-DRN 8		RUI - DRN 132kV	RUT-DRN 8
RUT-DRN 9		RUI - DRN 132kV	RUT-DRN 9
RUT-DRN 10		RUI - DRN 132kV	RUT-DRN 10
RUT-DRN 11		RUI - DRN 132kV	RUT-DRN 11
RUT-DRN 12		RUI - DRN 132kV	RUT-DRN 12
RUT-DRN 13		RUI - DRN 132kV	RUT-DRN 13
RUT-DRN 14		RUI - DRN 132kV	RUT-DRN 14
RUT-DRN 15		RUI - DRN 132kV	RUT-DRN 15
RUT-DRN 16		RUI - DRN 132kV	RUT-DRN 16
RUT-DRN 17		RUI - DRN 132kV	RUT-DRN 17
RUT-DRN 18		RUI - DRN 132kV	RUT-DRN 18
RUT-DRN 19		RUI - DRN 132kV	RUT-DRN 19
RUT-DRN 20		RUI - DRN 132kV	RUT-DRN 20
RUT-DRN 21		RUI - DRN 132kV	RUT-DRN 21
RUT-DRN 22		RUI - DRN 132kV	RUT-DRN 22
RUT-DRN 23		RUI - DRN 132kV	RUT-DRN 23
RUT-DRN 24		RUI - DRN 132kV	RUT-DRN 24
RUT-DRN 25		RUI - DRN 132kV	RUT-DRN 25
RUT-DRN 26		RUI - DRN 132kV	RUT-DRN 26
RUT-DRN 27		RUI - DRN 132kV	RUT-DRN 27
RUT-DRN 28		RUI - DRN 132kV	RUT-DRN 28
RUT-DRN 29		RUI - DRN 132kV	RUT-DRN 29
RUT-DRN 30		RUI - DRN 132kV	RUT-DRN 30
RUT-DRN 31		RUI - DRN 132kV	RUT-DRN 31
RUT-DRN 32		RUI - DRN 132kV	RUT-DRN 32
RUT-DRN 33		RUI - DRN 132kV	RUT-DRN 33
RUT-DRN 34		RUI - DRN 132kV	RUT-DRN 34
RUT-DRN 35		RUI - DRN 132kV	RUT-DRN 35
RUT-DRN 36		RUI - DRN 132kV	RUT-DRN 36
RUT-DRN 37		RUI - DRN 132kV	RUT-DRN 37
RUT-DRN 38		RUI - DRN 132kV	RUT-DRN 38
RUT-DRN 39		RUI - DRN 132kV	RUT-DRN 39
RUT-DRN 40		RUI - DRN 132kV	RUT-DRN 40

RUT-DRN	41		RUI - DRN 132kV	RUT-DRN	41
RUT-DRN	42		RUI - DRN 132kV	RUT-DRN	42
RUT-DRN	43		RUI - DRN 132kV	RUT-DRN	43
RUT-DRN	44		RUI - DRN 132kV	RUT-DRN	44
RUT-DRN	45		RUI - DRN 132kV	RUT-DRN	45
RUT-DRN	46		RUI - DRN 132kV	RUT-DRN	46
RUT-DRN	47		RUI - DRN 132kV	RUT-DRN	47
RUT-DRN	48		RUI - DRN 132kV	RUT-DRN	48
RUT-DRN	49		RUI - DRN 132kV	RUT-DRN	49
RUT-DRN	50		RUI - DRN 132kV	RUT-DRN	50
RUT-DRN	51		RUI - DRN 132kV	RUT-DRN	51
RUT-DRN	52		RUI - DRN 132kV	RUT-DRN	52
RUT-DRN	53		RUI - DRN 132kV	RUT-DRN	53
RUT-DRN	54		RUI - DRN 132kV	RUT-DRN	54
RUT-DRN	55		RUI - DRN 132kV	RUT-DRN	55
RUT-DRN	56		RUI - DRN 132kV	RUT-DRN	56
RUT-DRN	57		RUI - DRN 132kV	RUT-DRN	57
RUT-DRN	58		RUI - DRN 132kV	RUT-DRN	58
RUT-DRN	59		RUI - DRN 132kV	RUT-DRN	59
RUT-DRN	60		RUI - DRN 132kV	RUT-DRN	60
RUT-DRN	61		RUI - DRN 132kV	RUT-DRN	61
RUT-DRN	62		RUI - DRN 132kV	RUT-DRN	62
RUT-DRN	63		RUI - DRN 132kV	RUT-DRN	63
RUT-DRN	64		RUI - DRN 132kV	RUT-DRN	64
RUT-DRN	65		RUI - DRN 132kV	RUT-DRN	65
RUT-DRN	66		RUI - DRN 132kV	RUT-DRN	66
RUT-DRN	67		RUI - DRN 132kV	RUT-DRN	67
RUT-DRN	68		RUI - DRN 132kV	RUT-DRN	68
RUT-DRN	69		RUI - DRN 132kV	RUT-DRN	69
RUT-DRN	70		RUI - DRN 132kV	RUT-DRN	70
RUT-DRN	71		RUI - DRN 132kV	RUT-DRN	71
RUT-DRN	72		RUI - DRN 132kV	RUT-DRN	72
RUT-DRN	73		RUI - DRN 132kV	RUT-DRN	73
RUT-DRN	74		RUI - DRN 132kV	RUT-DRN	74
RUT-DRN	75		RUI - DRN 132kV	RUT-DRN	75
RUT-DRN	76		RUI - DRN 132kV	RUT-DRN	76
RUT-DRN	77		RUI - DRN 132kV	RUT-DRN	77
RUT-DRN	78		RUI - DRN 132kV	RUT-DRN	78
RUT-DRN	79		RUI - DRN 132kV	RUT-DRN	79
RUT-DRN	80		RUI - DRN 132kV	RUT-DRN	80

RUT-DRN	81		RUI - DRN 132kV	RUT-DRN	81
RUT-DRN	82		RUI - DRN 132kV	RUT-DRN	82
RUT-DRN	83		RUI - DRN 132kV	RUT-DRN	83
RUT-DRN	84		RUI - DRN 132kV	RUT-DRN	84
RUT-DRN	85		RUI - DRN 132kV	RUT-DRN	85
RUT-DRN	86		RUI - DRN 132kV	RUT-DRN	86
RUT-DRN	87		RUI - DRN 132kV	RUT-DRN	87
RUT-DRN	88		RUI - DRN 132kV	RUT-DRN	88
RUT-DRN	89		RUI - DRN 132kV	RUT-DRN	89
RUT-DRN	90		RUI - DRN 132kV	RUT-DRN	90
RUT-DRN	91		RUI - DRN 132kV	RUT-DRN	91
RUT-DRN	92		RUI - DRN 132kV	RUT-DRN	92
RUT-DRN	93		RUI - DRN 132kV	RUT-DRN	93
RUT-DRN	94		RUI - DRN 132kV	RUT-DRN	94
RUT-DRN	95		RUI - DRN 132kV	RUT-DRN	95
RUT-DRN	96		RUI - DRN 132kV	RUT-DRN	96
RUT-DRN	97		RUI - DRN 132kV	RUT-DRN	97
RUT-DRN	98		RUI - DRN 132kV	RUT-DRN	98
RUT-DRN	99		RUI - DRN 132kV	RUT-DRN	99
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RUT-DRN	104		RUI - DRN 132kV	RUT-DRN	104
RUT-DRN	105		RUI - DRN 132kV	RUT-DRN	105
RUT-DRN	106		RUI - DRN 132kV	RUT-DRN	106
RUT-DRN	107		RUI - DRN 132kV	RUT-DRN	107
RUT-DRN	108		RUI - DRN 132kV	RUT-DRN	108
RUT-DRN	109		RUI - DRN 132kV	RUT-DRN	109
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RUT-DRN	111		RUI - DRN 132kV	RUT-DRN	111
RUT-DRN	112		RUI - DRN 132kV	RUT-DRN	112
RUT-DRN	113		RUI - DRN 132kV	RUT-DRN	113
RUT-DRN	114		RUI - DRN 132kV	RUT-DRN	114
RUT-DRN	115		RUI - DRN 132kV	RUT-DRN	115
RUT-DRN	116		RUI - DRN 132kV	RUT-DRN	116
RUT-DRN	117		RUI - DRN 132kV	RUT-DRN	117
RUT-DRN	118		RUI - DRN 132kV	RUT-DRN	118
RUT-DRN	119		RUI - DRN 132kV	RUT-DRN	119
RUT-DRN	120		RUI - DRN 132kV	RUT-DRN	120

RUT-DRN 121		RUI - DRN 132kV	RUT-DRN 121
RUT-DRN 122		RUI - DRN 132kV	RUT-DRN 122
RUT-DRN 123		RUI - DRN 132kV	RUT-DRN 123
RUT-DRN 124		RUI - DRN 132kV	RUT-DRN 124
RUT-DRN 125		RUI - DRN 132kV	RUT-DRN 125
RUT-DRN 126		RUI - DRN 132kV	RUT-DRN 126
RUT-DRN 127		RUI - DRN 132kV	RUT-DRN 127
RUT-DRN 128		RUI - DRN 132kV	RUT-DRN 128
RUT-DRN 129		RUI - DRN 132kV	RUT-DRN 129
RUT-DRN 130		RUI - DRN 132kV	RUT-DRN 130
RUT-DRN 131		RUI - DRN 132kV	RUT-DRN 131
RUT-DRN 132		RUI - DRN 132kV	RUT-DRN 132
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RUT-DRN 158		RUI - DRN 132kV	RUT-DRN 158
RUT-DRN 159		RUI - DRN 132kV	RUT-DRN 159
RUT-DRN 160		RUI - DRN 132kV	RUT-DRN 160

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RUT-DRN	162		RUI - DRN 132kV	RUT-DRN	162
RUT-DRN	163		RUI - DRN 132kV	RUT-DRN	163
RUT-DRN	164		RUI - DRN 132kV	RUT-DRN	164
RUT-DRN	165		RUI - DRN 132kV	RUT-DRN	165
RUT-DRN	166		RUI - DRN 132kV	RUT-DRN	166
RUT-DRN	167		RUI - DRN 132kV	RUT-DRN	167
RUT-DRN	168		RUI - DRN 132kV	RUT-DRN	168
RUT-DRN	169		RUI - DRN 132kV	RUT-DRN	169
RUT-DRN	170		RUI - DRN 132kV	RUT-DRN	170
RUT-DRN	171		RUI - DRN 132kV	RUT-DRN	171
RUT-DRN	172		RUI - DRN 132kV	RUT-DRN	172
RUT-DRN	173		RUI - DRN 132kV	RUT-DRN	173
RUT-DRN	174		RUI - DRN 132kV	RUT-DRN	174
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RUT-DRN	180		RUI - DRN 132kV	RUT-DRN	180
RUT-DRN	181		RUI - DRN 132kV	RUT-DRN	181
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RUT-DRN	183		RUI - DRN 132kV	RUT-DRN	183
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RUT-DRN	185		RUI - DRN 132kV	RUT-DRN	185
RUT-DRN	186		RUI - DRN 132kV	RUT-DRN	186
RUT-DRN	187		RUI - DRN 132kV	RUT-DRN	187
RUT-DRN	188		RUI - DRN 132kV	RUT-DRN	188
RUT-DRN	189		RUI - DRN 132kV	RUT-DRN	189
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RUT-DRN	193		RUI - DRN 132kV	RUT-DRN	193
RUT-DRN	194		RUI - DRN 132kV	RUT-DRN	194
RUT-DRN	195		RUI - DRN 132kV	RUT-DRN	195
RUT-DRN	196		RUI - DRN 132kV	RUT-DRN	196
RUT-DRN	197		RUI - DRN 132kV	RUT-DRN	197
RUT-DRN	198		RUI - DRN 132kV	RUT-DRN	198
RUT-DRN	199		RUI - DRN 132kV	RUT-DRN	199
RUT-DRN	200		RUI - DRN 132kV	RUT-DRN	200

RUT-DRN	201		RUI - DRN 132kV	RUT-DRN	201
RUT-DRN	202		RUI - DRN 132kV	RUT-DRN	202
RUT-DRN	203		RUI - DRN 132kV	RUT-DRN	203
RUT-DRN	204		RUI - DRN 132kV	RUT-DRN	204
RUT-DRN	205		RUI - DRN 132kV	RUT-DRN	205
RUT-DRN	206		RUI - DRN 132kV	RUT-DRN	206
RUT-DRN	207		RUI - DRN 132kV	RUT-DRN	207
RUT-DRN	208		RUI - DRN 132kV	RUT-DRN	208
RUT-DRN	209		RUI - DRN 132kV	RUT-DRN	209
RUT-DRN	210		RUI - DRN 132kV	RUT-DRN	210
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RUT-DRN	212		RUI - DRN 132kV	RUT-DRN	212
RUT-DRN	213		RUI - DRN 132kV	RUT-DRN	213
RUT-DRN	214		RUI - DRN 132kV	RUT-DRN	214
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RUT-DRN	216		RUI - DRN 132kV	RUT-DRN	216
RUT-DRN	217		RUI - DRN 132kV	RUT-DRN	217
RUT-DRN	218		RUI - DRN 132kV	RUT-DRN	218
RUT-DRN	219		RUI - DRN 132kV	RUT-DRN	219
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RUT-DRN	221		RUI - DRN 132kV	RUT-DRN	221
RUT-DRN	222		RUI - DRN 132kV	RUT-DRN	222
RUT-DRN	223		RUI - DRN 132kV	RUT-DRN	223
RUT-DRN	224		RUI - DRN 132kV	RUT-DRN	224
RUT-DRN	225		RUI - DRN 132kV	RUT-DRN	225
RUT-DRN	226		RUI - DRN 132kV	RUT-DRN	226
RUT-DRN	227		RUI - DRN 132kV	RUT-DRN	227
RUT-DRN	228		RUI - DRN 132kV	RUT-DRN	228
RUT-DRN	229		RUI - DRN 132kV	RUT-DRN	229
RUT-DRN	230		RUI - DRN 132kV	RUT-DRN	230
RUT-DRN	231		RUI - DRN 132kV	RUT-DRN	231
RUT-DRN	232		RUI - DRN 132kV	RUT-DRN	232
RUT-DRN	233		RUI - DRN 132kV	RUT-DRN	233
RUT-DRN	234		RUI - DRN 132kV	RUT-DRN	234
RUT-DRN	235		RUI - DRN 132kV	RUT-DRN	235
RUT-DRN	236		RUI - DRN 132kV	RUT-DRN	236
RUT-DRN	237		RUI - DRN 132kV	RUT-DRN	237
RUT-DRN	238		RUI - DRN 132kV	RUT-DRN	238
RUT-DRN	239		RUI - DRN 132kV	RUT-DRN	239
RUT-DRN	240		RUI - DRN 132kV	RUT-DRN	240

RUT-DRN	241		RUI - DRN 132kV	RUT-DRN	241
RUT-DRN	242		RUI - DRN 132kV	RUT-DRN	242
RUT-DRN	243		RUI - DRN 132kV	RUT-DRN	243
RUT-DRN	244		RUI - DRN 132kV	RUT-DRN	244
RUT-DRN	245		RUI - DRN 132kV	RUT-DRN	245
RUT-DRN	246		RUI - DRN 132kV	RUT-DRN	246
RUT-DRN	247		RUI - DRN 132kV	RUT-DRN	247
RUT-DRN	248		RUI - DRN 132kV	RUT-DRN	248
RUT-DRN	249		RUI - DRN 132kV	RUT-DRN	249
RUT-DRN	250		RUI - DRN 132kV	RUT-DRN	250
RUT-DRN	251		RUI - DRN 132kV	RUT-DRN	251
RUT-DRN	252		RUI - DRN 132kV	RUT-DRN	252
RUT-DRN	253		RUI - DRN 132kV	RUT-DRN	253
RUT-DRN	254		RUI - DRN 132kV	RUT-DRN	254
RUT-DRN	255		RUI - DRN 132kV	RUT-DRN	255
RUT-DRN	256		RUI - DRN 132kV	RUT-DRN	256
RUT-DRN	257		RUI - DRN 132kV	RUT-DRN	257
RUT-DRN	258		RUI - DRN 132kV	RUT-DRN	258
RUT-DRN	259		RUI - DRN 132kV	RUT-DRN	259
RUT-DRN	260		RUI - DRN 132kV	RUT-DRN	260
RUT-DRN	261		RUI - DRN 132kV	RUT-DRN	261
RUT-DRN	262		RUI - DRN 132kV	RUT-DRN	262
RUT-DRN	263		RUI - DRN 132kV	RUT-DRN	263
RUT-DRN	264		RUI - DRN 132kV	RUT-DRN	264
RUT-DRN	265		RUI - DRN 132kV	RUT-DRN	265
RUT-DRN	266		RUI - DRN 132kV	RUT-DRN	266
RUT-DRN	267		RUI - DRN 132kV	RUT-DRN	267
RUT-DRN	268		RUI - DRN 132kV	RUT-DRN	268
RUT-DRN	269		RUI - DRN 132kV	RUT-DRN	269
RUT-DRN	270		RUI - DRN 132kV	RUT-DRN	270
RUT-DRN	271		RUI - DRN 132kV	RUT-DRN	271
RUT-DRN	272		RUI - DRN 132kV	RUT-DRN	272
RUT-DRN	273		RUI - DRN 132kV	RUT-DRN	273
RUT-DRN	274		RUI - DRN 132kV	RUT-DRN	274
RUT-DRN	275		RUI - DRN 132kV	RUT-DRN	275
RUT-DRN	276		RUI - DRN 132kV	RUT-DRN	276
RUT-DRN	277		RUI - DRN 132kV	RUT-DRN	277
RUT-DRN	278		RUI - DRN 132kV	RUT-DRN	278
RUT-DRN	279		RUI - DRN 132kV	RUT-DRN	279
RUT-DRN	280		RUI - DRN 132kV	RUT-DRN	280

RUT-DRN	281		RUI - DRN 132kV	RUT-DRN	281
RUT-DRN	282		RUI - DRN 132kV	RUT-DRN	282
RUT-DRN	283		RUI - DRN 132kV	RUT-DRN	283
RUT-DRN	284		RUI - DRN 132kV	RUT-DRN	284
RUT-DRN	285		RUI - DRN 132kV	RUT-DRN	285
RUT-DRN	286		RUI - DRN 132kV	RUT-DRN	286
RUT-DRN	287		RUI - DRN 132kV	RUT-DRN	287
RUT-DRN	288		RUI - DRN 132kV	RUT-DRN	288
RUT-DRN	289		RUI - DRN 132kV	RUT-DRN	289
RUT-DRN	290		RUI - DRN 132kV	RUT-DRN	290
RUT-DRN	291		RUI - DRN 132kV	RUT-DRN	291
RUT-DRN	292		RUI - DRN 132kV	RUT-DRN	292
RUT-DRN	293		RUI - DRN 132kV	RUT-DRN	293
RUT-DRN	294		RUI - DRN 132kV	RUT-DRN	294
RUT-DRN	295		RUI - DRN 132kV	RUT-DRN	295
RUT-DRN	296		RUI - DRN 132kV	RUT-DRN	296
RUT-DRN	297		RUI - DRN 132kV	RUT-DRN	297
RUT-DRN	298		RUI - DRN 132kV	RUT-DRN	298
RUT-DRN	299		RUI - DRN 132kV	RUT-DRN	299
RUT-DRN	300		RUI - DRN 132kV	RUT-DRN	300
RUT-DRN	301		RUI - DRN 132kV	RUT-DRN	301
RUT-DRN	302		RUI - DRN 132kV	RUT-DRN	302
RUT-DRN	303		RUI - DRN 132kV	RUT-DRN	303
RUT-DRN	304		RUI - DRN 132kV	RUT-DRN	304
RUT-DRN	305		RUI - DRN 132kV	RUT-DRN	305
RUT-DRN	306		RUI - DRN 132kV	RUT-DRN	306
RUT-DRN	307		RUI - DRN 132kV	RUT-DRN	307
RUT-DRN	308		RUI - DRN 132kV	RUT-DRN	308
RUT-DRN	309		RUI - DRN 132kV	RUT-DRN	309
RUT-DRN	310		RUI - DRN 132kV	RUT-DRN	310
RUT-DRN	311		RUI - DRN 132kV	RUT-DRN	311
RUT-DRN	312		RUI - DRN 132kV	RUT-DRN	312
RUT-DRN	313		RUI - DRN 132kV	RUT-DRN	313
RUT-DRN	314		RUI - DRN 132kV	RUT-DRN	314
RUT-DRN	315		RUI - DRN 132kV	RUT-DRN	315
RUT-DRN	316		RUI - DRN 132kV	RUT-DRN	316
RUT-DRN	317		RUI - DRN 132kV	RUT-DRN	317
RUT-DRN	318		RUI - DRN 132kV	RUT-DRN	318
RUT-DRN	319		RUI - DRN 132kV	RUT-DRN	319
RUT-DRN	320		RUI - DRN 132kV	RUT-DRN	320
RUT-DRN	321		RUI - DRN 132kV	RUT-DRN	321
RUT-DRN	322		RUI - DRN 132kV	RUT-DRN	322
RUT-DRN	323		RUI - DRN 132kV	RUT-DRN	323
RUT-DRN	324		RUI - DRN 132kV	RUT-DRN	324
RUT-DRN	325		RUI - DRN 132kV	RUT-DRN	325

RUT-DRN	326		RUI - DRN 132kV	RUT-DRN 326
RUT-DRN	327		RUI - DRN 132kV	RUT-DRN 327
RUT-DRN	328		RUI - DRN 132kV	RUT-DRN 328
RUT-DRN	329		RUI - DRN 132kV	RUT-DRN 329
RUT-DRN	330		RUI - DRN 132kV	RUT-DRN 330
RUT-DRN	331		RUI - DRN 132kV	RUT-DRN 331
RUT-DRN	332		RUI - DRN 132kV	RUT-DRN 332
RUT-DRN	333		RUI - DRN 132kV	RUT-DRN 333
RUT-DRN	334		RUI - DRN 132kV	RUT-DRN 334
RUT-DRN	335		RUI - DRN 132kV	RUT-DRN 335
RUT-DRN	336		RUI - DRN 132kV	RUT-DRN 336
RUT-DRN	337		RUI - DRN 132kV	RUT-DRN 337
RUT-DRN	338		RUI - DRN 132kV	RUT-DRN 338
RUT-DRN	339		RUI - DRN 132kV	RUT-DRN 339
RUT-DRN	340		RUI - DRN 132kV	RUT-DRN 340
RUT-DRN	341		RUI - DRN 132kV	RUT-DRN 341
RUT-DRN	342		RUI - DRN 132kV	RUT-DRN 342
RUT-DRN	343		RUI - DRN 132kV	RUT-DRN 343
RUT-DRN	344		RUI - DRN 132kV	RUT-DRN 344
RUT-DRN	345		RUI - DRN 132kV	RUT-DRN 345
RUT-DRN	346		RUI - DRN 132kV	RUT-DRN 346
RUT-DRN	347		RUI - DRN 132kV	RUT-DRN 347
RUT-DRN	348		RUI - DRN 132kV	RUT-DRN 348
RUT-DRN	349		RUI - DRN 132kV	RUT-DRN 349
RUT-DRN	350		RUI - DRN 132kV	RUT-DRN 350
RUT-DRN	351		RUI - DRN 132kV	RUT-DRN 351
RUT-DRN	352		RUI - DRN 132kV	RUT-DRN 352
RUT-DRN	353		RUI - DRN 132kV	RUT-DRN 353
RUT-DRN	354		RUI - DRN 132kV	RUT-DRN 354
RUT-DRN	355		RUI - DRN 132kV	RUT-DRN 355
RUT-DRN	356		RUI - DRN 132kV	RUT-DRN 356
RUT-DRN	357		RUI - DRN 132kV	RUT-DRN 357
RUT-DRN	358		RUI - DRN 132kV	RUT-DRN 358
RUT-DRN	359		RUI - DRN 132kV	RUT-DRN 359
RUT-DRN	360		RUI - DRN 132kV	RUT-DRN 360
RUT-DRN	361		RUI - DRN 132kV	RUT-DRN 361
RUT-DRN	362		RUI - DRN 132kV	RUT-DRN 362
RUT-DRN	363		RUI - DRN 132kV	RUT-DRN 363
RUT-DRN	364		RUI - DRN 132kV	RUT-DRN 364
RUT-DRN	365		RUI - DRN 132kV	RUT-DRN 365
RUT-DRN	366		RUI - DRN 132kV	RUT-DRN 366
RUT-DRN	367	DREUNBERG	RUI - DRN 132kV	RUT-DRN 367
1DRN - MLK	1	DREUNBERG	1DRN - MLK 132kV	1DRN - MLK 1
1DRN - MLK	1A		1DRN - MLK 132kV	1DRN - MLK 1A

2. Templated Profile

3. Stringing Charts

4. Staking Table

5. Vibration Dampers

6. Bill of Materials (BOM) & Bill of Quantity (BOQ)

7. Structure Drawing & Structure Foundations

8. Hardware Assembly Drawings

9. Buyers Guide Specifications

10. Construction Checklist

11. Safety & Environmental Specification

12. Appendix A : Environmental approval

