

ESKOM DISTRIBUTION

**PROPOSED DECOMMISSIONING OF THE EXISTING CLOCOLAN –
FICKSBURG 88 KV POWER LINE AND CONSTRUCTION OF THE
MARALLANENG SUBSTATION NEAR FICKSBURG, SETSOTO
LOCAL MUNICIPALITY, FREE STATE**

DRAFT BASIC ASSESSMENT REPORT

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EXECUTIVE SUMMARY

INTRODUCTION AND LEGAL REQUIREMENTS

SINCE RECEIVING ENVIRONMENTAL AUTHORISATION (EA) FOR THE CONSTRUCTION OF THE SECOND 88 KILO VOLT (KV) LINE IN 2014, CIRCUMSTANCES AROSE THAT REQUIRED ESKOM TO AMEND THE AUTHORISED ROUTE. FURTHER CHANGES AND ADDITIONS NOW REQUIRE ESKOM TO APPLY FOR AUTHORISATION FOLLOWING THE UNDERTAKING OF A SEPARATE BASIC ASSESSMENT PROCESS. THE ADDITIONS INCLUDE:

- ❑ THE REMOVAL OF THE EXISTING 88 KV POWER LINE BETWEEN CLOCOLAN AND FICKSBURG, TO REALIGN IT ONTO THE DOUBLE CIRCUIT STRUCTURES OF THE AUTHORISED NEW 88 KV POWER LINE
- ❑ THE CONSTRUCTION OF THE NEW 2 X 20 MEGA VOLT AMPERES (MVA) MARALLANENG 88/11 KV SUBSTATION ON THE FICKSBURG END OF THE PROPOSED NEW 88 KV POWER LINE. THE SUBSTATION IS REQUIRED TO PROVIDE SUFFICIENT CAPACITY TO TRANSFORM AND DISTRIBUTE THE ADDITIONAL POWER TO VARIOUS INDUSTRIES AND NEWLY BUILT TOWNSHIPS IN THE FICKSBURG AREA.
- ❑ THE AUTHORISATION OF ASSOCIATED POWER LINE AND SUBSTATION INFRASTRUCTURE AND ACTIVITIES OCCURRING WITHIN IDENTIFIED WETLANDS AND/OR WATERCOURSES. THE REALIGNMENT OF THE AUTHORISED POWER LINE ROUTE, ADDITIONAL INFRASTRUCTURE, AND ADDITIONAL WETLANDS IDENTIFIED DURING SUBSEQUENT DELINEATIONS HAVE REVEALED IT IS NO LONGER POSSIBLE FOR ALL INFRASTRUCTURE TO COMPLETELY AVOID WETLANDS/WATERCOURSES.

PROJECT NEED AND DESIRABILITY

THE NEED TO REMOVE THE EXISTING 88 KV POWER LINE, BETWEEN CLOCOLAN AND FICKSBURG AROSE DURING THE POST EA SERVITUDE NEGOTIATIONS WITH AFFECTED LAND OWNERS AND THE ECOLOGICAL WALK DOWN ASSESSMENT. ESKOM IS PROPOSING TO REMOVE THE EXISTING POWER LINE AND REALIGN IT ON THE DOUBLE CIRCUIT STRUCTURES OF THE PROPOSED NEW 88 KV POWER LINE IN ORDER TO REDUCE VISUAL IMPACTS AND THE PHYSICAL FOOTPRINT ON THE ENVIRONMENTAL AND AGRICULTURAL LANDS.

THE MARALLANENG SUBSTATION IS REQUIRED TO ADDRESS THE DEMAND FOR ELECTRICITY IN THE TOWNSHIPS NEAR FICKSBURG. THE SETSOTO LOCAL MUNICIPALITY HAS FORMALLY REQUESTED A NEW SUBSTATION IN ORDER TO ALLOW THE MUNICIPALITY TO IMPLEMENT NEW INFRASTRUCTURE DEVELOPMENTS, AND TO PROVIDE POWER TO ALREADY COMPLETED PROJECTS. THERE

PROJECT LOCATION

THE STUDY AREA IS LOCATED IN THE EASTERN REGION OF THE FREE STATE PROVINCE. THE PROJECT FALLS BETWEEN THE TOWNS OF CLOCOLAN AND FICKSBURG, WITHIN THE SETSOTO LOCAL MUNICIPALITY, ONE OF THE FOUR LOCAL MUNICIPALITIES WITHIN THE THABO MOFUTSANYANA DISTRICT MUNICIPALITY. THE STUDY AREA IS CHARACTERISED BY AGRICULTURAL ACTIVITIES CONSISTING PREDOMINANTLY OF LIVESTOCK, CROP AND FRESH PRODUCE FARMING, AND THE RESIDENTIAL SETTLEMENTS OF CLOCOLAN AND FICKSBURG.

PROJECT ALTERNATIVES

REGARDING THE DECOMMISSIONING OF THE EXISTING 88 KV POWER LINE; THE ONLY ALTERNATIVE ASSESSED WAS THE NO-GO ALTERNATIVE, WHERE THE EXISTING 88 KV POWER LINE WOULD REMAIN AS IS, AND THE AUTHORISED LINE BE CONSTRUCTED ALONG THE AUTHORISED ALIGNMENT. THIS ALTERNATIVE WOULD PRESENT ESKOM WITH DIFFICULTIES DURING THE SERVITUDE NEGOTIATIONS PHASE WITH THE AFFECTED LANDOWNERS. IF HOWEVER, NEGOTIATIONS ARE SUCCESSFUL THEN THIS ALTERNATIVE WILL HAVE INCREASED VISUAL IMPACTS AND INCREASED PHYSICAL FOOTPRINT ON THE NATURAL ENVIRONMENT AND AGRICULTURAL LANDS, MAKING THIS ALTERNATIVE UNDESIRABLE.

ESKOM INITIALLY IDENTIFIED THREE SITE ALTERNATIVES FOR THE CONSTRUCTION OF THE MARALLANENG SUBSTATION BASED ON FACTORS SUCH AS PROXIMITY TO THE NEW 88 KV POWER LINE AND MV SUPPLY SIDE, EXISTING ROAD ACCESS, AND ENVIRONMENTAL SENSITIVITIES. FOLLOWING SPECIALIST INVESTIGATIONS OF THE

THREE SITE ALTERNATIVES, A FOURTH OPTION WAS SELECTED BASED ON THE FINDINGS AND RECOMMENDATIONS OF THE WETLAND SPECIALIST.

THE NO-GO ALTERNATIVE WOULD MEAN THAT ESKOM WOULD NOT HAVE SUFFICIENT CAPACITY TO TRANSFORM AND DISTRIBUTE THE ADDITIONAL POWER SUPPLIED BY THE PROPOSED NEW 88 KV POWER LINE. THE SETSOTO LOCAL MUNICIPALITY WILL THEREFORE NOT BE ABLE TO IMPLEMENT NEW INFRASTRUCTURE DEVELOPMENTS OR PROVIDE ELECTRICITY TO ALREADY COMPLETED DEVELOPMENTS AND RDP HOUSES. THIS ALTERNATIVE IS NOT FEASIBLE DUE TO THE ESSENTIAL ROLE OF A SECURE ELECTRICAL SUPPLY IN THE FUNCTIONING OF LOCAL AND REGIONAL ECONOMIES AND THE OVERALL SOCIO-ECONOMIC UPLIFTMENT OF COMMUNITIES WHERE ELECTRICITY WAS PREVIOUSLY UNAVAILABLE.

CURRENT LAND USE AND ZONING

THE STUDY AREA IS DOMINATED BY AGRICULTURAL LANDS WHICH ARE MAINLY UTILISED AS GRAZING LANDS FOR LIVESTOCK NEAR THE FICKSBURG AND CLOCOLAN SUBSTATIONS. THE STUDY AREA IS LOCATED ADJACENT TO URBAN AND RESIDENTIAL AREAS.

LAND OWNERSHIP

THE PROPOSED ACTIVITIES WILL TRAVERSE A NUMBER OF PRIVATELY OWNED PROPERTIES, MOST OF WHICH ARE CURRENTLY UNDER AGRICULTURAL PRODUCTION. ESKOM HAS ENGAGED THE DIRECTLY AFFECTED LANDOWNERS WHO HAVE SIGNED THE REQUIRED OPTION AGREEMENT TO ACQUIRE A SERVITUDE. NEGOTIATIONS FOR THE LEASE OR PROCUREMENT OF THE SUBSTATION SITE WILL ONLY COMMENCE ONCE THE RELEVANT AUTHORISATIONS, LICENCES AND PERMITS ARE IN PLACE.

THE SOCIAL/SOCIO-ECONOMIC ENVIRONMENT

THE SOCIO-ECONOMIC PROFILE OF THE SETSOTO LOCAL MUNICIPALITY IS CHARACTERISED BY HIGH LEVELS OF UNEMPLOYMENT AND CRIME; HIGH RATES OF UNSKILLED LABOUR; LOW LEVELS OF LITERACY AND TERTIARY EDUCATION AND HIGH HEALTH CHALLENGES SUCH AS TUBERCULOSIS (TB) AND HUMAN IMMUNODEFICIENCY VIRUS (HIV). THE ECONOMIC PROFILE OF THE MUNICIPALITY IS DOMINATED BY AGRICULTURE, FOLLOWED BY FINANCIAL SERVICES, TRADE, GOVERNMENT SERVICES AND MANUFACTURING. MINING PLAYS A SMALL ROLE.

CULTURAL HERITAGE RESOURCES

THE STUDY AREA FALLS WITHIN A RICH REGION IN TERMS OF HISTORY. BOTH CLOCOLAN AND FICKSBURG ARE MORE THAN 100 YEARS OLD AND, THEREFORE CONTAIN A NUMBER OF BUILDINGS AND STRUCTURES OLDER THAN 60 YEARS AND THEREFORE PROTECTED BY THE NATIONAL HERITAGE ACT. THIS IS EVIDENT IN BOTH TOWNS WHERE OLD CHURCHES, RESIDENCES AND FARM HOMESTEADS EXIST.

NO FORMALLY PROTECTED HERITAGE RESOURCES, PLACES, GRAVE SITES, BUILDINGS OR STRUCTURES WILL BE AFFECTED DIRECTLY BY THE PROPOSED INFRASTRUCTURE.

THE POTENTIAL IMPACT OF THE CONSTRUCTION OF THE MARALLANENG SUBSTATION ON THE SUBTERRANEAN FOSSIL BEARING STRATA, IS HIGHLY LIKELY. THESE FOSSILS HAVE MEDIUM TO HIGH HERITAGE SIGNIFICANCE AT ALL LEVELS FOR THEIR SCIENTIFIC VALUE. IT IS THEREFORE RECOMMENDED THAT A PALAEOLOGIST WITH EXPERIENCE OF THE PERMIAN EXTINCTION ZONE BE APPOINTED TO HAVE A WATCHING BRIEF TO MONITOR EXCAVATIONS DURING ESTABLISHMENT OF THE SUBSTATION PLATFORM.

PROTECTED AREAS

NO EXISTING OR FUTURE PLANNED CONSERVATION AREAS OCCUR ALONG THE EXISTING AND PROPOSED 88 KV POWER LINE ROUTES.

CRITICAL BIODIVERSITY AREAS (CBA)

APART FROM THE EASTERN FREE STATE CLAY GRASSLAND, A VULNERABLE ECOSYSTEM,; NO CRITICAL CBA'S OR ECOLOGICAL SUPPORT AREAS (ESA'S) WERE IDENTIFIED IN THE STUDY AREA.

VEGETATION TYPES

THREE VEGETATION TYPES OCCUR WITHIN THE STUDY AREA, NAMELY; EASTERN FREE STATE CLAY GRASSLAND, EASTERN FREE STATE SANDY GRASSLAND AND BASOTHO MONTANE SHRUBLAND. THE EASTERN FREE STATE CLAY GRASSLAND IS A VULNERABLE ECOSYSTEM AS LISTED BY NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (NEMBA), 2004.

VEGETATION ON SITE

THE STUDY AREA IS CHARACTERISED BY GENTLY ROLLING GRASSLAND, WHICH RANGES FROM FLAT TO SLIGHTLY UNDULATING WITH SEVERAL SANDSTONE RIDGES TO THE EAST AND WEST OF THE STUDY AREA. THE ALTITUDE VARIES FROM 1200 M TO 1650 M. THE CURRENT HABITAT CONDITION OF THE STUDY AREA IS ESTIMATED TO BE AT 10 % NATURAL, 10 % NEAR NATURAL, 20 % DEGRADED AND 60 % TRANSFORMED. THE FOLLOWING SIX MAJOR VEGETATION COMMUNITIES WERE IDENTIFIED IN THE STUDY AREA:

- ❑ *SERIPHIMUM PLUMOSUM* – *ERAGROSTIS GUMMIFLUA* MOIST GRASSY HILL SEEPS.
- ❑ *DIOSPYROS AUSTRO-AFRICANA* – *GYMNOSPORIA BUXIFOLIA* RIDGES AND MOUNTAIN SLOPES.
- ❑ *HELICHRYSUM AUREONITENS* – *ERAGROSTIS GUMMIFLUA* MOIST CLAY GRASSLAND.
- ❑ *CREPIS HYPOCHOERIDEA* – *ERAGROSTIS PLANA* UNCHANNELLED VALLEY BOTTOM.
- ❑ *HELICHRYSUM CALLICOMUM* – *TRISTACHYA LEUCOTHRIX* SANDY ROCKY GRASSLAND.
- ❑ *LEUCOSIDEA SERICEA* – *PASSERINA MONTANA* CHANNELLED VALLEY BOTTOM.

SURFACE WATER AND RIVERS

THE STUDY AREA IS LOCATED WITHIN THE UPPER ORANGE WATER MANAGEMENT AREA, SPANNING ACROSS TWO QUATERNARY DRAINAGE REGIONS (D22G AND D22C). A NUMBER OF RIVERS FLOW THROUGH THE STUDY AREA, NAMELY THE CALEDON, MEULSPRUIT, RANTSHO AND MOPELI. THE CALEDON RIVER IS A TRIBUTARY OF THE ORANGE RIVER IN THE EASTERN FREE STATE. IT RISES IN THE DRakensBERG, ON THE LESOTHO–SOUTH AFRICAN BORDER, AND FLOWS GENERALLY SOUTHWEST, FORMING MOST OF THE BOUNDARY BETWEEN LESOTHO AND FREE STATE PROVINCE, SOUTH AFRICA. THE MEULSPRUIT AND RANTSHO RIVER ARE STREAMS AND OCCUR AT AN ESTIMATED TERRAIN ELEVATION OF 1543 M AND 1529 M ABOVE SEA LEVEL, RESPECTIVELY.

WETLANDS

THREE WETLAND TYPES WERE IDENTIFIED WITHIN THE STUDY AREA, NAMELY; CHANNELLED VALLEY BOTTOM, UNCHANNELLED VALLEY BOTTOM AND HILLSLOPE SEEPS. THE MAJORITY OF THE WETLANDS WITHIN THE STUDY AREA ARE UNCHANNELLED VALLEY BOTTOMS (ALBEIT THAT THE HILLSLOPE SEEPS ARE RELATIVELY EXTENSIVE). AS A RESULT OF MANY YEARS OF GRAZING AND POOR MANAGEMENT PRACTICES, A NUMBER OF THESE WETLANDS HAVE BECOME ERODED AND CHANNELLED.

THE CHANNELLED VALLEY BOTTOM WETLANDS RECEIVE WATER FROM SEASONAL STREAMS. THE BANKS OF THE WETLANDS ARE DOMINATED BY *ERAGROSTIS PLANA*. NEARLY ALL THE PLANT SPECIES OCCURRING IN THIS COMMUNITY BELONG TO THE SEDGE FAMILY (*CYPERACEAE*).

UNCHANNELLED VALLEY BOTTOM WETLANDS RECEIVE WATER INPUTS THAT ARE SPREAD DIFFUSELY ACROSS THE WETLAND, RESULTING IN EXTENSIVE AREAS REMAINING PERMANENTLY SATURATED. THESE PERMANENTLY SATURATED AREAS TEND TO HAVE HIGH LEVELS OF SOIL ORGANIC MATTER THAT ASSIST WITH EROSION CONTROL.

HILLSLOPE SEEP AREAS ARE OFTEN (BUT NOT ALWAYS) ASSOCIATED WITH SANDSTONE OUTCROPS AND RIDGES WHERE THEY ARE EXPOSED ON STEEP SLOPES CLOSE TO VALLEY BOTTOM WETLAND SYSTEMS. OFTEN THESE SANDSTONE RIDGES HAVE ASSOCIATED SEEP AREAS WHERE WATER EITHER ACCUMULATES ABOVE THE RIDGE, SIPHONS THROUGH THE RIDGE BY MEANS OF CRACKS, OR GET EXPELLED FROM THE SOIL

AVIFAUNA

WITHIN THE STUDY AREA, A FAIRLY WIDE DIVERSITY OF BIRD SPECIES (278 BIRD SPECIES IN TOTAL) ARE FOUND AND THESE ARE RECORDED BY THE SOUTH AFRICAN BIRD ATLAS PROJECT 1 AND PROJECT 2. OF THESE, 18 SPECIES ARE RED LIST SPECIES AND THEY INCLUDE THE BLUE CRANE, GREY-CROWNED CRANE, CAPE VULTURE, AND MELODIOUS LARK. OVERALL, THE BIRD SPECIES MOST IMPORTANT WITHIN THE STUDY AREA ARE THE BLUE CRANE, GREY-CROWNED CRANE, CAPE VULTURE AND MELODIOUS LARK.

VISUAL AND AESTHETIC CHARACTER

THE STUDY AREA IS LOCATED TO THE NORTH OF THE MALUTI MOUNTAINS IN THE SOUTHERN FREE STATE AND ITS LANDSCAPE CHARACTER IS LARGELY A PRODUCT OF GEOLOGICAL FEATURES (LANDFORMS AND DRAINAGES PATTERNS), NATURAL FEATURES (VEGETATION) AND MAN-MADE FEATURES (BUILT STRUCTURES). THE MOUNTAINS FORM A HIGH BACKDROP TO VIEWS WHEN TRAVELLING THROUGH THE STUDY AREA, PARTICULARLY IN A WEST TO EAST DIRECTION.

THE EXISTING MAIN ROAD (R26) BETWEEN CLOCOLAN AND FICKSBURG CARRIES ALL REGIONAL TRAFFIC FROM THE WESTERN AND NORTHERN FREE STATE. IT IS AN IMPORTANT REGIONAL LINK ROAD. IT ALSO FORMS A PART OF THE MALUTI ROUTE WHICH IS BEING DEVELOPED AS A TOURISM DEVELOPMENT CORRIDOR BY REGIONAL AND LOCAL TOURISM BODIES. THUS, VIEWS FROM THE ENTIRE LENGTH OF THE R26 ARE IMPORTANT, IN PARTICULAR TOWARDS THE SOUTH AND EAST OF THE STUDY AREA.

THE ROUTE FOR THE NEW 88 KV POWER LINE WAS PREFERRED, DUE TO THE DISTANCE AWAY FROM KEY VIEWPOINTS AND LANDSCAPES, SUCH AS THE MALUTI ROUTE, THE MEULSPRUIT DAM AND THE MEUL RIVER GORGE.

THE SUBSEQUENT REALIGNMENT OF THIS ROUTE AND THE PROPOSED REMOVAL OF THE EXISTING POWER LINE, IS LIKELY TO RESULT IN A REDUCTION OF VISUAL CLUTTER ASSOCIATED WITH ELECTRICAL INFRASTRUCTURE AS SEEN FROM LOCAL AND REGIONAL ROADS.

POTENTIAL SENSITIVE VISUAL RECEIVERS TO THE PROPOSED MARALLANENG SUBSTATION INCLUDE; THE R26 WHICH IS PART OF THE MALUTI ROUTE, A SCENIC TOURISM ROUTE THAT IS PROMOTED BY SA TOURISM; THE MEULSPRUIT DAM WHICH IS A LOCAL RECREATIONAL RESOURCE AND HOUSING AREAS TO THE SOUTH OF THE PROPOSED SITES.

PUBLIC PARTICIPATION PROCESS

THE PUBLIC PARTICIPATION PROCESS FOR THE PROPOSED PROJECT WAS DESIGNED TO COMPLY WITH THE REQUIREMENTS OF THE EIA REGULATIONS, 2014, AS AMENDED. NOTIFICATION OF THE PROJECT AND THE OPPORTUNITY TO PARTICIPATE IN THE BASIC ASSESSMENT PROCESS WAS ANNOUNCED ON 11TH OCTOBER 2017. BACKGROUND INFORMATION DOCUMENTS AND COMMENT SHEETS TO REGISTERED INTERESTED AND AFFECTED PARTIES (I&APS) WERE MADE AVAILABLE IN TWO LOCAL LANGUAGES, ENGLISH AND AFRIKAANS. PROJECT NOTICES WERE PUBLISHED IN TWO LOCAL ENGLISH AND AFRIKAANS NEWSPAPERS. AN SITE NOTICE, PRINTED IN BOTH ENGLISH AND AFRIKAANS WAS ERECTED AT THE PROPOSED SUBSTATION SITE ADJACENT TO THE R26. A PROJECT WEBSITE CONTAINING RELEVANT DOCUMENTATION WAS SET UP ON WWW.ACERAFRICA.CO.ZA. RECEIPT OF COMMENTS FROM I&APS AND ACKNOWLEDGEMENT OF COMMENTS WILL BE ONGOING FROM THE PROJECT ANNOUNCEMENT PHASE, UNTIL SUBMISSION OF THE FINAL BAR. NO COMMENTS HAVE BEEN RECEIVED THUS FAR.

THE DRAFT BAR WILL BE MADE AVAILABLE FOR 30 DAYS PUBLIC REVIEW BY WAY OF; WRITTEN NOTIFICATION OF ALL REGISTERED I&AP'S, NEWSPAPER ADVERTS IN TWO LANGUAGES, AND THE DISTRIBUTION OF HARD COPIES TO THE COMPETENT AND COMMENTING AUTHORITIES. THE DOCUMENTS WILL BE MADE AVAILABLE AT BOTH THE CLOCOLAN AND FICKSBURG LIBRARIES AS WELL AS ON ACER'S WEBSITE. CD COPIES OF THE DRAFT BAR & EMPR WILL BE AVAILABLE TO ALL KEY STAKEHOLDERS AND LANDOWNERS.

ASSESSMENT METHODOLOGY

ISSUES AND POTENTIAL IMPACTS OF THE PROJECT ON THE ENVIRONMENT (AND VICE VERSA) WERE IDENTIFIED BY WAY OF FIELD INVESTIGATIONS, DESKTOP STUDIES AND INTERACTION WITH I&APS. KEY ISSUES AND IMPACTS REQUIRING FURTHER INVESTIGATION WERE ADDRESSED BY SPECIALIST STUDIES AND/OR FURTHER DETAILED INPUT FROM THE ENVIRONMENTAL AND TECHNICAL TEAMS. SPECIALIST STUDIES WERE GUIDED BY THE ASSESSMENT CONVENTIONS TO ENSURE THAT ISSUES AND ASSOCIATED IMPACTS WERE CORRECTLY IDENTIFIED, UNDERSTOOD AND ADDRESSED, THEREBY ENABLING AN INTEGRATED ASSESSMENT OF THE DEVELOPMENT PROPOSAL.

SUMMARY OF KEY ISSUES AND POTENTIAL IMPACTS ASSOCIATED WITH THE PROPOSED DEVELOPMENT AND ASSESSMENT OF THE SIGNIFICANCE OF THE IDENTIFIED IMPACTS

THE NEGATIVE IMPACTS ASSOCIATED WITH THE DECOMMISSIONING OF THE EXISTING 88 KV POWER LINE DURING CONSTRUCTION AND OPERATION INCLUDE LOSS OF INDIGENOUS VEGETATION (LOW); EROSION AND LOSS OF SOIL (LOW); FAUNAL HABITAT DESTRUCTION (LOW); DISTURBANCE AND MODIFICATION OF WETLAND HABITAT (LOW); TEMPORARY DISTURBANCE OF BIRDS AND DESTRUCTION OF BIRD HABITAT (LOW); IMPACT ON FORMALLY PROTECTED HERITAGE RESOURCES (LOW); INCREASED DUST AND NOISE (LOW); DISRUPTION IN AGRICULTURAL PRODUCTION (LOW); ESTABLISHMENT AND SPREAD OF ALIEN PLANTS (LOW). POSITIVE IMPACTS INCLUDE; LOCAL EMPLOYMENT OPPORTUNITIES (MEDIUM); REDUCED FOOTPRINT ON THE NATURAL ENVIRONMENT (HIGH); REDUCED IMPACTS ON AGRICULTURAL LANDS (HIGH); IMPROVED AESTHETICS AND REDUCED VISUAL CLUTTER (HIGH).

THE NEGATIVE IMPACTS ASSOCIATED WITH THE CONSTRUCTION AND OPERATION OF THE MARALLANENG SUBSTATION INCLUDE THE LOSS OF NATURAL VEGETATION (MEDIUM); LOSS OF FAUNAL HABITAT AND CORRIDORS (LOW); EXOTIC SPECIES ENCROACHMENT (LOW); DISTURBANCE AND LOSS OF WETLAND HABITAT (LOW); CONTAMINATION OF GROUNDWATER RESOURCES (LOW); DRAINAGE PATTERN CHANGES (LOW); STORM WATER INCREASE (LOW); INCREASED SOIL SEDIMENT LOADS (LOW); COMPACTION OF SOIL (LOW); LOSS OF SOIL AND RESULTANT EROSION (LOW); DESTRUCTION OF BIRD HABITAT AND DISTURBANCE/ELECTROCUTION/COLLISION OF BIRDS (LOW); POTENTIAL IMPACT ON THE SUBTERRANEAN FOSSIL BEARING STRATA (HIGH); LOSS OF VISUAL AESTHETICS (LOW); LOSS OF POTENTIAL FUTURE BENEFITS RELATED TO TOURISM (LOW); DISRUPTION IN AGRICULTURAL PRODUCTION (LOW); INCREASED DUST (LOW); NOISE (LOW); CRIMINAL ACTIVITY (LOW); TRAFFIC (LOW); FIRE (LOW); AND RESTRICTIONS TO FUTURE DEVELOPMENT (LOW). POSITIVE IMPACTS INCLUDE; INCREASED EMPLOYMENT OPPORTUNITIES (MEDIUM); INCREASED OPPORTUNITIES FOR SMALL MEDIUM ENTERPRISES (MEDIUM); AND THE PROVISION OF ELECTRICITY TO NEW INFRASTRUCTURE DEVELOPMENTS, AND ALREADY COMPLETED PROJECTS (HIGH).

THE NEGATIVE IMPACTS ASSOCIATED WITH THE CONSTRUCTION AND OPERATION OF INFRASTRUCTURE WITHIN WETLANDS AND/OR WATERCOURSES INCLUDE; DESTRUCTION OR MODIFICATION WETLAND/RIPARIAN HABITATS (MEDIUM); DISTURBANCE OF FAUNA (MEDIUM); MODIFICATION IN LOCAL HYDROLOGICAL REGIMES (LOW); WATER QUALITY IMPACTS FROM LEAKAGES OR SPILLS OF HYDROCARBONS, CEMENT, SEWAGE; EROSION AND SEDIMENTATION, SOLID WASTE (LOW) AND THE ESTABLISHMENT AND SPREAD OF ALIEN PLANTS (LOW).

ENVIRONMENTAL IMPACT STATEMENT

A SUMMARY OF THE ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTIVITY (AFTER MITIGATION) IS PROVIDED BELOW.

THE REMOVAL OF THE EXISTING 88 KV POWER LINE, TO BE RELOCATED ON THE DOUBLE CIRCUIT STRUCTURES OF THE AUTHORISED NEW 88 KV POWER LINE WILL HAVE TEMPORARY NEGATIVE BIOPHYSICAL AND NUISANCE IMPACTS DURING THE CONSTRUCTION PHASE, HOWEVER THROUGH PROPER REINSTATEMENT OF THE DECOMMISSIONED SERVITUDE, WILL SERVE TO MINIMISE ADDITIONAL NEGATIVE VISUAL IMPACTS AND REDUCE THE FOOTPRINT OF THE OF THE EXISTING AND PROPOSED ELECTRICAL INFRASTRUCTURE ON THE NATURAL ENVIRONMENT AND AGRICULTURAL LANDS. THE NO-GO OPTION WILL HAVE IMPLICATIONS OF THE SERVITUDE NEGOTIATIONS WITH AFFECTED LANDOWNERS, AND COULD DELAY OR EVEN JEOPARDISE THE CONSTRUCTION OF THE NEW AUTHORISED 88 KV POWER LINE, INCREASING THE DISSATISFACTION WITH THE CURRENT LACK OF

ELECTRICITY AND SERVICE DELIVERY EXPERIENCED BY COMMUNITIES WITHIN THE SETSOTO LOCAL MUNICIPALITY.

THE NEGATIVE IMPACTS ANTICIPATED FOR THE CONSTRUCTION AND OPERATION OF THE SUBSTATION ARE RELATED TO THE PERMANENT LOSS OF FAUNAL HABITAT, REDUCED AESTHETICS, INCREASED STORM WATER, POTENTIAL IMPACTS ON SUBTERRANEAN FOSSIL BEARING STRATA AND COLLISIONS WITH AND ELECTROCUTION OF AVIFAUNA. THESE IMPACTS CAN BE MITIGATED TO ACCEPTABLE LEVELS THROUGH IMPLEMENTATION OF THE PROPOSED MITIGATIONS AND SPECIFICATIONS SET OUT IN THE APPROVED ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR). THE NO-GO OPTION WOULD MEAN ESKOM WOULD NOT HAVE SUFFICIENT CAPACITY TO TRANSFORM AND THEN DISTRIBUTE THE ADDITIONAL POWER, AND THEREFORE THE SETSOTO LOCAL MUNICIPALITY WOULD BE UNABLE TO PROVIDE ELECTRICITY TO NEW AND EXISTING INFRASTRUCTURE DEVELOPMENTS.

THE NEGATIVE IMPACTS ASSOCIATED WITH THE CONSTRUCTION OF POWER LINE INFRASTRUCTURE WITHIN THESE SENSITIVE AREAS INCLUDE; THE LOSS OF AND MODIFICATION OF WETLAND HABITAT, FLOW MODIFICATION, WATER QUALITY IMPACTS, EROSION AND SEDIMENTATION. THESE ACTIVITIES WILL REQUIRE WATER USE AUTHORISATION FROM THE DEPARTMENT OF WATER AND SANITATION (DWS), AND WILL THEREFORE BE SUBJECT TO EXTENSIVE MITIGATORY, REHABILITATION AND MONITORING CONDITIONS, IN ADDITION TO THE PROPOSED MITIGATIONS MADE IN THIS REPORT AND THE SPECIFICATIONS SET OUT IN THE APPROVED EMPR. THE NO-GO OPTION WOULD PREVENT THE PROPOSED AND ALREADY AUTHORISED INFRASTRUCTURE FROM BEING CONSTRUCTED, LEAVING THE STATUS QUO OF A LIMITED AND INTERRUPTED SUPPLY OF ELECTRICITY.

IT IS THE OPINION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) THAT THE PROPOSED ACTIVITIES, AS LISTED ABOVE SHOULD BE AUTHORISED, BASED ON THE FINDINGS OF THE ASSESSMENT PROCESS AND CONDITIONAL ON THE ADHERENCE TO THE EA AND THE APPROVED EMPR, BY ESKOM DURING ALL PHASES OF THE PROJECT.

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ACRONYMS AND ABBREVIATIONS

ACER	ACER (Africa) Environmental Consultants
AC/DC	Alternating Current / Direct Current
BA	Basic Assessment
BAR	Basic Assessment Report
Bear Conductor	Type of conductor used to string high voltage power lines
BME	A type of module that forms part of the tele-communication system.
CT's	Current Transformers
CT	Current Transformer
DEA	Department of Environmental Affairs
D/C	Double Circuit
DoE	Department of Energy
EAP	Environmental Assessment Practitioner
EA	Environmental Authorisation
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
Eskom	Eskom Distribution
GNR	Government Notice Regulation
ha	Hectare
Hare Conductor	Type of conductor used to string the medium voltage power lines.
HIA	Heritage Impact Assessment
HV	High Voltage
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
I/O	Input / Output
JB	Junction Box
km	Kilometre
kV	Kilo Volt
kN	Kilo Newton
LV	Low Voltage
MVA	Mega Volt Amperes
MV	Medium Voltage
m	Meter
m ³	Cubic Meter
NEMA	National Environmental Management Act
N/O	Normal Open (an isolator structure but not an isolation point)
QOS	Quality of Supply
RDP	Rural Development Programme
SAHRA	South African Heritage Resources Association
Scada	Supervisory control and data acquisition
S/C	Single Circuit
SOC	State Owned Company
VIA	Visual Impact Assessment
VIP	Very Important Persons
VT	Volt Transformer

DETAILS AND EXPERTISE OF THE EAP

ACER (Africa) Environmental Consultants (ACER) is a well-established company with wide ranging expertise in environmental management and assessment processes. ACER has twice won the IAIA's National Premium Award for excellence in environmental management and assessment. The roles of the primary assessors and report compilers are outlined in the table below, details and CVs are contained in Appendix G.

Table 1 List of primary assessors and report compilers

Name	Role
Dr R-D Heinsohn (SACNASP Registration No: 400442/04)	Internal Reviewer
Mr G Churchill (SACNASP Registration No: 116348)	Project Manager, Environmental Assessment Practitioner
Mr K Kruger	Environmental Assessment Practitioner
Ms M Straeuli	Public Participation Practitioner

ADHERANCE TO REGULATORY REQUIREMENTS

Table 2 Required content of Basic Assessment Report according to GNR 982 (as amended)

		Content of Basic Assessment report according to Appendix 1 of GNR 982 (as amended)	Reference
1		A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application must include	
	a	Details of	
		i The EAP who prepared the report and	Appendix G
		ii The expertise of the EAP, including a curriculum vitae	Appendix G
	b	The location of the activity, including	Section 1.3, Figures 1 - 10
		i The 21-digit Surveyor General code of each cadastral land parcel	Table 14
		ii Where available, the physical address and farm name	Appendix C3
		iii Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties	N/A
	c	A plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale, or if it is	Figures 1 - 10
		i A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken, or	Table 8
		ii On land where the property has not been defined, the coordinates within which the activity is to be undertaken	N/A
	d	A description of the scope of the proposed activity, including	Section 1.3, Chapter 3
		i All listed and specified activities triggered and being applied for, and	Section 1.4.1, Table 6, Figure 3
		ii A description of the activities to be undertaken including associated structures and infrastructure	Tables 4 – 6 and Section 1.4.1.
	e	A description of the policy and legislative context within which the development is proposed including	Chapter 2
		i An identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report, and	Chapter 2
		ii How the proposed activity complies with and responds to the legislation and policy context, plans guidelines, tools frameworks and instruments	Section 1.2
	f	A motivation for the need and desirability for the proposed development including the need and desirability of the captivity in the context of the preferred location	Section 1.2
	g	A motivation for the preferred site, activity and technology alternative	Chapter 4
	h	A full description of the process followed to reach the proposed preferred alternative within the site including	Chapter 4
	i Details of all the alternatives considered	Chapter 4	
	ii Details of the public participation process undertaken in terms of regulation 411 of the Regulations, including copies of the supporting documents and inputs	Chapter 6, Appendix E	
	iii A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them.	Section 6.4. Appendix E3	
	iv The environment attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural	Chapter 5	

		Content of Basic Assessment report according to Appendix 1 of GNR 982 (as amended)	Reference
		aspect.	
	v	The impact and risks identified for each alternative, including the nature significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts	Chapter 8 & 9
	aa	Can be reversed	Chapter 8 & 9
	bb	May cause irreplaceable loss of resources, and	Chapter 8 & 9
	cc	Can be avoided, managed or mitigated	Chapter 8 & 9
	iv	The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives,	Chapter 7
	vii	Positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	Chapter 8
	viii	The possible mitigation measures that could be applied and level of residual risk	Chapter 8
	ix	The outcome of the site selection matrix	Chapter 4
	x	If no alternative locations for the activity were investigated, the motivation for not considering such, and	N/A
	xi	A concluding statement indicating the preferred alternatives, including preferred location of the activity	N/A
i		A full description of the process undertaken to identify assess and rank the impacts the activity will impose on the preferred location through the life of the activity including	Chapter 7
	ii	A description of all environmental issues and risks that were identified during the environmental impact assessment process, and	Chapter 8
	ii	An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation	Chapter 9
j		An assessment of each identified potentially significant impact and risk, including	Chapter 9
	i	Cumulative impacts	Chapter 9
	ii	The nature, significance and consequences of the impacts and risk	Chapter 9
	iii	The extent and duration of the impact and risk	Chapter 9
	iv	The probability of the impact and risk occurring	Chapter 9
	v	The degree to which the impact and risk can be reversed	Chapter 9
	vi	The degree to which the impact and risk may cause irreplaceable loss of resources and	Chapter 9
	vii	The degree which the impact and risk can be avoided, managed or mitigated	Chapter 9
k		Where applicable, a summary of the findings and impact management measures identified in any specialist's report complying and Appendix 6 to these regulations and an indication as to how these findings and recommendations have been included in the final report	Chapter 8
l		An environmental impact statement which contains	
	i	A summary of the key findings of the environmental impact assessment	Chapter 10
	ii	A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers and	Appendix C2
	iii	A summary of the positive and negative impacts and risks of the proposed	Executive

		Content of Basic Assessment report according to Appendix 1 of GNR 982 (as amended)	Reference
		activity and identified alternatives	Summary, Chapter 10, and Chapter 11
	m	Based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed (impact management objectives and the) impact management outcomes for the development for the inclusion in the EMPr	Chapter 8, Appendix F
	n	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation	Chapter 11
	o	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed.	Section 7.2
	p	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	Chapter 11
	q	Where the proposed activity does not include operational aspects, period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised	N/A
	r	An undertaking under oath or affirmation by the EAP in relation to	Appendix H3
	i	The correctness of the information provided in the reports	
	ii	The inclusion of comments and inputs from stakeholders and I&APs	
	iii	The inclusion of inputs and recommendations from the specialist reports where relevant, and	
	iv	Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties, and	
	s	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts	N/A
	t	Any specific information that may be required by the competent authority, and	N/A
	u	Any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A

Table 3 Regulatory requirement for public participation in a Basic Assessment Process according to Chapter 6 of GNR 982 (as amended)

		Public Participation Process (Chapter 6 of GNR 326, 7 April 2017)	Undertaken during the Basic Assessment
41(1)		This regulation only applies in instances where adherence to the provisions of these regulations specifically required.	-
2		The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by—	-
	a	fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of—	-
		i the site where the activity to which the application or proposed application relates is or is to be undertaken; and	Appendix E1
		ii any alternative site	N/A
	b	giving written notice, in any of the manners provided for in section 47D of the Act to—	-
		i the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken	Section 6.3; Appendix E1, E2, E4 & E5
		ii owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;	Section 6.3; Appendix E1, E2, E4 & E5
		iii the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area;	Section 6.3; Appendix E5
		iv the municipality which has jurisdiction in the area	Section 6.3; Appendix E5
		v any organ of state having jurisdiction in respect of any aspect of the activity; and	Section 6.3; Appendix E5
		vi any other party as required by the competent authority;	Section 6.3
	c	placing an advertisement in—	-
		i one local newspaper; or	Section 6.3; Appendix E1
		ii any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	N/A
	d	placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii); and	Section 6.3;
	e	using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to—	Appendix E1
		i illiteracy;	
		ii disability; or	
		iii any other disadvantage.	
3		A notice, notice board or advertisement referred to in subregulations (2)	-

		Public Participation Process (Chapter 6 of GNR 326, 7 April 2017)	Undertaken during the Basic Assessment
		must—	
	a	give details of the application or proposed application which is subjected to public participation; and	Appendix E1
	b	state—	-
	i	whether basic assessment or S&EIR procedures are being applied to the application;	Appendix E1
	ii	the nature and location of the activity to which the application relates;	
	iii	where further information on the application or proposed application can be obtained; and	
	iv	the manner in which and the person to whom representations in respect of the application or proposed application may be made	
4		A notice board referred to in subregulation (2) must—	Appendix E1
	a	be of a size of at least 60cm by 42cm; and	
	b	display the required information in lettering and in a format as may be determined by the competent authority.	
5		Where public participation is conducted in terms of this regulation for an application or proposed application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d), on condition that—	Noted.
	a	such process has been preceded by a public participation process which included compliance with subregulations (2)(a), (b), (c) and (d); and	N/A
	b	written notice is given to registered interested and affected parties regarding where the—	N/A
	i	revised basic assessment report or, EMPr or closure plan, as contemplated in regulation 19(1)(b);	N/A
	ii	revised environmental impact assessment report or EMPr as contemplated in regulation 23(1)(b); or	N/A
	ii	environmental impact assessment report and EMPr as contemplated in regulation 21(2)(d); may be obtained, the manner in which and the person to whom representations on these reports or plans may be made and the date on which such representations are due.	N/A
6		When complying with this regulation, the person conducting the public participation process must ensure that—	-
	a	information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and	This Draft BAR
	b	participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.	Section 6.3; Appendix E
7		Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.	Noted.

1. INTRODUCTION

1.1 Background

The Ficksburg Municipality Substation is currently supplied from the Clocolan Substation via 1 x 88 kV Mink power line with 4 x 5 MVA 88/11 kV transformers installed. The maximum demand for the transformers was measured at 16.82 MVA in 2011 which is 84 % loading of the installed capacity. The substation is a radial substation which supplies approximately 9 000 customers. One of the draw backs of the existing electrical infrastructure configuration is that a fault on the existing 88 kV Mink power line results supply being lost to all 9000 customers.

To address this problem Eskom Holdings SOC Limited (Eskom) received Environmental Authorisation (EA) from the National Department of Environmental Affairs (DEA) in February 2014 to construct a new (second) 88 kV power line and associated infrastructure between the existing Clocolan Substation and the Ficksburg Municipal Substation.

Since receiving EA for the construction of the second 88 kV line in 2014, circumstances arose that required Eskom to deviate from the authorised route in certain areas. The realignment of the second 88 kV line was authorised following a Part 2 amendment process.

Eskom have since proposed additional infrastructure and activities in order to further secure the electrical supply. As such the scope of the original and amended EA has been changed, giving rise to listed activities in terms of the EIA Regulations, 2014, as amended, which on their own require environmental authorisation. Eskom is therefore undertaking a separate Basic Assessment process for the authorisation of these activities.

1.1.1 Decommissioning of the Existing 88 kV Power Line

Eskom is proposing to remove the existing 88 kV power line between Clocolan and Ficksburg and to realign it onto the double circuit structures of the authorised new 88 kV power line. The need to remove the existing 88 kV power line is a result of the post EA servitude negotiations with affected stakeholders and land owners and environmental sensitivities identified during the Ecological Walk Down Assessment (Texture, September 2015).

Table 4 Listing notice and activities triggered by the decommissioning of the existing 88 kV power line

Listing Notice and Activity Triggered	Reason triggered
<p>Listing Notice 1, 2014 (GN R983, as amended) Activity Number 31</p> <p>The decommissioning of existing facilities, structures or infrastructure for:</p> <p>(i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014...</p>	<p>The development of the existing 88 kV power line would trigger activities listed under Listing Notices 1 and 3, and therefore the decommissioning of such infrastructure will trigger activity 31 of Listing Notice 1.</p>

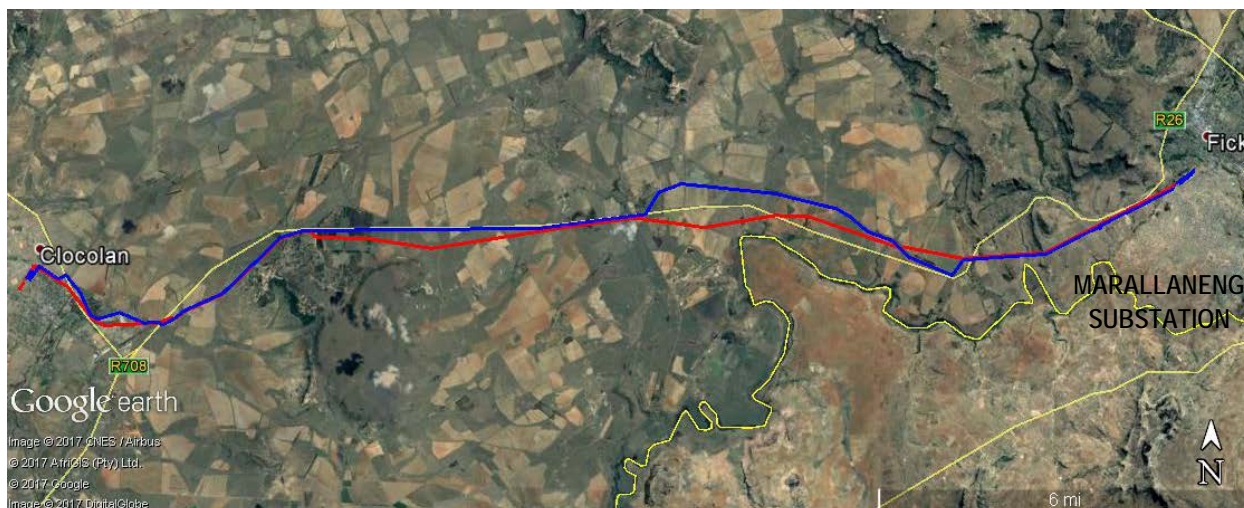


Figure 1 Locality map of Eskom’s existing (red) and authorised (blue) 88 kV power lines and the proposed Marallaneng Substation

1.1.2 Construction of the Marallaneng Substation

Eskom is proposing the construction of the new 2 x 20 MVA Marallaneng 88/11 kV Substation on the Ficksburg end of the proposed new 88 kV power line. The substation is required to provide sufficient capacity to transform and distribute the additional power supplied by the proposed new 88 kV power line to various industries and newly built townships in the Ficksburg area.

Table 5 Listing notice and activity triggered by the construction of the Marallaneng Substation

Listing Notice 1, 2014 (GN R983, as amended)	Reason triggered
Activity Number 11 The development of facilities or infrastructure for the transmission and distribution of electricity: (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts...	The proposed Marallaneng Substation falls outside of the Ficksburg urban edge and will have a capacity of more than 33 kV but less than 275 kV.

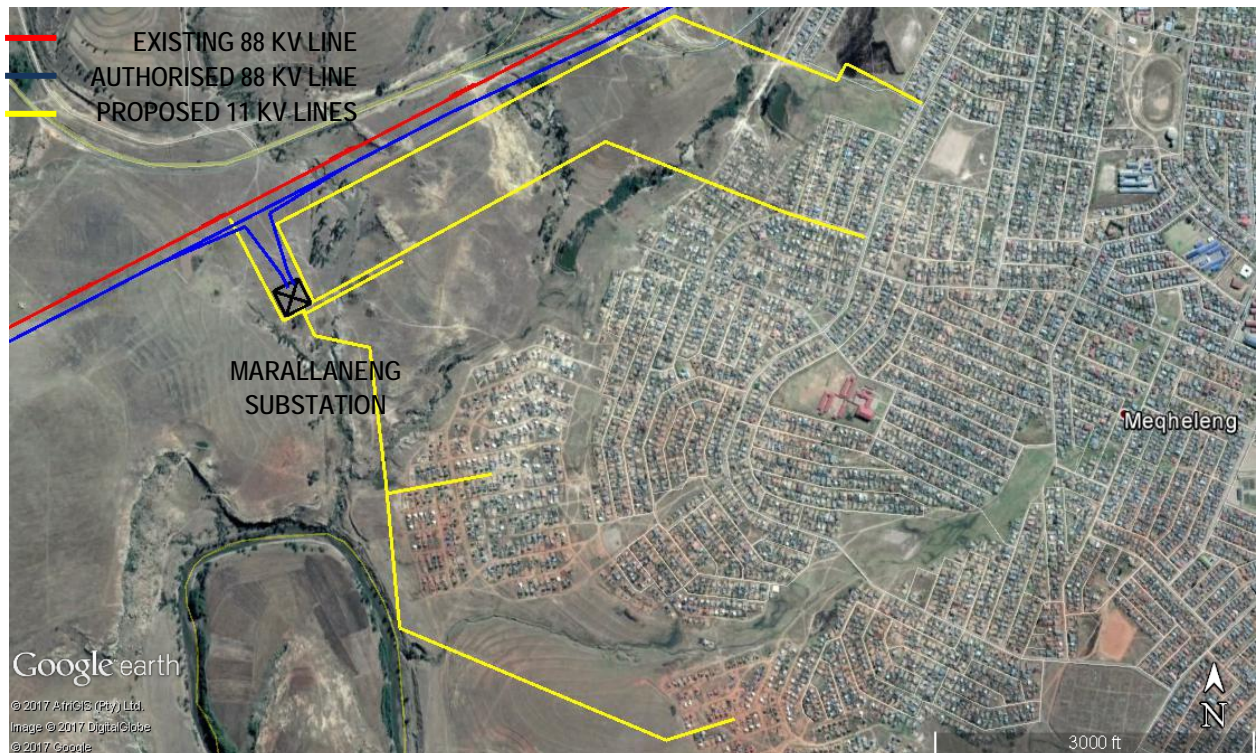


Figure 2 Proposed Marallaneng Substation and associated infrastructure

1.1.3 Authorisation of construction activities and infrastructure within wetlands and/or watercourses

Results from the wetland delineation (ACER, 2013) undertaken for the 2km corridor of the authorised 88 kV power line during the original BAR, indicated that all wetlands and riparian zones (with 30 m buffers) were less than 250 m and could therefore be spanned by the power line. Listed activities associated with construction within wetlands and watercourses in terms of the EIA Regulations at the time were thus removed, and are not authorised under the existing or amended EA's.

The realignment of the authorised power line route, additional infrastructure (loop in/out HV lines) associated with the proposed new Marallaneng Substation, and additional, larger wetlands identified during subsequent wetland delineations undertaken as part of the post EA Walk Down Assessment (Texture, 2015) and EA amendment process (Exigent, 2016) substation site selection process, have revealed it is no longer possible for all infrastructure to completely avoid wetlands/watercourses. The locations of the infrastructure in relation to wetlands are illustrated in Figures 3, 4, 5, 6, 7, 8 and 9.

Table 6 Listing notice and activity triggered by the construction of the proposed distribution infrastructure

Listing Notice 1, 2014 (GN R983, as amended)	Reason triggered
<p>Activity Number 12</p> <p>The development of:</p> <p>(ii) infrastructure or structures with a physical footprint of 100 m² or more; where such development occurs:</p> <p>(a) within a watercourse.</p> <p>(c) if no development setback exists, within 32 m of a watercourse, measured from the edge of a watercourse...</p>	<p>Certain infrastructure associated with the already authorised 88 kV power line including the loop in/out lines and medium voltage (MV) lines leaving the Marallaneng Substation will not be able to entirely avoid identified wetlands and watercourses surrounding the Substation, thereby cumulatively resulting in a footprint of more than 100 m².</p>
<p>Activity Number 19</p> <p>The infilling or depositing of any material of more than 10 m³ into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 m³ from a watercourse.</p>	<p>Certain infrastructure associated with the already authorised 88 kV power line including the loop in/out lines and medium voltage (MV) lines leaving the Marallaneng Substation will not be able to entirely avoid identified wetlands surrounding the Substation.</p>
Listing Notice 3, 2014 (GN R985, as amended)	Reason triggered
<p>Activity Number 12</p> <p>The clearance of an area of 300 m² or more of indigenous vegetation:</p> <p>(iv) within areas within a watercourse or wetland; or within 100 m from the edge of a watercourse or wetland.</p>	<p>Although mostly under agriculture and or highly degraded, the cumulative clearance of indigenous vegetation within 100 m from the edge of watercourses or wetlands required for the construction of the substation and associated infrastructure may exceed 300 m².</p>



Figure 3 Pole 13 is located 21 m from the edge of an identified wetland.



Figure 4 Poles 22, 23, 25, 26 and 27 are located inside, or within 32 m of an identified wetland / watercourse.



Figure 5 Pole 32 is located 30 m from the edge of an identified wetland.

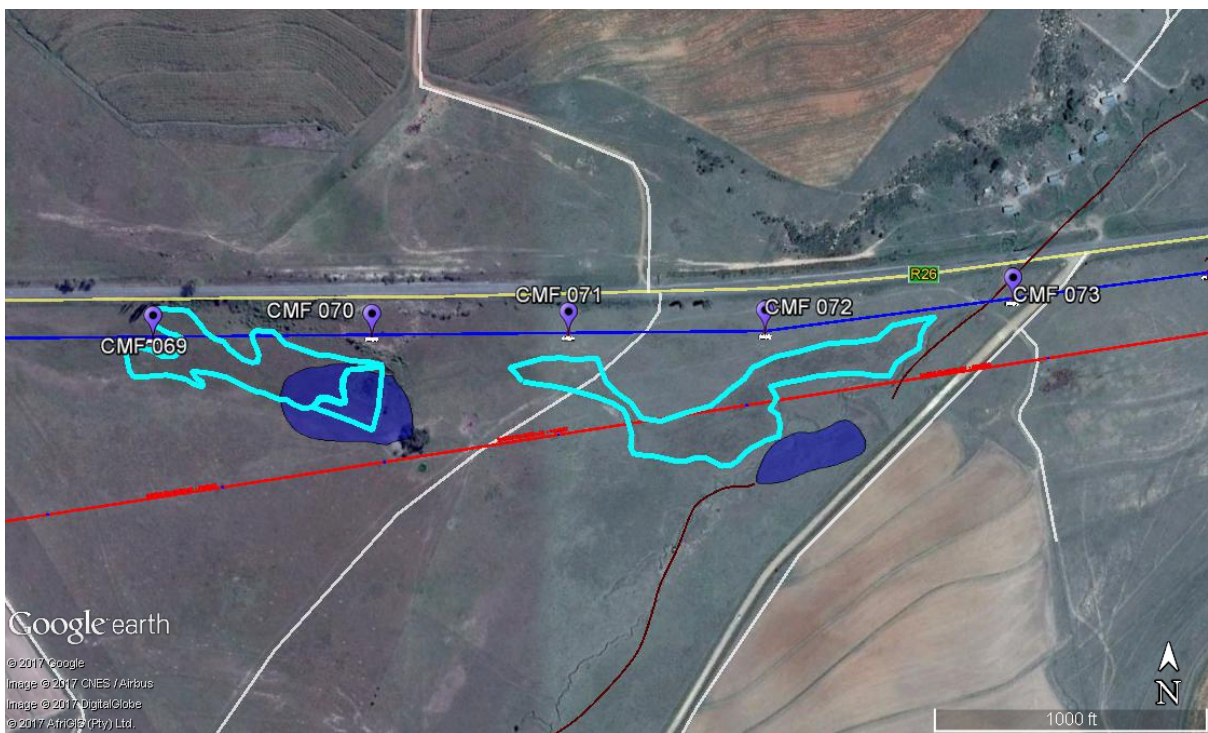


Figure 6 Poles 69, 70, 71, 72 and 73 are located within 32 m of the edge of an identified wetland / watercourse.

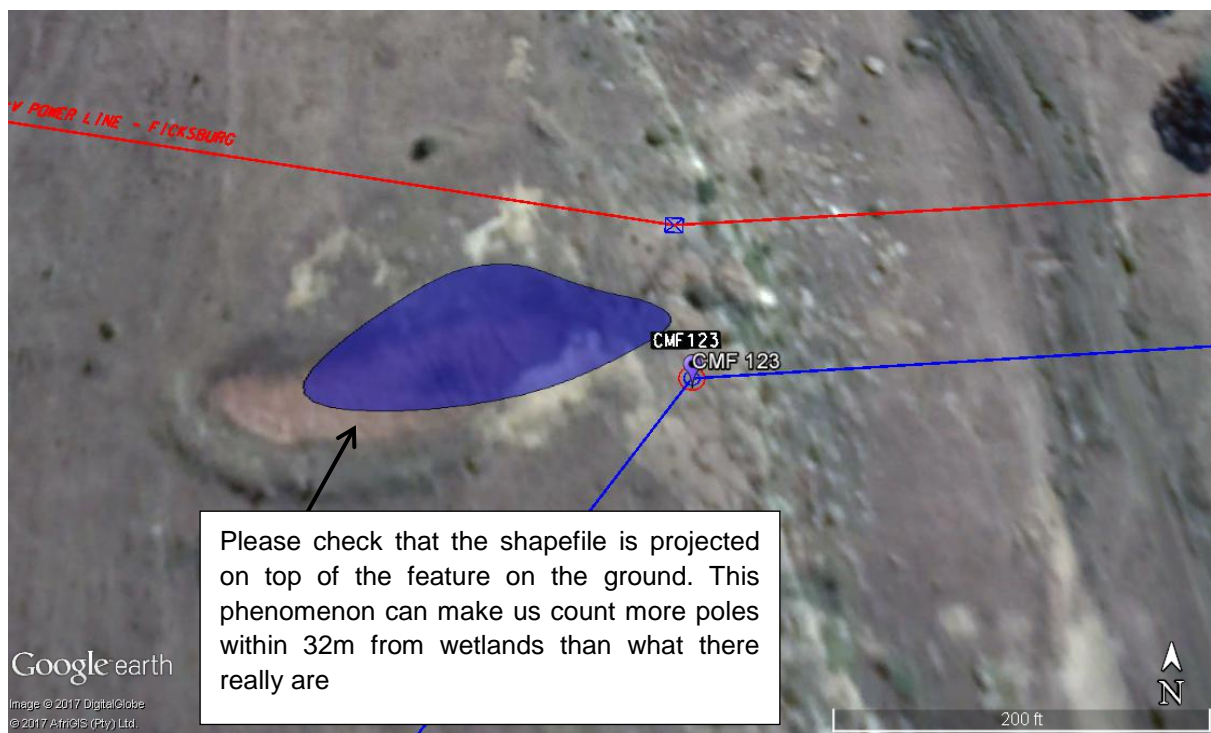


Figure 7 Pole 123 is located 12 m from the edge of an identified wetland.

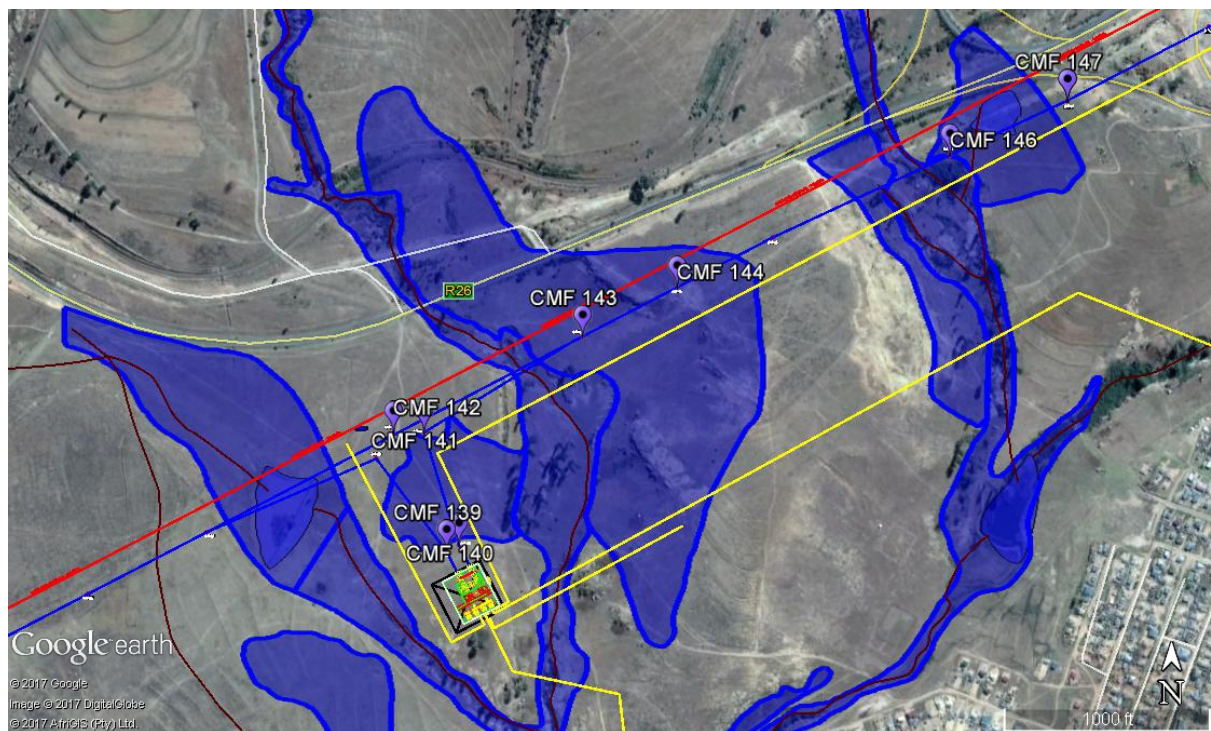


Figure 8 Poles 139, 140, 141, 142, 143, 144, 146 and 147 are located inside and / or within 32 m of the edge of an identified wetland.

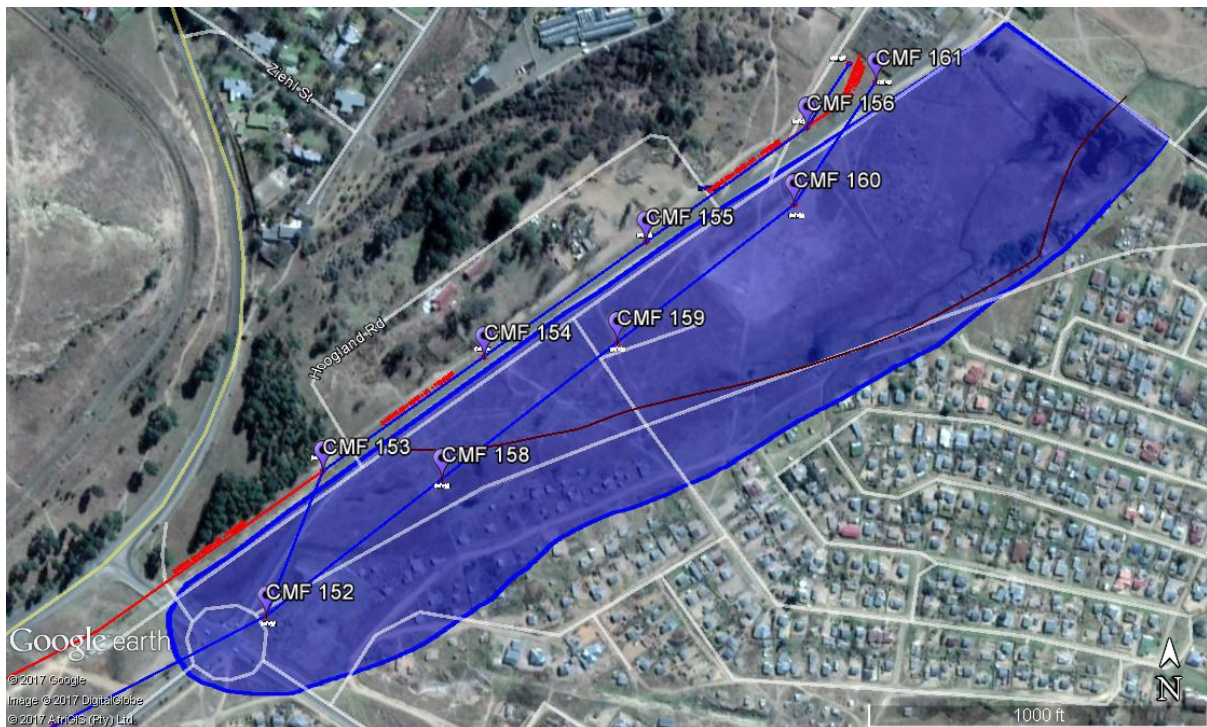


Figure 9 Poles 152, 153, 154, 155, 156, 158, 159, 160 and 161 are located inside and / or within 32 meters of an identified wetland.

1.2 Project purpose, need and desirability

1.2.1 Decommissioning of existing 88 kV power line

The need to remove the existing 88 kV power line, between Clocolan and Ficksburg arose during the post EA servitude negotiations with affected land owners and the Ecological Walk Down Assessment. Eskom is proposing to remove the existing power line and realign it on the double circuit structures of the proposed new 88 kV power line along the proposed amended route.

1.2.2 Proposed Marallaneng Substation and Associated Infrastructure

Eskom is proposing to amend the existing EA for the Clocolan - Ficksburg 88 kV power line and associated infrastructure to include the construction of the new 2 X 20 MVA Marallaneng 88/11 kV Substation towards the Ficksburg end of the new 88 kV power line. The Marallaneng Substation is required to address the following problems with the current distribution infrastructure, and to address the demand for electricity in the Sesotho Local Municipality:

1.2.2.1 Strengthening

The maximum demand for the existing transformers was measured at 16.82 MVA in 2011, 84% loading of the installed, and was already expected to reach 100% loading in 2014.

1.2.2.2 Reliability

The substation is a radial substation with approximately 9000 customers. Under N-1 contingency on the 88 kV Clocolan - Ficksburg Power Line, supply is lost to all customers, as there is no/limited backfeeding on the 11 kV network.

1.2.2.3 Summary of Needs

The Marallaneng Substation is therefore required to address the demand for electricity in the townships near Ficksburg. The Sesotho Local Municipality has formally requested (Appendix H1) the need for a new substation in order to allow the municipality to implement new infrastructure developments, and to provide power to already completed projects such as:

- ❑ Electrification of 856 RDP house stands as approved by the Department of Energy (DoE).
- ❑ Supply of electricity to the Poultry Processing Plant, Tractor Clinic, VIP Guest Houses, Chalets and Office Block. All of which are creating jobs and promote sustainable economic growth in the municipality.

1.3 Location and scope of proposed distribution infrastructure

The study area is located in the eastern region of the Free State Province. The project falls within the Sesotho Local Municipality, one of the four local municipalities within the Thabo Mofutsanyana District Municipality. The study area is characterised by agricultural activities consisting predominantly of livestock, crop and fresh produce farming, and the residential settlements of Clocolan and Ficksburg (Sesotho IDP, 2016 – 2017).

Table 7 Municipalities and wards affected by the project

Province	Free State
District Municipality	Thabo Mofutsanyana District Municipality
Local Municipality	Sesotho Local Municipality
Ward Number(s)	8, 10 and 11

Table 8 Geographical co-ordinates of the proposed infrastructure

	Latitude (S)	Longitude (E)
Existing 88 kV Power Line to be Removed		
Starting point	28°52'53.21"S	27°52'29.81"E
Middle point	28°53'39.41"S	27°42'50.16"E
End point	28°54'25.59"S	27°33'48.00"E
Authorised 88 kV Power Line to be Constructed		
Starting point	28°52'53.21"S	27°52'29.81"E
Middle point	28°53'35.39"S	27°43'6.75"E
End point	28°54'25.59"S	27°33'48.00"E
Marallaneng Substation		
Middle point of Substation	28°53'48.87"S	27°51'1.77"E
Infrastructure inside or within 32 m of identified wetlands/watercourses		
CMF 013 (21 m from edge of wetland)	28°54'31.54"S	27°34'34.74"E
CMF 022 (Inside wetland)	28°54'56.47"S	27°35'25.27"E
CMF 023 (10 m from edge of wetland)	28°54'59.31"S	27°35'32.84"E
CMF 025 (Inside wetland)	28°55'1.67"S	27°35'55.27"E
CMF 026 (Inside wetland)	28°55'4.20"S	27°35'58.42"E
CMF 027 (2 m from edge of wetland)	28°54'58.49"S	27°36'10.03"E
CMF 032 (30 m from edge of wetland)	28°54'41.20"S	27°36'47.19"E
CMF 069 (12 m from edge of wetland)	28°53'43.23"S	27°41'35.45"E
CMF 070 (30 m from edge of wetland)	28°53'43.15"S	27°41'44.49"E
CMF 071 (28 m from edge of wetland)	28°53'43.08"S	27°41'52.61"E
CMF 072 (30 m from edge of wetland)	28°53'43.02"S	27°42'0.73"E
CMF 073 (30 m from edge of wetland)	28°53'41.83"S	27°42'10.98"E
CMF 123 (12 m from edge of wetland)	28°54'9.36"S	27°48'47.17"E
CMF 139 (10 m from edge of wetland)	28°53'46.71"S	27°51'0.58"E
CMF 140 (10 m from edge of wetland)	28°53'46.41"S	27°51'1.24"E
CMF 141 (7 m from edge of wetland)	28°53'41.02"S	27°50'59.33"E
CMF 142 (15 m from edge of wetland)	28°53'41.03"S	27°50'57.66"E
CMF 143 (Inside wetland)	28°53'36.44"S	27°51'8.01"E
CMF 144 (Inside wetland)	28°53'34.09"S	27°51'13.19"E
CMF 146 (Inside wetland)	28°53'27.76"S	27°51'28.12"E
CMF 147 (25 m from edge of wetland)	28°53'25.15"S	27°51'34.56"E
CMF 152 (Inside wetland)	28°53'9.38"S	27°52'9.16"E
CMF 153 (11 m from edge of wetland)	28°53'5.16"S	27°52'11.05"E
CMF 154 (10 m from edge of wetland)	28°53'1.82"S	27°52'16.41"E
CMF 155 (12 m from edge of wetland)	28°52'58.46"S	27°52'21.81"E
CMF 156 (20 m from edge of wetland)	28°52'55.12"S	27°52'27.16"E
CMF 158 (Inside wetland)	28°53'5.39"S	27°52'15.00"E
CMF 159 (Inside wetland)	28°53'1.40"S	27°52'20.84"E
CMF 160 (Inside wetland)	28°52'57.38"S	27°52'26.73"E
CMF 161 (22 m from edge of wetland)	28°52'53.80"S	27°52'29.45"E

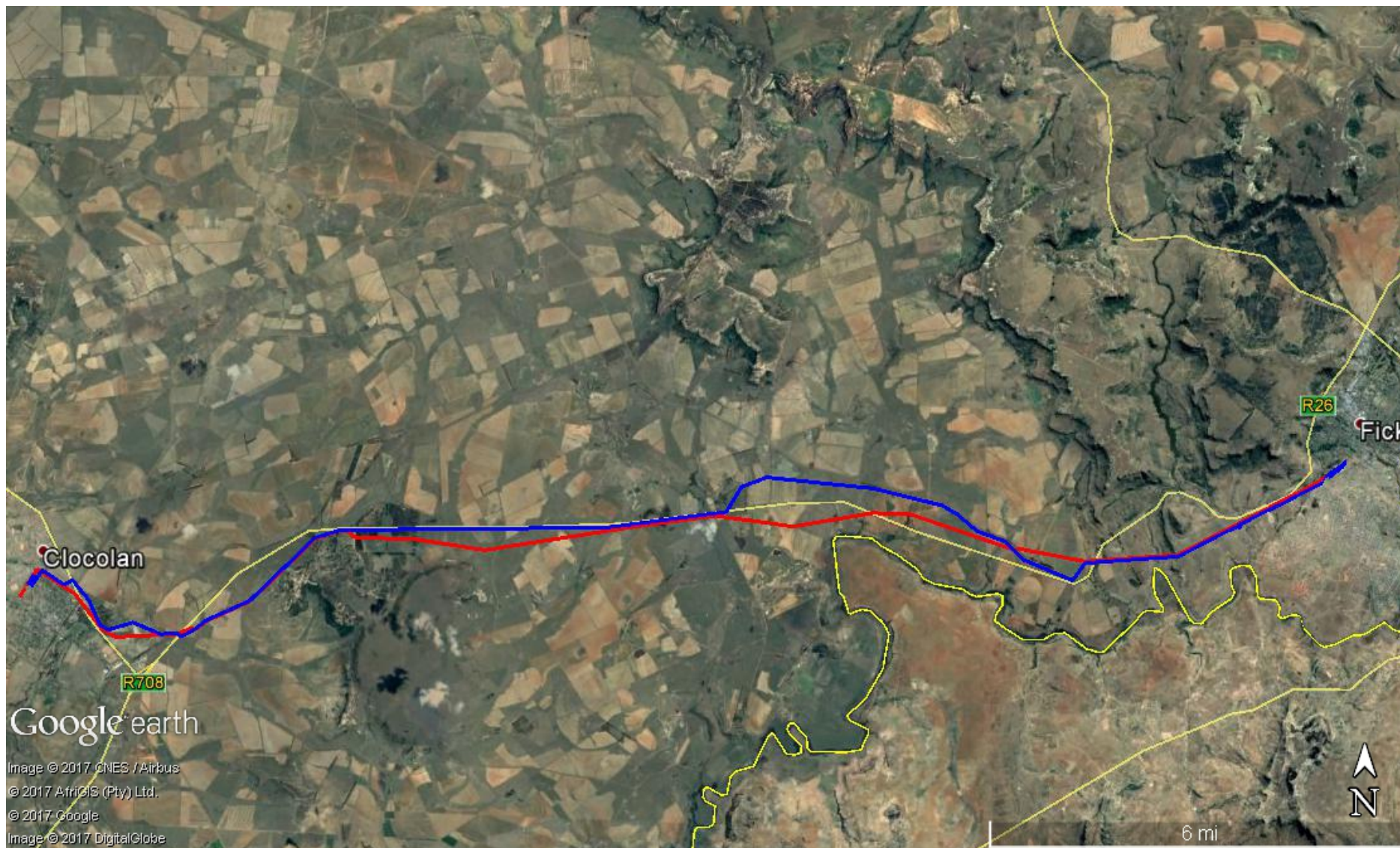


Figure 10 Locality map of the existing (red) and authorised (blue) 88 kV power lines (Red), and proposed Marallaneng Substation

1.4 Environmental authorisation requirements and listed activities triggered by the project

In terms of the 2014 EIA Regulations (as amended April 2017) published under Section 24 of the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), the proposed project triggers activities that may significantly affect the environment. Therefore, Eskom requires environmental authorisation following a Basic Assessment process, from the competent authority, viz. the National Department of Environmental Affairs (DEA)¹.

1.4.1 Listed activities triggered by the project

As presented and detailed in Section 1.1, Activities 11, 12, 19 and 31 from Listing Notice 1 (GN R.983, as amended) and Activity 12 from Listing Notice 3 (GN R.985, as amended) are triggered by the project.

Figures 1 - 10, provide the locality of the triggered listed activities.

1.4.2 Contents of a Basic Assessment Report (BAR)

A BAR must contain the information set out in Appendix 1 of GN No. 982, as amended. Table 2 indicates where in this BAR these various components are covered.

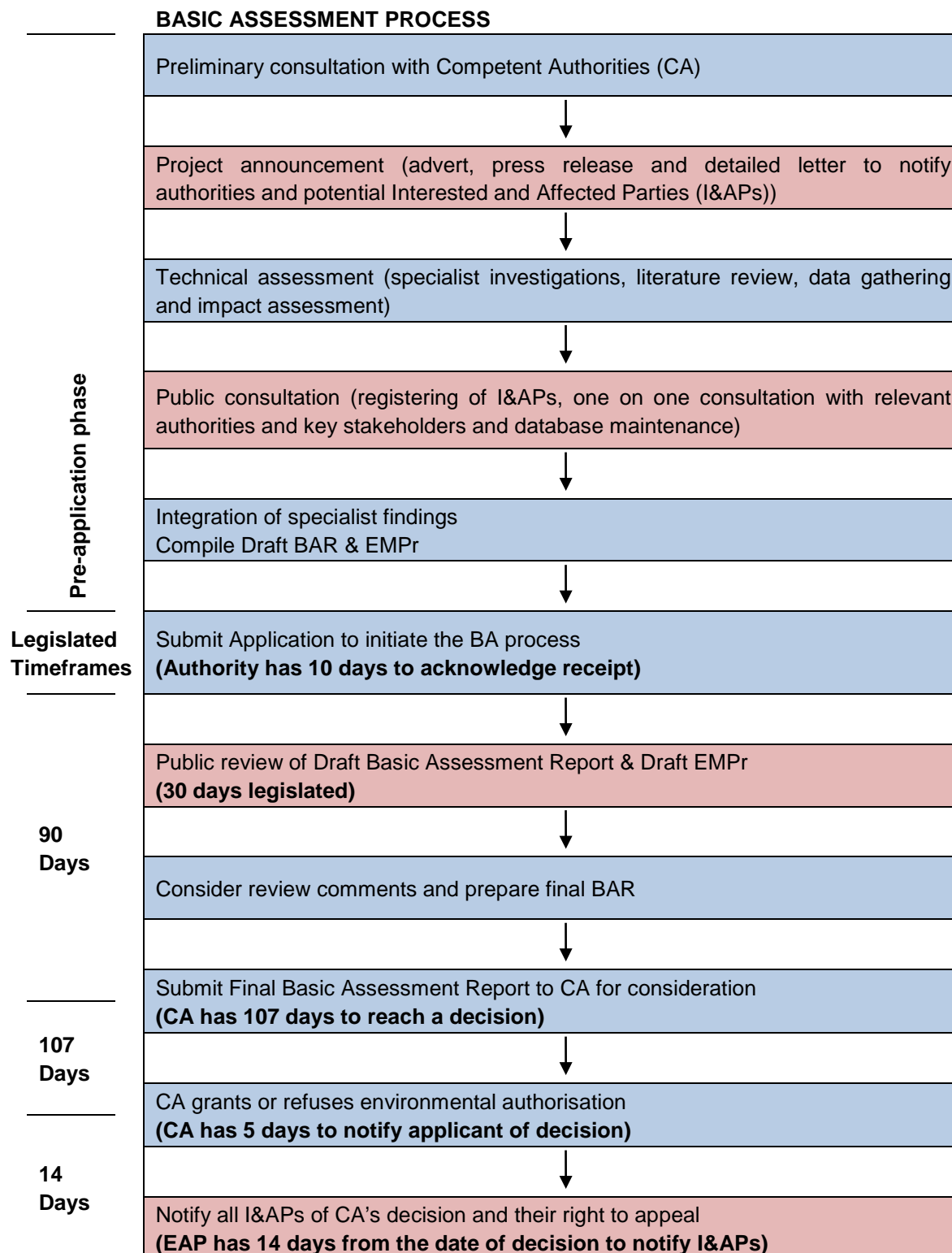
1.4.3 Public participation process during the Basic Assessment

Public participation is to be undertaken in accordance with Chapter 6 of GN No. 982, as amended 2017 (refer to Table 3). A detailed description of the public participation undertaken for this project is provided in Chapter 6 of this BAR.

¹ In cases where an applicant is an organ of state or a parastatal, DEA is the lead competent authority, considering the application in close consultation with its provincial counterparts.

1.4.4 Basic assessment process and requirements

The application for environmental authorisation requires a Basic Assessment to be undertaken in accordance with Regulations 19 and 20 of GN No. 982 (08 December 2014, as amended) as shown below.



2. LEGISLATIVE FRAMEWORK

Further to the regulatory process for environmental authorisation outlined in Section 1.4, the environmental legislation applicable to this project includes but is not limited to that indicated in Table 9.

Table 9 Applicable legislation, policies and guidelines

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) (as amended)	The Environmental Clause, Access to Information, Fair Administrative Action, Enforcement of Rights and Administrative Review	Government of South Africa	1996
National Environmental Management Act, 1998 (Act No. 107 of 1998)	Management of activities that may have a significant impact on the environment. Principles include: <ul style="list-style-type: none"> <input type="checkbox"/> The sustainability principle. <input type="checkbox"/> The life-cycle, cradle-to-grave principle. <input type="checkbox"/> The 'polluter pays' principle. <input type="checkbox"/> The precautionary principle. <input type="checkbox"/> The duty of care principle. <input type="checkbox"/> Fair and transparent public consultation. 	Department of Environmental Affairs	1998
National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004)	The conservation of natural habitats, fauna and flora. Permits required to remove or relocate protected plant species.	Department of Environmental Affairs	2004
National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003)	To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. Permission to construct a road within a protected area will be required by SANRAL from the management authority.	Department of Environmental Affairs	2003
Free State Nature Conservation Ordinance, 1969 (Ordinance No. 8 of 1969)	The conservation of natural habitats, fauna and flora.	Free State Dept of Economic Development, Tourism and Environmental Affairs	1969
National Environmental Management: Waste Act, 2008 (Act No.59 of 2008)	Management of activities that generate waste.	Free State Dept of Economic Development, Tourism and Environmental Affairs	2008
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	The conservation of agricultural resources. Protection of soils.	Free State Dept of Economic Development, Tourism and Environmental Affairs	1983

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Forests Act, 1998 (Act No. 84 of 1998)	The conservation of natural forests. Permits required to remove or cut protected tree species.	Department of Agriculture, Forestry and Fisheries	1998
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The protection of cultural heritage resources and the management of activities that may have a significant impact on cultural heritage resources.	South African Heritage Resources Agency	1999
Environment Conservation Act, 1989 (Act No 73 of 1989)	National Noise Control Regulations (GN R154 dated 10 January 1992)	Department of Environmental Affairs	1989
National Water Act, 1998 (Act No 36 of 1998)	Legislation regulating and protecting water resources in South Africa which includes non-consumptive water uses such as the impeding or diverting of water in a water course or altering of beds, banks or characteristics of a watercourse. Also regulates abstraction of large volumes of water from natural water bodies.	Department of Water and Sanitation Provincial Office of Water and Sanitation	1998
National Environmental Management: Air Quality Act, 2004 (Act No 39 of 2004)	Measures in respect to air quality.	Department of Environmental Affairs	2004
National Roads Traffic Act, 1996 (Act No 93 of 1996)	Measures in respect to road use in South Africa	South African National Roads Agency Limited (national roads); Provincial Department of Transport	1996
Promotion of Access to Information Act, 2000 (Act No 2 of 2000)	All requests for access to information held by the state or private bodies are provided for in the Act under Section 11.	Department of Justice and Constitutional Development	2000
Promotion of Administration Justice Act, 2000 (Act No 3 of 2000)	In terms of Section 3, the Government is required to act lawfully and take procedurally fair, reasonable, and rational decisions. Interested and affected parties have a right to be heard.	Department of Justice and Constitutional Development	2000
Infrastructure Development Act, 2014 (Act No. 23 of 2014)	To provide for the facilitation and co-ordination of public infrastructure development which is of significant economic or social importance to the Republic.	Presidential Infrastructure Coordinating Commission	2014
Public Participation Guideline in Terms of the National Environmental Management Act, 1998 and Environmental Impact Assessment Regulations	The guideline provides information and guidance for proponents or applicants, I&APs, competent authorities and Environmental Assessment Practitioners on the public participation requirements of the Act. It further provides information on the characteristics of a rigorous and inclusive public participation process.	Department of Environmental Affairs	2017

3. DESCRIPTION OF THE PROPOSED ACTIVITY

3.1 Marallaneng Substation

Construction of the substation is estimated to take two years. However, it is not anticipated that civil works, when the main noise, dust and transport impacts occur, will take place over the entire two-year period.

Table 10 provides an approximate breakdown of the timeframes anticipated for each stage based on the construction programme of a similar sized substation.

Table 10 Approximate sub-station construction timeframes

Construction Stage	Approximate Duration*
Civil Works	14 months
Bulk earthworks (site establishment, bulk earthworks and terracing, road works etc.)	6 months
Civil construction (foundation construction, buildings, fencing, steelwork, yard stone/paving)	9 months
Installation and Commissioning	13 months
Installation of transformers, reactors, busbars	4 months
Stringing, cabling and earthing	5 months
Final commissioning	6 months

* The total construction timeframe is estimated at two years (24 months). This table gives an approximate breakdown of different stages. Please note that some of these stages overlap and are not necessarily finalised prior to the next stage commencing.

Construction will commence with the installation of gates in existing fences, to create access to the site, then clearing of vegetation, and the levelling and terracing of the ground surface in those areas where heavy electrical transformers and other switchgear will stand. Once levelled and terraced, the concrete works and construction of foundations for the supporting steelworks, transformers and other switchgear will commence. This will also include the construction of storm water drainage pipes, slabs, bund walls, a control room, small buildings and storage areas that are needed.

All open areas between the transformer plinths and other switchgear foundations will be covered with about a 100 mm layer of 25 – 38 mm crushed stone. Before laying the crushed stone, the ground surface is intensively treated to strict specifications with insecticide and herbicide to prevent insect activity and the growth of weeds and other plants in the high voltage yard.

The steelworks will then be erected. The transformers, circuit breakers, reactors and other high voltage equipment will be delivered to site, erected and then commissioned. The sub-station will be built in phases. As the demand for power increases, so the number of incoming and outgoing transmission lines with their electrical switchgear will be increased.

The substation will be served by a gravel access road which is likely run on a similar route to the existing farm access road. Around the site there will be internal gravelled traffic areas for access to the electrical equipment.

All equipment, commissioning, and operational procedures and protocols are subject to strict specifications which Eskom has had in place for many years.

During construction when the civil works are being carried out (foundations, storm water drainage, buildings, etc), there will not be more than approximately 80 people present on the site at any one time. Construction staff will not be housed on site but will be transported to site each day.

With the exception of a security guard(s), no people will be housed on site on a permanent basis during the operational life of the sub-station. However, there will be ongoing monitoring and control of operations as well as planned and other maintenance work done on an *ad hoc* basis.

3.2 Proposed decommissioning of the existing 88 kV power line

The decommissioning of the existing 88 kV power line will typically entail the following:

- ❑ Access negotiations: negotiations between the landowner, contractor and Eskom will be undertaken in order to determine access methods to the tower positions.
- ❑ On-site verification: of infrastructure to be decommissioned, and potentially sensitive habitats or areas to be avoided.
- ❑ Establishment of construction camps and temporary storage areas: the establishment of construction camps will be done in accordance with the stipulations of the Environmental Management Programme (EMPr) and conditions set through negotiations with the affected landowners.
- ❑ Gate installation: gates to be installed where it is necessary to breach existing fence lines.
- ❑ Removal/unstringing of all transmission lines or wires.
- ❑ Removal of all transmission poles and any related support structures or bedding to a depth of 1 m below surface levels.
- ❑ Rehabilitation of areas disturbed during decommissioning activities.
 - Disturbed areas shall be graded as close as reasonably possible to its original contours.
 - Soils shall be restored to a condition consistent with other resource uses.
 - Disturbed areas shall be replanted with locally occurring grass seed mixes suited to the area.
- ❑ Rehabilitation of any new or existing access roads along the old servitude (ripped/graded and replanted with endemic grasses).
- ❑ Removal of temporary gates and repairing of fences breached.
- ❑ Ongoing monitoring of rehabilitated areas until well established.

3.3 Construction and operation of the HV and MV power lines

Typical steps followed by Eskom in the construction and operation of transmission lines are outlined below.

With respect to construction:

- ❑ Aerial survey of the route.
- ❑ Determine technically feasible alignments within the authorised corridor.
- ❑ Walk down by environmental specialists to assess specific tower locations.
- ❑ Negotiation of a final servitude alignment within the authorised corridor with landowners.
- ❑ Selection of best-suited structures and foundations.
- ❑ Final design of line and placement of towers.

- ❑ Establishment of construction camps and construction of access roads where necessary.
- ❑ Vegetation clearance and gate erection.
- ❑ Centre line track establishment.
- ❑ Construction of foundations.
- ❑ Assembly and erection of towers.
- ❑ Stringing of conductors.
- ❑ Rehabilitation of working areas and protection of areas susceptible to erosion.
- ❑ Testing and commissioning.

During operation, Eskom requires access to the servitude to enable maintenance of the power lines. This could require traversing private property. Maintenance is carried out at regular intervals, and is often done by helicopter in inaccessible areas. Maintenance activities are highly specialised and are, therefore, carried out by Eskom employees/contractors.

The power line servitudes will need to be cleared occasionally to ensure that vegetation and trees, including the management of alien species, do not interfere with the operation of the transmission lines. Relevant specifications regarding maintenance are provided in the EMPr.

Different tower designs, such as Guyed-V Suspension or Cross-roped Suspension are to be used whilst Self-supporting Strain Towers will be required for bends greater than 3° and/or when crossing difficult terrain.

3.4 Servitude negotiations and registration

Before construction commences, Eskom needs to purchase the land for the substation and also secure servitude rights for the power lines by negotiating with affected landowners. A servitude provides Eskom certain defined rights over the use of the specific area of land but not ownership thereof. These rights include:

- ❑ Access to erect a power line along a specific agreed route.
- ❑ Reasonable access to operate and maintain the power line inside the servitude area.
- ❑ The removal of trees and vegetation that will interfere with the operation of the power line. If other structures are not permitted exist within the servitude they may need to be removed.

However, this forms part of the negotiation process with landowners and the planning of the agreed route.

The registration of servitudes can be a lengthy process requiring contractual negotiations with each affected landowner. Once this is complete, an application for registration of the servitude is lodged with the Provincial Deeds Office against the property title deed.

The actual location of the towers on which the conductors will be strung is determined by a number of different factors, including:

- ❑ The outcome of Eskom negotiations with landowners.
- ❑ Environmental features and technical requirements.

As a result of these factors, it is not possible to predict the exact position of the towers during the environmental authorisation process as these positions are only determined after authorisation, with site-specific input from specialists.

3.5 Use of services and resources during construction

3.5.1 Water and sanitation

Water will be required for potable use and for the construction of the substation and power line infrastructure. This will be obtained from the existing municipal supply. Sewage during construction will be managed on site through the use of portable toilets.

3.5.2 Roads

The existing farm road to the site will be used during construction and operation. For the construction of a substation like Marallaneng, the construction period would typically be around two years but not all of this time would entail heavy civil works. Heavy civil works would most likely take between 13 - 20 months.

For this period of the construction programme, it is envisaged that trucks will probably be running from 07:00 to 19:00 spoiling or delivering material for the platform, or ready mix concrete for foundations. Thereafter, steel work deliveries will take place. It is estimated that there will be on average two trucks per hour for a period of approximately two years.

The use of roads on private property for construction of the power line towers is subject to the provisions of an EMPr that will be prepared for the project (with individual landowner specifications being determined by discussions with landowners during the negotiation process).

3.5.3 Storm water

Storm water infrastructure will be carefully designed and managed during the construction of the substation terrace and internal roads. Storm water will be diverted into the surrounding fields at low energy levels to make sure that erosion is avoided in and around the site. This will be in accordance with Eskom's Guidelines for Erosion Control and Vegetation Management. A Storm Water Management Plan is provided in the EMPr.

3.5.4 Solid waste disposal

All solid waste will be collected at a central location along the route and will be stored temporarily until removal to waste disposal facilities which are licensed to accept particular waste streams. Recycling of recyclable substances will be done where possible.

3.5.6 Electricity

Electricity will be required during construction; this will be provided for through the use of diesel generators.

3.5.7 Local labour

The exact number of people that will be employed during construction is unknown at this stage. It is anticipated that the workforce for the construction of the substation and transmission infrastructure will vary in number depending on the level and nature of the construction activity taking place, and, as construction activities will not be continuous, people will be employed at specific times throughout the construction process over a wide area.

It is important to note that the construction of electrical infrastructure is a specialised undertaking, requiring skilled people. It is probable that the appointed contractors will bring in skilled labour from other areas. By implication, job opportunities for local people will be limited to unskilled jobs. Apart from direct employment, local people and businesses will benefit through the supply of goods and services to the appointed contractors.

3.6 Project Infrastructure Requirements

3.6.1 Proposed Marallaneng Substation

The proposed new 2 X 20 MVA (Mega Volt Ampere) Marallaneng 88/11 kV Substation on the Ficksburg end of the new 88 kV power line is required to provide sufficient capacity to transform the additional power supplied by the proposed new 88 kV power line. The additional power is required to address the demand for electricity in the townships near Ficksburg.

The infrastructure requirements for the Marallaneng Substation are described below:

3.6.1.1 2 X 20 MVA MARALLANENG 88/11 KV SUBSTATION

- ❑ The construction of the 65 m x 75 m new 2 x 20 MVA Marallaneng 88/11 kV Substation at the proposed centre coordinates: 28°53'48.88"S / 27°51'1.76"E
- ❑ Installation of two 88 kV line bays. (88kV feeder bay consist of Line isolator, 132 kV current transformer, 132 kV voltage transformers, transformer isolators/busbar isolators, LV isolators, transformer, transformer breaker, busbar)
- ❑ Installation of six outgoing 11 kV feeders and provision for a spare feeder bay. (11 kV Feeder bay consist of LV surge arrestors, Voltage transformers, current transformers, breaker isolators, breaker, feeder isolators)
- ❑ Install all the necessary protection schemes, metering, Scada, AC/DC systems and telecommunications in the control room of the Marallaneng Substation.

3.6.1.2 CLOCOLAN SUBSTATION

- ❑ Install one 88 kV feeder bay at the Clocolan Substation.
- ❑ Install all the necessary protection, metering, Scada, and telecommunications equipment for the new 88 kV Marallaneng feeder bay.

3.6.1.3 FICKSBURG SUBSTATION

- ❑ Install two 88 kV feeder bays at the Ficksburg Substation.
- ❑ Install all the necessary protection, metering, Scada, and telecommunications equipment for the new 88 kV Marallaneng feeder bay.

3.6.1.4 88 KV DOUBLE CIRCUIT LINE (PROPOSED NEW 88 KV POWER LINE)

- ❑ Build 25 km of double circuit line from the Clocolan Substation to connect to the new Marallaneng Substation.
- ❑ Build 10 km of double circuit line to connect from the new Marallaneng Substation to the Ficksburg Substation.
- ❑ Build a double circuit line using a Bear conductor.

3.6.1.5 LOOP-IN AND LOOP-OUT AT MARALLANENG SUBSTATION

- ❑ From the proposed 88 kV line bays, build 1 km of loop-in line and 1 km of loop-out line.
- ❑ The connection of the loop-in / loop-out must be from the new double circuit Bear line.

3.6.1.6 MEDIUM VOLTAGE (MV) LINES

- ❑ Build 2 km Hare line from the new Marallaneng Substation to pole number FMQC13-2-29-13-5-8 and re-label feeder to Marallaneng.

- ❑ Create N/O (Normal Open) points at pole numbers FMQC13-2-28 and FMQC13-2-29-13-2.
- ❑ Build 200 m Hare line from the new Marallaneng Substation to pole number FMQC13-2-29-13-2-4 and re-label feeder to Marallaneng Mantsopa.
- ❑ Create N/O points at pole numbers FMQC13-2-29-14 and FMQC13-2-29-1.
- ❑ Build 2 km Hare line from the new Marallaneng Substation to pole numbers FMQC13-2-29-14-6-3 and re-label feeder to Marallaneng Thihe.
- ❑ Create N/O points at pole numbers FMQC13-2-29-14-21 and FMQC13-2-33-1 and build a 300 m interconnector between pole numbers FMQC13-2-29-14-13-3 and FMQC13-2-52-10.
- ❑ Build 2 km Hare line from the new Marallaneng Substation to pole numbers FMQC13-2-29-14-27-25 and re-label feeder to Marallaneng Setsoto.
- ❑ Create N/O points at pole numbers FMQC13-2-29-14-17 and FMQA-MS2 and build a 300 m interconnector between pole numbers FMQC13-2-29-14-38 and FMQC13-2-89-4.
- ❑ Build 200 m Hare line from the new Marallaneng Substation to pick up Deemster feeder and rename feeder to Marallaneng Deemster.
- ❑ Build 2.7 km Hare line (Hare is the type of conductor used to string the medium voltage power lines) from the new Marallaneng Substation to supply the new developments and rename feeder to Marallaneng Moqhaka.

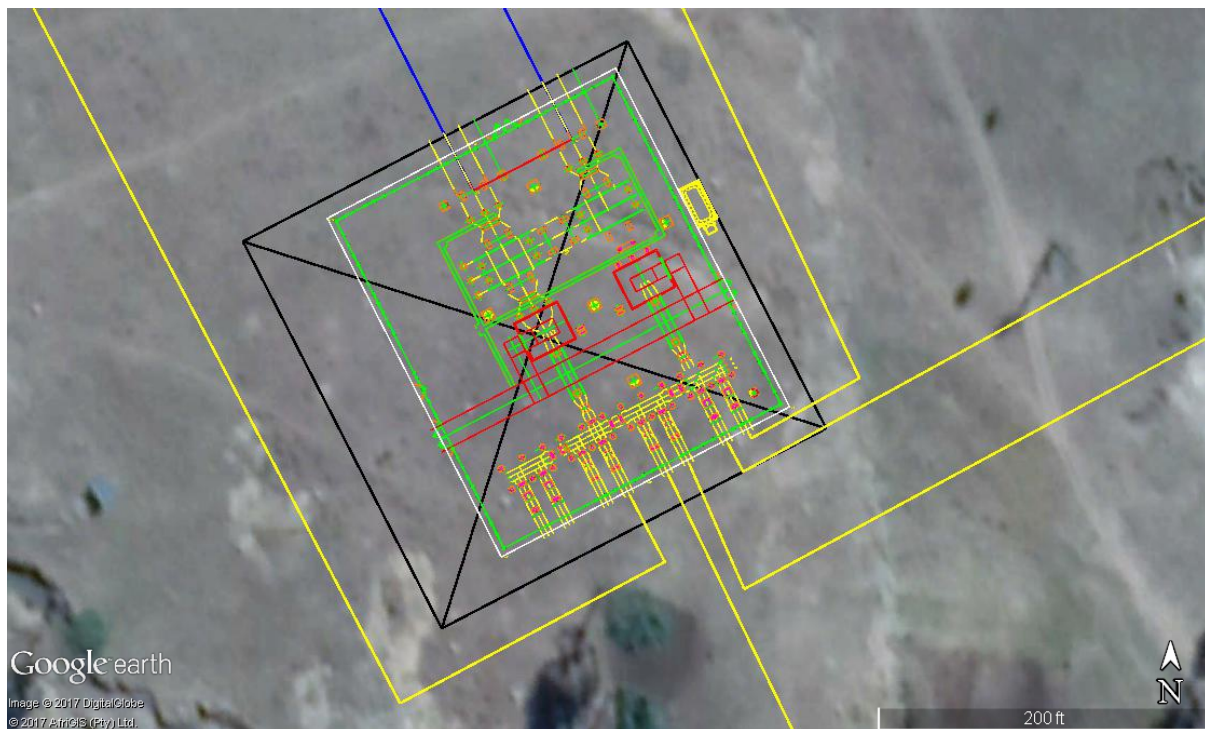


Figure 11 Marallaneng Substation footprint (Black) and internal layout, Loop-in and Loop-out HV lines (Blue) and outgoing MV lines (Yellow)

3.6.2 Proposed 88 kV Power Line Infrastructure

Eskom is proposing that the existing and proposed 88 kV power lines be strung on double circuit structures, for the entire proposed amended route from Clocolan to Ficksburg, except upon entering/exiting the Clocolan and Ficksburg Substations where, due to various technical and spatial difficulties, they will remain on separate single circuit structures. The infrastructure requirements of the proposed 88 kV power line, which will now also carry the existing 88 kV power line, are detailed below.

3.6.2.1 SINGLE CIRCUIT STRUCTURES

Planted steel mono-pole structures are to be erected for all single circuit sections. This will apply to all strain and intermediate structures. The following Single Circuit structures are to be used:

- ❑ 7615 – S/C Stayed Angle Strain Structure.
- ❑ 7618 – S/C Stayed 3-Pole Angle Strain Structure.
- ❑ 7645 – S/C Stayed Angle Strain Structure.
- ❑ 7808 – S/C H-Pole Terminal Structure.
- ❑ 7611 – Single Circuit Intermediate Structure.
- ❑ 7649 – Single Circuit Intermediate Structure.

3.6.2.2 DOUBLE CIRCUIT STRUCTURES

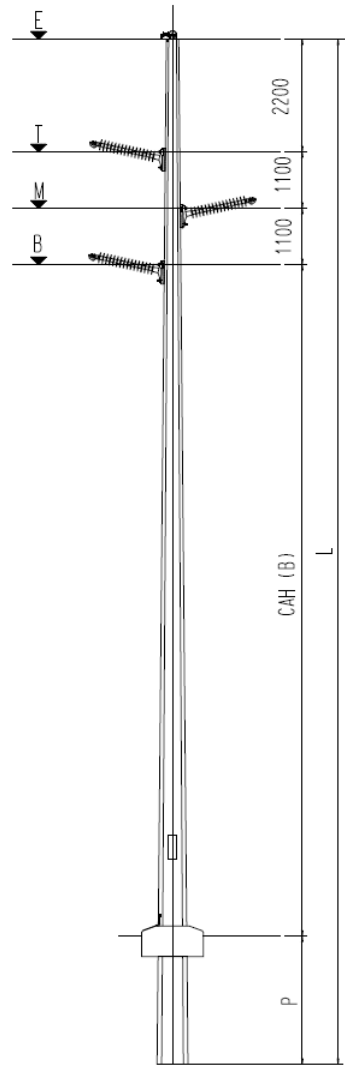
Double circuit Lattice Towers of the 245 Series are to be erected for all bends and inline strain towers along the double circuit sections. Planted steel mono-pole structures are to be erected for all intermediate structures. The following Double Circuit structures are to be used:

- ❑ 7649 – D/C Intermediate Structure.
- ❑ 245 – D/C Lattice Tower Series.

3.6.2.3 STAYS

The double circuit lattice towers to be used for in-line strain and angle strain structures will not require any stays (as per the Land Owner requirements). The single circuit in-line strain and angle strain structures will however require the installation of stays, thus the following stays are to be installed where required:

- ❑ M20 x 94 kN Temporary stays (Non-Adjustable) - Construction Stays.
- ❑ M24 x 135 kN Permanent stays (Adjustable) - Structure anchoring purposes.



SINGLE CIRCUIT STRUCTURES

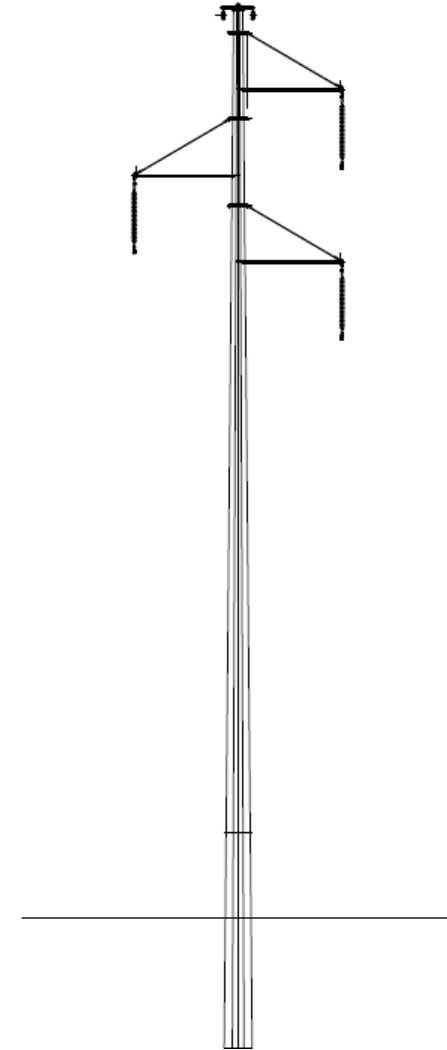


Plate 1 7611S/C Intermediate

Plate 2 7649 S/C Intermediate

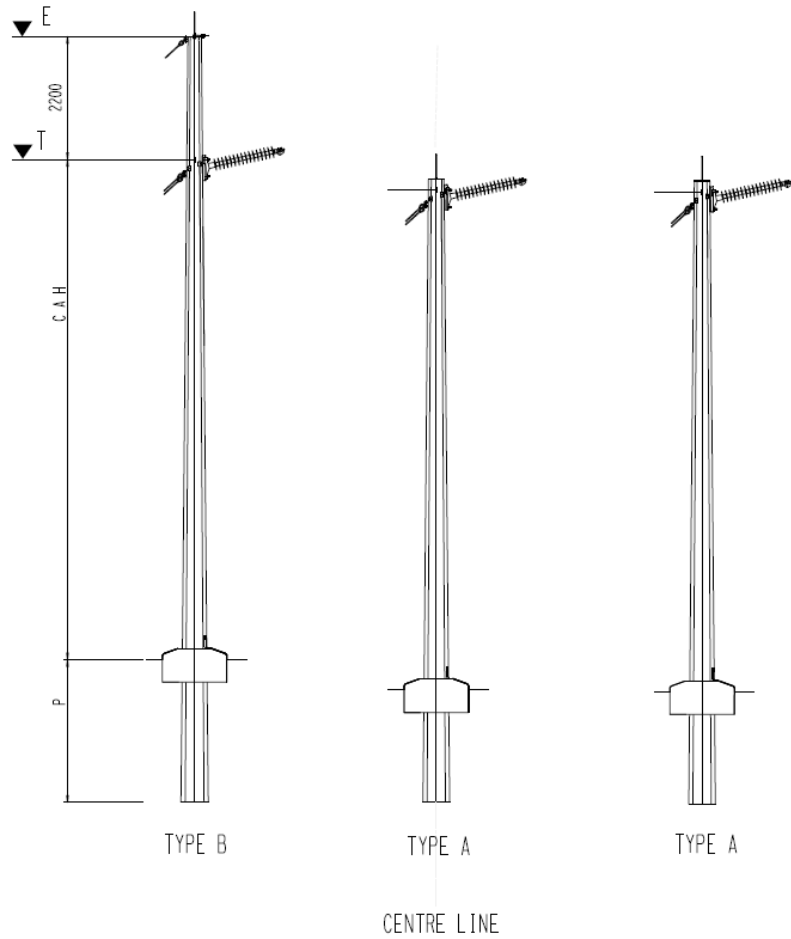


Plate 3 7618 3-Pole Angle Strain

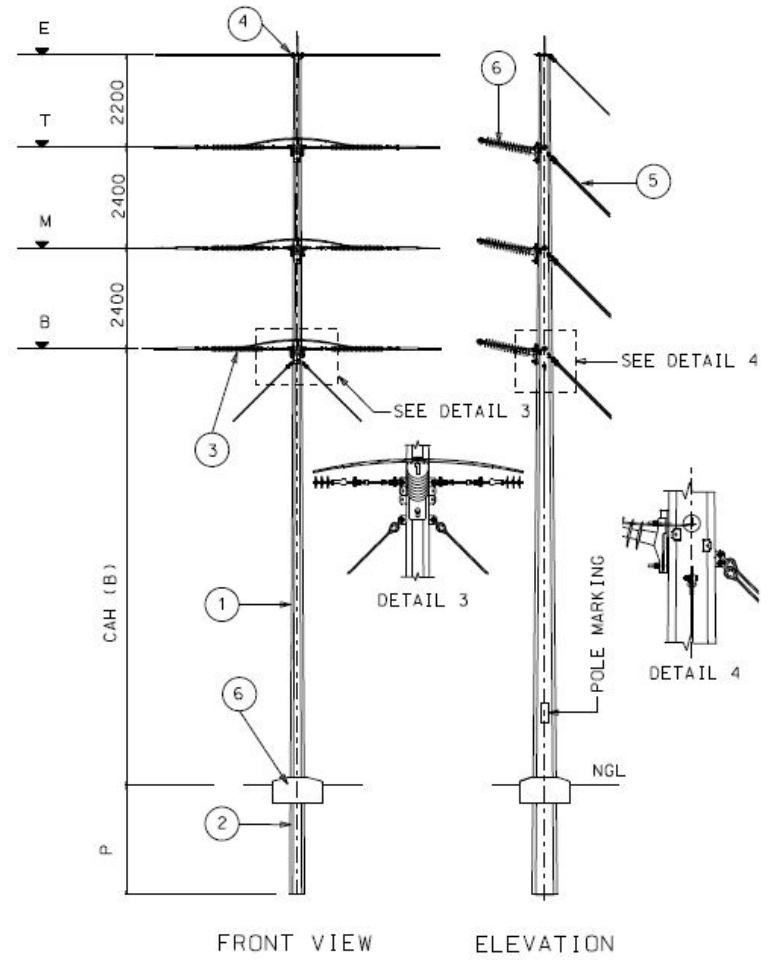


Plate 4 7645 S/C Angle Strain

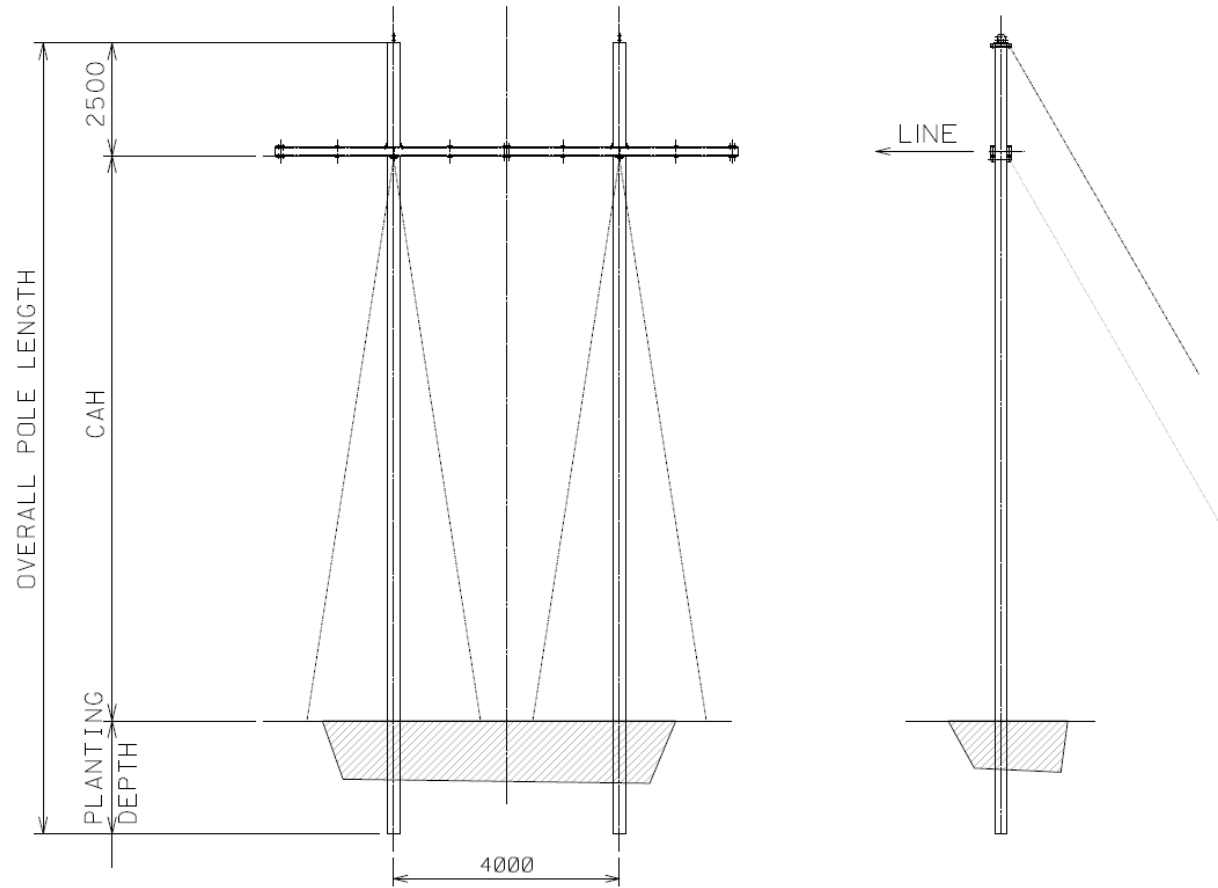


Plate 5 7808 H-Pole Terminal

DOUBLE CIRCUIT STRUCTURES

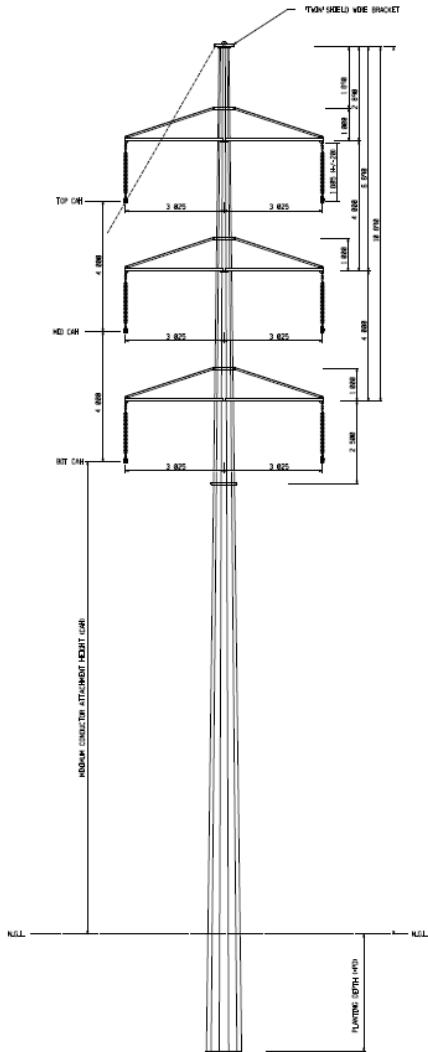


Plate 6 7649 D/C Intermediate

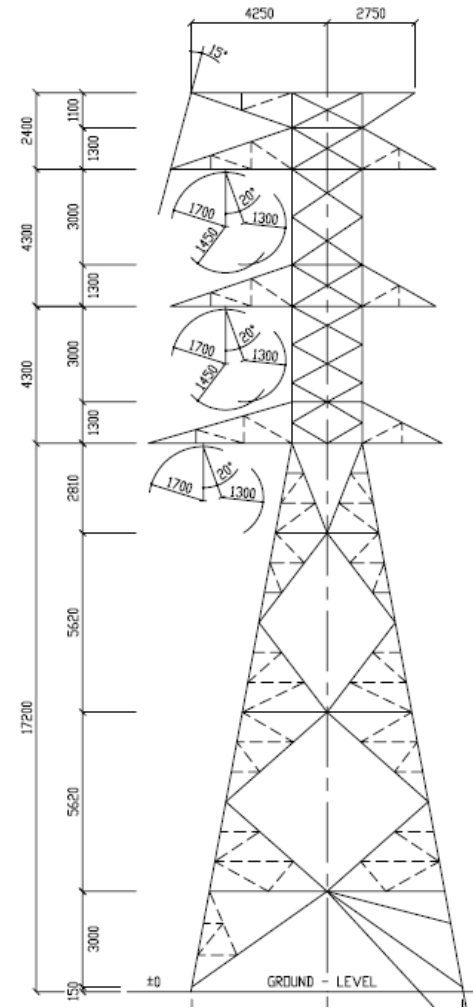


Plate 7 245E Lattice Tower Angle Strain

4. PROJECT ALTERNATIVES

4.1 Decommissioning of the Existing 88 kV Power Line

The need to remove the existing 88 kV power line and relocate it onto the double circuit structures of the proposed 88 kV power line between Clocolan and Ficksburg, arose during the post EA servitude negotiations with affected land owners and the Ecological Walk Down Assessment. The aim is to reduce the visual clutter as well as the physical footprint on the environment and agricultural lands that would otherwise have two 88 kV overhead power lines running in close proximity of each other.

4.1.1 No-Go Alternative

The only alternative to this assessed proposed activity was the No-Go alternative, where the existing 88 kV power line would remain as is, and the authorised line be constructed along the authorised alignment.

This alternative will present Eskom with difficulties during the servitude negotiations phase with the affected landowners. If however, negotiations are successful, this alternative will have increased visual impacts and increased physical footprint on the natural environment and agricultural lands, making this alternative undesirable.

4.2 Marallaneng Substation and Associated Infrastructure

Following the Ecological Walk Down Assessment (Texture, 2015) of the authorised 88 kV power line, prior to the EA Amendment process, three site alternatives for the construction of the 65 m x 75 m Marallaneng Substation were put forward (Figure 12). These sites were selected based on factors such as proximity to the new 88 kV power line and MV supply side, existing road access, and environmental sensitivities. Of the three site alternatives put forward for assessment Option 1 was considered the preferred option based on the technical and financial pros and cons explained below. Following the specialist investigations, Option 1 was subsequently revised due to the findings and recommendations of the wetland specialist (Exigent, 2016), as explained below.

Table 11 Pros and cons associated with Option 1 (preferred option)

PROS	CONS
Shortest access route, constructed on an existing farm track.	Substation will require some earthworks to balance the site levels.
Relatively even terrain.	Located near an existing dam.
Close to the new 88 kV power line.	Located furthest from the MV (medium voltage) Supply side

Table 12 Pros and cons associated with Option 2

PROS	CONS
Close to MV Supply side.	Substation will require some earthworks to balance the site levels.
Relatively flat terrain.	High risk of encountering rock when doing earthworks for the substation.
Close to the new 88 kV power line.	Much longer access road that will cross directly over an existing water course or stream requiring the installation of large culverts.
	Access position will be the same as that of Option 1 due to the proximity of major intersections and curves.

Table 13 Pros and cons associated with Option 3

PROS	CONS
Closest of the three options to the MV Supply side.	High risk of encountering rock when doing earthworks for the substation.
Located on top of a hill, flat terrain.	Much longer access road that will cross directly over an existing watercourse or stream requiring the installation of large culverts.
	Access position will be the same as that of Option 1, due to the proximity of major intersections and curves.
	Steep terrain requires more extensive earth works to construct the substation
	Furthest from the new 88 kV power line.

The wetland delineation undertaken as part of the amendment process showed that all three sites were located at least partly within a wetland, with the preferred option entirely within a hillslope seep feeding a valley bottom wetland system. As recommended by the wetland specialist, the preferred option, Option 1, needed to be moved approximately 150 m in a south-eastern direction, out of any wetlands and/or watercourses and their respective buffers, forming the final substation site.

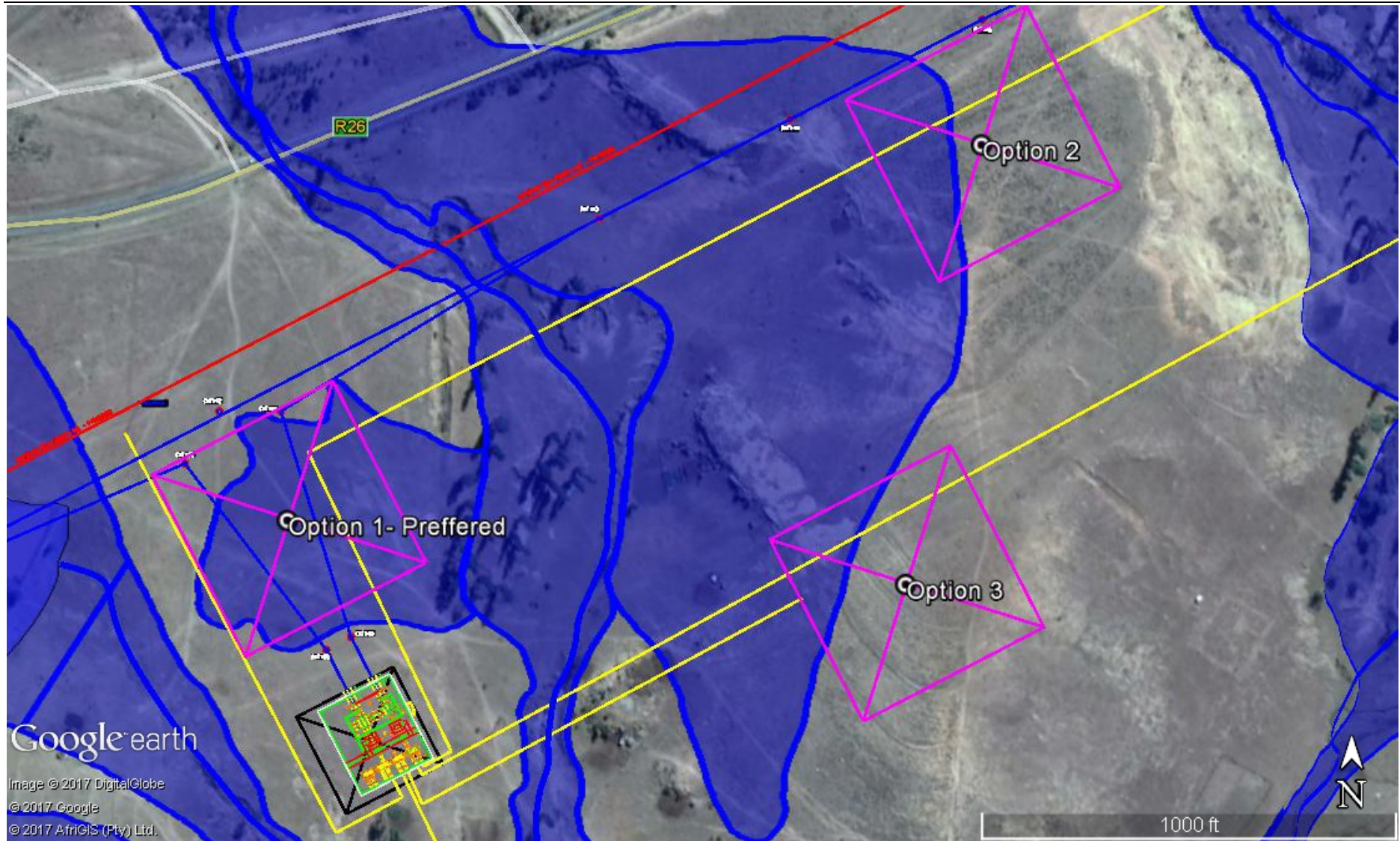


Figure 12 Marallaneng site alternatives assessed during the Part 2 EA Amendment process

4.2.1 Design/layout alternatives

The internal layout of the Marallaneng Substation (Figure 11) is entirely dependent on its position in relation to the incoming loop-in and loop-out HV power lines, as well as the outgoing MV power lines. Due to the limited options for the location of the Substation, and due to the high presence of wetlands in the surrounding area, no additional internal layout alternatives were assessed.

4.2.2 The No-Go alternative

The no-go alternative would mean that Eskom would not have sufficient capacity to transform and distribute the additional power supplied by the proposed new 88 kV power line. The Setsoto Local Municipality will therefore not be able to implement new infrastructure developments or provide electricity to already completed developments and Rural Development Programme (RDP) houses.

Adopting the no-go alternative, with increasing demand for electricity will result in a continued unreliable power supply. The EAP is of the opinion that this alternative is not feasible due to the essential role of a secure electrical supply in the functioning of local and regional economies and the overall socio-economic upliftment of communities where electricity was previously unavailable.

5. DESCRIPTION OF THE RECEIVING ENVIRONMENT

A description of aspects of the receiving environment relevant to the assessment is provided below. Refer to Appendix B for site photographs.

5.1 Current land use and zoning

The study area along the existing and proposed 88 kV power line alignments is dominated by agricultural lands. With the area surrounding the proposed Marallaneng Substation site is mainly utilised as grazing lands for livestock from the Meqheleng Township to the south.

Near the Ficksburg and Clocolan Substations, the study area is located adjacent to urban and residential areas.

5.2 Land ownership and affected properties

5.2.1 Land ownership

The proposed 88 kV power line route will traverse a number of privately owned properties, most of which are currently under agricultural production. Eskom has engaged the directly affected landowners who have signed the required Option to Acquire a Servitude form (Appendix H4).

The Marallaneng Substation is located on municipal owned land, negotiations for the lease or procurement of the substation site will only commence once the relevant authorisations, licences and permits are in place.

Table 14 List of affected properties

21 Digit SG KEY	Farm Number And Portion	Title Deed	Property Owner
F00800000000040000000	Remainder of Clocolan Townlands 40	T341/1912	Tshepiso Simon Rankgotho Ramakarane
F00800000000039000000	Vooruitzicht 39	T7335/2011	Tshepiso Simon Rankgotho Ramakarane
F00800000000026800000	Makoadi 268	T21686/2009	Mundus Grove Joubert
F00800000000027500000	The Quarry 275	T446/1920	Tshepiso Simon Rankgotho Ramakarane
F00800000000036400000	Potsoko 364	T 21686/2009	Mundus Grove Joubert
F00800000000104000000	Koperasie No. 104		
F008000000000406000001	Portion 1 of S.F. 406	T4090/1978	Gerrit Kempen Higgo
F008000000000181000000	Beatrix 181		
F008000000000407000000	Van Niekerks Kroon 407	T4090/1978	Gerrit Kempen Higgo
F008000000000402000001	Portion 1 of Kadie 402	??	Toit Michiel Van Breda Du
F00800000000015000000	Oogiesfontein 15	T6250/1988	Jan Van Niekerk
F00800000000018000000	Prynns Berg 18	T2469/1997	Prynnsberg Preservation Farming Trust Cc
F008000000000282000001	Portion 1 of Klein Bankjes 282	T14051/1996	Andries Jacobus Kriel
F008000000000258000001	Portion 1 of Mooie Bankjes 258	T14051/1996	Andries Jacobus Kriel
F012000000000765000000	Gansfontein 765	T339/1980	Jacob Francois Wessels
F012000000000766000000	Mooifontein 766	T4115/1975	Friedrick Van Maltitz Wagener
F012000000000764000000	Upper Rantso 764	T769/1965	Ronald Haward Stevens
F012000000000290000000	Zwartlaagte 29	T4736/1982	Margaret June Berend
F012000000000570000000	Vegetal No. 570		
F012000000000300000000	Platkop 30	T15528/2008	Tshepiso Simon Rankgotho Ramakarane
F012000000000280000000	Lagersdrift 28		
F012000000000292000000	Holstein 292		
F012000000000235000000	Hope Valley 235	T6903/2009	Denton Henry Osler
F012000000000509000010	Portion 1 of Douglas Dale 509	T22294/1998	Denton Henry Osler
F012000000000509000000	Remainder of Douglas Dale 509		
F012000000000816000000	Ebenhaeser 816	T9011/2009	Douglas Graham Mc Donald
F012000000000951000001	Portion 1 of Owanty 951	T5680/2013	Thomas Ignasives Wille
F012000000000507000000	Lyons Rust 507	T17262/2010	Douglas Graham Mc Donald
F012000000000750000001	Remainder of Ficksburgs Dorpgronden 75	T41140/1891	Tshepiso Simon Rankgotho Ramakarane

5.3 The social/socio-economic environment

The study area falls within the Setsoto Local Municipality, one of four local municipalities within the Thabo Mofutsanyana District Municipality, Free State Province. According to the Setsoto Local Municipality IDP 2016 – 2017, the socio-economic profile of the municipality is characterised by the following:

- ❑ High levels of unemployment.
- ❑ High rates of unskilled labour.
- ❑ Low levels of literacy and tertiary education.
- ❑ High crime levels.
- ❑ High health challenges such as TB and HIV.

The economic profile of the municipality is dominated by agriculture, followed by financial services, trade, government services and manufacturing. Mining plays a small role (Setsoto IDP, 2016 – 2017).

5.4 Cultural heritage resources

A Cultural Heritage Impact Assessment was conducted by eThembeni Cultural Heritage to locate and evaluate the significance of heritage resources within the study area during the original BAR for the proposed 88 kV power line (Appendix D1). The study was undertaken in accordance with Section 38 of the National Heritage Resources Act (Act No. 25 of 1999). An addendum to this report (Appendix D2) was drafted by eThembeni for the assessment of the Marallaneng Substation site, the findings of these studies are summarised below.

5.4.1 Overall study area

The study area falls within a rich region in terms of history. Both Clocolan and Ficksburg are more than 100 years old and, therefore they contain a number of buildings and structures older than 60 years and therefore protected by the National Heritage Act. This is evident in both towns where old churches, residences and farm homesteads exist.

The heritage specialist noted that Clocolan is a town located west of Pryn's Berg and it was laid out on the farms Harold and Rienzi in 1906. It was declared a municipality in 1910. The name of the town is of Sotho origin, said to be derived from *hlohloane*, 'bump and fight', from an incident in which the bumping over of a basket filled with wheat led to a fight; or 'pressed in the mountains'. In contrast, Ficksburg, which is located 30 km east of Clocolan and on the western bank of the Caledon River and the eastern slopes of the Mpharane Mountain, is located in the so-called Conquered Territory, approximately 200 km east of Bloemfontein. It was laid out in 1867 on the farms Generaalsvlei, Kromdraai, Losberg and Sikonjelasberg, and it was declared a municipality in 1891. It was named after Johan Izak Jacobus Fick (1816-1892), Commandant-General of the then Orange Free State, who played a prominent role in the Basuto Wars of 1865-1868.

5.4.1.1 Formally protected heritage resources

Although seven formally protected heritage resources are present in the study area, none will be affected directly by the proposed infrastructure.

5.4.1.2 Landscapes and natural features

No places, buildings or structures will be affected directly by the proposed infrastructure.

5.4.1.3 *Paleontological sites*

No paleontological sites will be affected directly by the power infrastructure.

5.4.1.4 *Graves and burial grounds*

Apart from formal cemeteries, four known grave and burial sites were identified near the western edge of the town of Clocolan. According to the heritage specialist, these are likely to be associated with villages, farmsteads, workers' accommodation and homesteads, including abandoned homesteads. No cemeteries will be affected directly by the proposed infrastructure.

5.4.2 **Marallaneng Substation Site**

The potential impact of the construction of the Marallaneng Substation on the subterranean fossil bearing strata is highly likely. These fossils have medium to high heritage significance at all levels for their scientific value. It is therefore recommended that a palaeontologist with experience of the Permian Extinction Zone be appointed to have a watching brief to monitor excavations during establishment of the Substation platform. The palaeontologist must be permitted by the relevant heritage authority to collect, rescue and record fossils during these excavations.

5.5 **Terrestrial Ecology**

5.5.1 **Protected areas**

No existing or future planned conservation areas occur along the existing and proposed 88 kV power line routes. The Meulspruit Dam's nature conservation area is located 2 km away from the site; north of the R26 near Ficksburg (SANBI, 2009 and Setsoto IDP 2016 – 2017).

5.5.2 **Critical Biodiversity Areas**

Apart from the Eastern Free State Clay Grassland, a vulnerable ecosystem as listed by the National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004). No Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) were identified by the Vegetation, Terrestrial Fauna and Wetlands Impact Assessment Study (Appendix D2).

5.5.3 **Vegetation types**

Three vegetation types occur within the study area, namely:

- Eastern Free State Clay Grassland.
- Eastern Free State Sandy Grassland.
- Basotho Montane Shrubland.

The Eastern Free State Clay Grassland is a vulnerable ecosystem as listed by the National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004). There are however no declared/future protected or conservation areas within the study area.

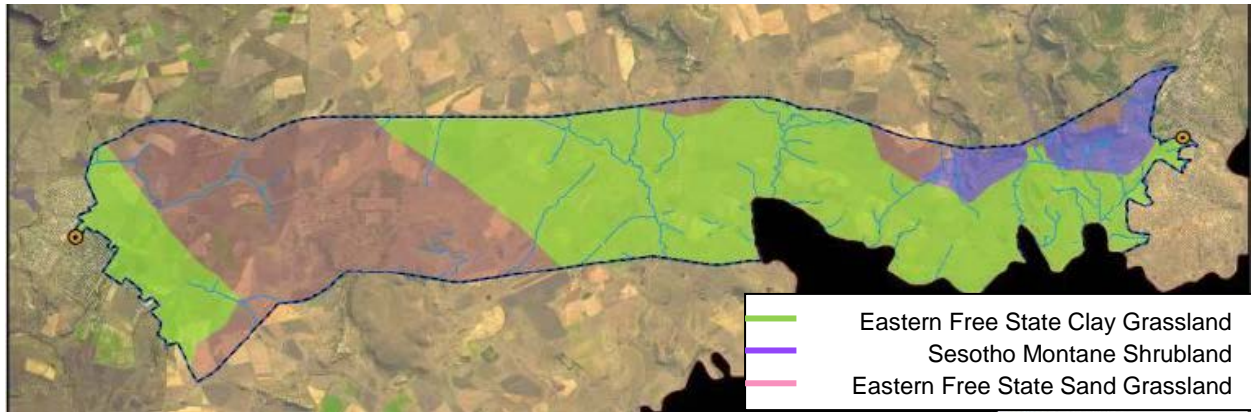


Figure 13 Vegetation types found on site (Mucina and Rutherford, 2006)

5.5.4 Vegetation on site

A Vegetation, Terrestrial Fauna Assessment and Wetland Delineation were undertaken by Liesl Mostert of ACER (Africa) Environmental Management Consultants (Appendix D2.1). A summary of the findings is provided below.

The study area is characterised by gently rolling grassland, which ranges from flat to slightly undulating with several sandstone ridges to the east and west of the study area. Numerous watercourses (rivers and streams) traverse the terrain. The altitude varies from 1200 m to 1650 m. The area holds important agricultural potential, evident by large tracts of cultivated land. However, many cattle and sheep farmers still rely on the natural vegetation for grazing with many of these farms containing primary vegetation, although it has become overgrazed over the years.

A number of rivers flow through the study area, namely the Caledon, Meulspruit, Rantsho and Mopeli, together with smaller seasonal streams. These promote the development of a network of wetlands and act as important niches for the fauna species. Some of the streams have been dammed.

During the site visit, the following six major vegetation communities were identified in the study area:

- ❑ *Seriphium plumosum* – *Eragrostis gummiflua* moist grassy hill seeps.
- ❑ *Diospyros austro-africana* – *Gymnosporia buxifolia* ridges and mountain slopes.
- ❑ *Helichrysum aureonitens* – *Eragrostis gummiflua* moist clay grassland.
- ❑ *Crepis hypochoeridea* – *Eragrostis plana* unchannelled valley bottom.
- ❑ *Helichrysum callicomum* – *Tristachya leucothrix* sandy rocky grassland.
- ❑ *Leucosidea sericea* – *Passerina montana* channelled valley bottom.

Table 9 Summary of habitat condition on site

Habitat Condition	% of Habitat Condition Class	Description and Additional Comments and Observations
Natural	10 %	Ridges and riparian vegetation appear to be in their natural state with indigenous and protected plant species.
Near Natural (includes areas with low to moderate level of alien invasive plants)	10 %	Riparian vegetation occurs along the river courses throughout the site.
Degraded (includes areas heavily invaded by alien plants)	20 %	Old agricultural fields and degraded grasslands occur across the study area. Cultivation and livestock farming including poor land management practices are responsible for this degradation.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	60 %	The majority of land within the study area is agricultural land or has infrastructure and services developed upon it (e.g. R26 and railway line).

5.5.4.1 *Seriphium plumosum* – *Eragrostis gummiflua* moist grassy hill seeps

This plant community occurs on the eastern slopes of the sandstone hills in the study area. *Seriphium plumosum*, also known as bankrupt bush, is the dominant species in this plant community due to overgrazing as well as moist veld conditions. Selective grazing of the grassland creates a patchy appearance, where palatable grass species are constantly grazed, and unpalatable species remain. Termite mounds are found in this vegetation community.

5.5.4.2 *Diospyros austro-africana* – *Gymnosporia buxifolia* rocky ridges and mountain slopes

This plant community is found on the drier western slopes of the study area. Exposed rocks and boulders cover approximately 30% of the slopes. This community, with its shallow soils, is dominated by hardy grasses such as *Hyparrhenia hirta*, *Cymbopogon pospischilii*, *Aristida diffusa*, and *Melinis nerviglumis*. Diagnostic plant species that are found in this community include *Aloe maculata*, *Cussonia paniculata*, *Clematis brachiata*, *Gymnosporia buxifolia*, *Euclea crispa*, *Diospyros austro-africana*, *D. lycioides* and *D. whyteana*.

This is a sensitive ecosystem that creates important habitats for several faunal species. There is a high probability that the sandstone ridges also contain caves, which is important for some of the bat species.

5.5.4.3 *Helichrysum aureonitens* – *Eragrostis gummiflua* moist clay grassland

This plant community is primary grassland and occurs on the midslopes and the footslopes and in most places is heavily grazed. Due to the heavy grazing and the late season, most of the grasses were unidentifiable. The grass layer is dominated by *Elionurus muticus*, *Themeda triandra*, *Setaria sphacelata*, *Harpochoa falx*, *Heteropogon contortus* and *Eragrostis gummiflua*. Prominent species include *Helichrysum aureonitens*. Termite mounds are found in this vegetation community.

5.5.4.4 *Crepis hypochoeridea* – *Eragrostis plana* unchannelled valley bottom

This plant community is characterized by an accumulation of clay in the landscape. The dominant species in the community are *Eragrostis plana*, *Setaria sphacelata* and *Crepis hypochoeridea*. *Verbena bonariensis* is a prominent species.

5.5.4.5 *Helichrysum callicomum* – *Tristachya leucothrix* sandy rocky grassland

This sandy rocky grassland plant community is found on the footslopes. Depending on the degree of weathering of the geological material, and the placement in the terrain, the soils can contain a greater or lesser percentage of sand and / or clay

5.5.4.6 *Leucosidea sericea* – *Passerina montana* rocky river banks

This plant community occurs on the lowest part of the landscape, where over the years, the water has carved a path through the rocks. *Passerina drakensbergensis*, *P. montana*, *Widdringtonia nodiflora* dominate the rocky river banks. Grey poplar (*Populus x canescens*) can frequently be seen where it forms dense stands.

In places where there is slow moving water or standing water, *Typha capensis*, *Phragmites australis*, *Imperata cylindrica*, *Leersia hexandra*, *Persicaria lapathifolia* and *Verbena bonariensis* are the dominant herbs and grasses. *Diospyros austro-africana* is a prominent species.

Not all the rivers in the area have rocky banks. The Meulspruit river has sandy banks and Grey poplar (*Populus x canescens*) and Weeping willow (*Salix babylonica*) can frequently be seen along its banks.

5.6 Freshwater Ecology

5.6.1 Surface water and rivers

The study area is located within the Upper Orange Water Management Area, spanning across two quaternary drainage regions (D22G and D22C).

A number of rivers flow through the study area, namely the Caledon, Meulspruit, Rantsho and Mopeli.

The Caledon River is a tributary of the Orange River in the eastern Free State. It rises in the Drakensberg, on the Lesotho–South African border, and generally flows southwest, forming most of the boundary between Lesotho and Free State province, South Africa.

The Meulspruit and Rantsho River are streams and occur at an estimated terrain elevation of 1543 m and 1529 m above sea level, respectively.

5.6.2 Wetlands

5.6.2.1 Overall study area

According to the findings of the Vegetation, Terrestrial Fauna Assessment and Wetland Delineation (ACER, 2013), three wetland types are found within the study area (channelled valley bottom, unchannelled valley bottom and hillslope seeps).

The majority of the wetlands within the study area are unchannelled valley bottoms (albeit that the hillslope seeps are relatively extensive). As a result of many years of grazing and poor management practices, a number of these wetlands have become eroded and channelled.

The *Cyperus* – *Eragrostis plana* channelled valley bottom wetlands receive water from seasonal streams. The banks of the wetlands are dominated by *Eragrostis plana*. Nearly all the plant species occurring in this community belong to the sedge family (*Cyperaceae*).

Unchannelled valley bottom wetlands receive water inputs that are spread diffusely across the wetland, resulting in extensive areas remaining permanently saturated. These permanently

saturated areas tend to have high levels of soil organic matter that assist with erosion control. Other important functions include the enhancement of water quality by removing nitrates and degrading toxicants. Indicator species for the unchannelled valley bottom wetland includes *Eragrostis plana*, which has a cover abundance value of more than 75%. Other grass species indicative of damp places are *Bromus catharticus*, *Cynodon dactylon* and *Paspalum dilatatum*. Indicator herbaceous species found in this wetland type include *Berkheya onopordifolia*, *Rumex crispus* and the weedy species *Verbena bonariensis*.

The hillslope seeps can be found anywhere in the landscape where the underlying soil layers and/or geology prevent water movement into the lower soil horizons. Hillslope seeps contribute to erosion control – if the vegetation is kept intact. Due to the steeper slopes of these units, once the vegetation is removed, the loss of soil is accelerated with the high water inputs. Indicator species for the hillslope seeps include *Seriphium plumosum* with a cover abundance value of up to 12%. *Eragrostis gummiflua* has a cover abundance value of up to 5%. Other grass species indicative of damp places include *Eragrostis plana*, *E. racemosa*, *Brachiaria serrata* and *Cynodon dactylon*.

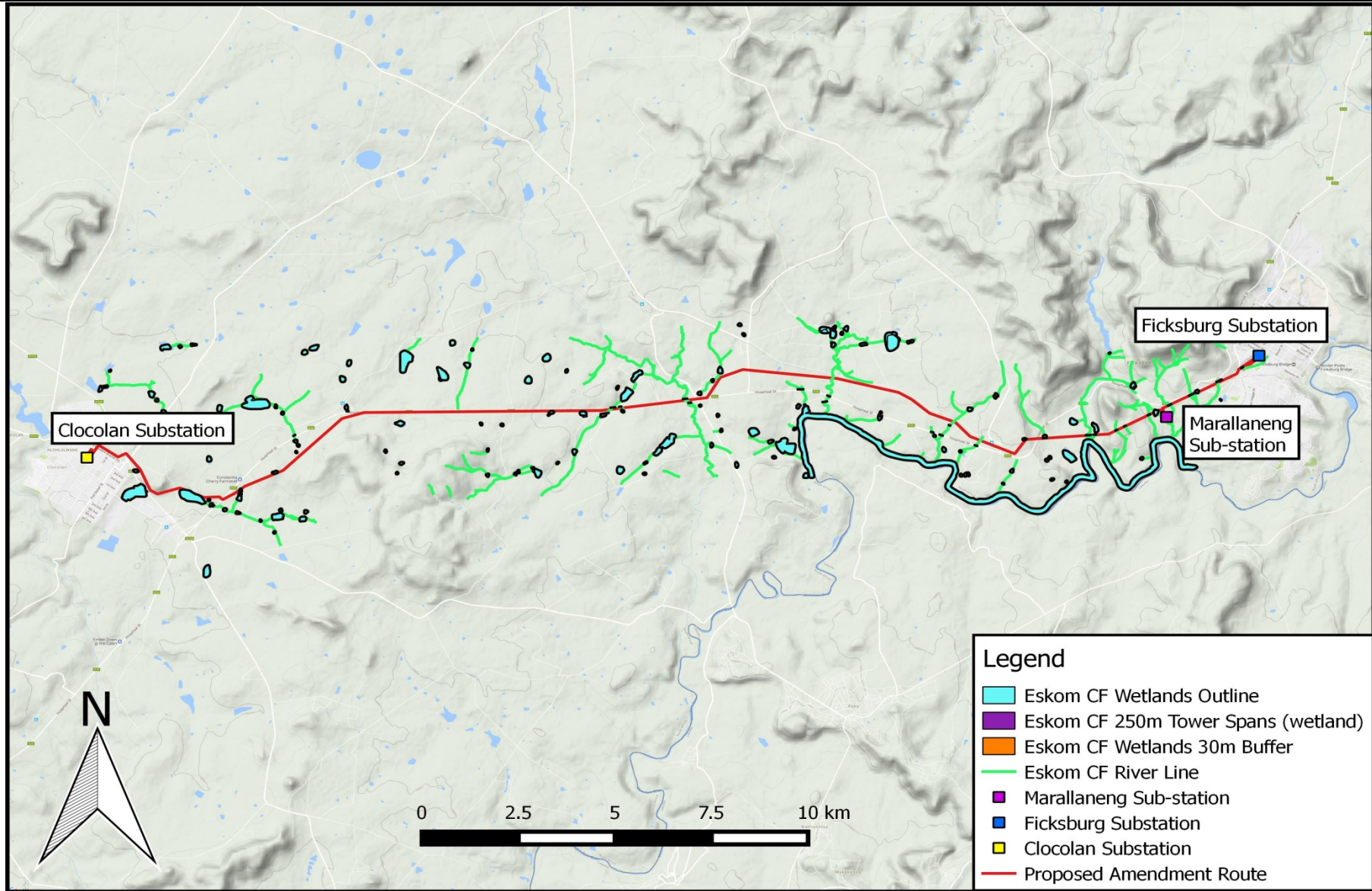


Figure 14 Wetlands identified within the corridor during the original Basic Assessment process (ACER, 2013)

5.6.2.2 *Marallaneng substation site*

During the EA amendment process, Exigent Engineering Consultants was appointed to produce an addendum to the original Vegetation, Terrestrial Fauna Assessment and Wetland Delineation Report, to assess the potential impacts of the proposed amendments. Included in the terms of reference of their appointment was the delineation and functional assessment of all wetlands within 500 m of the three substation site alternatives. A summary of the findings is provided below.

Three major drainage lines (channelled and unchannelled valley bottom wetland systems) and six main hillslope seeps were identified (Figure 15).

There is only one unchannelled valley bottom system (green polygon), which precedes a channelled valley bottom system (blue polygon). This system exhibit signs of erosion commencing. All the channelled valley bottom wetland systems are severely eroded, most of them up to bedrock. In their natural state it is possible that they were not channelled systems, but rather more similar to the unchannelled valley bottom system. It was typically found that the erosion has washed away the whole wetland system up to the temporary wet boundary (i.e. where the wetland starts), except in the case where a channelled valley bottom system is bordered by a hillslope seep (turquoise polygon).

Hillslope seep areas are often (but not always) associated with sandstone outcrops and ridges where they are exposed on steep slopes close to valley bottom wetland systems. Often these sandstone ridges have associated seep areas where water either accumulates above the ridge, siphons through the ridge by means of cracks, or gets expelled from the soil just below the ridge. These seep areas can be expressed either as 'pockets' of wetlands above, on, or below the sandstone ridges; or may appear as one large seep area from the ridge down to the valley-bottom wetland system. These seeps may be seasonal or very temporary in nature, especially those seep areas characterised by vertic soil or a very shallow soil on the sandstone ridges, which are in many cases also eroding. Seep zones are often extensive, and may stretch from crest to valley bottom.

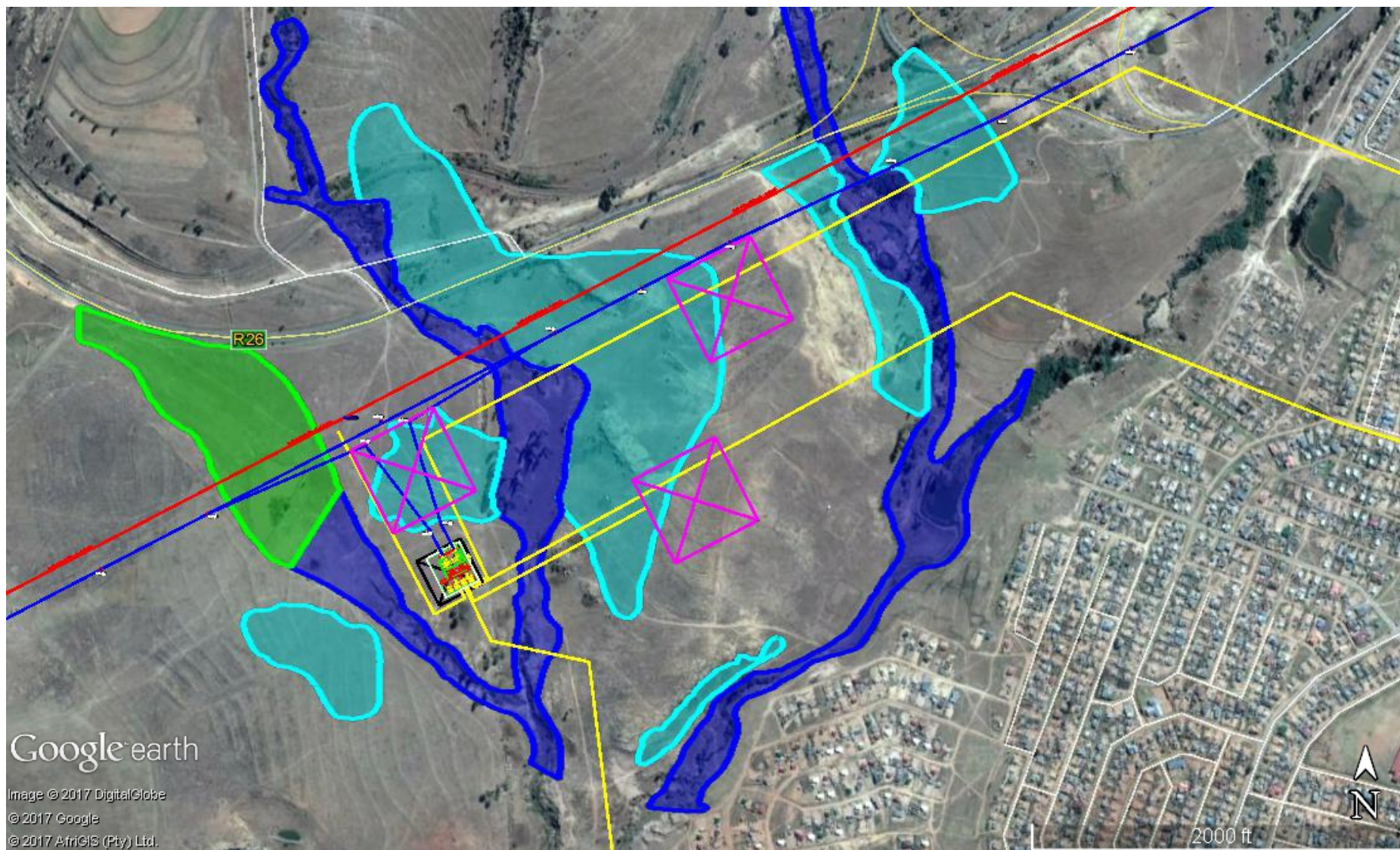


Figure 15 Wetlands delineated during EA amendment process within 500 m of Marallaneng Substation site

5.7 Avifauna

Jon Smallie of WildSkies Ecological Services was appointed during the original BAR to assess the impacts of the proposed 88 kV power line on avifauna species (Appendix D3.1). Jon Smallie was subsequently appointed during the EA amendment process to assess the impacts of the proposed 88 kV power line realignment as well as the construction of the Marallaneng Substation (Appendix D3.2). A summary of his findings is given below:

5.7.1 Overall study area

Due to the size and prominence of electrical infrastructure, it constitutes an important interface between birdlife and man. In Southern Africa, two common problems are associated with interactions between birdlife and electrical infrastructure; there are electrocutions of birds and birds colliding with power lines. Other problems include disturbance and habitat destruction during construction and maintenance activities, and electrical faults caused by bird excreta when roosting or breeding on electricity infrastructure.

Within the study area, a fairly wide diversity of bird species (278 bird species in total) is found and these are recorded by the South African Bird Atlas Project 1 and Project 2. Of these, 18 species are Red List species and they include the Blue Crane, Grey-crowned Crane, Cape Vulture, and Melodious Lark.

In terms of mapped bird areas, the study found the following within the study area:

- ❑ No Co-ordinated Avi-faunal Road count project (CAR) route sites.
- ❑ No Co-ordinated Water bird Count (CWAC) sites.
- ❑ No Important Bird Areas (IBA). The closest IBA in the wider area is the Fouriesburg-Bethlehem-Clarens IBA which will not be significantly impacted on by the new power line due to distant location.

Overall, the bird species most important within the study area are the Blue Crane, Grey-crowned Crane, Cape Vulture and Melodious Lark.

5.7.2 Marallaneng Substation site

The proposed Marallaneng Substation is positioned in habitat that is neither sensitive nor unique for avifauna. The impacts of destruction of habitat and disturbance of birds during construction and operation of the substation will be of low significance, and through proper implantation of the proposed mitigations, will be acceptable from an avifaunal perspective.

5.8 Visual and Aesthetic Character

Jon Marshall of Environmental Planning and Design was appointed to assess the impacts of the proposed 88 kV power line on the visual and aesthetic aspects of the receiving environment during the original BAR process (Appendix D4.1). Jon Marshall was subsequently appointed during the EA amendment process, to provide specialist input on the proposed amendments including the addition of the Marallaneng Substation (Appendix D4.2).

5.8.1 Overall study area

5.8.1.1 Landform description

The study area is located to the north of the Maluti Mountains in the southern Free State and its landscape character is largely a product of geological features (landforms and drainages patterns), natural features (vegetation) and man-made features (built structures). The mountains form a high backdrop to views when travelling through the study area, particularly in a west to east direction.

A number of small peaks and ridges occur within the study area and their formation originates from sandstone outliers from the main mountain range. At Ficksburg, a remarkable gorge has been created by the Meul River. The existing R26 passes through this gorge. The Meul River Dam is a popular camping destination and the surrounding areas of the Meulspruit Dam are used for the annual Ficksburg Cherry Festival.

West of Ficksburg and the Meul River Gorge, the landform is generally flat and is characterised by a series of rolling small rounded ridgelines and valleys that generally run in a north to south direction. Small watercourses flow through the valley lines. The ridgelines are approximately 30 - 40m higher than the valleys.

Near Clocolan, there is a ridgeline that occurs south of the existing power line and that rises to approximately 1750 m above mean sea level. It offers panoramic views in easterly and westerly directions.

The landform in the study area has the following influence on aesthetics:

- ❑ Long range panoramic views of the surrounding landscape.
- ❑ The Maluti Mountains offers a remarkable backdrop to panoramic views to the west and south.
- ❑ Apart from a number of visible isolated hills and ridgelines, the west of the study area offers no obvious backdrop to views.
- ❑ The minor valley lines that cross the study area have the effect of screening panoramic views of the surrounding landscape.
- ❑ The Meul River Gorge in Ficksburg provides a visually remarkable entrance to the town.

5.8.1.2 Maluti tourism route

The existing main road (R26) between Clocolan and Ficksburg carries all regional traffic from the Western and Northern Free State. It is an important regional link road. It also forms a part of the Maluti Route which is being developed as a tourism development corridor by regional and local tourism bodies. Thus, views from the entire length of the R26 are important, in particular towards the south and east of the study area.

The authorised route was considered the most preferred, due to the distance away from key viewpoints and landscapes, such the Maluti Route, the Meulspruit Dam and the Meul River Gorge.

The realignment of the authorised route and the removal of the existing power line, is likely to result in a reduction of visual clutter associated with electrical infrastructure as seen from local and regional roads. This will also help to minimise an increase in the footprint of electrical infrastructure within the rural landscape. There are therefore no visual grounds for not authorising these deviations.

5.8.2 Marallaneng Substation

Potential sensitive visual receivers in the area include:

- ❑ The R26 which is part of the Maluti Route which is a scenic tourism route that is promoted by SA Tourism;
- ❑ The Meulspruit Dam which is a local recreational resource.
- ❑ Housing areas to the south of the proposed sites.

Of the three site alternatives assessed, Option 1 was preferred due to the following observations made by the visual specialist:

- ❑ Option 1 is the lowest site so this means that this is likely to be favoured in terms of maintaining views over the substation towards the Maluti Mountains to the south of the road.
- ❑ Option 1 is located on a gentle slope that falls away from the R26. This could mean that it will be possible to cut the site into the slope closest to the road which could further reduce the visibility of the development from this area.
- ❑ None of the proposed Options are likely to be visible from the Meulspruit Dam.

Following the final placement of the Marallaneng Substation the following input from the visual specialist was received:

- ❑ The proposed location is approximately 150 m further from the R26 and approximately 5 m higher in elevation. The proposed site also appears to be on slightly steeper land than the Option 1 Substation.
- ❑ The proposed location still maintains at least a 500 m buffer strip between it and the closest residential area and is likely to be largely screened by landform from the closest houses.
- ❑ Figures 16 and 17 as included in the original VIA Addendum Report to illustrate the approximate locations of substation alternatives as viewed from the R26 has been updated to indicate the approximate location of the new Marallaneng Substation proposal.
- ❑ The proposed Marallaneng Substation will be seen slightly higher in the landscape when compared with Option 1. It will however be located in the same general area.
- ❑ Given that Option 1 is not feasible due to other environmental considerations, the proposed Marallaneng Substation is also likely to have the least visual impact both on the R26

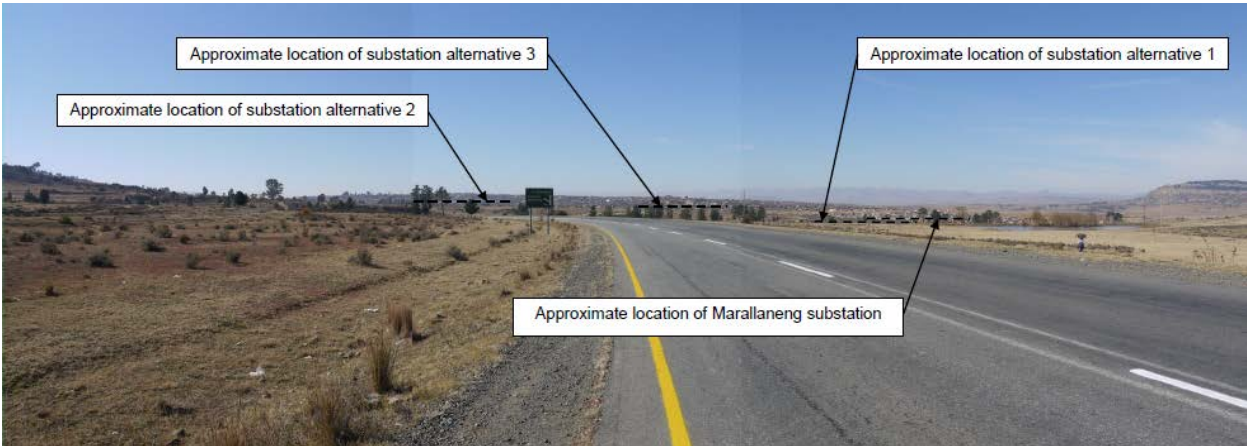


Figure 16 View from the R26 on exiting the Meul River Gorge looking to the east towards Ficksburg. The approximate locations of the substation alternatives have been marked for information.

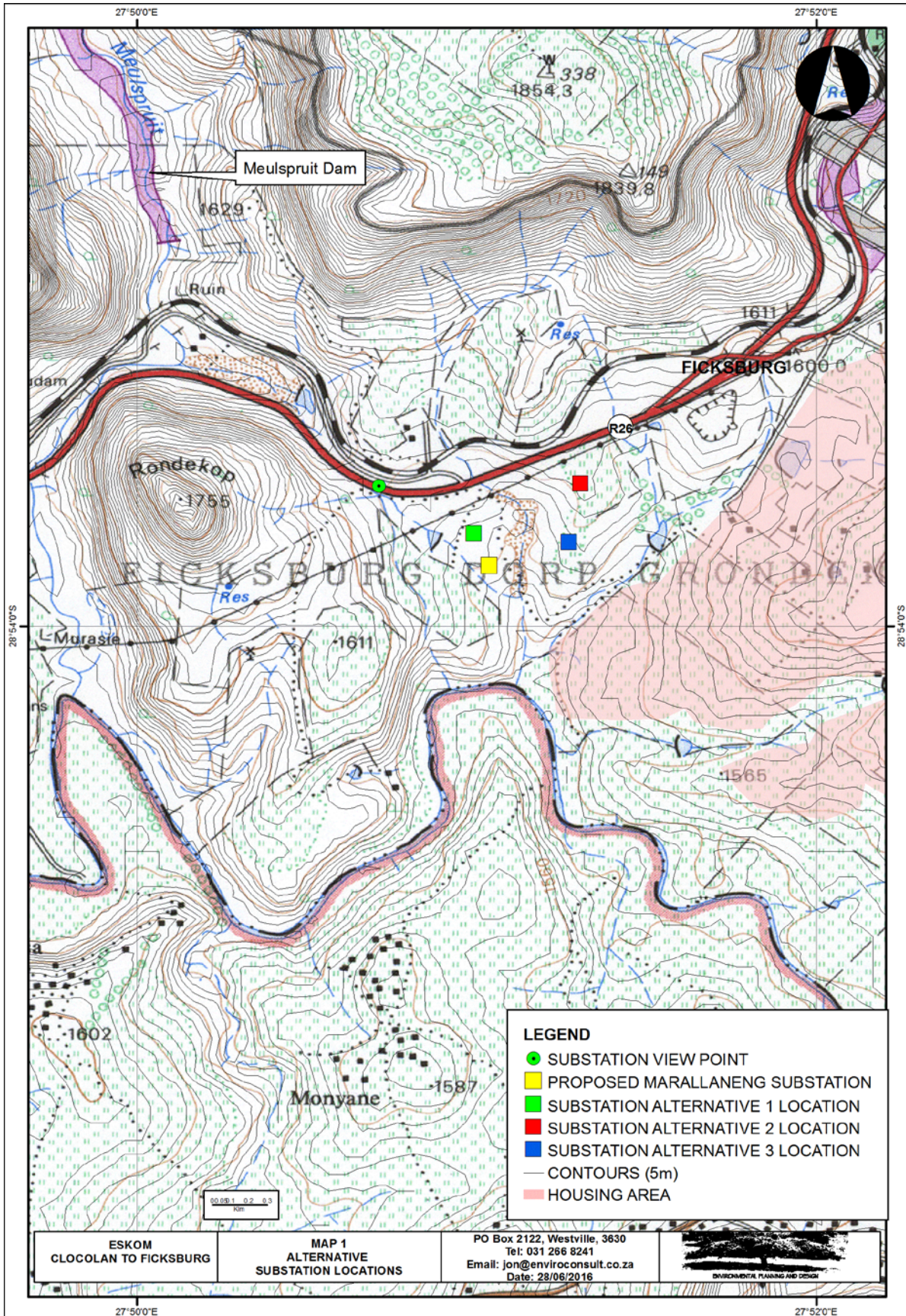


Figure 17 View point on the R26 looking to the east towards the substation site alternatives

5.9 Site sensitivity map

Please refer to Appendix C2 for a map showing cultural and environmental sensitivities.

6. PUBLIC PARTICIPATION PROCESS

6.1 Objectives

The public participation process for the proposed project was designed to comply with the requirements of the EIA Regulations and NEMA (Table 3). The objectives of public participation are to provide sufficient and accessible information to I&APs in an objective manner to assist them to:

- Identify issues of concern, and provide suggestions for enhanced benefits and alternatives.
- Contribute local knowledge and experience.
- Verify that their issues have been considered.
- Comment on the findings of the assessment, including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.

6.2 Stakeholder/I&AP profile

Table 15 lists the stakeholder profile registered on the database (Appendix E2) and Table 11 lists the organs of state who have been identified as key stakeholders

Table 15 Sectors of society represented by I&APs on the direct mailing list

Sectors of society represented on the database
Government (National, Provincial and Local)
State owned companies (Telkom, Transnet)
Transport sector (rail, taxis, buses)
Non-Governmental Organisations/Community Based Organisations
Private and institutional adjacent landowners
Local residents and businesses
Conservation Authorities
Business and Industry

Table 16 Authorities and organs of state identified as key stakeholders

Title	Position Co/Org	Address	Tel	E-mail
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Mrs June M Berend	Landowner Zwartlaagte Farm	P O Box 675, Ficksburg, 9730	051 933 3631 073 216 1123	juneberend@gmail.com

6.3 Project notification and invitation to participate

Notification of the project and the opportunity to participate in the Basic Assessment process was announced on the 11th October 2017. Notifications to I&APs were made available in two local languages, English and Afrikaans. The process undertaken is described below. All relevant documentation associated with the public participation process is contained in Appendix E.

- ❑ Direct personal notification of **directly affected property owners** (where they have been contactable) has been undertaken to date by Eskom along the authorised 88 kV power line. This refers to the owners of properties on which Eskom needs to acquire a servitude.
- ❑ **Landowners adjacent to the site** – a deeds search was done to identify owners of properties adjacent to the proposed distribution infrastructure, and all reasonable attempts were made to obtain current contact details. Many property owners own multiple properties and are in the form of Companies or Trusts, and several properties belong to the state or municipality. A letter, Background Information Document (BID) and comment sheet were posted to the identified addresses of owners and in the letter, the I&APs were requested to update their details for the database. (Appendix E4 and 5 provides proof of postage).
- ❑ Compilation of a **database of I&APs** (Appendix E2) identified as being potentially interested and/or affected, including authorities, municipalities, organs of state, councillors, conservation bodies, non-government organisations, landowners, local residents, etc. The registered I&APs from databases used for the original Clocolan-Ficksburg 88 kV power line BAR was also included in the database.
- ❑ The councillors for the affected wards were sent the project information and invited to comment, as were other **authorities** (e.g. municipalities, and provincial and national government departments) (Appendix E5 provides proof of written notice to authorities).
- ❑ **Personalised letters and electronic mail, including a Background Information Document** (Appendix E1) containing relevant details of the project and environmental application process were sent out to all I&APs on this database. A comment sheet was provided for I&APs to update their contact details, register themselves on the database, to record issues and to send back by fax or email. Contact telephone numbers of the project public participation office were provided to enable direct telephonic liaison with the project team, if required.
- ❑ **Advertisements** (Appendix E1) were placed on 11 October 2017 in local and provincial newspapers providing project details and contact details of where to register as an I&AP and obtain further information. Advertisements were placed in the following newspapers:
 - Express (English).
 - Vrystaad Nuus (Afrikaans).
- ❑ An **Onsite notice** in English and Afrikaans (Appendix E1) was placed adjacent to the R26, at the site of the proposed Marallaneng Substation.
- ❑ A **project website** containing relevant documentation was set up on www.acerafrica.co.za.
- ❑ Receipt of comments from I&APs and acknowledgement of comments will be ongoing from the project announcement phase, until submission of the Final BAR. These comments and the responses sent are in the **Comments and Responses Report** (Appendix E3).

6.4 Summary of Issues Raised by I&APs

Table 17 provides a summary of issues raised by I&APs and the responses provided by the EAP. A full Comments and Responses Report is provided in Appendix E3.

Table 17 Summary of issues raised by interested and affected parties

Summary of main issues raised by I&APs	Summary of response from EAP
No comments received thus far.	N/A

6.5 Circulation of draft BAR for public review

- ❑ Stakeholders on the project database (registered stakeholders) were notified of the availability of the draft BAR & EMPr for comment, for a period of 30 days (all I&APs including authorities). Notification was done by post and email.
- ❑ The documents were made available on ACER's website.
- ❑ Hard copies of the draft BAR and EMPr were made available at the following public libraries: Clocolan and Ficksburg.
- ❑ Hard copies and/or CDs of the draft BAR & EMPr were provided to all key commenting authorities and organs of state (Department of Environmental Affairs (DEA), Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA), Free State Department of Water and Sanitation (DWS), Transnet Freight Rail, Free State Department of Agriculture and Rural Development (DARD), Free State Department of Police, Roads and Transport and Setsoto Local Municipality).
- ❑ CDs were made available on request to all key stakeholders and landowners.

7. ASSESSMENT METHODOLOGY

7.1 Identification and assessment of significance of key issues and impacts

Issues and potential impacts of the project on the environment (and *vice versa*) were identified by way of field investigations, desktop studies and interaction with I&APs. Key issues and impacts requiring further investigation were addressed by specialist studies (Appendix D) and/or further detailed input from the environmental and technical teams. Specialist studies were guided by the assessment conventions (Table 18) to ensure that issues and associated impacts were correctly identified, understood and addressed, thereby enabling an integrated assessment of the development proposal.

Mitigation measures were identified with inputs from the specialists, the design engineers and the EAP team. Information was collated, evaluated and integrated. Thereafter, the significance of each impact was assessed using the assessment conventions outlined in Table 14. It should be noted that the significance of an impact is a function of all the attributes outlined in Table 18, and the relationships between them. The assessment conventions are applied qualitatively by the EAP, based on an understanding of the receiving environment, the proposed project components and activities, and the information gathered from different sources, including specialists and the public.

Table 18 Conventions applied to the impact assessment

Criteria	Rating Scales	Definition
Nature	Positive	This is an evaluation of the overall impact of the construction, operation and management that the proposed N2/N3 upgrades would have on the affected environment (social, biophysical and economic)
	Negative	
	Neutral	
Spatial extent	Low	Site-specific, affects only the development footprint
	Medium	Local (< 2 km from site)
	High	Regional (within 30 km of site) to national
Duration	Very low	Temporary (less than 1 year)
	Low	Short term (1-4 years, i.e. duration of construction phase)
	Medium	Medium term (5-10 years)
	High	Long term (impact will only cease after the operational life of the activity) to permanent
Intensity	Low	Negligible alteration of natural systems, patterns or processes
	Medium	Noticeable alteration of natural systems, patterns or processes
	High	Severe alteration of natural systems, patterns or processes
Irreplaceability of resource caused by impacts	Low	No irreplaceable resources will be impacted (the affected resource is easy to replace/rehabilitate)
	Medium	Resources that will be impacted can be replaced, with effort
	High	Project will destroy unique resources that cannot be replaced
Reversibility of impacts	Low	Low reversibility to non-reversible
	Medium	Moderate reversibility of impacts
	High	High reversibility of impacts
Consequence (a combination of spatial extent, duration, intensity and irreplaceability of impact on resources).	Low	A combination of any of the following: - Intensity, duration, extent and impact on irreplaceable resources are all rated low - Intensity is low and up to two of the other criteria are rated medium - Intensity is medium and all three other criteria are rated low
	Medium	Intensity is medium and at least two of the other criteria are rated medium
	High	Intensity and impact on irreplaceable resources are rated high, with any combination of extent and duration Intensity is rated high, with all of the other criteria being rated medium or high
Probability (the likelihood of the impact occurring)	Low	It is highly unlikely or there is a less than 50% chance that an impact will occur
	Medium	It is between 50 and 75% certain that the impact will occur
	High	It is more than 75% certain that the impact will occur or it is definite that the impact will occur
Significance (all impacts including potential cumulative impacts)	Low	Low consequence and low probability Low consequence and medium probability Low consequence and high probability
	Medium	Medium consequence and low probability Medium consequence and medium probability Medium consequence and high probability High consequence and low probability
	High	High consequence and medium probability High consequence and high probability

7.2 Assumptions, limitations and gaps in knowledge

7.2.1 General assumptions, limitations and gaps in knowledge

- ❑ It is assumed that technical data supplied by Eskom are correct and valid at the time of compilation of the BAR.
- ❑ It is assumed that data supplied by external institutions (for example, SANBI, NFEPA) were correct and valid at the time of compilation of the specialist reports and the BAR.
- ❑ While every effort was made to directly contact all affected landowners and adjacent landowners, it is assumed that the advertising and site notices would serve to notify the public at large.

7.2.2 Specialist assumptions, limitations and gaps in knowledge

The assumptions, limitations and gaps in knowledge stated in the specialist reports are listed below.

7.2.2.1 Cultural heritage resources impact assessment

- ❑ The description of the proposed project, provided by the client, is assumed to be accurate.
- ❑ This report represents only partial compliance with a Phase 1 HIA for the proposed project. The project may not proceed without the completion of the recommendations of this report and the approval of the Phase 1 HIA report by SAHRA.
- ❑ A key concept in the management of heritage resources is that of non-renewability: damage to or destruction of most resources, including that caused by bona fide research endeavours, cannot be reversed or undone. Accordingly, management recommendations for heritage resources in the context of development are as conservative as possible.
- ❑ Human sciences are necessarily both subjective and objective in nature. eThembeni staff members strive to manage heritage resources to the highest standards in accordance with national and international best practice, but recognise that their opinions might differ from those of other heritage practitioners.
- ❑ Staff members involved in this project have no vested interest in it; are qualified to undertake the tasks as described in the terms of reference; and comply at all times with the Codes of Ethics and Conduct of the Association of Southern African Professional Archaeologists.
- ❑ eThembeni staff members take no personal or professional responsibility for the misuse of the information contained in this report, although they will take all reasonable precautions against such misuse.

7.2.2.2 Terrestrial ecology and wetlands impact assessment

Original Report (ACER 2013)

The site visit was performed in April 2013 during autumn which is the end of the growing season, with most of the herbs and grasses past the flowering stage. Many plant species could not be identified due to an absence of flowers or inflorescences. Geophytic species present on site could not be located and/or positively identified due to the season. Many of the grasslands found on site have experienced many years of overgrazing. This has led to degraded grasslands in many instances.

Addendum Report (Exigent 2016)

- ❑ The site visit was done in June 2016. Since this falls within the South African winter season, limited vegetation cover to assist the delineation was available. A single baseline assessment was conducted.
- ❑ Accuracy of the maps, aquatic ecosystems, routes and desktop assessments were made using the current 1:50 000 topographical map series of South Africa and Google Earth.
- ❑ A GPS which is accurate within 5 m will be used during the site visit.
- ❑ The faunal assessment is a desktop study.
- ❑ Whilst every care is taken in ensuring that the data presented is qualitatively adequate, inevitably circumstantial conditions may prohibit this.
- ❑ Wetland and riparian zone reference points were identified during a desktop study and verified during the field visit. Representative transects in each wetland unit on site was surveyed. The final delineation does rely on some degree of interpolation using the verified field delineation as a benchmark for image interpolation of satellite and Google Earth imagery.

7.2.2.3 Visual impact assessment

The study is based on the limit of both the Visual Envelope (extent of potential visibility) and Zone of Visual Influence (ZVI) for the project. The limits assume that the alignment is located within the identified Eskom Corridor. They have been calculated using a 3km buffer from the edge of the corridor for the limit of possible ZVIs and a 6km buffer from the edge of the corridor for the limit of possible Visual Envelopes.

7.2.2.4 Avifauna impact assessment

This study made the assumption that the sources of information are reliable. The following factors may potentially detract from the accuracy of the predicted results:

- ❑ The SABAP 1 data covers the period 1986-1997. Bird distribution patterns fluctuate continuously according to availability of food and nesting substrate. (For a full discussion of potential inaccuracies in SABAP data, see Harrison, Allan, Underhill, Herremans, Tree, Parker & Brown, 1997).
- ❑ Unfortunately the SABAP 2 data is not yet readily available with sufficient coverage for this area to be used on its own and so has been used in combination with SABAP 1.
- ❑ The site visit was conducted in late summer/autumn over which time various species may not have been present or may not have been as conspicuous in the study area as they may have been during summer. No long term studies were conducted on site.
- ❑ Predictions in this study are based on experience of these and similar species in different parts of South Africa, through the authors' experience working in the field of wildlife – energy interaction since 1999. However bird behaviour can't be reduced to formulas that will hold true under all circumstances. This is particularly true for a species such as Cape Vulture, which wanders widely over the landscape and can forage anywhere at any time, depending on carcass availability.

8. INTEGRATED DESCRIPTION OF ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS

The assessment of impacts adheres to the minimum requirements in the EIA Regulations, 2014, and considers all components of the proposed project, i.e.:

- ❑ The decommissioning of the existing 88 kV power line between Ficksburg and Clocolan.
- ❑ The construction of the Marallaneng Substation and associated infrastructure.
- ❑ The construction of infrastructure within 32 m of an identified wetland / watercourse.

Furthermore, the assessment has considered the outcomes of the discipline specific specialist studies in an integrated manner in order to arrive at a recommended alternative that has the least significant impact on the environment while still achieving the purpose and need of the proposed project.

The assignment of significance ratings to impacts (where applicable), according to the assessment conventions (Table 18), is provided in Chapter 9 (Tables 19 - 21).

Table 19 Decommissioning of the existing 88 kV power line

8.1 DECOMMISSIONING OF THE EXISTING 88 KV POWER LINE			
PLANNING AND DESIGN PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
Impacts arising from the planning and design phase.	Direct impacts No direct impacts will occur on the site during the Planning and Design phase.	None	<ul style="list-style-type: none"> ▪ No direct impacts will occur on the site during the Planning and Design phase. However, cognisance must be taken during project planning and budgeting of the potential impacts identified and mitigation measures required for the Construction, Operation and Decommissioning phases.
Indirect impacts As above.		None	<ul style="list-style-type: none"> ▪ As above.
Cumulative impacts As above.		None	<ul style="list-style-type: none"> ▪ As above.
CONSTRUCTION PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
Impacts arising from construction activities.	Ecological Impacts		<ul style="list-style-type: none"> ▪ Large trees and plants of conservation concern should be avoided. ▪ Open areas that remain after the decommissioning of existing infrastructure, should be seeded (with locally sourced seeds) or mulched to limit erosion and to encourage vegetation growth. ▪ Keep vegetation clearance to a minimum. ▪ Sensitive areas should be demarcated and avoided. ▪ Implement soil erosion control measures. ▪ Immediate rehabilitation of disturbed areas (shaping, topsoil replacement, re-vegetation). ▪ Collection, hunting or harvesting of any plants or animals should be strictly forbidden. ▪ Fuel wood collection should not be allowed on or around site. ▪ Burrowing animals' nests must be avoided.
	<ul style="list-style-type: none"> ▪ Disturbance and loss of vegetation due to construction activities. 	Low (-)	
	<ul style="list-style-type: none"> ▪ Erosion and loss of soil as a result of the clearance of vegetation 	Low (-)	
	<ul style="list-style-type: none"> ▪ Faunal habitat destruction. 	Low (-)	

	<ul style="list-style-type: none"> ▪ Disturbance and modification of wetland habitat. ▪ Temporary disturbance of birds and destruction of bird habitat. 	<p>Low (-)</p> <p>Low (-)</p>	<ul style="list-style-type: none"> ▪ The ECO and Eskom appointed Contractor must ensure that all wetlands and rivers/streams likely to be affected have been identified, delineated, photographed and clearly marked prior to the start of construction activities. ▪ The timing of construction in wetlands and rivers should be during the low flow season to minimise increased sedimentation and turbidity. ▪ No materials may be stockpiled in any wetland and riparian areas. ▪ Compacted areas must be ripped and scarified to break up soils and allow the re-establishment of natural vegetation. ▪ Disturbed areas within wetland/riparian areas must be re-vegetated with appropriate local species, immediately after surface reinstatement is complete. ▪ A monitoring and alien weed control programme must be implemented by Eskom for the decommissioned servitude for a minimum of a year to ensure no nick-point erosion develops in disturbed soils, wetland vegetation re-establishes and that alien weeds are controlled. ▪ The normal suite of environmental good practices should be applied, such as ensuring strict control of staff, vehicles and machinery on site and limiting the creation of new roads as far as possible.
Impacts arising from construction activities.	<p>Socio Economic Impacts</p> <ul style="list-style-type: none"> ▪ Impact on formally Protected Heritage Resources. ▪ Positive impact on local employment opportunities. ▪ Generation of fugitive dust. ▪ Increased noise pollution. 	<p>Low (-)</p> <p>Medium (+)</p> <p>Low (-)</p> <p>Low (-)</p>	<ul style="list-style-type: none"> ▪ Prior to the start of any construction activities, the ECO must ensure that all heritage resources are identified, so that direct and indirect impacts are avoided. ▪ Eskom should source as much local labour as possible during construction ▪ As far as feasibly possible, Eskom should be required to make use of local service providers. ▪ Dust must be suppressed on the construction site during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off. ▪ Surrounding communities and adjacent landowners are to be notified in advance of noisy construction activities.
Impacts arising from construction activities.	<p>Indirect Impacts</p> <ul style="list-style-type: none"> ▪ Disruption in agricultural production. 	<p>Low (-)</p>	<ul style="list-style-type: none"> ▪ Negotiation with farmers around access to land and safety is encouraged. Compensation for damages and loss of profits where negligence on Eskom's behalf can be proved, should take place.
Impacts arising from construction activities.	<p>Cumulative Impacts</p> <ul style="list-style-type: none"> ▪ The overall cumulative impacts are expected to be of low significance 	<p>Low (-)</p>	<ul style="list-style-type: none"> ▪ Mitigation measures for the management of vegetation, terrestrial fauna, avi-fauna, cultural and heritage resources, and the visual environment must be implemented during construction.

	and mostly positive.		<ul style="list-style-type: none"> Implement a monitoring programme in order to ensure compliance with the EMPr. Preferably, construction camps and storage areas should be located within the urban boundary of either Clocolan or Ficksburg so as to minimise environmental impacts on the natural environment and water bodies.
OPERATION PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
Reinstatement of the decommissioned sections of the existing servitude.	<p>Direct Ecological Impacts</p> <ul style="list-style-type: none"> Loss of soil as a result of the erosion from newly exposed areas. Establishment and spread of alien plants. 	<p>Low (-)</p> <p>Low (-)</p>	<ul style="list-style-type: none"> Rip and scarify compacted soils, to a depth of 300 mm, along the contour. Replace topsoil. Re-vegetate site with indigenous vegetation. Monitor the rehabilitated areas for signs of soil erosion. Monitor the increase of alien invasive plant species. Control alien plants using methodology in the EMPr.
Reinstatement of the decommissioned sections of the existing servitude.	<p>Indirect Impacts</p> <ul style="list-style-type: none"> Reduced footprint on the natural environment. Reduced impacts on agricultural lands. Improved aesthetics and reduced visual clutter. 	<p>High (+)</p> <p>Medium (+)</p> <p>Medium (+)</p>	<ul style="list-style-type: none"> Proper implementation of the required rehabilitation measures to the decommissioned sections of the old power line servitude.
Reinstatement of the decommissioned sections of the existing servitude.	<p>Cumulative Impacts</p> <ul style="list-style-type: none"> The cumulative impacts associated with the decommissioning of the existing 88 kV power line will be positive overall. 	<p>Medium (+)</p>	<ul style="list-style-type: none"> Ongoing monitoring of reinstated areas for signs of erosion, establishment of alien plants and the success of re-vegetation.
DECOMMISSIONING PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
As described above.	<ul style="list-style-type: none"> The impacts and mitigations provided above are for the decommissioning of the existing 88 kV power line. 	<p>Not applicable</p>	<ul style="list-style-type: none"> The impacts and mitigations provided above are for the decommissioning of the existing 88 kV power line.
NO-GO ALTERNATIVE			
Activity and Impact summary		Significance (with mitigation)	Proposed mitigation
<p>This would mean the existing 88 kV power line be left as is and the new 88 kV line be built on single circuit structures along the authorised route.</p> <p>Having two High Voltage (HV) over head power lines running in close proximity to each other, to and from the same destinations will have increased visual, ecological</p>		<p>High (-)</p>	<p>This option is not desirable from an ecological or socio-economic perspective.</p> <p>The no-go option could delay or further jeopardise the successful implementation of the already authorised new 88 kV power line and Marallaneng Substation.</p>

<p>and social impacts as a result of the additional the increased footprint on the environment and agricultural land.</p>		<p>Without the additional electricity capacity, the municipality will not be in a position to achieve its economic and social developments targets.</p>
<p>Leaving the existing 88 kV power line as is and constructing the new 88 kV line on single circuit structures along the authorised route would be against the requests of many affected landowners, and could jeopardise Eskom's servitude acquisition negotiations and therefore ultimately the success of the entire project.</p>		

Table 20 Construction of the Marallaneng Substation and associated infrastructure

8.2 CONSTRUCTION OF THE MARALLANENG SUBSTATION AND ASSOCIATED INFRASTRUCTURE			
PLANNING AND DESIGN PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
Impacts resulting from the planning and design phase.	Direct impacts No direct impacts will occur on the site during the Planning and Design phase.	None	No direct impacts will occur on the site during the Planning and Design phase. However, cognisance must be taken during project planning and budgeting of the potential impacts identified and mitigation measures required for the Construction, Operation and Decommissioning phases.
Impacts resulting from the planning and design phase.	Indirect impacts As above.	None	As above.
Impacts resulting from the planning and design phase.	Cumulative impacts As above.	None	As above.
CONSTRUCTION PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
Impacts resulting from construction activities.	Direct Ecological Impacts <ul style="list-style-type: none"> ▪ Clearing of natural vegetation/loss of indigenous species ▪ Loss of faunal habitat and corridors ▪ Exotic species encroachment and impacts ▪ Disturbance and loss of wetland habitat 	Medium (-) Low (-) Low (-) Low (-)	<ul style="list-style-type: none"> ▪ Construction footprints must be approved by the ECO and demarcated, to keep encroachment on surrounding environments to a minimum. ▪ A program should be put in place to remove exotic vegetation and maintain open space areas free from exotic invasions within the development footprint. ▪ Areas where drainage patterns may have been altered must be rehabilitated to prevent significant amounts of additional storm water from entering the wetland system during the operational phase.
Impacts resulting from construction activities.	Direct Hydrological Impacts <ul style="list-style-type: none"> ▪ Contamination of groundwater resources ▪ Drainage pattern changes ▪ Storm water increase 	Low (-) Low (-) Low (-)	<ul style="list-style-type: none"> ▪ Construction should preferably take place during the winter months to minimise the risk of sediment, debris and other pollutants being washed into the wetland during high rainfall events. ▪ Bare areas and stockpiles should be covered during extreme wind or rainfall events to prevent dust and sedimentation of aquatic habitats. ▪ Machinery and equipment must not be

			<p>serviced, re-fuelled or washed on site.</p> <ul style="list-style-type: none"> ▪ The use of all chemicals and potentially hazardous substances must take place on a tray over an impermeable surface. ▪ Chemical or potentially hazardous substance spills must be addressed immediately and reported to the ECO and the relevant authority.
Impacts resulting from construction activities.	<p>Direct Geomorphological Impacts</p> <ul style="list-style-type: none"> ▪ Increased soil sediment loads ▪ Compaction of soil ▪ Loss of soil and resultant erosion ▪ Dust generation and transportation 	<p>Low (-) Low (-) Low (-) Low (-)</p>	<ul style="list-style-type: none"> ▪ Temporary storm water management structures must be used during construction. ▪ All signs of erosion must be rehabilitated immediately. ▪ Compacted soil must be ripped before re-vegetation to increase viability of establishment. ▪ Once construction is complete, all disturbed areas must be re-vegetated with suitable species.
Impacts resulting from construction activities.	<p>Direct Avifaunal Impacts</p> <ul style="list-style-type: none"> ▪ Destruction of bird habitat – likely to affect Red Listed species and habitat specialists, such as Melodious Lark and the cranes. ▪ Disturbance of birds – likely to affect breeding birds in particular. 	<p>Low (-) Low (-)</p>	<ul style="list-style-type: none"> ▪ The primary means of mitigating this impact is typically through the selection of the optimal site for the substation. ▪ In addition to this, the normal suite of environmental good practices should be applied, such as ensuring strict control of staff, vehicles and machinery on site and limiting the creation of new roads as far as possible.
Impacts resulting from construction activities.	<p>Direct Heritage and Paleontological Impacts</p> <ul style="list-style-type: none"> ▪ Potential impact of excavations on the subterranean fossil bearing strata 	<p>High (-)</p>	<ul style="list-style-type: none"> ▪ In addition to the mitigations from the original BAR, EMPr and resulting EA, the following mitigations must be adhered to: ▪ A palaeontologist with experience of the Permian Extinction Zone must be appointed to have a watching brief to monitor excavations during establishment of the Substation platform. The palaeontologist must be permitted by the relevant heritage authority to collect, rescue and record fossils during these excavations.
Impacts resulting from construction activities.	<p>Direct Visual Impacts</p> <ul style="list-style-type: none"> ▪ Loss of visual aesthetics of the environment. ▪ Loss of potential future benefits related to tourism. 	<p>Low (-) Low (-)</p>	<p>Where possible, infrastructure in the following locations should be avoided:</p> <ul style="list-style-type: none"> ▪ Where it will be out of character or disruptive to the sense of place. ▪ Where it will break the skyline on a scenic landscape. ▪ Along scenic tourist routes. Where alignment is required adjacent to roads, place the power line as close as possible to the road so that views are least affected (“by looking under the power line at source on the road”). ▪ In any area, property, adjacent to sites of cultural or social importance such as

			historical sites proclaimed in terms of the NHRA, graveyards, public open spaces and visual corridors or gateways.
Impacts resulting from construction activities.	<p>Nuisance Impacts</p> <ul style="list-style-type: none"> ▪ Disruption in agricultural production ▪ Increased criminal activity. ▪ Increased dust. ▪ Increased traffic and reduced road safety. ▪ Increased danger of fire. ▪ Increased noise. 	<p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p>	<ul style="list-style-type: none"> ▪ Effective communication with the land owners during construction to ensure minimal impact on production activities. ▪ Implement measures to prevent nuisance (noise, light, dust and fire) disturbances.
Impacts resulting from construction activities.	<p>Direct Socio-Economic Impacts</p> <ul style="list-style-type: none"> ▪ Economic impacts and material wellbeing. ▪ Increased employment opportunities. ▪ Increased opportunities for Small Medium Enterprises (SME)s. 	<p>Medium (+)</p> <p>Medium (+)</p> <p>Medium (+)</p>	<ul style="list-style-type: none"> ▪ Eskom should source as much local labour as possible during construction ▪ As far as feasibly possible, Eskom should be required to make use of local service providers.
Impacts resulting from construction activities.	<p>Cumulative Impacts</p> <ul style="list-style-type: none"> ▪ Impacts on vegetation, terrestrial fauna and wetlands: ▪ Erosion and sedimentation from the construction site may have negative effects on the water quality of water resources. This can potentially affect freshwater species. ▪ Potential displacement or permanent loss of terrestrial fauna due to the loss of natural vegetation and migration corridors. ▪ Potential spread of alien plant species into natural vegetation. ▪ Loss of habits for bird species which may lead to the displacement or permanent loss of bird species. ▪ Permanent loss of visual aesthetics of the environment. ▪ Permanent loss of potential future benefits related to tourism. ▪ Potential impacts of excavations on the subterranean fossil bearing strata. 	<p>Medium (-)</p>	<ul style="list-style-type: none"> ▪ Mitigation measures for the management of vegetation, terrestrial fauna, avi-fauna, cultural and heritage resources, and the visual environment must be implemented during construction. ▪ Implement a monitoring programme in order to ensure compliance with the EMPr. ▪ Preferably, construction camps and storage areas should be located within the urban boundary of Ficksburg so as to minimise environmental impacts on the natural environment and water bodies.

	<ul style="list-style-type: none"> ▪ Economic impacts and material wellbeing. ▪ Increased employment opportunities. ▪ Increased opportunities for Small Medium Enterprises (SME)s. 	High (+)	<ul style="list-style-type: none"> ▪ Eskom should source as much local labour as possible during construction ▪ As far as feasibly possible, Eskom should be required to make use of local service providers.
OPERATIONAL PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
Operation and maintenance of the Marallaneng Substation and associated infrastructure.	<ul style="list-style-type: none"> ▪ Impacts of on-going servitude maintenance on the vegetation within and surrounding the proposed substation. ▪ Loss of faunal habitat and corridors. ▪ Exotic species encroachment and impacts. <p>Hydrological Impacts</p> <ul style="list-style-type: none"> ▪ Storm water increase. <p>Geomorphological impacts</p> <ul style="list-style-type: none"> ▪ Loss of soil and resultant erosion. 	<p>Low (-)</p> <p>Low (-)</p> <p>Medium (-)</p> <p>Low (-)</p> <p>Low (-)</p>	<ul style="list-style-type: none"> ▪ An ongoing monitoring program should be put in place to ensure rehabilitated areas are re-establishing and exotic vegetation is controlled and eradicated. ▪ Implement the storm water and pollution mitigation measures proposed in the EMPR. ▪ The operational monitoring of waste and run-off is to be undertaken as proposed in the EMPR.
Operation and maintenance of the Marallaneng Substation and associated infrastructure.	<p>Direct Avifaunal Impacts</p> <ul style="list-style-type: none"> ▪ Electrocution – likely to affect large raptors, and most importantly the Cape Vulture. ▪ Collision of birds – likely to affect water birds and most importantly the two crane species. ▪ Disturbance of birds during routine maintenance activities. 	<p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p>	<ul style="list-style-type: none"> ▪ Install anti-bird collision line marking devices on the power line (earth wire) on sections posing a high collision risk to birds. These sections of line will need to be identified by an avi-faunal walk through as part of the site-specific EMPr.
Operation and maintenance of the Marallaneng Substation and associated infrastructure.	<p>Direct Visual Impacts</p> <ul style="list-style-type: none"> ▪ Permanent loss of visual aesthetics of the environment. ▪ Permanent loss of potential future benefits related to tourism. 	<p>Medium (-)</p> <p>Medium (-)</p>	<ul style="list-style-type: none"> ▪ Ensure that the design reflects the design of the existing power line as far as possible. This could include aligning existing and new towers. ▪ Ensure that all road crossings remain within valleys. ▪ Use solid monopoles where the alignment runs close to key areas. However, this needs to be considered against the differences in the existing and new towers (making the addition of the new line more obvious).
Operation and maintenance of the Marallaneng Substation and associated infrastructure.	<p>Direct Socio-Economic Impacts</p> <ul style="list-style-type: none"> ▪ Economic impacts and material wellbeing. ▪ Restrictions to future development. 	Low (-)	<ul style="list-style-type: none"> ▪ Ensure that the design reflects the design of the existing power line as far as possible. This could include aligning new infrastructure with the existing. ▪ Ensure that all road crossings remain within valleys.

			<ul style="list-style-type: none"> Use solid monopoles where the alignment runs close to key areas.
Operation and maintenance of the Marallaneng Substation and associated infrastructure	<p>Cumulative Impacts</p> <ul style="list-style-type: none"> Negative ecological, paleontological and visual. The new operation of the Marallaneng Substation will allow the Setsoto Local Municipality to implement new infrastructure developments, and provide electricity to already completed projects. 	<p>Medium (-)</p> <p>High (+)</p>	<ul style="list-style-type: none"> As above. None
DECOMMISSIONING PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
Decommissioning of the Marallaneng Substation and associated infrastructure.	<ul style="list-style-type: none"> Generation of waste and potential pollution impacts. 	Low (-)	<ul style="list-style-type: none"> Disposal of waste must be in accordance with relevant legislative requirements. Waste must be disposed of in the appropriate manner at a licensed disposal site.
Decommissioning of the Marallaneng Substation and associated infrastructure.	<p>Impacts on soils including:</p> <ul style="list-style-type: none"> Contamination. Compaction. Erosion. 	<p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p>	<ul style="list-style-type: none"> All hardened surfaces within the construction camp area should be ripped, all imported materials removed, and the area shall be top soiled and landscaped. All structures are to be removed from site. The area is to be checked for spills of substances such as oil, paint, etc, and these shall be cleaned up and contaminants disposed of appropriately. Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded. It is critical that adequate topsoil remains in exposed areas until such time that a layer of vegetation has stabilised the soil.
Decommissioning of the Marallaneng Substation and associated infrastructure.	<p>Ecological impacts including:</p> <ul style="list-style-type: none"> Establishment and spread of alien plants. Impact on wetlands on surrounding habitats. Return of faunal habitat and ecological functioning biodiversity value. 	<p>Low (-)</p> <p>Low (-)</p> <p>High (+)</p>	<ul style="list-style-type: none"> Rehabilitation of areas affected by decommissioning activities should ideally commence at the start of the rainy season. Recommended rehabilitation is in the form of active re-vegetation of affected areas, including areas where surface disturbances are evident. All partially constructed areas should be completed and prepared for final

			<p>rehabilitation and re-vegetation.</p> <ul style="list-style-type: none"> All areas where topsoil was removed should be landscaped in order to reflect surrounding conditions.
Decommissioning of the Marallaneng Substation and associated infrastructure.	<ul style="list-style-type: none"> No capacity to transform and distribute electricity to new and existing infrastructure developments. 	High (-)	<ul style="list-style-type: none"> None.
NO-GO ALTERNATIVE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
The no-development option would be to not construct the substation and associated infrastructure, i.e. the status quo would remain.		High (-)	<p>This option would mean that Eskom would not have sufficient capacity to transform and distribute the additional power supplied by the proposed new 88 kV power line to various industries and newly built townships in the Ficksburg area.</p> <p>This would prevent the Setsoto Local Municipality from implementing new infrastructure developments, and from providing electricity to already completed projects and RDP houses.</p>
None of the anticipated ecological impacts would occur.		High (+)	None.

Table 21 Activities and infrastructure within wetlands and/or watercourses

8.3 ACTIVITIES AND INFRASTRUCTURE WITHIN WETLANDS AND/OR WATERCOURSES			
PLANNING AND DESIGN PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
Impact on the biophysical and social environments	Direct impacts No direct impacts will occur on the site during the Planning and Design phase.	None	No direct or indirect impacts will occur on the site during the Planning and Design phase. However, cognisance must be taken during project planning and budgeting of the potential impacts identified and mitigation measures required for the Construction, Operation and Decommissioning phases.
Impacts resulting from the planning and design phase.	Indirect impacts As above.	None	As above.
Impacts resulting from the planning and design phase.	Cumulative impacts As above.	None	As above.
CONSTRUCTION PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
Construction of Power Line infrastructure within 32 m of a water course.	Destruction and modification of wetland habitat. <ul style="list-style-type: none">▪ Destruction or modification wetland/riparian habitats as a result of construction activities.	Medium (-)	In addition to the specifications of the approved EMPr: <ul style="list-style-type: none">▪ No construction must occur within the regulated area of a watercourse without authorisation from DWS.▪ Keep the size of the construction footprint to a minimum.▪ Demarcation of the extent of the construction footprint and access routes.▪ Demarcation of sensitive No-Go areas outside the construction footprint.▪ Prompt and progressive reinstatement of disturbed areas as per the specifications of the Rehab Plan.
Construction of Power Line infrastructure within 32 m of a water course.	Flow modification and erosion / sedimentation <ul style="list-style-type: none">▪ Temporary modification in local hydrological regimes as a result of construction activities occurring within a wetland/river channel, ultimately affecting the rate of erosion and/or the distribution of sediment.	Low (-)	In addition to the specifications of the approved EMPr: <ul style="list-style-type: none">▪ Construction within watercourses should be undertaken in the winter/dry months (May-September) to reduce erosion and sedimentation risks.▪ Before any work commences in any watercourse, sediment control/silt capture measures (silt fence, silt curtains, sand bags etc.) must be installed downstream of construction areas within the watercourse.▪ Areas where drainage patterns have

			been altered must be rehabilitated to mitigate against the increased storm water entering the wetland system.
Construction of Power Line infrastructure within 32 m of a water course.	<p>Water quality impacts</p> <ul style="list-style-type: none"> ▪ Hydrocarbons – leakages and or spillages. ▪ Cement - spillages from poor mixing and disposal practices. ▪ Sewage – leakages from and/or poor servicing of chemical toilets and/or informal use of surrounding bush by workers. ▪ Suspended solids – as a result of erosion and sedimentation from disturbed soils. ▪ Solid waste emanating from the construction site. 	<p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p>	<p>Strict implementation of the approved EMPr must be enforced regarding activities with the potential to impact on water quality of the surrounding watercourses, including but not limited to;</p> <ul style="list-style-type: none"> ▪ Use of machinery and plant. ▪ Cement mixing. ▪ Placement and servicing of portable toilets. ▪ Storage and use of hazardous substances. ▪ Erosion protection and storm water management. ▪ General housekeeping and waste management.
OPERATIONAL PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
Construction of Power Line infrastructure within 32 m of a water course.	<ul style="list-style-type: none"> ▪ Permanent loss of wetland/riparian habitat 	Medium (-)	<ul style="list-style-type: none"> ▪ No construction must occur within the regulated area of a watercourse without authorisation from DWS. ▪ Keep the size of the construction footprint to a minimum. ▪ Demarcation of the extent of the construction footprint and access routes. ▪ Demarcation of sensitive No-Go areas outside the construction footprint. ▪ Prompt and progressive reinstatement of disturbed areas as per the specifications of the Rehab Plan.
Construction of Power Line infrastructure within 32 m of a water course.	<ul style="list-style-type: none"> ▪ Disturbance of fauna and sensitive wetland/riparian habitat. 	Medium (-)	<ul style="list-style-type: none"> ▪ Maintenance activities must be restricted to the power line servitude. ▪ No vehicles should be allowed to cross rivers or streams in any area other than an approved crossing, taking care to prevent any impact (particularly erosion) in surrounding habitat. ▪ All buffers around wetlands and rivers should be maintained. ▪ Limiting of operational vegetation clearing along the servitude to woody vegetation higher than maximum clearance height.
Construction of Power Line infrastructure within 32 m of a water course.	<ul style="list-style-type: none"> ▪ Erosion and sedimentation of wetlands and watercourse. 	Low (-)	<ul style="list-style-type: none"> ▪ No construction materials may be stockpiled in any wetland and riparian areas. ▪ The timing of construction in wetlands and rivers should be during the low flow season to minimise increased

			<p>sedimentation and turbidity.</p> <ul style="list-style-type: none"> Rehabilitation in the form of active re-vegetation of areas where surface disturbances resulted from construction. All areas where topsoil was removed or placing of infrastructure should be landscaped in order to reflect surrounding conditions. Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded.
Construction of Power Line infrastructure within 32 m of a water course.	<ul style="list-style-type: none"> Establishment and spread of alien plants 	Low (-)	<ul style="list-style-type: none"> Eskom must monitor all sites disturbed by operational activities for colonisation by weeds, exotics or invasive plants, to be controlled as they emerge.
DECOMMISSIONING PHASE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
Decommissioning of infrastructure from within 32 m of watercourses.	<p>The physical removal of the infrastructure and rehabilitation of the site will include impacts such as: ?</p> <ul style="list-style-type: none"> Generation of waste and potential pollution impacts. <p>Impacts on soils including:</p> <ul style="list-style-type: none"> Contamination. Compaction. Erosion. 	<p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p> <p>Low (-)</p>	<ul style="list-style-type: none"> A decommissioning plan will need to be put in place to identify site specific impacts relevant to the time of decommissioning, including residual impacts (for example, alien plant invasion and soil erosion) and provide appropriate mitigation and monitoring measures. Disposal of waste must be in accordance with relevant legislative requirements. Waste must be disposed of in the appropriate manner at a licensed disposal site. All hardened surfaces within the construction camp area should be ripped, all imported materials removed, and the area shall be top soiled and landscaped. All structures are to be removed from site. The area is to be checked for spills of substances such as oil, paint, etc, and these shall be cleaned up and contaminants disposed of appropriately. Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded. It is critical that

	<p>Ecological impacts including:</p> <ul style="list-style-type: none"> ▪ Establishment and spread of alien plants. ▪ Impact on wetlands and surrounding habitats. ▪ Return of faunal habitat and ecological functioning biodiversity value. ▪ Continued loss of power to all customers during faults. 	<p>Low (-)</p> <p>Low (-)</p> <p>High (+)</p> <p>High (-)</p>	<p>adequate topsoil remains in exposed areas until such time that a layer of vegetation has stabilised the soil.</p> <ul style="list-style-type: none"> ▪ Rehabilitation of areas affected by decommissioning activities should ideally commence at the start of the rainy season. ▪ Recommended rehabilitation is in the form of active re-vegetation of affected areas, including areas where surface disturbances are evident. ▪ All partially constructed areas should be completed and prepared for final rehabilitation and re-vegetation. ▪ All areas where topsoil was removed should be landscaped in order to reflect surrounding conditions. ▪ As above. ▪ None.
NO-GO ALTERNATIVE			
Activity	Impact summary	Significance (with mitigation)	Proposed mitigation
<p>The No-Go alternative would mean that the infrastructure which falls within 32 m of a water course cannot be constructed.</p>		<p>High (-)</p>	<p>Limitations on the placement of the infrastructure associated with the proposed and already authorised components of this project, as well as new larger wetlands identified in the latest delineation, means that certain infrastructure cannot avoid watercourses and/or their proposed buffers.</p> <p>Not authorising the placement of infrastructure within 32 m of a watercourse would therefore prevent the proposed and already authorised infrastructure from being constructed. Therefore the status quo (limited and interrupted supply of electricity) will prevail. Eskom would not have sufficient capacity to transform and distribute the additional power supplied by the proposed new 88 kV power line. This would ultimately prevent the Setsoto Local Municipality from implementing new infrastructure developments, and from providing electricity to already completed projects and RDP houses.</p>
<p>None of the anticipated ecological impacts would occur.</p>		<p>High (+)</p>	<p>None.</p>

9. ASSESSMENT OF THE SIGNIFICANCE OF POTENTIAL IMPACTS

9.1 Assessment

This Chapter deals with the assessment of the significance of the potential impacts, both with and without management measures (mitigation). Impact tables, **where applicable** to the key issues discussed in this report, are provided in Tables 22 - 24.

Table 22	Assessment of potential impacts resulting from the proposed decommissioning of the existing 88 kV power line from Clocolan - Ficksburg, at a local, regional and national scale, during planning, construction and operation.
Table 23	Assessment of potential impacts resulting from the proposed Marallaneng Substation, at a local, regional and national scale, during planning, construction, operation and decommissioning.
Table 24	Assessment of potential impacts resulting from the proposed activities / infrastructure within wetlands and/or watercourses, at a local, regional and national scale, during planning, construction, operation and decommissioning.

Table 22 Assessment of potential impacts resulting from the proposed decommissioning of the existing 88 kV power line from Clocolan - Ficksburg, at a local, regional and national scale, during planning, construction and operation.

Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
PLANNING AND DESIGN PHASE										
None.										
CONSTRUCTION PHASE										
Disturbance and loss of vegetation.	Unmanaged	Negative	Medium	Low	Medium	Low	High	Medium	High	Medium
	Managed	Negative	High	Low	Low	Low	High	Low	Medium	Low
Erosion and loss of soil.	Unmanaged	Negative	Medium	Low	Medium	Low	High	Medium	High	Medium
	Managed	Negative	High	Low	Low	Low	High	Low	Medium	Low
Faunal habitat destruction.	Unmanaged	Negative	Medium	Low	Medium	Low	High	Medium	High	Medium
	Managed	Negative	High	Low	Low	Low	High	Low	Medium	Low
Disturbance and modification of wetland habitat.	Unmanaged	Negative	Medium	Low	Medium	Low	High	Medium	High	Medium
	Managed	Negative	High	Low	Low	Low	High	Low	Medium	Low
Temporary disturbance of birds and destruction of bird habitat.	Unmanaged	Negative	Medium	Low	Medium	Low	High	Medium	High	Medium
	Managed	Negative	High	Low	Low	Low	High	Low	Medium	Low
Impact on formally Protected Heritage Resources.	Unmanaged	Negative	Medium	Low	Low	Low	High	Medium	Low	Low
	Managed	Negative	High	Low	Low	Low	High	Low	Low	Low
Positive impact on local employment opportunities.	Unmanaged	Positive	High	Low	N/A	N/A	N/A	Low	Low	Low
	Managed	Positive	High	Low	N/A	N/A	N/A	Medium	Medium	Medium

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Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
Generation of fugitive dust.	Unmanaged	Negative	Medium	Low	Low	Low	High	Medium	Medium	Medium-Low
	Managed	Negative	High	Low	Low	Low	High	Low	Low	Low
Increased noise pollution.	Unmanaged	Negative	Medium	Low	Low	Low	High	Medium	Medium	Medium-Low
	Managed	Negative	High	Low	Low	Low	High	Low	Low	Low
Disruption in agricultural production.	Unmanaged	Negative	Medium	Low	Low	Low	High	Medium	Medium	Medium-Low
	Managed	Negative	High	Low	Low	Low	High	Low	Low	Low
OPERATIONAL PHASE										
Loss of soil as a result of the erosion from newly exposed areas.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	High	Medium	Low	Low	High	Low	Low	Low
Establishment and spread of alien plants.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	High	Medium	Low	Low	High	Low	Low	Low
Reduced footprint on the natural environment.	Unmanaged	Positive	High	High	N/A	N/A	N/A	Low	High	Medium
	Managed	Positive	High	High	N/A	N/A	N/A	Low	High	High
Reduced impacts on agricultural lands.	Unmanaged	Positive	High	Low	N/A	N/A	N/A	Low	Low	Low
	Managed	Positive	High	Low	N/A	N/A	N/A	Medium	Medium	Medium
Improved aesthetics and reduced visual clutter.	Unmanaged	Positive	High	Low	N/A	N/A	N/A	Low	Low	Low
	Managed	Positive	High	Low	N/A	N/A	N/A	Medium	Medium	Medium
DECOMMISSIONING PHASE										
N/A – the impacts assessed above are for the decommissioning of the existing 88 kV power line.										

Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
NO-GO ALTERNATIVE										
Increased visual, ecological and socio-economic impacts associated with not authorising the decommissioning of the existing power line.	N/A	Negative	Medium	High	High	High	High	High	High	High

Table 23 Assessment of potential impacts resulting from the proposed construction of the Marallaneng Substation during the planning, construction, operation and decommissioning phases.

Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
PLANNING AND DESIGN PHASE										
No impacts will occur on the site during the Planning and Design phase.										
CONSTRUCTION PHASE										
Clearing of natural vegetation/loss of indigenous species	Unmanaged	Negative	Medium	High	High	Medium	Medium	Medium	High	High
	Managed	Negative	Low	Medium	Medium	Low	High	Low	High	Medium
Loss of faunal habitat and corridors	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	High	Low
Exotic species encroachment and impacts	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Medium	Low
Disturbance and loss of wetland habitat	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	Medium	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Low
Contamination of groundwater resources	Unmanaged	Negative	Medium	Medium	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	Low	Low	Low	Low	High	Low	Low	Low
Hydrological impacts - Drainage pattern changes, storm water increase, increased soil sediment loads.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Low
Soil impacts -	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium

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Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
compaction, contamination and erosion.	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Low
Destruction of bird habitat – likely to affect Red Listed species and habitat specialists.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Low
Disturbance of birds – likely to affect breeding birds in particular.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	High	Medium	Low	Low	High	Low	Low	Low
Potential impact of excavations on the subterranean fossil bearing strata	Unmanaged	Negative	Medium	High	High	High	Low	High	High	High
	Managed	Negative	Low	Medium	Medium	Medium	Medium	Medium	Medium-High	High-medium
Loss of visual aesthetics of the environment.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	High	Medium	Low	Low	High	Low	Low	Low
Loss of potential future benefits related to tourism.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	High	Medium	Low	Low	High	Low	Low	Low
Nuisance impacts (dust, noise, criminal activity, traffic, fire, disruption in agricultural production).	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Low
Social development	Unmanaged	Positive	High	High	N/A	N/A	N/A	High	High	High

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Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
impacts and material wellbeing	Managed	Positive	High	High	N/A	N/A	N/A	High	High	High
Increased employment opportunities.	Unmanaged	Positive	High	Low	N/A	N/A	N/A	Low	Low	Low
	Managed	Positive	High	Medium	N/A	N/A	N/A	High	High	High
Increased opportunities for Small Medium Enterprises (SME)s.	Unmanaged	Positive	High	Low	N/A	N/A	N/A	Low	Low	Low
	Managed	Positive	High	Medium	N/A	N/A	N/A	High	High	High
Cumulative Impacts - Negative ecological, paleontological and visual impacts.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	High
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Medium-Low
Cumulative Impacts - Positive social development and economic impacts.	Unmanaged	Positive	High	Low	N/A	N/A	N/A	Low	Low	Low
	Managed	Positive	High	Medium	N/A	N/A	N/A	High	High	High
OPERATIONAL PHASE										
Loss of faunal habitat and corridors.	Unmanaged	Negative	Medium	High	Medium	Medium	Low	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	Medium	Low	Medium	Medium-Low
Exotic species encroachment and impacts.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	High
	Managed	Negative	Low	Low	Low	Low	High	Low	Low	Medium
Storm water increase.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	Low	Low	Low	Low	High	Low	Medium	Low
Erosion and	Unmanaged	Negative	Medium	High	High	Medium	Medium	High	High	High

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Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
resultant loss of soil.	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Low
Electrocution and collision of birds – likely to affect large raptors, and crane species.	Unmanaged	Negative	Medium	High	High	High	Low	High	High	High
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Low
Disturbance of birds during routine maintenance activities.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	Medium	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Low
Permanent loss of visual aesthetics of the environment.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	High
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Medium-Low
Permanent loss of potential future benefits related to tourism.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Medium-Low
Economic impacts and material wellbeing.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	High
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Medium-Low
Restrictions to future development.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	High
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Medium-Low
Cumulative Impacts - Negative ecological, paleontological and visual.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	High
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Medium
Cumulative Impacts	Unmanaged	Positive	High	Medium	N/A	N/A	N/A	Medium	Medium	Medium

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Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
- Positive socio-economic – electricity to new and existing infrastructure developments.	Managed	Positive	High	High	N/A	N/A	N/A	High	High	High
DECOMMISSIONING PHASE										
Generation of waste and potential pollution impacts.	Unmanaged	Negative	Medium	Medium	Medium	Medium	Low	Medium	High	Medium
	Managed	Negative	Low	Low	Low	Low	High	Low	Medium	Low
Impacts on soils - contamination, compaction, erosion.	Unmanaged	Negative	Medium	High	High	Medium	Low	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Low
Ecological impacts - spread of alien plants and impact on wetlands on surrounding habitats.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Medium	Low
Return of faunal habitat and ecological functioning biodiversity value.	Unmanaged	Positive	High	Medium	N/A	N/A	N/A	Low	Low	Low
	Managed	Positive	High	High	N/A	N/A	N/A	High	High	High
No capacity to transform and distribute electricity to new and existing infrastructure developments.	Unmanaged	Negative	Medium	High	High	High	High	High	High	High
	Managed	Negative	Medium	High	High	High	High	High	High	High

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Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
NO-GO ALTERNATIVE										
Socio-economic impacts associated with not authorising the Marallaneng Substation	N/A	Negative	Medium	High	High	High	High	High	High	High
Ecological impacts will be avoided.	N/A	Positive	High	High	N/A	N/A	N/A	High	High	High

Table 24 Assessment of potential impacts resulting from the proposed activities and construction of infrastructure within wetlands and/or watercourses during the planning, construction, operation and decommissioning phases.

Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
PLANNING AND DESIGN PHASE										
No impacts will occur on the site during the Planning and Design phase.										
CONSTRUCTION PHASE										
Destruction and modification of wetland habitat.	Unmanaged	Negative	Medium	High	High	High	Low	High	High	High
	Managed	Negative	High	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Flow modification and erosion / sedimentation	Unmanaged	Negative	Medium	High	Medium	Medium	Low	Medium	Medium	Medium
	Managed	Negative	High	Low	Low	Low	Medium	Low	Low	Low
Water quality impacts - hydrocarbon/cement/sewage spills and increased sediment.	Unmanaged	Negative	Medium	High	Medium	Medium	Low	Medium	Medium	Medium
	Managed	Negative	High	Low	Low	Low	Medium	Low	Low	Low
OPERATIONAL PHASE										
Permanent loss of wetland/riparian habitat.	Unmanaged	Negative	High	High	High	High	Low	High	High	High
	Managed	Negative	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Disturbance of fauna and sensitive wetland/riparian habitat.	Unmanaged	Negative	High	High	Medium	High	Medium	Medium	Medium	Medium
	Managed	Negative	Medium	Medium	Low	Medium	High	Low	Low	Medium-Low
Erosion and sedimentation of wetlands and watercourse.	Unmanaged	Negative	Medium	High	Medium	Medium	Low	Medium	Medium	Medium
	Managed	Negative	High	Low	Low	Low	Medium	Low	Low	Low

ESKOM DISTRIBUTION

Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
Establishment and spread of alien plants	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Medium	Low
DECOMMISSIONING PHASE										
Generation of waste and potential pollution impacts.	Unmanaged	Negative	Medium	High	High	Medium	Low	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Low
Impacts on soils including – contamination, compaction and erosion.	Unmanaged	Negative	Medium	High	High	Medium	Low	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Low	Low
Establishment and spread of alien plants.	Unmanaged	Negative	Medium	High	Medium	Medium	Medium	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	High	Low	Medium	Low
Impact on wetlands and surrounding habitats.	Unmanaged	Negative	Medium	High	Medium	Medium	Low	Medium	High	Medium
	Managed	Negative	Low	Medium	Low	Low	Medium	Low	Medium	Medium-Low
Continued loss of power to all customers during faults.	Unmanaged	Negative	Medium	High	High	High	High	High	High	High
	Managed	Negative	Medium	High	High	High	High	High	High	High
Return of faunal habitat and ecological functioning biodiversity value.	Unmanaged	Positive	High	Medium	N/A	N/A	N/A	Low	Low	Low
	Managed	Positive	High	High	N/A	N/A	N/A	High	High	High
NO-GO ALTERNATIVE										
Socio-economic impacts associated	N/A	Negative	Medium	High	High	High	High	High	High	High

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Description and Nature of Impact	Mitigation	Nature (Positive, Negative, Neutral)	Spatial Extent (Low, Medium, High)	Duration (Very Low, Low, Medium, High)	Intensity (Low, Medium, High)	Irreplaceability (Low, Medium, High)	Reversibility (Low, Medium, High)	Consequence (Low, Medium, High)	Probability (Low, Medium, High)	Significance (Low, Medium, High)
with not authorising the proposed infrastructure within 32 m of a watercourse.										
Ecological impacts will be avoided.	N/A	Positive	High	High	N/A	N/A	N/A	High	High	High

10. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, a summary of the environmental impacts of the proposed activity (after mitigation) is provided below.

10.1 Decommissioning of the existing 88 kV power line

The removal of the existing 88 kV power line, to be relocated on the double circuit structures of the authorised new 88 kV power line will have temporary negative biophysical and nuisance impacts during the construction phase, however through proper reinstatement of the decommissioned servitude, will serve to minimise additional negative visual impacts and reduce the footprint of the existing and proposed electrical infrastructure on the natural environment and agricultural lands.

The No-Go option will have implications of the servitude negotiations with affected landowners, and could delay or even jeopardise the construction of the new authorised 88 kV power line, increasing the dissatisfaction with the current lack of electricity and service delivery experienced by communities within the Setsoto Local Municipality.

10.2 Construction of the proposed Marallaneng Substation

By its nature, the construction and operation of a substation will have negative ecological, visual, and social impacts on the receiving environment. The proposed Marallaneng Substation site was however carefully selected, after specialist investigations, in an attempt to avoid ecologically sensitive wetland habitats and their buffers. The major negative impacts during construction and operation of the substation are related to the permanent loss of faunal habitat, reduced aesthetics, increased storm water, potential impacts on subterranean fossil bearing strata and collisions and electrocution of avifauna. These impacts can be mitigated to acceptable levels through implementation of the proposed mitigations and specifications set out in the approved EMPr.

The No-Go option would mean Eskom would not have sufficient capacity to transform and then distribute the additional power, and therefore the Setsoto Local Municipality would be unable to provide electricity to new and existing infrastructure developments. This option is not considered feasible.

10.3 Activities and infrastructure within wetlands and/or watercourses and their buffer zones

Subsequent wetland delineations, and additional infrastructure, have made the authorisation of infrastructure and activities within watercourses and/or their buffers necessary. The negative impacts associated with the construction of power line infrastructure within these sensitive areas include; the loss of and modification of wetland habitat, flow modification, water quality impacts, erosion and sedimentation. These activities will require water use authorisation from DWS, and will therefore be subject to extensive mitigatory, rehabilitation and monitoring conditions, in addition to the proposed mitigations made in this report and the specifications set out in the approved EMPr.

The No-Go option would prevent the proposed and already authorised infrastructure from being constructed, leaving the status quo of a limited and interrupted supply of electricity. This would ultimately prevent the Setsoto Local Municipality from implementing new infrastructure developments, and from providing electricity to already completed projects and RDP houses.

It is the opinion of the EAP that the proposed activities, as listed above should be authorised, based on the findings of the assessment process and conditional on the adherence to the EA (once issued) and the approved EMPr by Eskom during all phases of the project. The appointment of an independent ECO will ensure compliance with the relevant conditions of the amended EA.

11. RECOMMENDATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

It is the opinion of the EAP that the information contained in this report and the documentation attached hereto is sufficient to make a decision in respect of the activities applied for, viz. the proposed decommissioning of the existing 88 kV power line from Clocolan to Ficksburg, the construction of the Marallaneng Substation, and the authorisation of infrastructure within watercourses and/or their buffers.

It is the opinion of the EAP that the proposed activity can be authorised, based on the findings of the assessment process and conditional on the following:

- ❑ Eskom must ensure the relevant authorisations from DWS for water use triggered for infrastructure within the regulated area of a wetland are in place before the construction phase.
- ❑ An independent, suitably qualified Environmental Control Officer (ECO) must be appointed to ensure compliance with the conditions of the EA, EMPr and any other environmental licence/permit.
- ❑ A walk down of the affected areas should be undertaken by the ECO and Eskom to identify:
 - Protected plants and flora of conservation concern.
 - Sensitive faunal habitats and wetlands/riparian habitats (as identified in this report).
 - Bird nesting/roosting sites.
- ❑ A palaeontologist with experience of the Permian Extinction Zone must be appointed to have a watching brief to monitor excavations during establishment of the Marallaneng Substation platform. The palaeontologist must be permitted by the relevant heritage authority to collect, rescue and record fossils during these excavations.
- ❑ The mitigation measures and conditions of the EA, EMPr and any other environmental licence/permit must be effectively implemented.
- ❑ Eskom is to ensure that close liaison is maintained with the relevant authorities and public, to ensure that sufficient notice is given regarding road closures and deviations, disruptions to services and temporary closure of public open space/nature reserves.
- ❑ Preferably, construction camps and storage areas should be located within the urban boundary of either Clocolan or Ficksburg so as to minimise environmental impacts on the natural environment and water bodies.
- ❑ An Eskom approved bird friendly pole design must be used, taking into account that this is a vulture area and, hence, clearances must be adequate for vultures. The Distribution Technical Bulletin must be used in this regard. In addition, if a monopole structure is used, as this report has assumed, a Bird Perch must be installed on top of all poles, to provide safe perching substrate for birds well above the dangerous hardware. The above mitigation is extremely important as without it this impact will be of high significance.
- ❑ Install anti-bird collision line marking devices on the power line (earth wire) on certain sections of line identified as posing a high collision risk to birds. These sections of line will need to be identified by an avi-faunal walk through as part of the site-specific EMPr. Disturbed areas that are no longer required for construction, should be progressively seeded (with locally occurring grass seeds) or mulched to limit erosion and to encourage vegetation growth.

- Financial provision must be made for environmental management of the contract in accordance with the conditions and specifications as mentioned above.

12. CONCLUDING REMARKS

This draft BAR has been submitted to the competent authority, DEA, along with an application for environmental authorisation. This BAR has been made available for public review and will be finalised after consideration of comments submitted. Thereafter, the final report will be submitted to DEA. Registered I&APs will be kept informed of all further submissions and DEA's decision making with respect to the issuing of an Environmental Authorisation (EA), as well as the appeal procedure which should be followed should a member of the public wish to appeal the EA.

KC KRUGER

NAME OF EAP:

SIGNATURE OF EAP

DATE

13. REFERENCES

- Exigent Engineering Consultants.** 2016. Proposed Clocolan – Ficksburg 88 kV Power Line: Addendum to the Terrestrial Ecology (Fauna and Flora) and Wetland Assessment.
- Environmental Planning and Design, 2013.** Proposed Construction of an 88 kV Power Line between Clocolan and Ficksburg - Visual Impact Assessment.
- ACER (Africa) Environmental Consultants. 2013.** Proposed Construction of the new Eskom Distribution Power Line: Clocolan – Ficksburg 88 kV, Setsoto Local Municipality, Free State Province. Amended Final Basic Assessment Report.
- Maree, J.O (Texture Environmental Consultants).** 2016. Biodiversity Assessment - Terrestrial Ecology Assessment & Aquatic Assessment.
- Mostert, L. 2013.** Proposed Construction of the Eskom Clocolan – Ficksburg 88 kV Power Line. Vegetation, Terrestrial Fauna Assessment and Wetland Delineation.
- Schalkwyk, L and Wahl, E. 2013.** Proposed Construction of Clocolan – Ficksburg 88 kV Power Line. Heritage Scoping Assessment Report.
- Smallie, J. 2013.** Clocolan – Ficksburg 88 kV Power Line: Basic Assessment – Avifaunal specialist study. Unpublished report submitted to ACER Africa.
- Smallie, J. 2016.** Clocolan – Ficksburg 88 kV Power Line: Addendum to Avifaunal Specialist Study. Unpublished report submitted to ACER Africa.
- Strugnell, L. 2015.** Clocolan – Ficksburg 88 kV Power Line: avifaunal walk through. Unpublished report submitted to Gibb Pty Ltd.

APPENDIX A: FACILITY ILLUSTRATIONS

APPENDIX B: SITE PHOTOGRAPHS

APPENDIX C: MAPS AND LAYOUTS

- C1 - Locality Map
- C2 - Sensitivity Map
- C3 - Cadastral Layout Map

APPENDIX D: SPECIALIST STUDIES

- D1 - Heritage Impact Assessment (HIA)
 - D1.1 – HIA from original BAR –
 - D1.2 – Addendum to original report regarding proposed amendments
 - D1.3 – Letter from specialist regarding final placement of Marallaneng Substation
 - D1.4 – Verification letter regarding validity of findings and recommendations.
 - D1.5 – Specialist declaration form

- D2 – Terrestrial Ecology and Wetlands Assessment
 - D2.1 – Terrestrial Ecology and Wetlands Assessment from original BAR
 - D2.2 – Addendum to original report regarding proposed amendments
 - D2.3 – Verification letter regarding validity of findings and recommendations.
 - D2.4 – Specialist declaration form

- D3 – Avi-faunal Impact Assessment
 - D3.1 – Avi-faunal Impact Assessment from original BAR
 - D3.2 – Addendum to original report regarding proposed amendments
 - D3.3 – Verification letter regarding validity of findings and recommendations.
 - D3.4 – Specialist declaration form

- D4 – Visual Impact Assessment (VIA)
 - D4.1 – VIA from original BAR
 - D4.2 – Addendum to original report regarding proposed amendments
 - D4.3 – Letter from specialist regarding final placement of Marallaneng Substation
 - D4.3 – Verification letter regarding validity of findings and recommendations.
 - D4.4 – Specialist declaration form

APPENDIX E: PUBLIC PARTICIPATION DOCUMENTATION & CORRESPONDENCE

- ❑ E1 Adverts, BID & Notices.
 - E1a Site Notices (English and Afrikaans).
 - E1b Advert - English.
 - E1c Advert - Afrikaans.
 - E1d Background Information Document (English).
 - E1e Background Information Document (Afrikaans).
 - E1f Comment Sheet sent with BID (English).
 - E1g Comment Sheet sent with BID (Afrikaans).
- ❑ E2 List of Registered I&APs.
- ❑ E3 Comments and Responses Report.
- ❑ E4 Proof of Key Stakeholder Notification.
- ❑ E5 Proof of Written Notification to Authorities.
- ❑ E6 Authorities Correspondence and Meetings.

APPENDIX F: ENVIRONMENTAL MANAGEMENT PROGRAMME (DRAFT)

- Appendix F - Draft EMPr
 - Appendix F1: Eskom Technical Standards (TRMSCAAC1 Revision 3).
 - Appendix F2: Eskom's Standard for vegetation clearance and maintenance within overhead power line servitudes (EPC 32-247) (TRMAGAAZ7).
 - Appendix F3: Eskom's Standard for Vegetation Management Services on Eskom Networks.
 - Appendix F4: Eskom's Herbicide Management Policy (ESKPBAAD4).
 - Appendix F5: Eskom's Standard for the safe use of Pesticides and Herbicides (ESKASAAL0).
 - Appendix F6: Eskom's Fire Protection Association Guideline (TGL31-336).
 - Appendix F7: Eskom's Standard for Fire Risk Management (EST 32-124).
 - Appendix F8: Eskom's Access to Farms Standard (TPC 41-340).
 - Appendix F9: Eskom's Erosion Guideline (TGL 41-337).
 - Appendix 10: Eskom's Standard for Transmission Line Towers and Line Construction (TRMSCAAC1).
 - Appendix F11: Eskom Transmission Bird Nesting Guidelines (TGL41-333).
 - Appendix F12: Eskom Transmission Bird Perch Guidelines (TGL41-332).
 - Appendix F13: Eskom Transmission Bird Collision Prevention Guideline (TGL41-335).
 - Appendix F14: Eskom's Specifications for Bird Flight Diverters.

APPENDIX G: DETAILS AND CV OF EAP

- ❑ G1 – Rolf-Dieter Heinsohn (Internal review and project management)
- ❑ G2 – Giles Churchill (Internal review and project management)
- ❑ G3 – Keagan Kruger (Environmental Assessment Practitioner)
- ❑ G4 – Mareike Straeuli (Public Participation Consultant)

APPENDIX H: OTHER

- H1 - Letter of motivation from the Setsoto Local Municipality
- H2 - Application for Environmental Authorisation
- H3 – Signed EAP Declaration Form
- H4 – Signed Land Options Agreement