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D

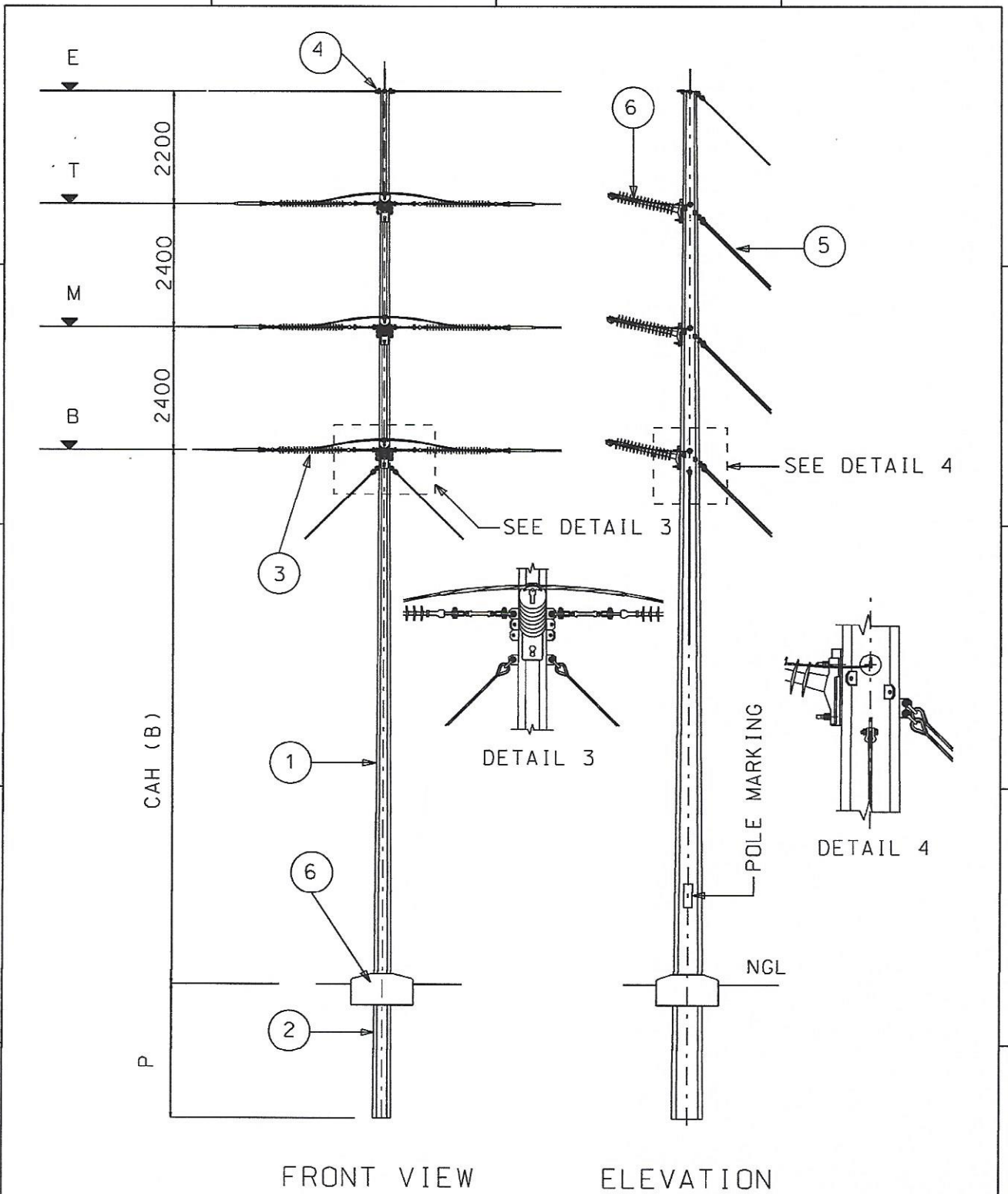
D

E

E

F

F



FRONT VIEW

ELEVATION

REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.

**Eskom**  
Distribution

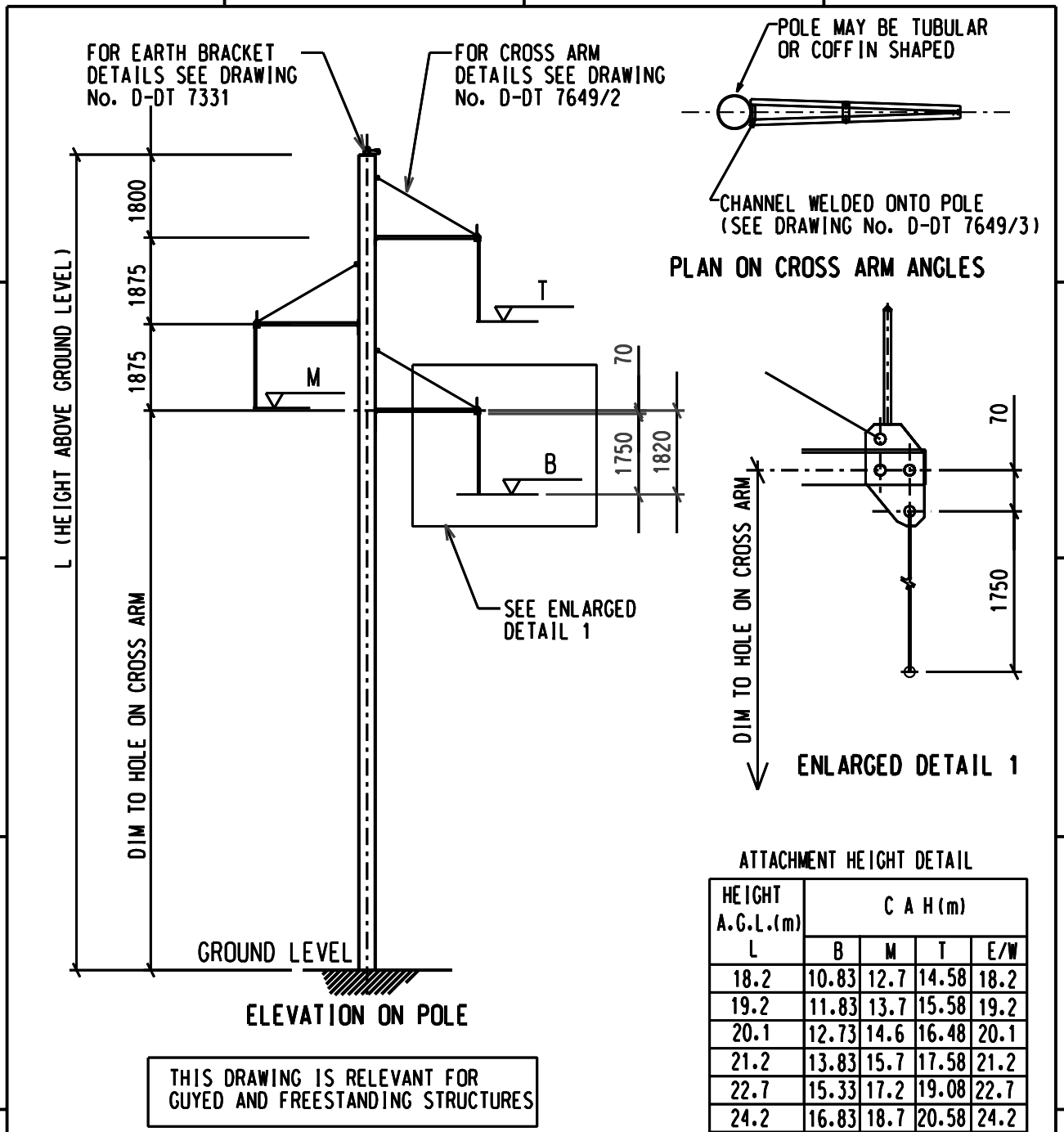
AUTH: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 CHKD: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 DRAWN: P.A. TRUBLET  
 DATE: 03.11.2009

DISTRIBUTION TECHNOLOGY  
 SUB-TRANSMISSION LINES  
 GUYED STRAIN STRUCTURE  
 GENERAL ARRANGEMENT (0-90°)

D-DT-7645

SET	SHEET	REVISION
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4	1	A
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REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.
1	ESKOM EMBLEM CHANGED	S. LE ROUX P.A.T.	B. BRANFIELD J. SCHOLTZ	B. BRANFIELD J. SCHOLTZ	19.11.2010	

<p><b>Eskom</b> Distribution</p> <p>AUTH: A. BEKKER</p> <p>DATE: 26/04/2002</p> <p>CHKD: B. BRANFIELD</p> <p>DATE: 16/03/2002</p> <p>DRAWN: S. LE ROUX</p> <p>DATE: 15/03/2002</p>	<p>DISTRIBUTION TECHNOLOGY</p> <p>132KV SUSPENSION X-ARM</p> <p>GENERAL ARRANGEMENT FOR</p> <p>SINGLE STEEL POLE STRUCTURE</p>				
	D-DT-7649		SET	SHEET	REVISION
			4	1	1

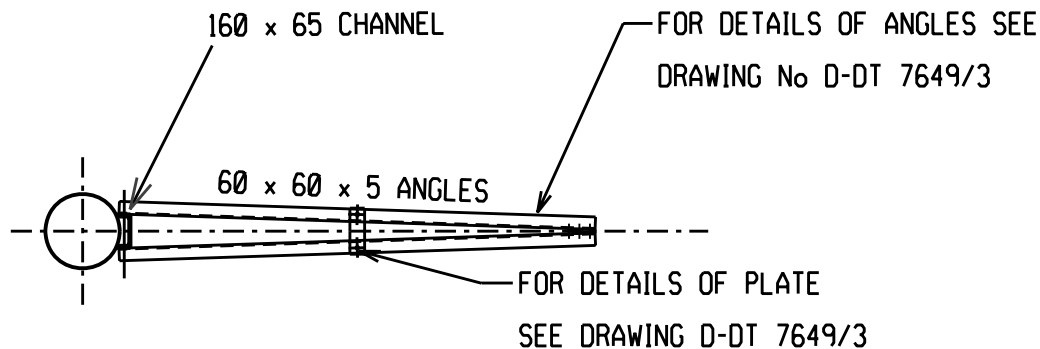
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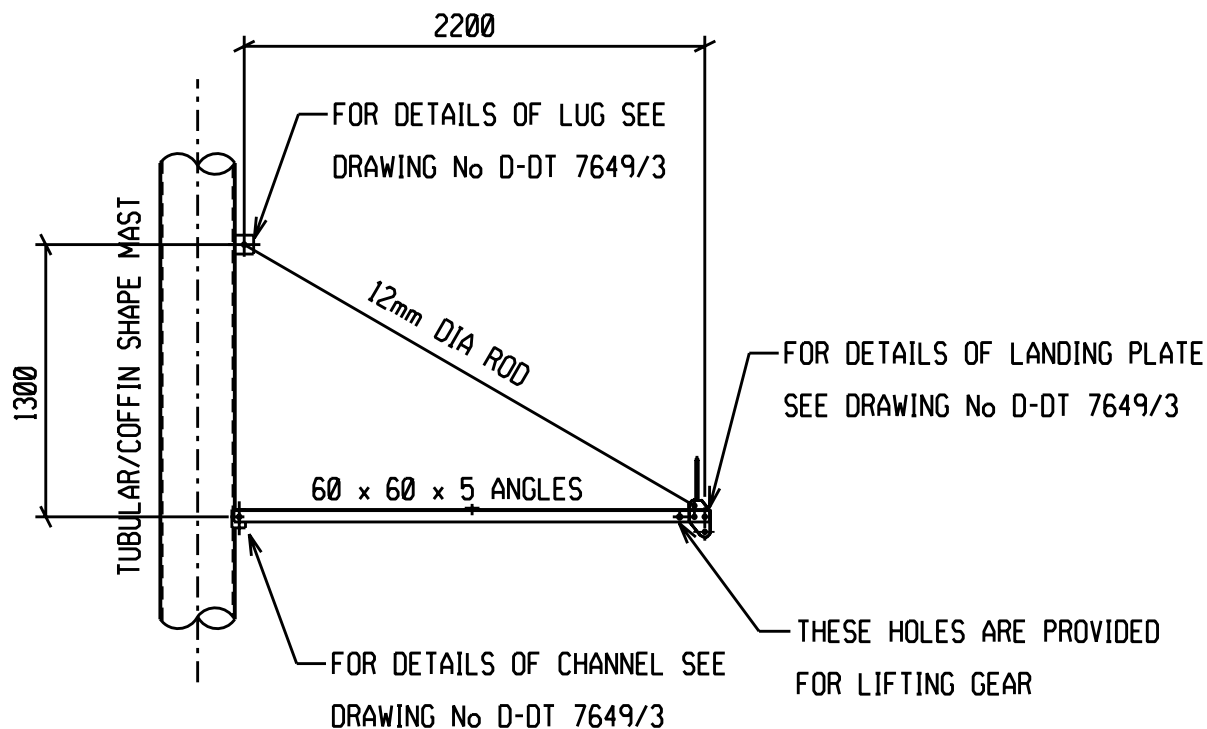
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A



### PLAN ON CROSS ARM ANGLES

B



### ELEVATION ON CROSS ARM

NOTE:

ALL BOLTS USED TO BE  
M16 GRADE 8.8 BOLTS

1	ESKOM EMBLEM CHANGED	S.L.E ROUX P.A.T.	B.BRANFIELD J.SCHOLTZ	B.BRANFIELD J.SCHOLTZ	19.11.2010	
0	FIRST ISSUE/EERSTE UITREIKING	S.L.E ROUX	R.BRANFIELD			
REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.



## DISTRIBUTION TECHNOLOGY 132KV SUSPENSION X-ARM LAYOUT OF CROSS ARM

AUTH: R.BRANFIELD

DATE: 26/04/2002

CHKD: R.BRANFIELD

DATE: 16.03  
2002

DRAWN: S.L.E ROUX

DATE: 15.03  
2002

D-DT-7649

SET

SHEET

REVISION

4

2

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4 A4L

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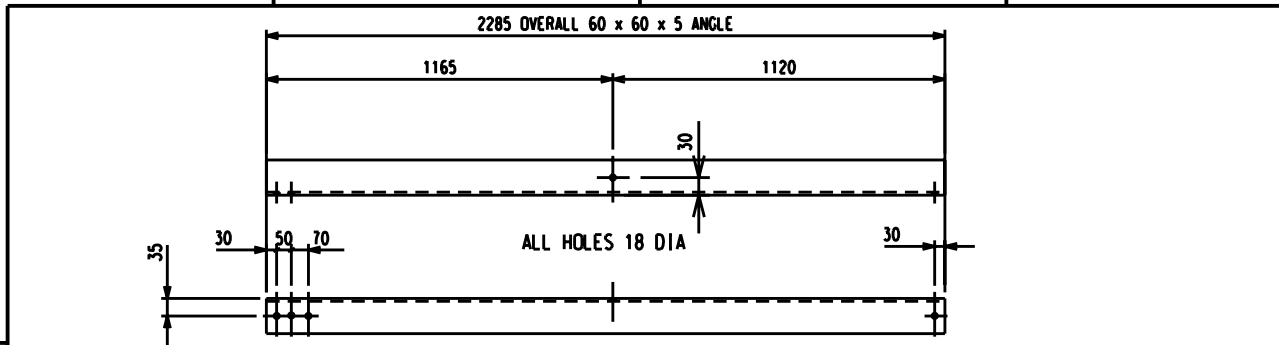
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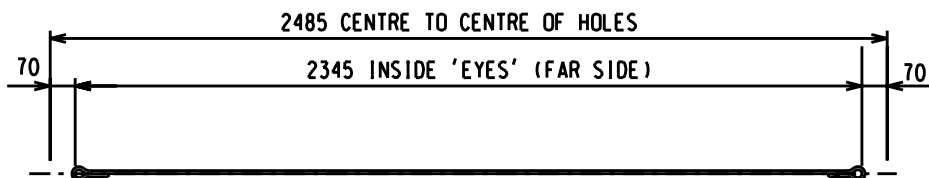


ONE ANGLE REQUIRED AS DRAWN  
ONE ANGLE REQUIRED TO OPP HAND

NOTE:  
ALL BOLTS USED  
TO BE M16 GRADE  
8.8 BOLTS

B

B

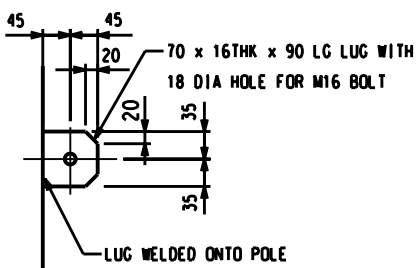


DETAIL OF 12mm DIA ROD

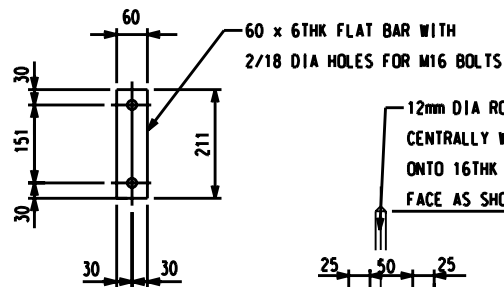
6mm FILLET WELD

C

C



DETAIL OF LUG 'L1'

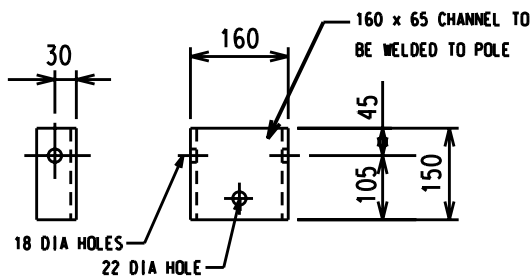


DETAIL OF PLATE 'P1'

12mm DIA ROD TO BE  
CENTRALLY WELDED  
ONTO 16THK PLATE  
FACE AS SHOWN

D

D



100 x 16THK x 175LG LANDING  
PLATE WITH 18 DIA HOLES FOR  
M16 BOLTS

DETAIL OF LANDING PLATE

E

E

1	ESKOM EMBLEM CHANGED	S. LE ROUX P.A.T.	B. BRANFIELD J. SCHOLTZ	B. BRANFIELD J. SCHOLTZ	19.11.2010	
0	FIRST ISSUE/EERSTE UITREIKING	S. LE ROUX	R. BRANFIELD			
REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.

F

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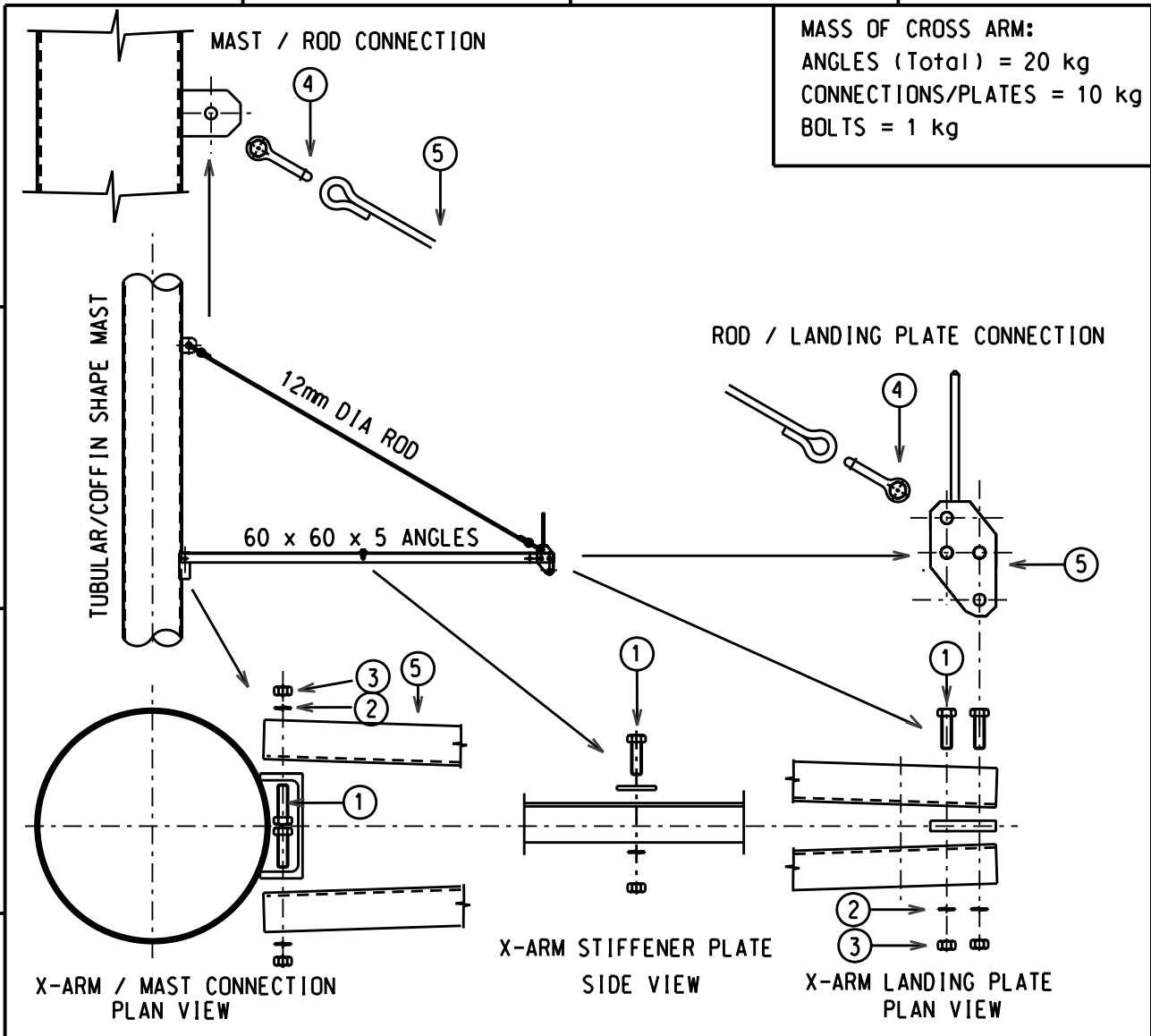
		<b>DISTRIBUTION TECHNOLOGY 132KV SUSPENSION X-ARM FABRICATION DRAWING</b>				
AUTH: R. BRANFIELD		<h1>D-DT-7649</h1>				
DATE: 26/04/2002						
CHKD: R. BRANFIELD						
DATE: 16.03 2002						
DRAWN: S. LE ROUX						
DATE: 15.03 2002		SET	SHEET	REVISION		
		4	3	1		

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3

4 A4L



REF	DESCRIPTION	DRAWING NO.
1	SET SCREW, M16 x 50 LG GRADE 8.8	
2	WASHER, SPRING, M16	
3	NUT, M16	
4	SHACKLE, D 120KN	D-DT 7017
5	SUSP. ARM ASSEMB, 132KV	

REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.
1	ESKOM EMBLEM CHANGED	S. LE ROUX P.A.T.	B. BRANFIELD J. SCHOLTZ	B. BRANFIELD J. SCHOLTZ	19.11.2010	
0	FIRST ISSUE / EERSTE UITREIKING	S. LE ROUX	B. BRANFIELD			

	<b>DISTRIBUTION TECHNOLOGY</b> <b>132KV SUSPENSION X-ARM ASSEMBLY</b>		
	AUTH: B. BRANFIELD		
	DATE: 26/04/2002		
	CHKD: B. BRANFIELD		
	DATE: 16.03.2002		
DRAWN: S. LE ROUX	<b>D-DT-7649</b>		SET
DATE: 15.03.2002			SHEET
		REVISION	
	4	4	1

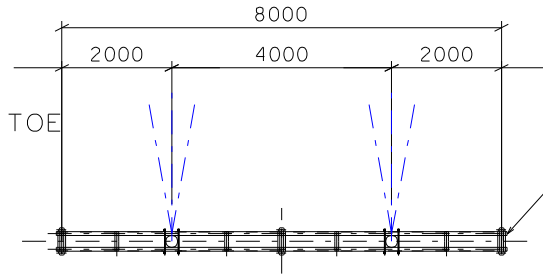
1

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200 x 75 PFC CHANNELS TOE TO TOE FOR DETAILS SEE SHEET 2

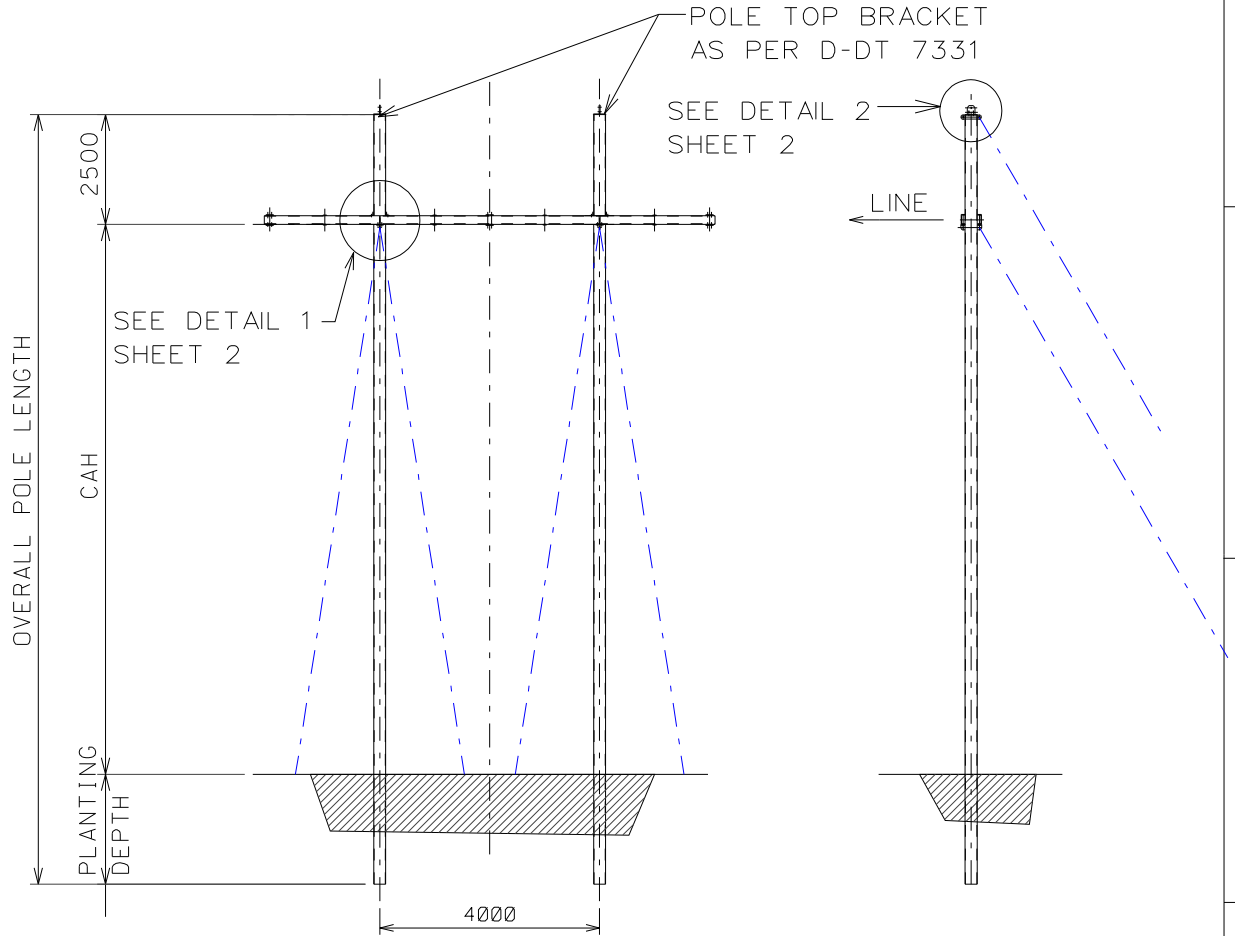


120 kN CROSS ARM CAPACITY

SEE DETAIL 3 SHEET 2

2 SHIELD WIRE STAYS  
4 CROSS ARM STAYS SPLAYED

PLAN ON CROSS ARM



DETAILS OF TERMINAL STRUCTURE

1	RETICULATION REMOVED FROM TITLE BLOCK	N.M.	P.A.T.	P.A.T.	31.01.2010	
0	ISSUED FOR PUBLICATION	SLR	RAB	AB	FEB 2005	
REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.



DISTRIBUTION TECHNOLOGY  
SUB-TRANSMISSION LINES

AUTH:	A BEKKER
DATE:	SEPT 2004
CHKD:	RAB
DATE:	SEPT 2004
DRAWN:	SLR
DATE:	SEPT 2004

132kV H-POLE STRUCTURES - 8m XARM  
TERMINAL STRUCTURE 70-120kN RANGE

D-DT 7808

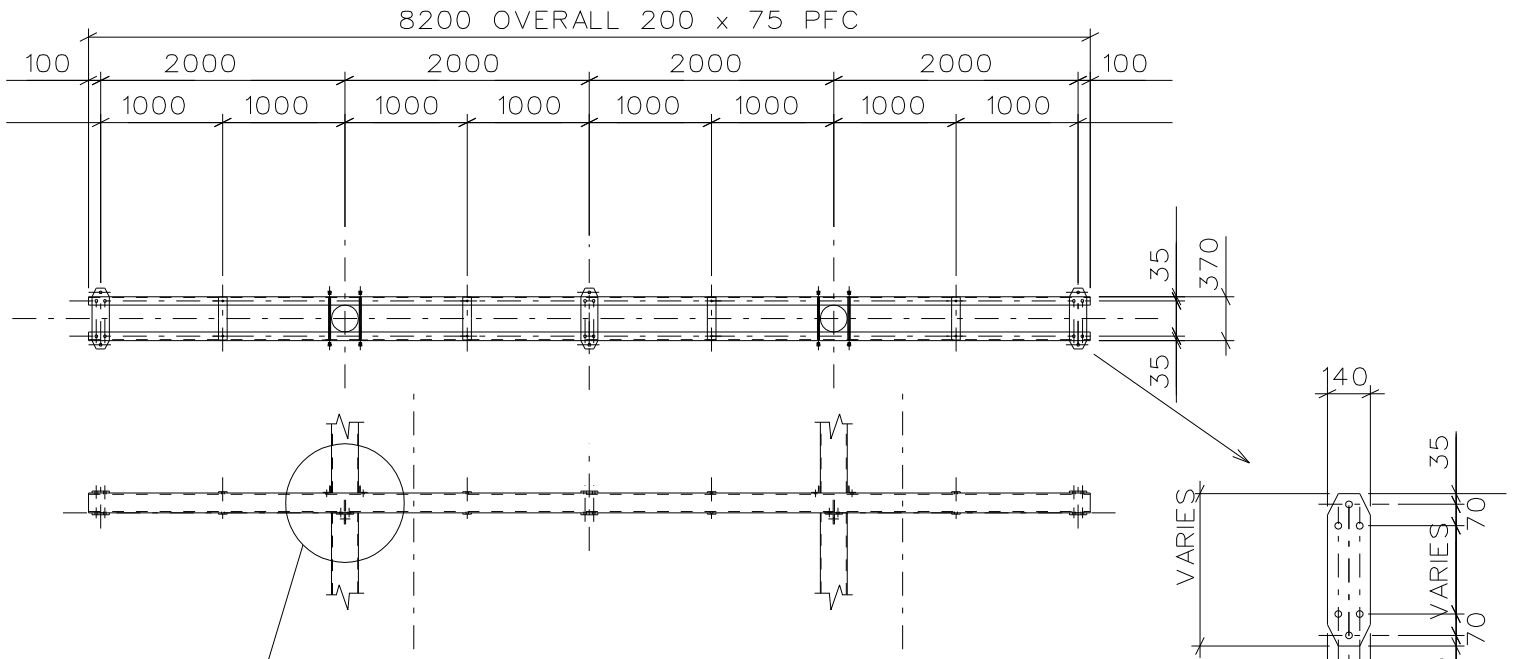
SET	SHEET	REVISION
3	1	1

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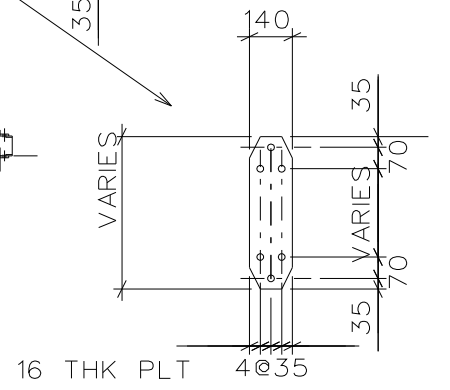
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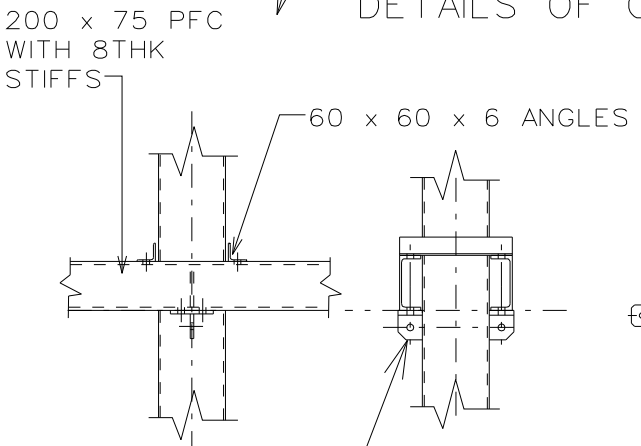
4 A4L



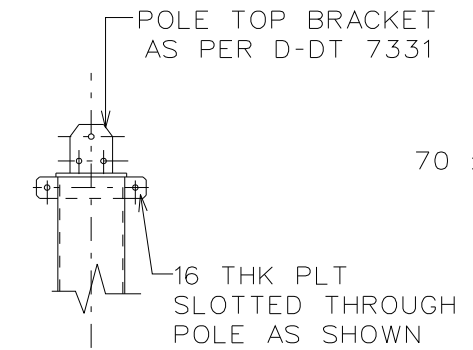
DETAILS OF CROSS ARM



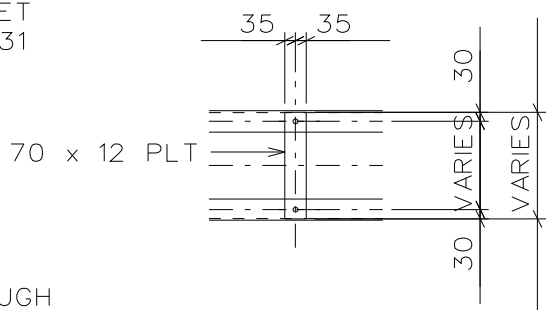
DETAIL 3



DETAIL 1



DETAIL 2



DETAIL OF TIE PLATES

1	RETICULATION REMOVED FROM TITLE BLOCK	N.M.	P.A.T.	P.A.T.	31.01.2010	
0	ISSUED FOR PUBLICATION	SLR	RAB	AB	FEB 2005	
REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.



DISTRIBUTION TECHNOLOGY  
SUB-TRANSMISSION LINES

AUTH: A BEKKER  
DATE: SEPT 2004

CHKD: RAB

DATE: SEPT 2004

DRAWN: SLR

DATE: SEPT 2004

132KV H-POLE STRUCTURES - 8m XARM

TERMINAL STRUCTURE 70-120KN RANGE

D-DT 7808

SET	SHEET	REVISION
3	2	1

1 2 3 4 A4L

DESIGN CRITERIA:

ALL STEEL GRADE 300W  
 ALL BOLTS GRADE 8.8 BOLTS  
 POLES AND CROSS ARMS TO BE SUPPLIED WITH FIXING BOLTS

POLES USED FOR H-POLE	OVERALL HEIGHT	PLANTING DEPTH	CROSS ARM ATT HEIGHT AGL	SHIELD WIRE ATT HEIGHT AGL	CONDUCTOR ATT HEIGHT AGL
219 x 4,5 THK CHS	15.1	2.0	10.6	13.1	10.6
219 x 4,5 THK CHS	16.1	2.0	11.6	14.1	11.6
219 x 4,5 THK CHS	17.1	2.0	12.6	15.1	12.6
219 x 6,0 THK CHS	18.2	2.0	13.7	16.2	13.7
219 x 6,0 THK CHS	19.2	2.0	14.7	17.2	14.7
324 x 4,5 THK CHS	20.1	2.0	15.6	18.1	15.6

70 TO 120kN UTS CONDUCTORS

POLES USED FOR H-POLE	WIND SPAN	WEIGHT SPAN	ELECTRICAL SPAN
15.1	350	455	460
16.1	350	455	460
17.1	350	455	460
18.2	350	455	460
19.2	350	455	460
20.1	350	455	460

1	RETICULATION REMOVED FROM TITLE BLOCK	N.M.	P.A.T.	P.A.T.	31.01.2010	
0	ISSUED FOR PUBLICATION	SLR	RAB	AB	FEB 2005	
REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.



DISTRIBUTION TECHNOLOGY  
 SUB-TRANSMISSION LINES

132kV H-POLE STRUCTURES - 8m XARM

TERMINAL STRUCTURE 70-120kN RANGE

AUTH:	A BEKKER
DATE:	SEPT 2004
CHKD:	RAB
DATE:	SEPT 2004
DRAWN:	SLR
DATE:	SEPT 2004

D-OT 7808		SET	SHEET	REVISION
		3	3	1

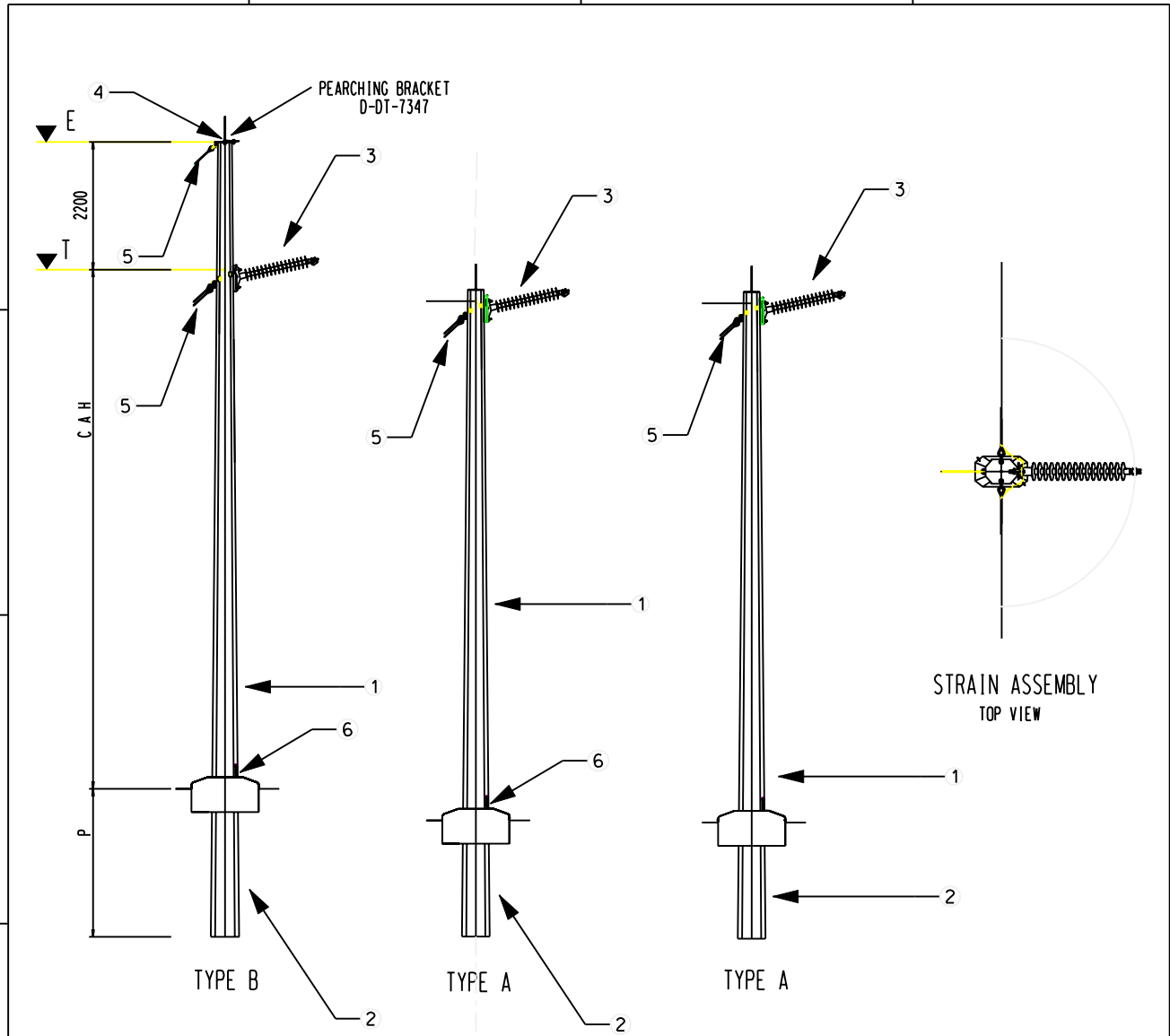
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4 A4L





NOTE:  
 1 THESE 3 POLES CAN BE USED AS AN UNSTAYED INTERMEDIATE STRUCTURE (0°) OR A STAYED INTERMEDIATE ANGLE STRUCTURE (1-20°) OR A STAYED ANGLE STRAIN STRUCTURE (0-90°).


C A H		PLANTING DEPTH		POLE LENGTH	
T	E	P	L	L	L
6,2	8,4	1,6	8	10	
7,1	9,3	1,7	9	11	
8,0	10,2	1,8	10	12	
8,9	11,1	1,9	11	13	
9,8	12,0	2,0	12	14	
10,7	12,9	2,1	13	15	
11,6	13,8	2,2	14	16	
12,5	14,7	2,3	15	17	
13,4	15,6	2,4	16	18	
14,3	16,5	2,5	17	19	
15,2	17,4	2,6	18	20	
16,1	18,3	2,7	19	21	

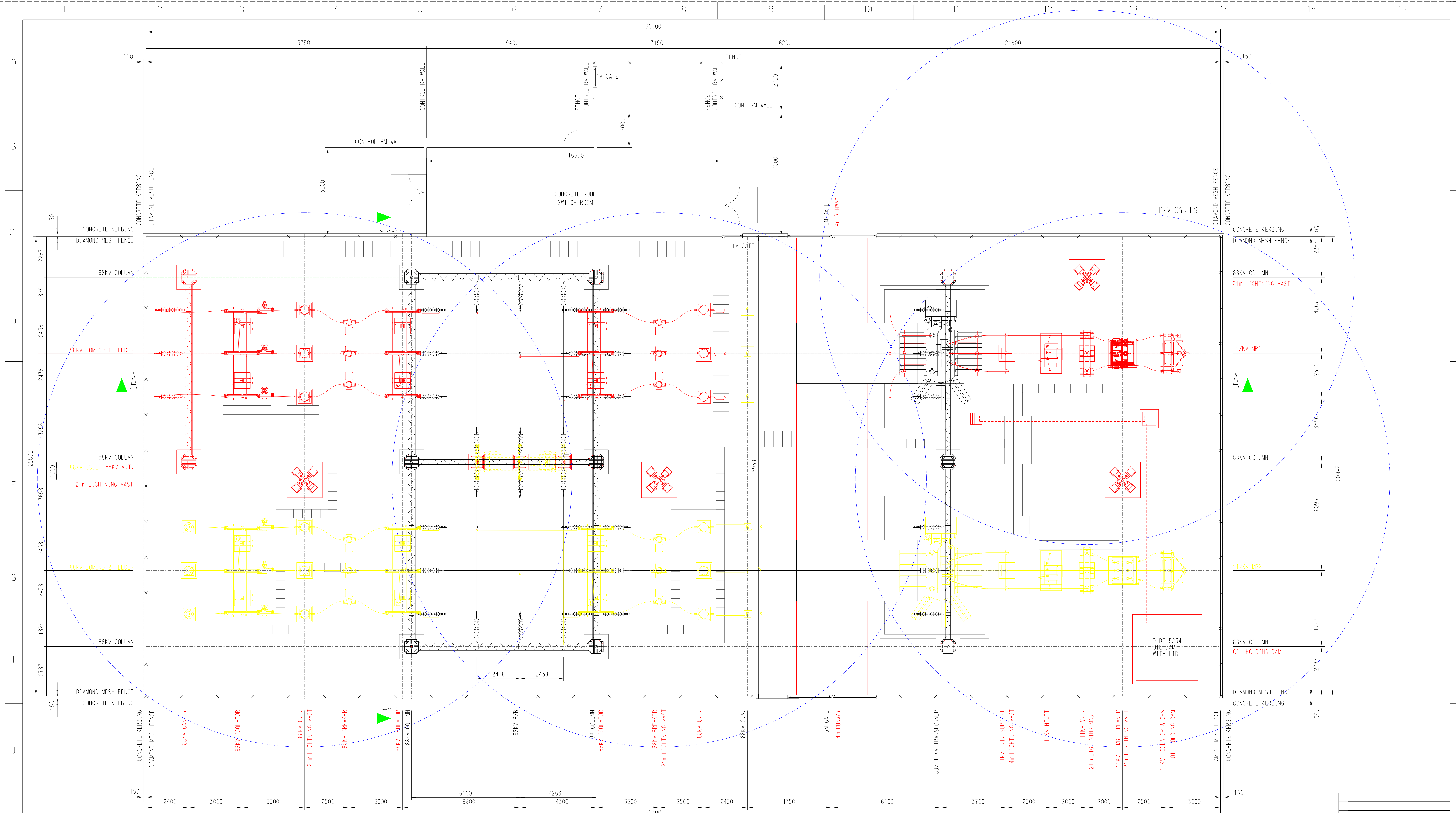
2	DRG SHT UPDATED. REFERENCES REVISED. GENERAL REVISION	PBM	SLR	A BEKKER	SEP 2005	
REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.

<p>AUTH: A BEKKER</p> <p>DATE: JAN 2004</p> <p>CHKD: RAB</p> <p>DATE: JAN 2004</p> <p>DRAWN: LMP</p> <p>DATE: 22/11/1998</p>	<p>DISTRIBUTION TECHNOLOGY</p> <p>RETICULATION/ SUB-TRANSMISSION LINES</p> <p>88/132kV 3-POLE STRAIN STRUCTURE (0-90°)</p> <p>GENERAL ARRANGEMENT</p>					
	D-DT 7618			SET	SHEET	REVISION
	2			2	1	2
	1					
	2					

ITEM NØ.	DESCRIPTION	D-DT NØ.
	STRUCTURE	
	TYPE 259S-MANUFACTURE DORBYL	7618
	TYPE 261S- MANUFACTURE CIS	7618
1	POLE LENGTH (BODY)	
	7.1M STEEL	7107
	8.0M STEEL	7107
	8.9M STEEL	7107
	9.8M STEEL	7107
	10.7M STEEL	7107
	11.6M STEEL	7107
	12.5M STEEL	7107
2	FOUNDATION	
	TYPE 1 (300kPa)	7337
	TYPE 2 (150kPa)	7338
	TYPE 3 (100kPa)	7339
	TYPE 4 (50kPa)	7340
	ROCK&DECOMPOSED ROCK	7341
3	INSULATOR ASSEMBLY	
	STRAIN ASSEMBLY	7311
	JUMPER ASSEMBLY	7321
4	EARTH WIRE ASSEMBLIES	
	STRAIN INSULATED	7324
	STRAIN NON-INSULATED	7323
5	STAY ASSEMBLY	7325
6	CONCRETE CAP & EARTHING DETAILS	7345

2	DRG SHT UPDATED, REFERENCES REVISED, GENERAL REVISION	PBM	SLR	A BEKKER	SEP 2005	
REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.

 <b>Eskom Distribution</b> AUTH: AB DATE: AUG 2004 CHKD: RAB DATE: AUG 2004 DRAWN: SLR DATE: AUG 2004	DISTRIBUTION TECHNOLOGY RETICULATION/ SUB-TRANSMISSION LINES 88/132kV 3-POLE STRAIN STRUCTURE (0-90°) REFERENCE TABLE		
	D-DT 7618		
	SET	SHEET	REVISION
	2	2	2



- NOTES:
1. ALL WORK TO BE DONE IN ACCORDANCE WITH SABS1200 LATEST REVISION.
  2. ALL LEVELS TO BE SET-OUT FROM BENCH INDICATED ON SHEET 2 WITH ⊕
  3. TOP OF EQUIPMENT FOUNDATIONS TO BE 150mm ABOVE TERRACE LEVEL, TOP OF FOUNDATION LEVELS.
  4. H.V. YARD TO HAVE A CLEAN, HARD, SOUND CRUSHED STONE OF A MIN 25mm NOMINAL SIZE, 100mm THICK LAYER. THIS SHOULD APPLY AFTER INSTALLATION OF ALL EQUIPMENT AND CABLES.
  5. ALL FOUNDATION H.D.BOLTS TO BE ALLIGNED FOR CASTING OF CONCRETE TO A TOLERANCE OF ±2mm. FOUNDATION TOLERANCE TO BE IN ACCORDANCE WITH SABS1200 G6 GRADE 11.
  6. DEPTH OF EQUIPMENT FOUNDATIONS TO BE NOT LESS THAN SHOWN ON DETAILS DRAWING AND NOT LESS THAN 300mm IN NATURAL GROUND.
  7. ALL TOP EDGES OF CONCRETE ABOVE G.L. TO HAVE 25mm CHAMFER AT 45°
  8. ALL FOUNDATIONS TO HAVE 25mm GROUT UNDER BASEPLATES ONLY. GROUT MIX 2:1. ALL H.D.BOLTS ARE SUPPLIED WITH 2 NUTS AND 2 WASHERS. GROUT MUST BE A FEATHERED FINISH TO ALLOW WATER TO RUN FREE FROM THE BASEPLATE.
  9. STRUCTURE SHALL BE ERECTED, ALIGNED, SQUARED, PLUMBED AND LEVELLED TO AN ACCURACY SPECIFIED IN SABS 1200 H 6.2.2.C12 - CLASS 11.
  10. EQUIPMENT NOT FITTED WITH DIA.26mm OR DIA.38mm CONNECTION PRONGS MUST BE FITTED WITH TINNED DIA.26mm OR DIA.38mm BRASS PRONGS DRILLED AND TAPED TO APPROPRIATE SIZES.

STEELWORK SCHEDULE (Rev 1)								
ITEM NO.	Steelwork Description	D-DT		Per Unit Mass	Total Mass			
		Number	Rev			REQ. Struct. St.	Bolts	
1	Isolator 132kV Support	2-ET14891 S2	6	3	502	11,2	1506	33,6
2	Medium Equipment Support Steelwork - 2.5m High	2-ET14927 S2	6	11	124,83	2,6	1373,13	28,6
3	Medium Equipment Cap M1	5206s2H	7	9	54,41	1,94	489,69	17,46
4	Medium Equipment Support Cap M2	5206 s2l	4	2	114	1,7	228	3,4
5	Column 88kV CH8 lattice steel	5265s2A	0	2	864,61	19,1	1729,22	38,2
6	Beam 88kV B831 lattice steel	5265s2C	0	1	569,71	28,71	569,71	28,71
7	Circuit Breaker 132kV Support	5200 s1A	9	2	242,39	0	484,78	0
7	132kV Surge Arrester Bracket	5219 s4	4	2	207,95	4,22	415,9	8,44
8	NECR/AUX - 6.6-22kV Lattice Steelwork	5207s2A	11	1	230,78	9,21	230,78	9,21
9	Lighting-Lightning Mast 21m	5217s2C	4	5	773,89	2,08	3869,45	10,4
10	Circuit Breaker Combo-11kV Lattice steelwork manufacturing details	5216s3A	7	1	96,07	2,21	96,07	2,21
11	Isolator - 22kV 1m Phase CRS Lattice support	5205s2A	9	1	155,46	4	155,46	4
12	Isolator 22kV CES bracket	2-ET14490s2	0	1	46	2	46	2
TRANSPORTATION TO SITE						YES		
ASSEMBLY AND ERECTION						YES		
Mass of Structural Steel							10896,66	
Mass of High Tensile Bolts							178,02	
Total Mass of Steelwork							11074,68	

EQUIPMENT SCHEDULE (Rev 1)					
ITEM NO.	Equipment Description	D-DT		QTY	
		Number	SAP NO		REQ.
1	132kV Circuit Breaker	D-DT 6250	0218735	2	
2	ISOL 132kV 2500A 40KA CRDB H/O 31	D-DT 6302s1	0527586	3	
3	S/Arr S/Cl 88kV MCOV 56kV	D-DT 6211	0187621	6	
4	VT 1PH 88kV/110V 100/50VA	D-DT 6170	0180089	3	
5	11kV S/Arr. (Tfr mounted)	D-DT 6216	0401605	6	
6	88kV S/Arr. (Tfr mounted)	D-DT 6212	0401595	1	
7	132 kV Current Transformer	D-DT 6190	0180031	6	
8	22kV Isolator	D-DT 6154	0527679	1	
9	VT 1P 11kV/110V 100/50VA 31	D-DT 6174	0402185	3	
10	11kV NEC/NER/AUX, 960 A	D-DT 6140	0182731	1	
11	BKR COMBO 11kV/2500A/25KA/3/110VDC	D-DT 6265	0633120	1	
12	S/ARR S/CL 11kV MCOV 12kV 31	D-DT 6216	0401605	3	
13	INSUL POST STN 132kV	D-DT6230	0017528	6	
14	LMP.FLOODLIGHT 400W/230V HPS	D-DT-6105	171536	16	
15	LAMP HOLDER INCL FITTING 400/250W HPS	D-DT-6104	171551	16	

1	STATION REFRUB. EXCLUDING TRFP's	SKW	NLEG	F.MASANGO	/	/		
0	FIRST ISSUE	ADM	NE.		13/07/2010			AS BUILT
REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE			PROJECT NO.

**SAFARI RURAL**  
**88/11kV SUBSTATION**  
**GENERAL ARRANGEMENT**

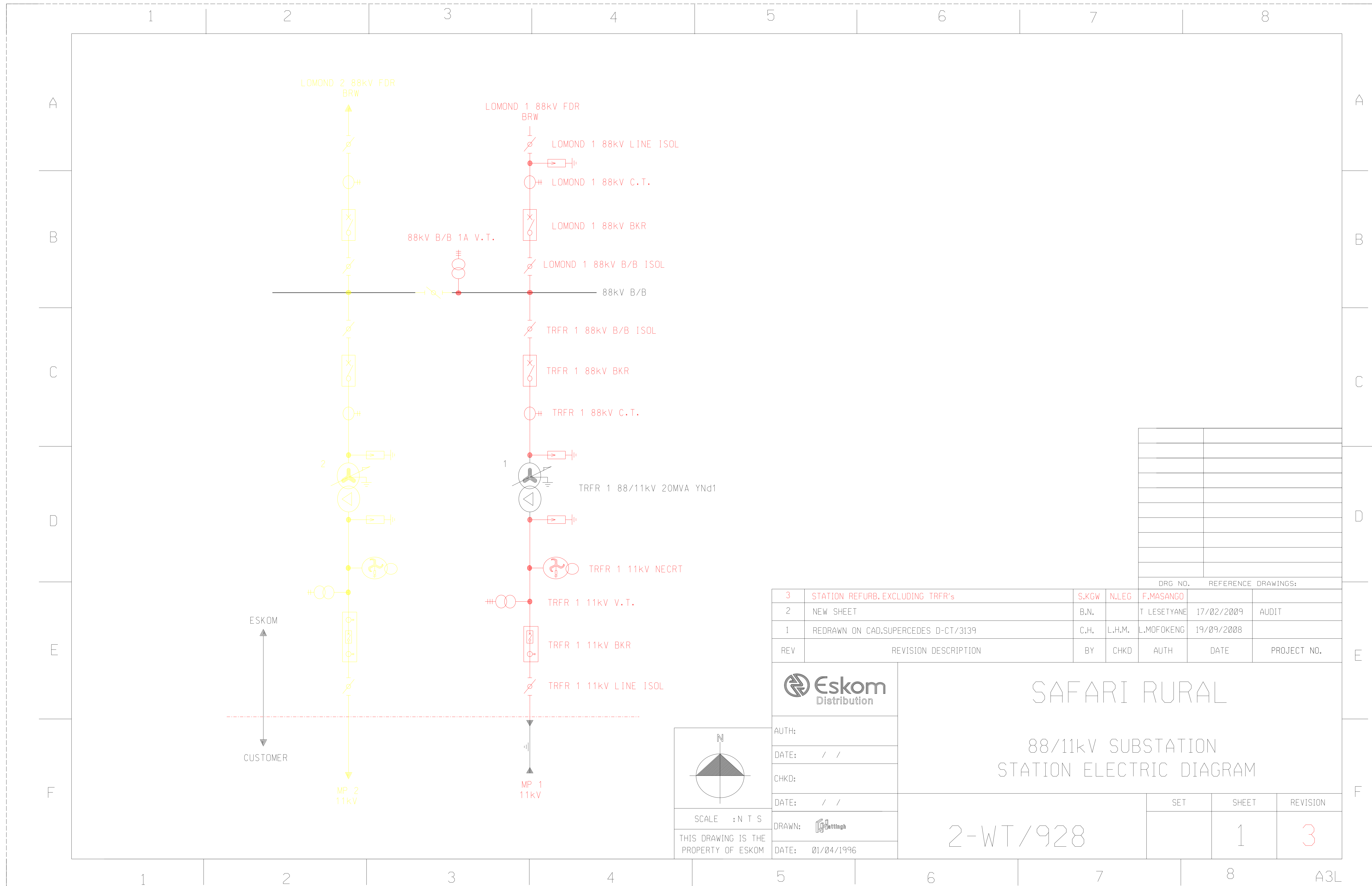
AUTH: / / /  
 DATE: / / /  
 CHKD: / / /  
 DATE: / / /  
 DRAWN: A D MADANLAL  
 DATE: 13/07/2010

SCALE 1:100  
 THIS DRAWING IS THE PROPERTY OF ESKOM

2-WT/928-4 RB	FOUNDATION AND EARTHMAI
2-WT/928-3 RB	SECTIONS
2-WT/928-2 RB	GENERAL ARRANGEMENT
2-WT/928-1 R2	STATION ELECT. DIA.
DRG NO. REFERENCE DRAWINGS	

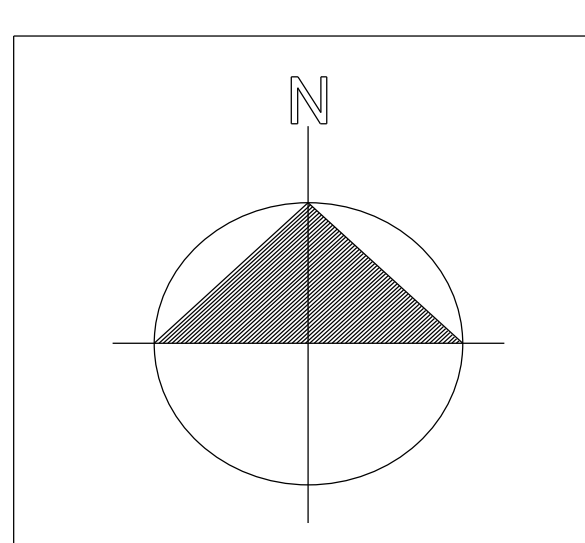
SET	SHEET	REVISION
4	2	1

2-WT/928



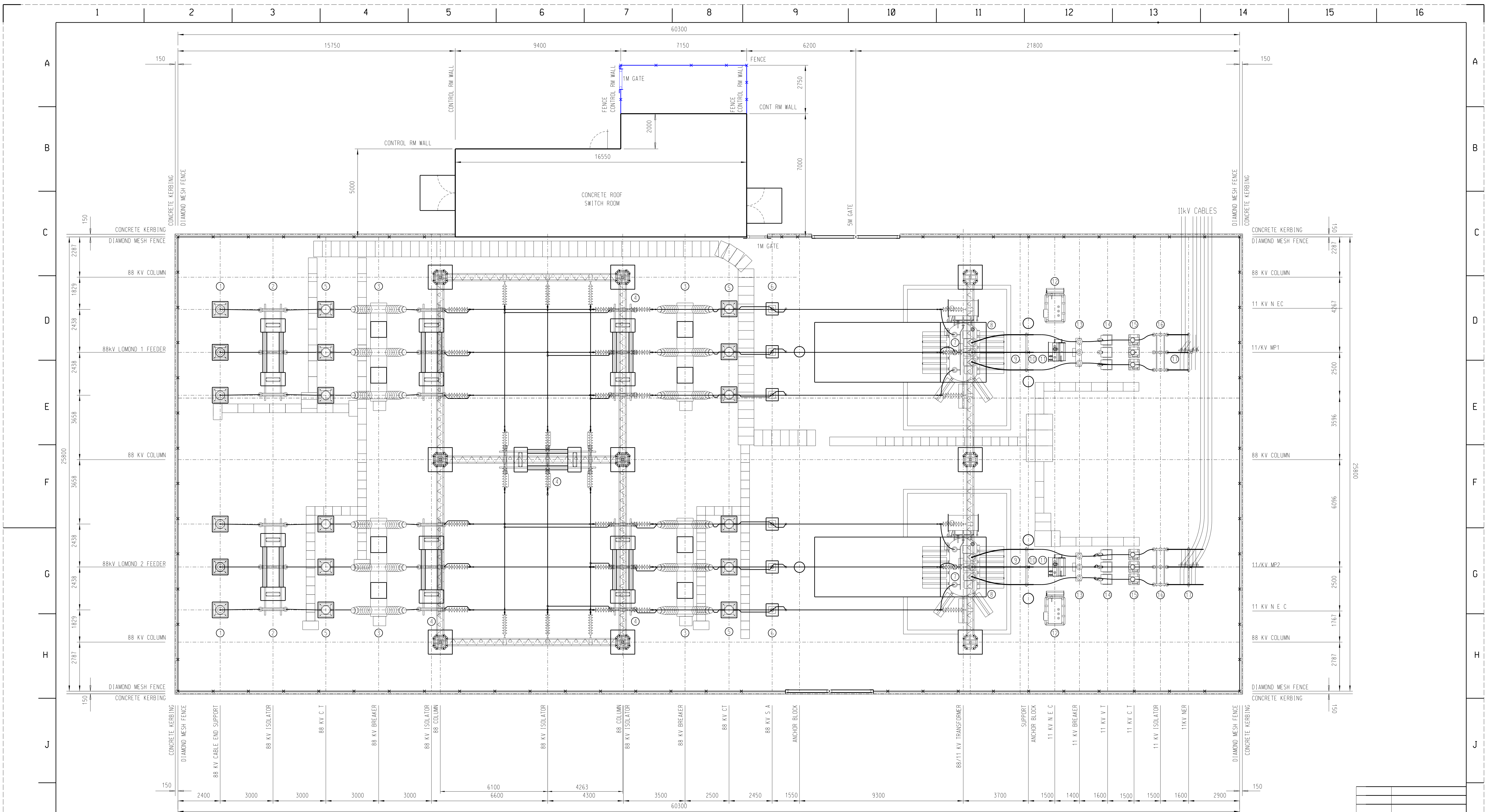

REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.
3	STATION REFURB. EXCLUDING TRFR's	S.KGW	N.LEG	F.MASANGO		
2	NEW SHEET	B.N.		T.LESETYANE	17/02/2009	AUDIT
1	REDRAWN ON CAD. SUPERCEDES D-CT/3139	C.H.	L.H.M.	L.MOFOKENG	19/09/2008	

	SAFARI RURAL		
	88/11kV SUBSTATION STATION ELECTRIC DIAGRAM		
	2-WT/928	SET	SHEET
		1	REVISION 3



SCALE : N T S  
THIS DRAWING IS THE PROPERTY OF ESKOM

DRAWN: DATE: 01/04/1996



- NOTES:
1. ALL WORK TO BE DONE IN ACCORDANCE WITH SABS1200 LATEST REVISION.
  2. ALL LEVELS TO BE SET-OUT FROM BENCH INDICATED ON SHEET 2 WITH  $\oplus$
  3. TOP OF EQUIPMENT FOUNDATIONS TO BE 150mm ABOVE TERRACE LEVEL, TOP OF FOUNDATION LEVELS.
  4. H.V. YARD TO HAVE A CLEAN, HARD, SOUND CRUSHED STONE OF A MIN 25mm NOMINAL SIZE, 100mm THICK LAYER. THIS SHOULD APPLY AFTER INSTALLATION OF ALL EQUIPMENT AND CABLES.
  5. ALL FOUNDATION H.D.BOLTS TO BE ALLIGNED FOR CASTING OF CONCRETE TO A TOLERANCE OF +2mm. FOUNDATION TOLERANCE TO BE IN ACCORDANCE WITH SABS1200 G6 GRADE II.
  6. DEPTH OF EQUIPMENT FOUNDATIONS TO BE NOT LESS THAN SHOWN ON DETAILS DRAWING AND NOT LESS THAN 300mm IN NATURAL GROUND.
  7. ALL TOP EDGES OF CONCRETE ABOVE G.L. TO HAVE 25mm CHAMFER AT 45°
  8. ALL FOUNDATIONS TO HAVE 25mm GROUT UNDER BASEPLATES ONLY. GROUT MIX 2:1. ALL H.D.BOLTS ARE SUPPLIED WITH 2 NUTS AND 2 WASHERS. GROUT MUST BE A FEATHERED FINISH TO ALLOW WATER TO RUN FREE FROM THE BASEPLATE.
  9. STRUCTURE SHALL BE ERECTED, ALIGNED, SQUARED, PLUMBED AND LEVELLED TO AN ACCURACY SPECIFIED IN SABS 1200 H 6.2.2-C12 - CLASS II.
  10. EQUIPMENT NOT FITTED WITH DIA.26mm OR DIA.38mm CONNECTION PRONGS MUST BE FITTED WITH TINNED DIA.26mm OR DIA.38mm BRASS PRONGS DRILLED AND TAPED TO APPROPRIATE SIZES.

11. ALL SURFACE AREAS OF CONDUCTOR OR CONTACT AREA OF CONNECTION CLAMPS MUST BE TREATED AS DESCRIBED PRIOR TO MAKING A CLAMPED OR CRIMPED CONNECTION.
  - a) APPLY THIN LAYER OF NON OXIDE GREASE TO SURFACE AREA.
  - b) BRUSH NON OXIDE GREASED AREA THOROUGHLY WITH A CLEAN BRUSH.
  - c) WIPE SURFACE AREA CLEAN WITH RAG AND IMMEDIATELY APPLY A FRESH LAYER OF NON OXIDE GREASE TO CLEAN SURFACE AREA.
12. ALL CLAMPS FROM THE TRFR MV BUSHING TO THE 11KV SA TO BE TAPED FIRST WITH SOME PUTTY TAPE AND THEN COVERED WITH P23 TAPE.
13. PLACE 3 x 150mm PVC PIPES 250mm C/C UNDER TRFR SLIPWAY.

ITEM	DRG NO	DESCRIPTION	QTY
1	.	88KV CSE	2
2	.	88KV ISOL.-ASEA MULTI RATIO 26,5KA 1600/1	2
3	.	88KV BKR.-SPRECHER & SCHUH HPF 511/2E 200A 4060/4500MVA 88/97KV 26.6KA	4
4	.	88KV ISOL.-ASEA NAP 1250A	5
5	.	88KV C.T.-ASEA IMBA 96 A4 MULTI RATIO 1600/1 26,5KA	12
6	.	88KV S.A's- EMP BM 78	6
7	.	88KV S.A's-ASEA XBC 60 10KA	6
8	.	11KV S.A's	6
9	.	TRFR's-20MVA 88/11KV HV=131 AMPS + LV=1050AMPS VECTOR YNd1 ASEA ON LOAD TC	2
10	.	11KV SUPPORT	2
11	.	11KV TRFR-GALILEO TYPE 10 CES 17 1250A 500MVA	2
12	.	11KV NEC-DESTA 630A FOR 10 SECS.	2
13	.	11KV BKR's	2
14	.	11KV C.E. V.T. TYPE OV11B CLASS AE - C 11000/110V 3 x 10	6
15	.	11KV C.T.'s TYPE OC 22 11/95KV MULTI RATIO 2000/1	6
16	.	11KV ISOL	2
17	.	11KV N.E.R: ASEA 300A 11KV TO EARTH	2

2-WT/928-4 R0	FOUNDATION AND EARTHING
2-WT/928-3 R0	SECTIONS
2-WT/928-2 R0	GENERAL ARRANGEMENT
2-WT/928-1 R2	STATION ELECT. DIA.
DRG NO.	REFERENCE DRAWINGS

88	FIRST ISSUE	ACM			13/07/2010	AS BUILT
REV	REVISION DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.

**Eskom**  
Distribution

AUTH: \_\_\_\_\_  
DATE: / /

CHKD: \_\_\_\_\_  
DATE: / /

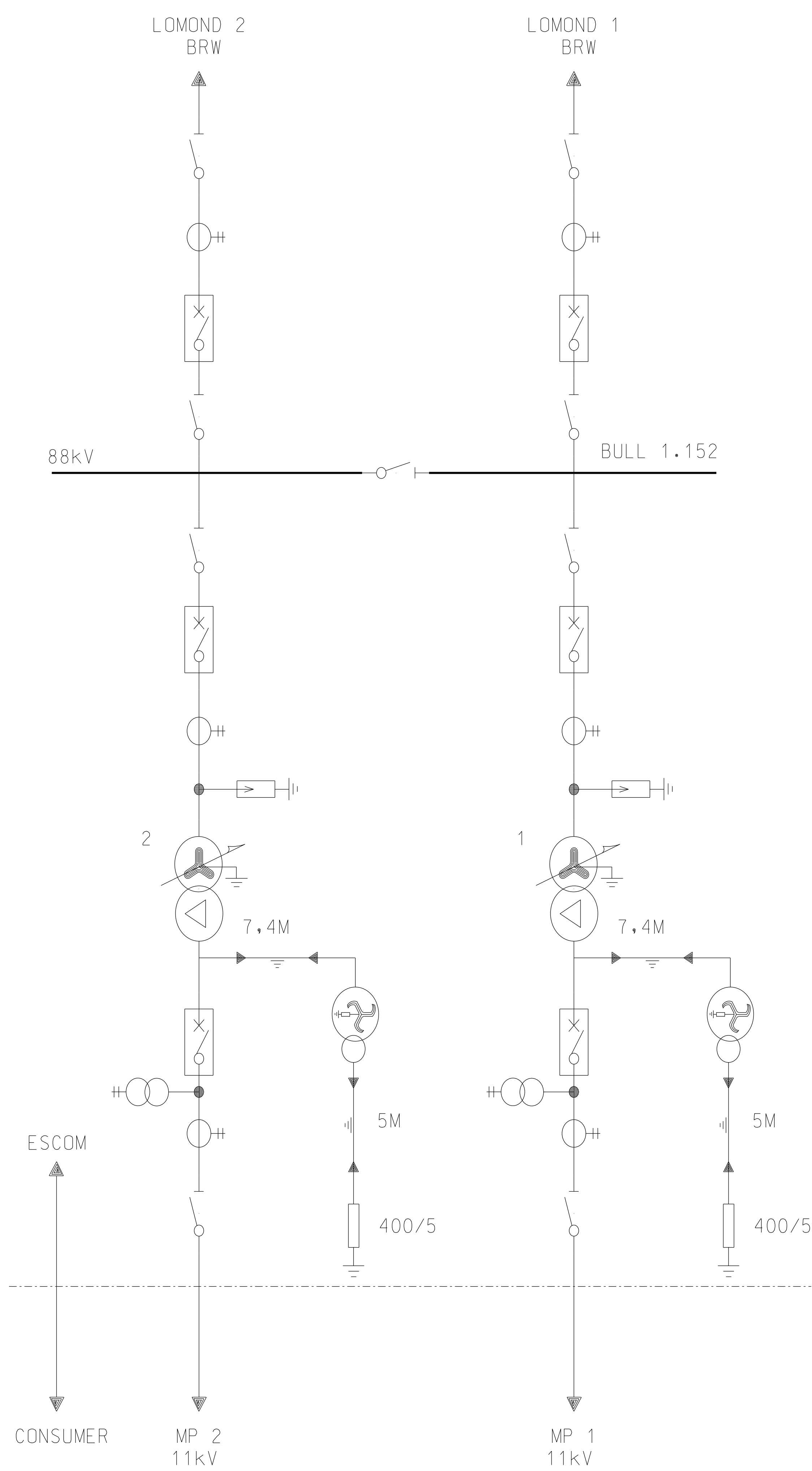
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**SAFARI RURAL**  
88/11kV SUBSTATION  
GENERAL ARRANGEMENT

2-WT/928

SET	SHEET	REVISION
4	2	0



CABLES: 500mm<sup>2</sup> OIL FILLED

LINE LENGTHS: LOMOND NO 1 2,055KM

BULL

LINKS: ASEA MULTI RATIO 26,5kA 1600/1

BREAKER: SPRECHER & SCHUH HPF 511/2E 200A  
200A 4060/4500MVA 88/97kV 26.8kA

LINKS: ASEA NAP 1250A

BREAKER: SPRECHER & SCHUH HPF 511L/2E 2000A  
4060/4500MVA 88/97kA 26.8kA

C.T: ASEA IMBA 96 A4 MULTI RATIO 1600/1 26,5kA

ARRESTERS: EMP BM 78

ARRESTERS: ASEA XBC 60 10kA

TRANSFORMERS: 20MVA 88/11KV HV=131 AMPS +  
LV = 1050 AMPS VECTOR YNd1 ASEA ON LOAD TAP CHANGE

CABLE: 120 mm<sup>2</sup> x 3C 11kV ALU NEC

CABLE: 300mm<sup>2</sup> x 1C x 11kV ALU NER

TRANSFORMER: GALILEO TYPE 10 CES 17 1250A 500MVA

NEUTRAL EARTHING COMPENSATOR 11kV DESTA  
630 A FOR 10 SECS.

C.E. V.T. TYPE OVIIB CLASS AE - C 11000/110V 3 x 10  
11kV C.T'S TYPE OC 22 11/95kV MULTI RATIO 2000/1

N.E.R: ASEA 300A 11KV TO EARTH  
METER PANNEL 1600A LINE GEAR  
ALL 11KV CONNECTION ARE BULL (38mm) ALL I


REV	DESCRIPTION	BY	CHKD	AUTH	DATE	PROJECT NO.
2	NEW SHEET	B.N.		T LESETYANE	17/02/2009	AUDIT
1	REDRAWN ON CAD.SUPERCEDES D-CT/3139	C.H.	L.H.M.	L.MOFOKENG	19/09/2008	

**Eskom**  
Distribution

AUTH: \_\_\_\_\_  
DATE: / /  
CHKD: \_\_\_\_\_  
DATE: / /  
DRAWN:   
DATE: 01/04/1996

**SAFARI RURAL**

88/11kV SUBSTATION  
STATION ELECTRIC DIAGRAM

2-WT/928

SET	SHEET	REVISION
	1	2

N

SCALE : N T S

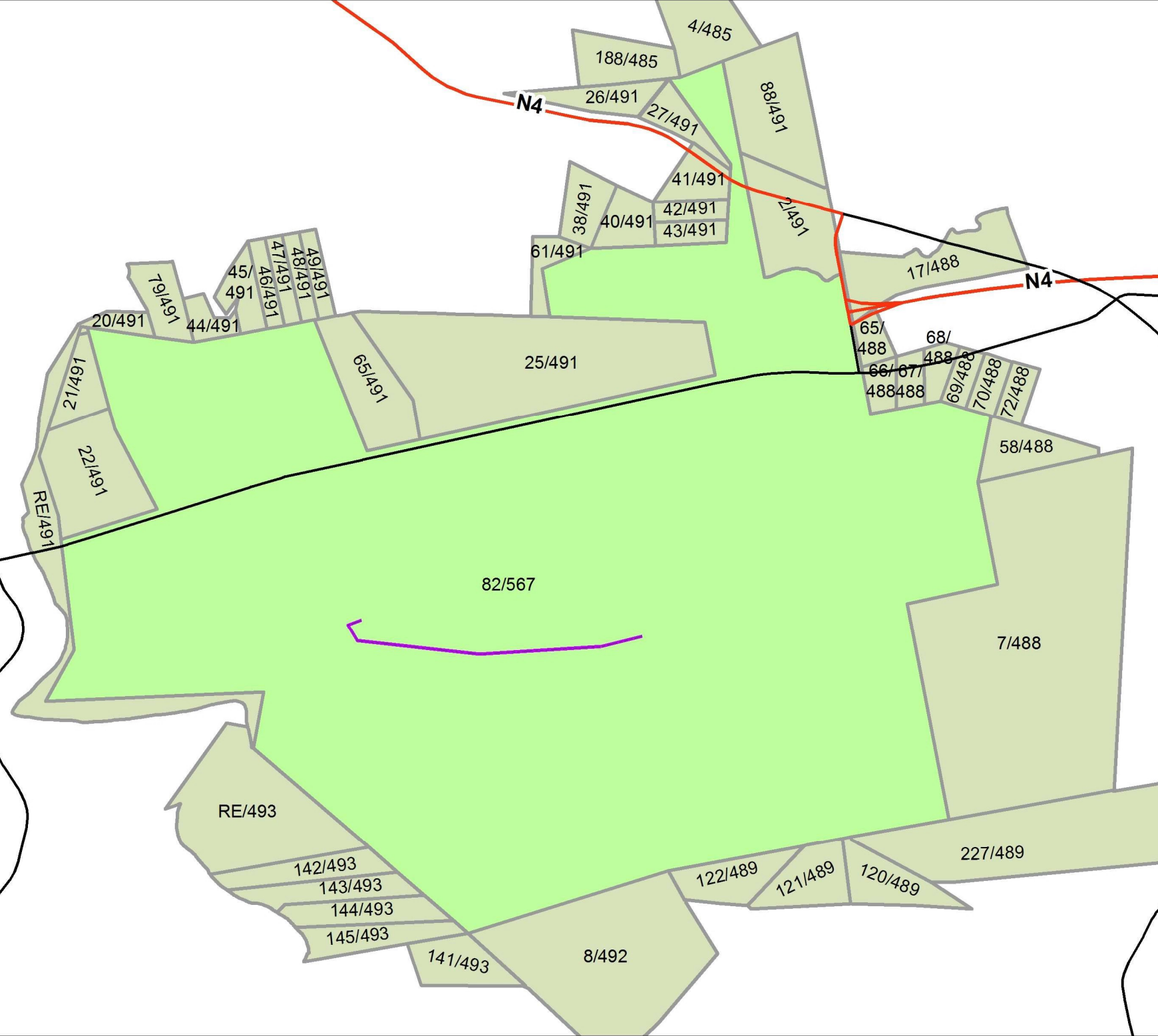
THIS DRAWING IS THE  
PROPERTY OF ESKOM

LOMOND SAFARI POWERLINE

ADJACENT PROPERTIES

Legend

- Powerline
- National Route
- Main Road
- Adjacent Properties
- Site Farm Portion









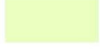
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0 1 2 km

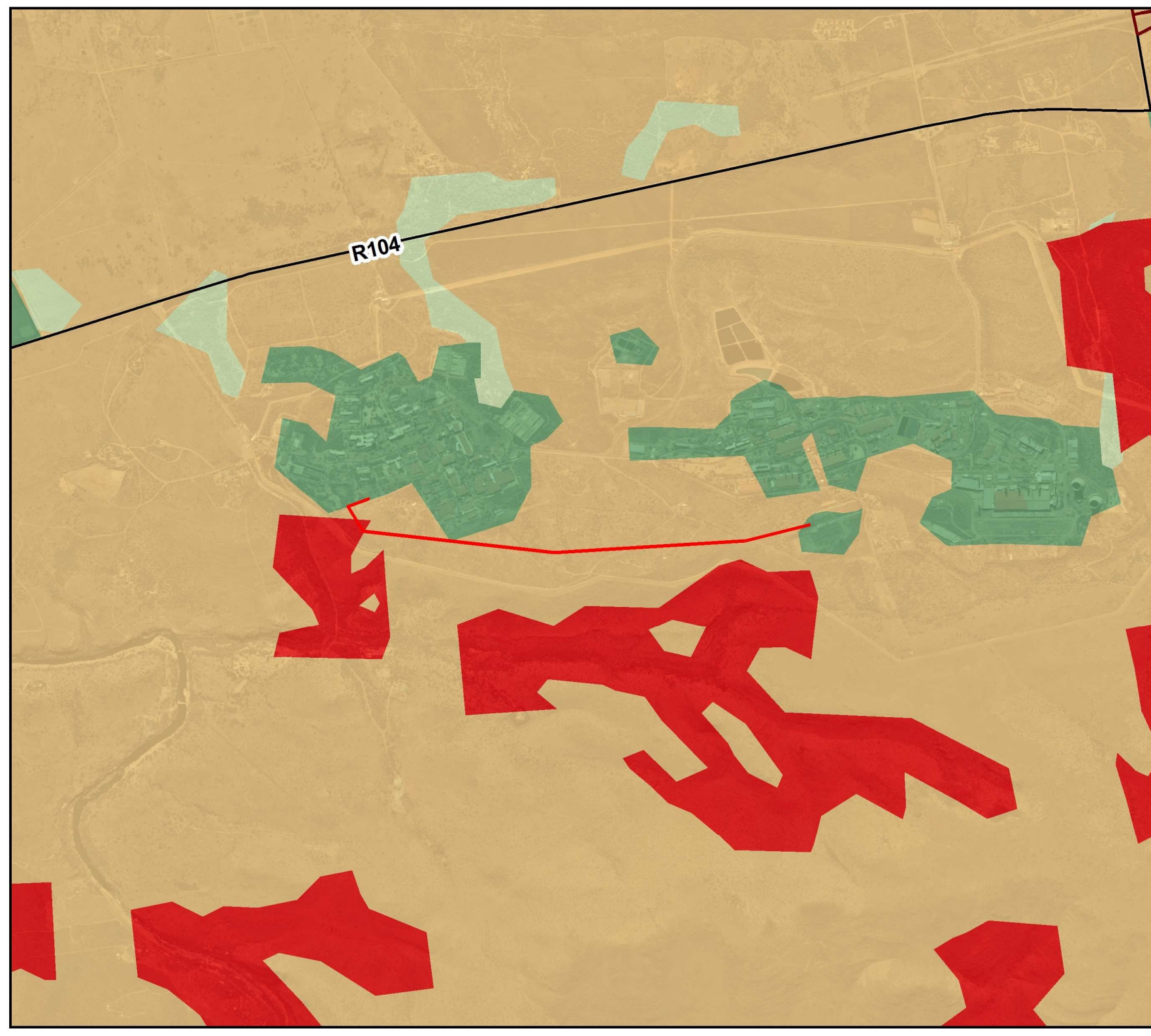
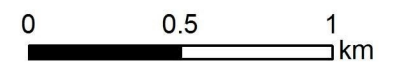
LOMOND SAFARI POWERLINE

TERRESTRIAL CBA

Legend

-  Powerline
-  National Route
-  Main Road
-  CBA1
-  CBA2
-  ESA1
-  ESA2

1:25 000



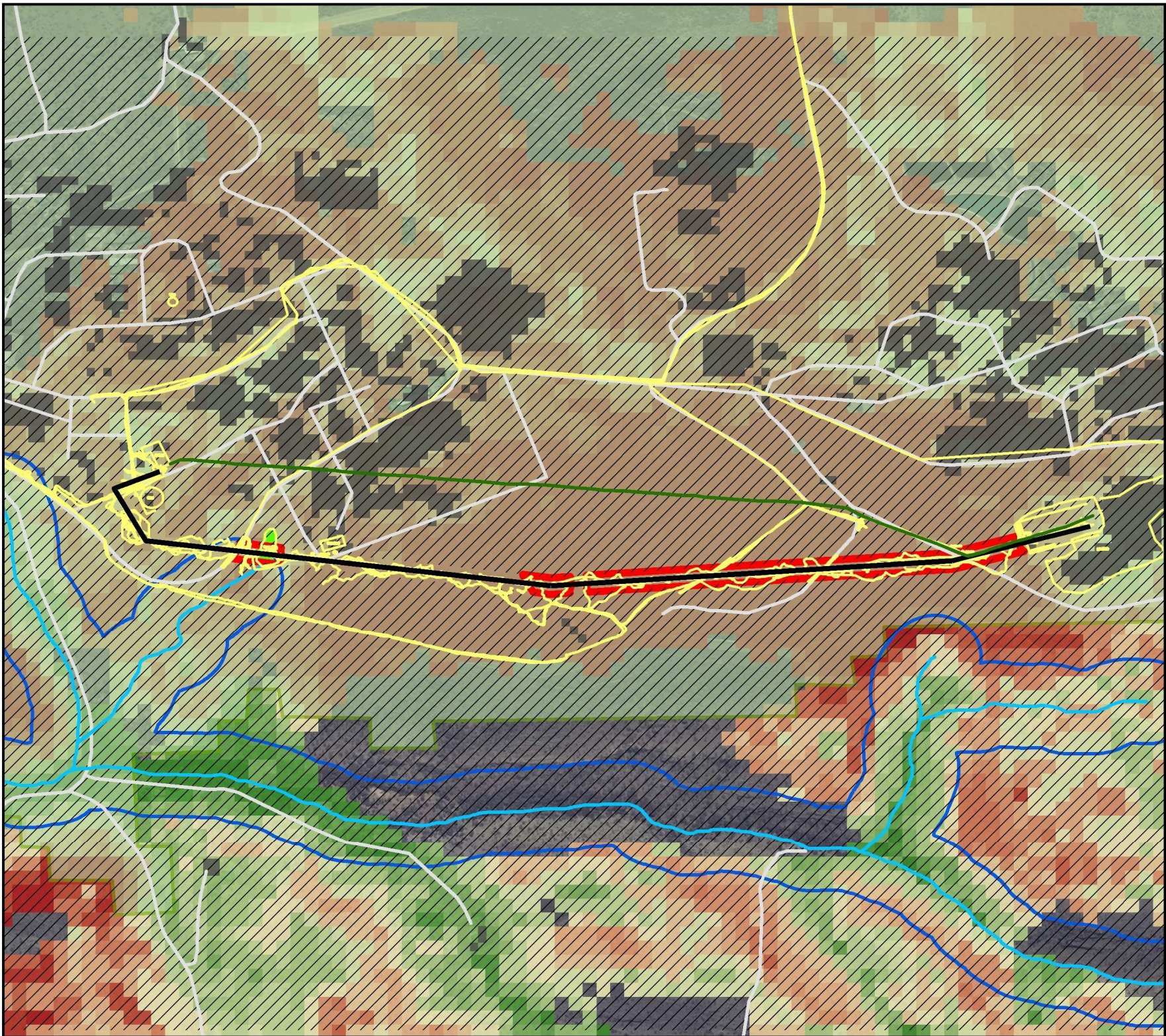


# LOMOND SAFARI POWERLINE

## COMBINED SENSITIVITY

### Legend

- Existing Underground Cable
  - Proposed Powerline
  - Specialist track (Various Specialists)
  - Channels Combined
  - Roads
  - Vegetation no-go areas
  - Medium Veg Sens
  - Channels Buffer
  - Artificial Wetland
  - Built-up
  - High Palaeontological Sens
- Visual Impact**
- High : 18.6529
  - Low : -8.88071






1:12 000

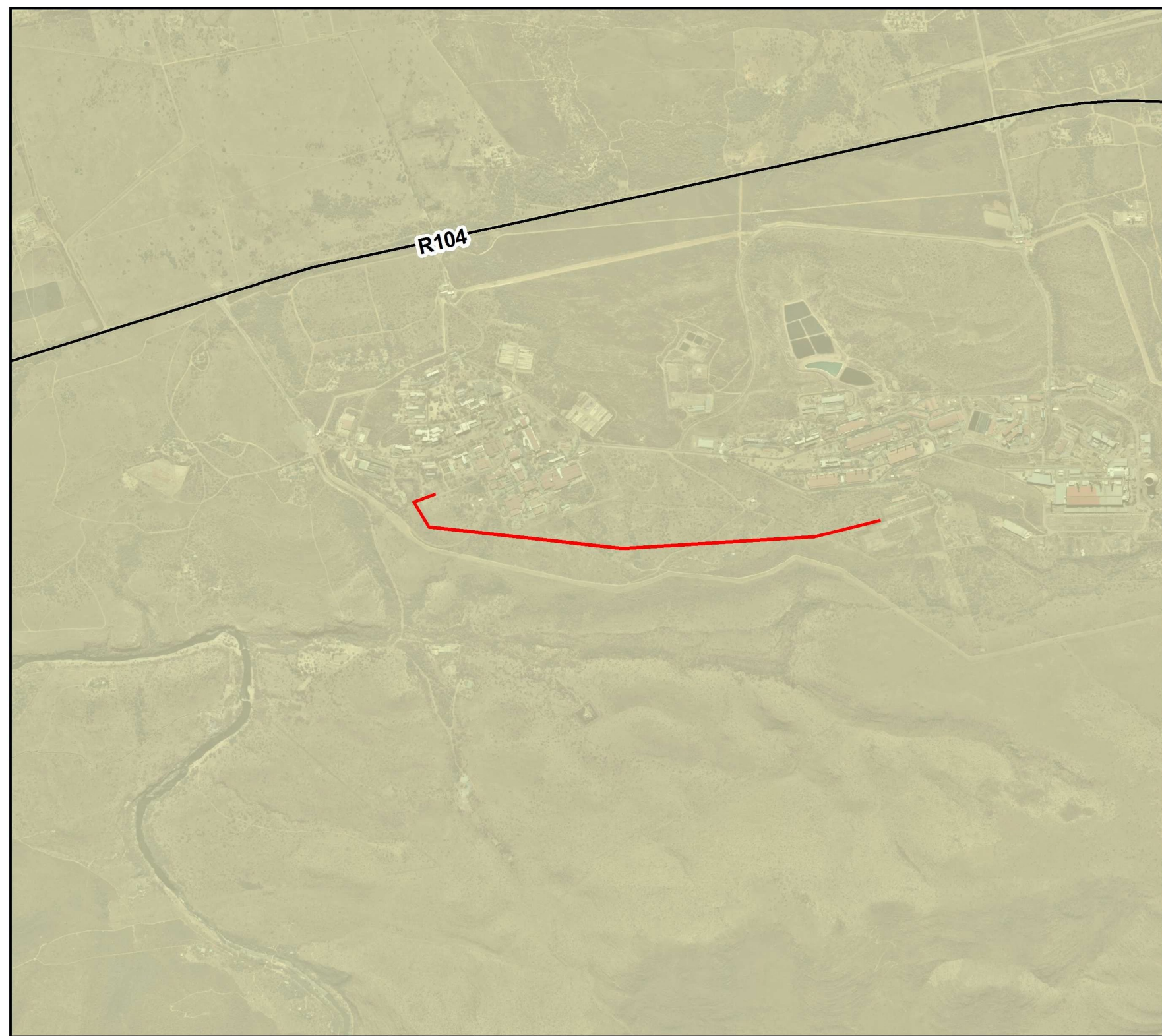


# LOMOND SAFARI POWERLINE

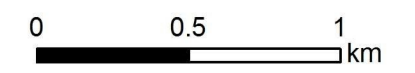
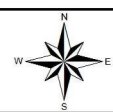
## ELECTRICITY GRID INFRASTRUCTURE

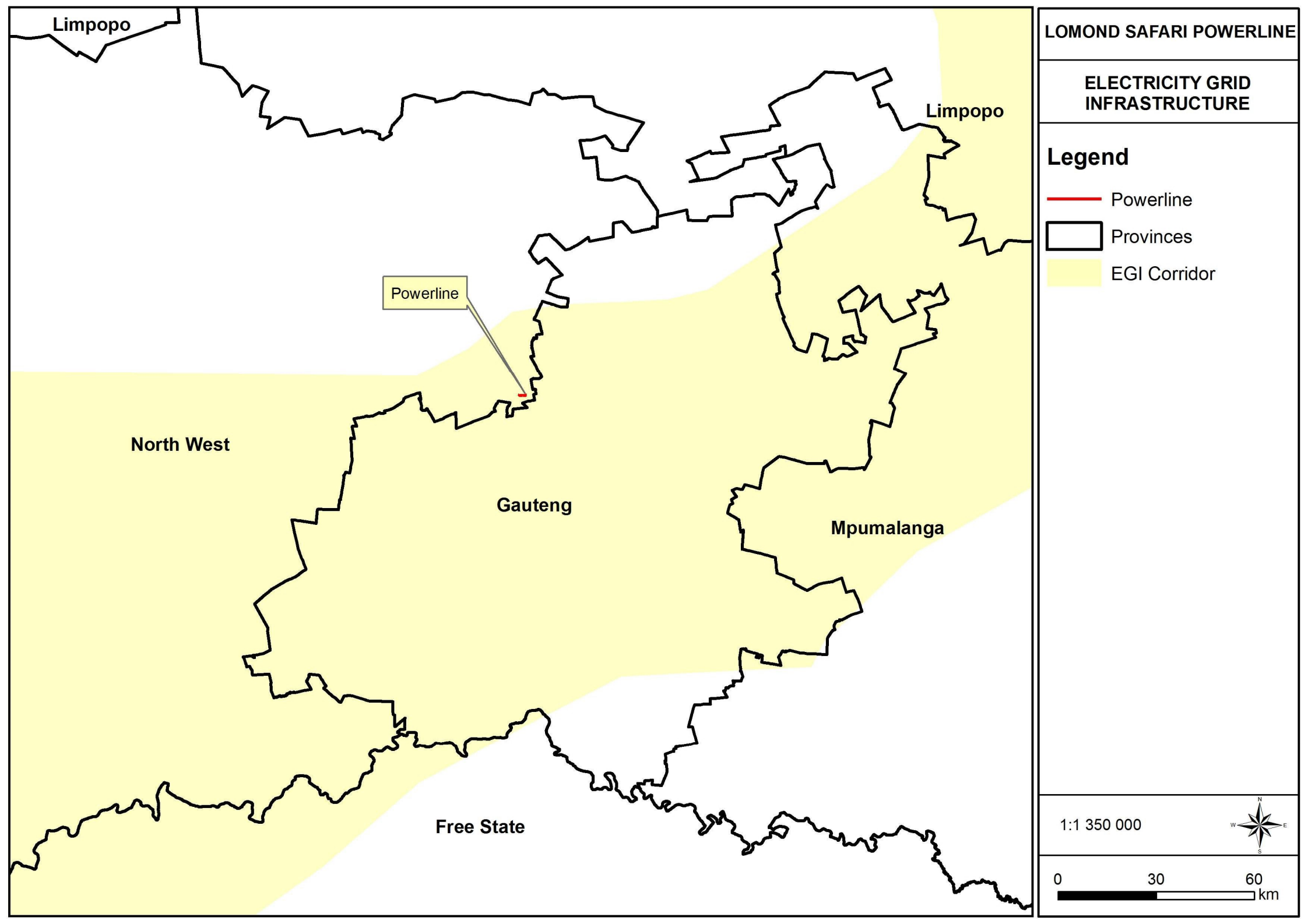
### Legend

-  Powerline
-  National Route
-  Main Road
-  EGI Corridor



1:25 000





Limpopo

Limpopo

Powerline

North West

Gauteng

Mpumalanga

Free State

LOMOND SAFARI POWERLINE

ELECTRICITY GRID  
INFRASTRUCTURE

Legend

— Powerline

□ Provinces

■ EGI Corridor

1:1 350 000



0 30 60 km

# LOMOND SAFARI POWERLINE

## ELEVATION

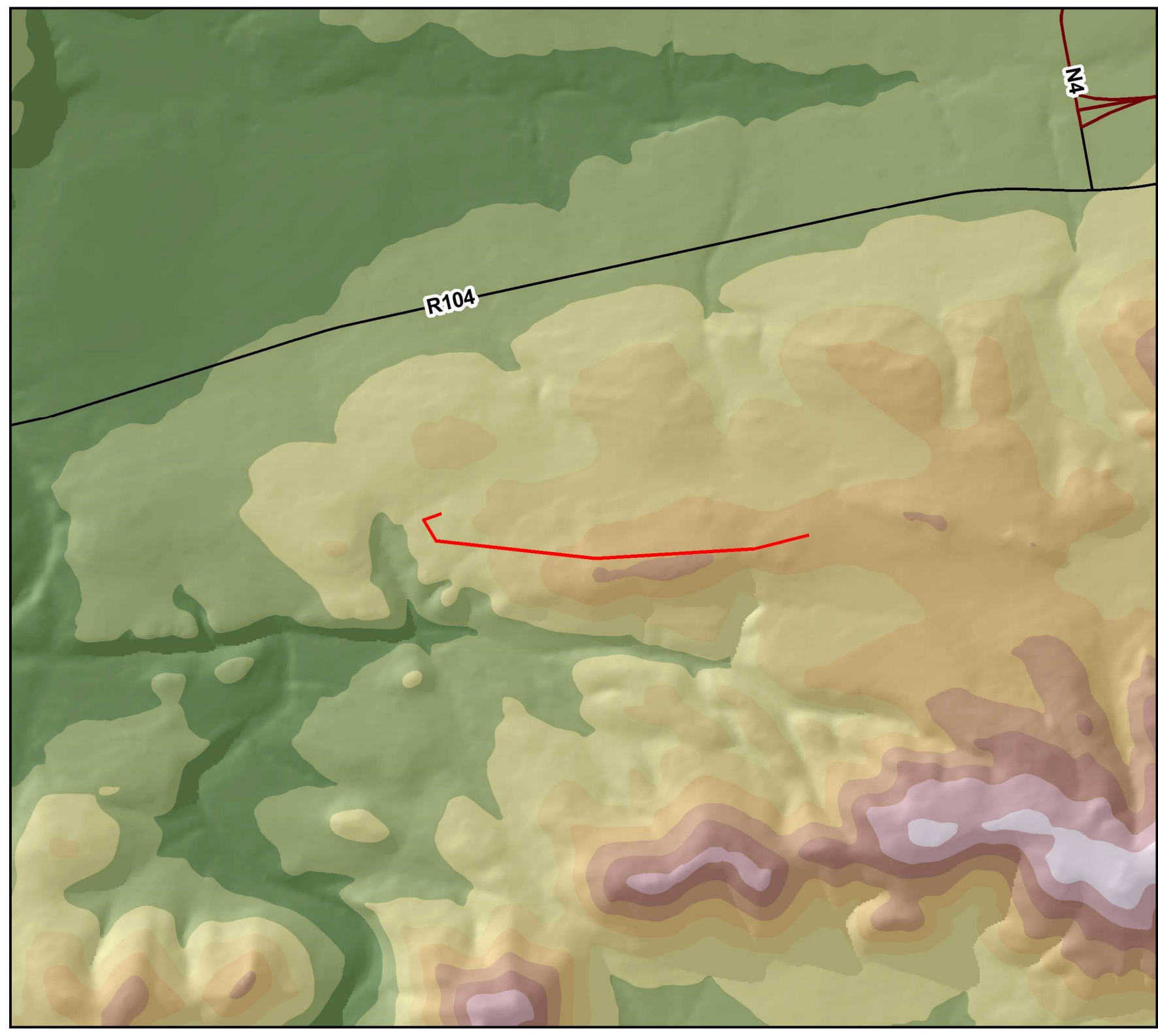
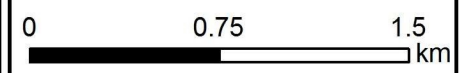
### Legend

- Powerline
- National Route
- Main Road

### Elevation

1 160 - 1 203
1 203 - 1 246
1 246 - 1 289
1 289 - 1 331
1 331 - 1 374
1 374 - 1 417
1 417 - 1 460
1 460 - 1 502
1 502 - 1 545

1:30 000

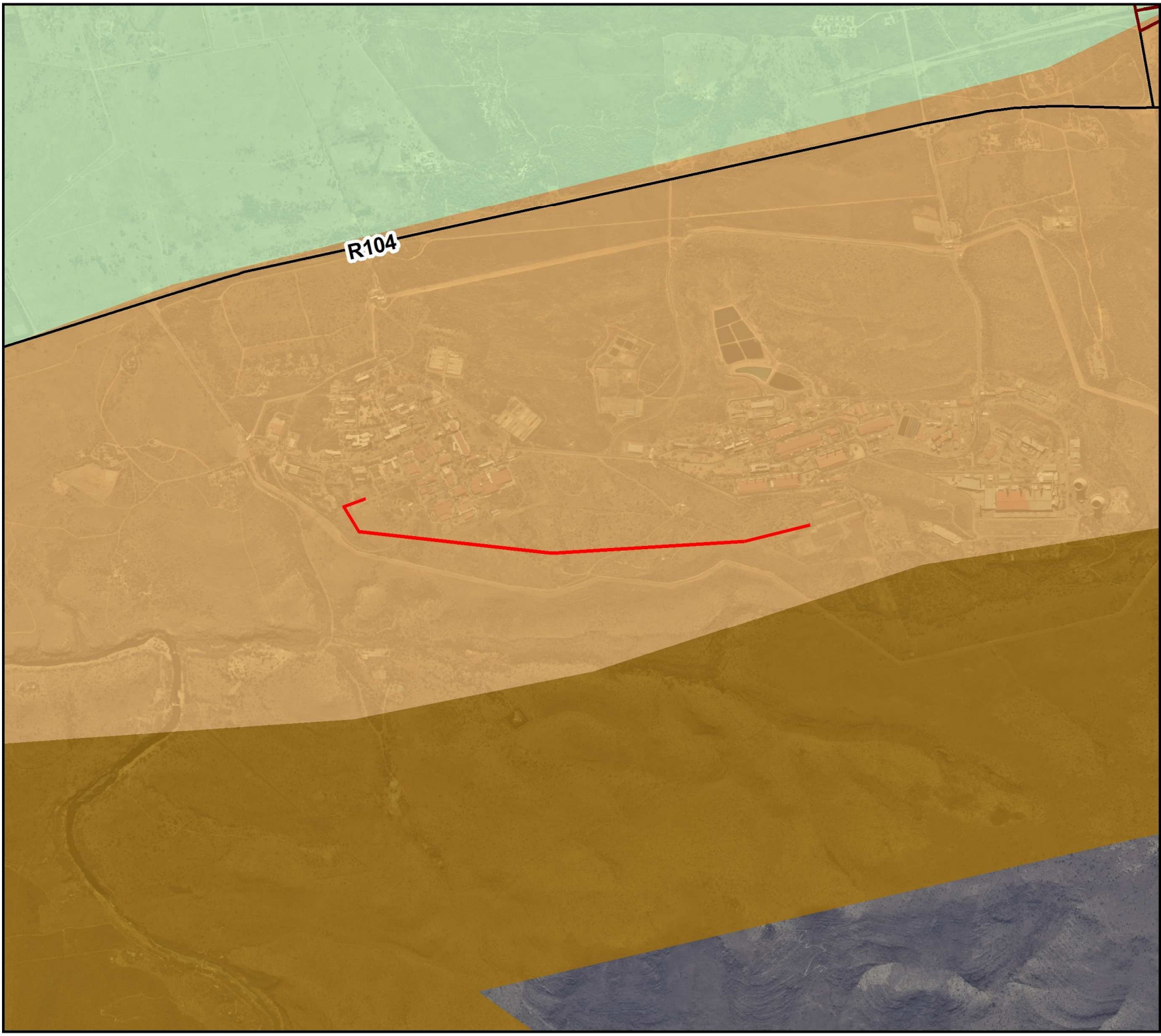


# LOMOND SAFARI POWERLINE

## GEOLOGY

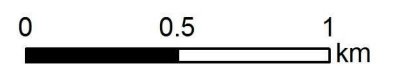
### Legend

- Powerline
- National Route
- Main Road
- ANDESITE
- DOLOMITE
- SHALE



R104








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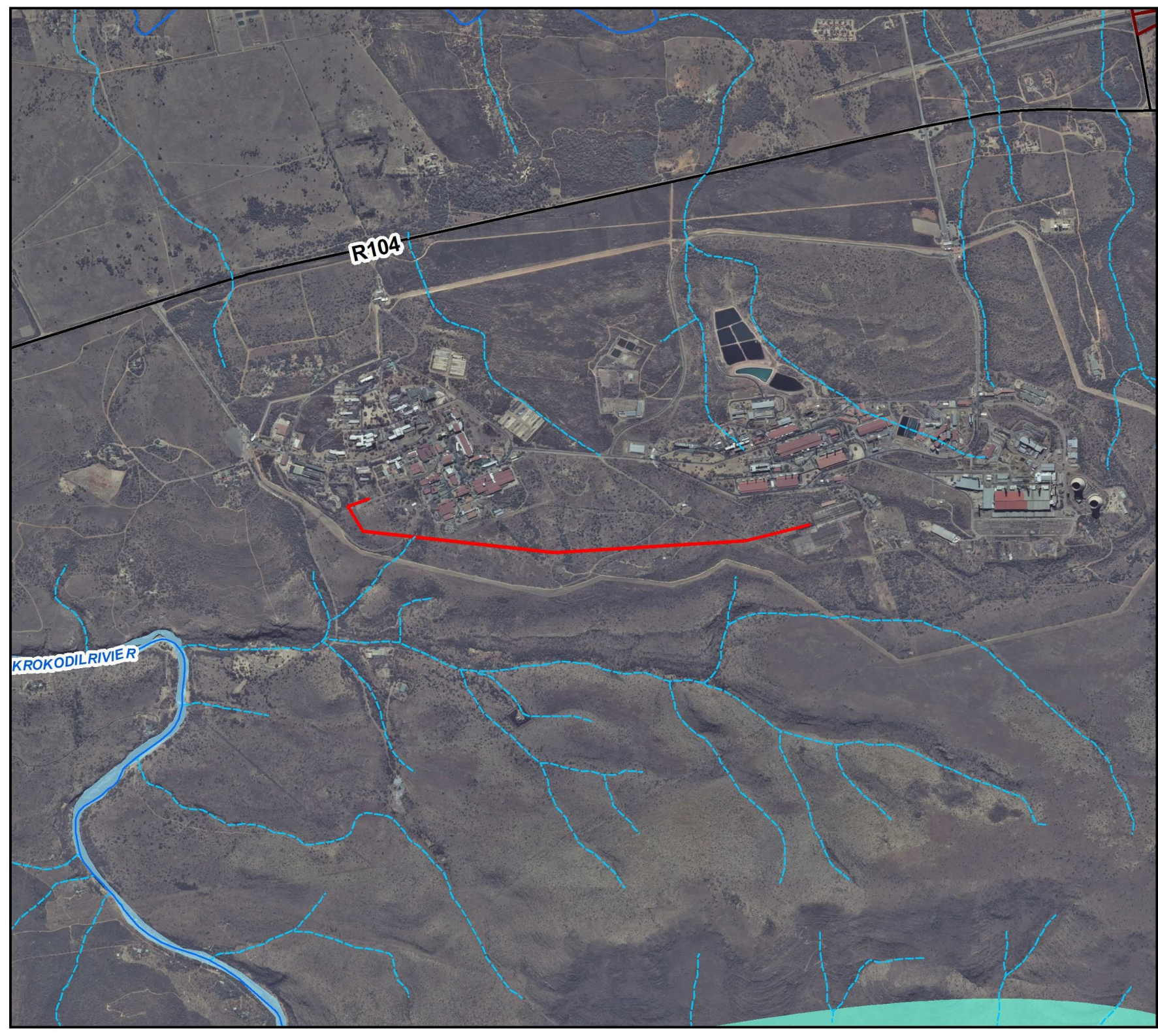


# LOMOND SAFARI POWERLINE

## HYDROLOGY

### Legend

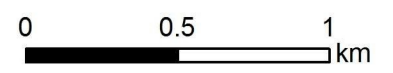
-  Non Perennial River
-  Perennial River
-  Powerline
-  National Route
-  Main Road
-  Strategic Water Source Area
-  Wetlands (NBA2018)

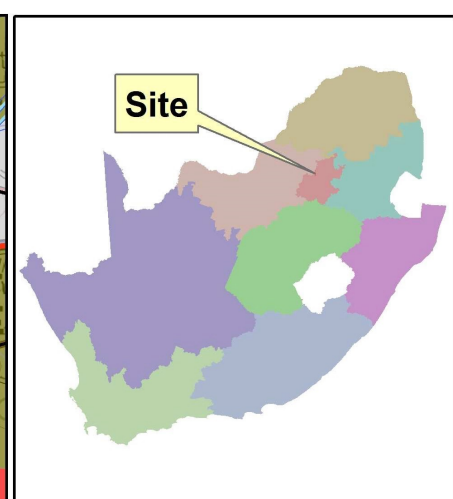
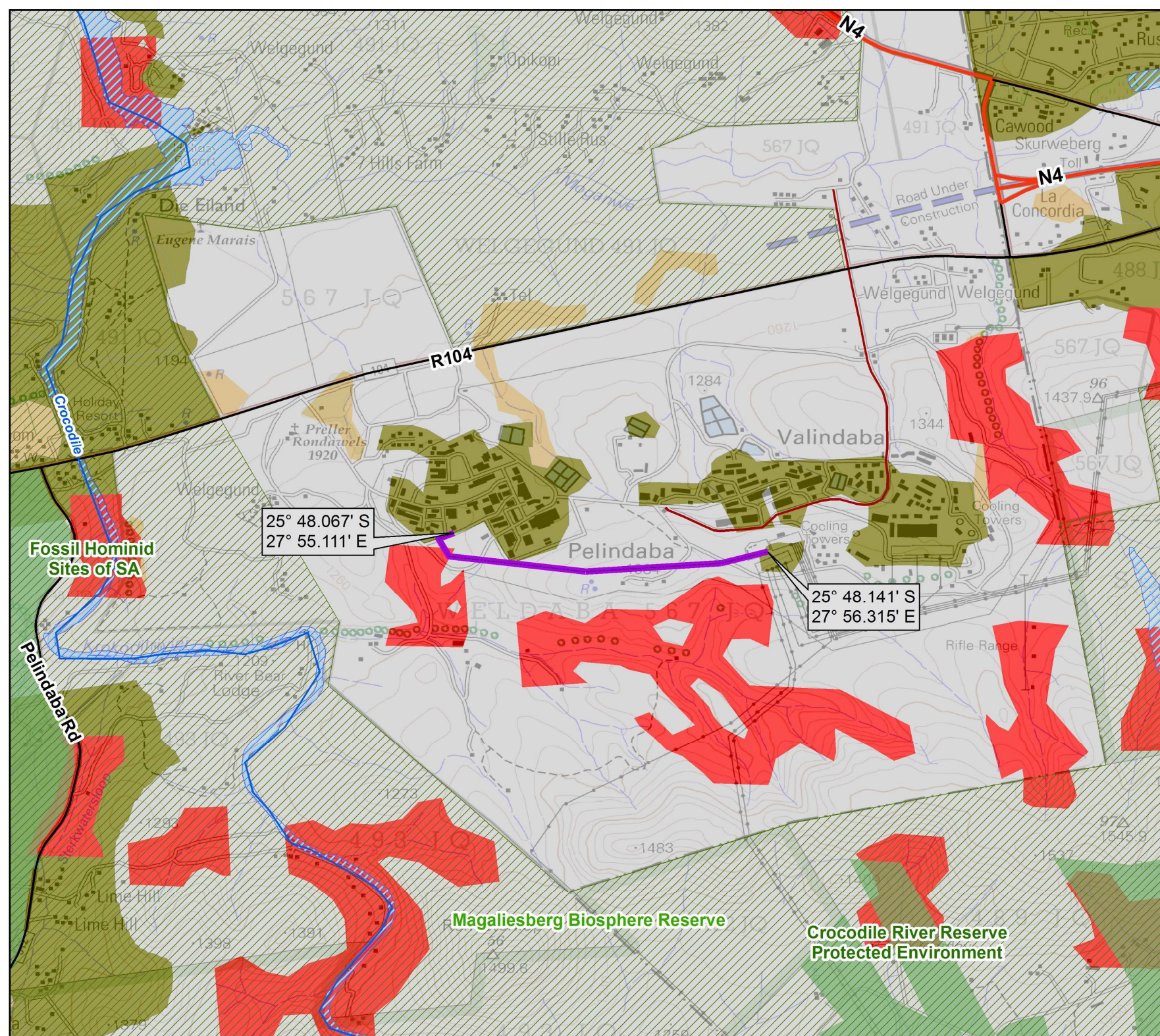


KROKODIL RIVER

R104

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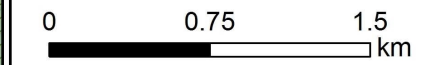


**LOMOND SAFARI POWERLINE LOCALITY MAP**

**Legend**

- River (NBA 2018)
  - Powerline
  - National Route
  - Main Road
  - Access Road
  - Wetland (NBA 2018)
  - Biosphere Transition Zone
  - Protected Area
- CBA**
- CBA1
  - CBA2
  - ESA1
  - ESA2
- Prevailing Wind : NNW

1:25 000

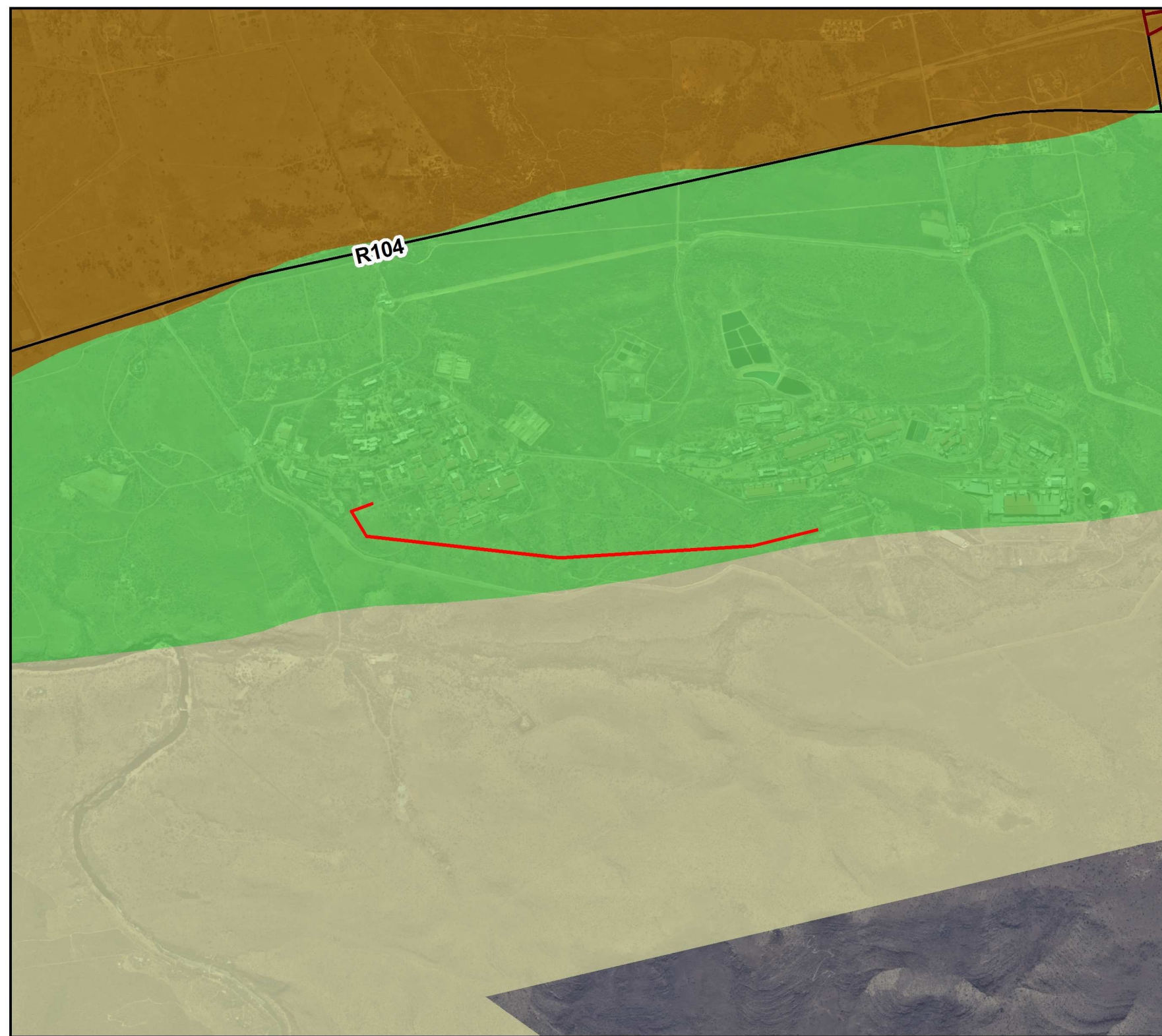


LOMOND SAFARI POWERLINE

SOIL

Legend

- Powerline
- National Route
- Main Road
- Ba7
- Ib4
- Ib6



R104

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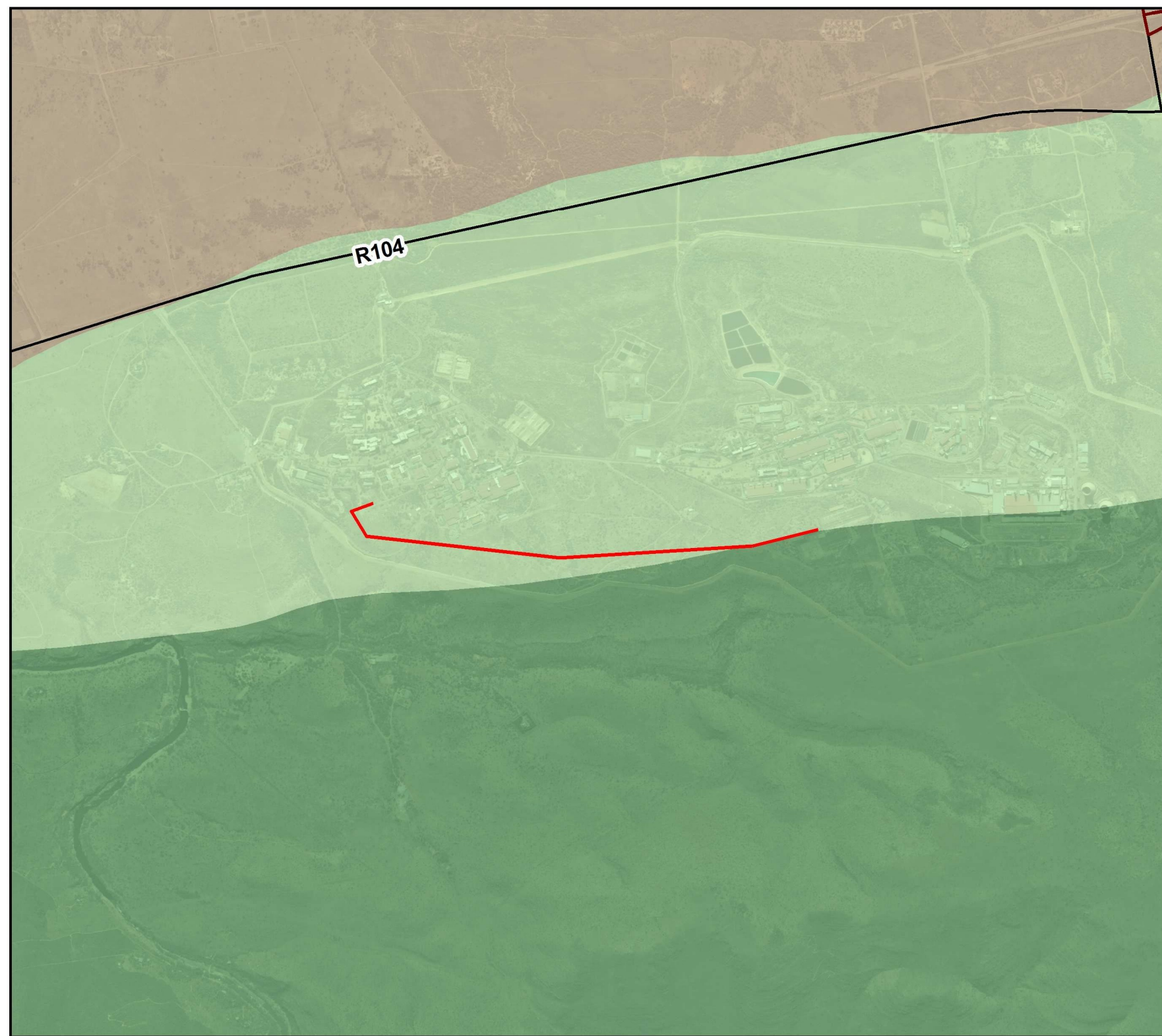


# LOMOND SAFARI POWERLINE

## VEGMAP

### Legend

-  Powerline
-  National Route
-  Main Road
-  Andesite Mountain Bushveld
-  Carletonville Dolomite Grassland
-  Gauteng Shale Mountain Bushveld



R104

1:25 000

