APPENDIX F

IMPACT ASSESSMENT REPORT FOR THE RECTIFICATION OF THE UNLAWFUL CONSTRUCTION AND OPERATION OF THE 4.5KM 50kV POWERLINE BETWEEN ESKOM HELIOS MAIN TRANSMISSION SUBSTATION AND TRANSNET HELIOS TRACTION FEEDER SUBSTATION WITHIN THE JURISDICTION OF HANTAM LOCAL MUNICIPALITY IN THE NORTHERN CAPE PROVINCE

DATE: FEBRUARY 2022

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DOC CONTROL		
Impact Assessment Report	07 February 2022	Draft

"From the world, we live to the world we seek "

DOCUMENT CONTROL

Project title:
Draft Section 24 G Impact Assessment Report for the rectification of the unlawful construction and operation of the 4.5km 50kv Bypass Powerline between Eskom Helios Main Transmission Substation and Transnet Helios traction Feeder Substation within the jurisdiction of Hantam Local Municipality in the Northern Cape Province.

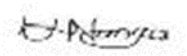
QUALITY CONTROL:		
Report:	**Compiled By:**	**Peer-Reviewed and Authorised By:**
Draft Section 24 G Impact Assessment Report	Hulisani Nunga  _____	Rejoice Aphane  _____ Munyadziwa Rikhotso  _____

TABLE OF CONTENTS

1. 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.

The assessment of impacts is largely based on the Department of Environmental Affairs and Tourism's (1998) Guideline Document: Environmental Impact Assessment Regulations. The assessment will consider impacts arising from the proposed activities of the project both before and after the implementation of appropriate mitigation measures.

The impacts are assessed according to the criteria outlined in this section. Each issue is ranked according to extent, duration, magnitude (intensity), and probability. From these criteria, a significance rating is obtained, the method and formula are described below. Where possible, mitigation recommendations have been made and are presented in tabular form.

The criteria given in table 1 below will be used to conduct the evaluation. The nature of each impact will be assessed and described the extent, duration, intensity, significance, and probability of occurrence attached to it.

Table 1: Methodology used in determining the significance of potential environmental impacts

Status of Impact
The impacts are assessed as either having a:
negative effect (i.e., at a `cost' to the environment),
positive effect (i.e., a `benefit' to the environment), or
Neutral effect on the environment.

Extent of the Impact
(**1**) Site (site only),
(**2**) Local (site boundary and immediate surrounds),
(**3**) Regional
(**4**) National, or
(**5**) International.

Duration of the Impact
The length that the impact will last for is described as either:
(**1**) immediate (<1 year)
(**2**) short term (1-5 years),
(**3**) medium term (5-15 years),
(**4**) long term (ceases after the operational life span of the project),
(**5**) Permanent.

Magnitude of the Impact

The intensity or severity of the impacts is indicated as either:

(**0**) none,

(**2**) Minor,

(**4**) Low,

(**6**) Moderate (environmental functions altered but continue),

(**8**) High (environmental functions temporarily cease), or

(**10**) Very high / Unsure (environmental functions permanently cease).

Probability of Occurrence

The likelihood of the impact occurring is indicated as either:

(**0**) None (the impact will not occur),

(**1**) improbable (probability very low due to design or experience)

(**2**) low probability (unlikely to occur),

(**3**) medium probability (distinct probability that the impact will occur),

(**4**) high probability (most likely to occur), or

(5) Definite.

Significance of the Impact

Based on the information contained in the points above, the potential impacts are assigned a significance rating (**S**). This rating is formulated by adding the sum of the numbers assigned to extent (**E**), duration (**D**) and magnitude (**M**) and multiplying this sum by the probability (**P**) of the impact.

S=(E+D+M)P

The significance ratings are given below

(**<30**) low (i.e. where this impact would not have a direct influence on the decision to develop in the area),

(**30-60**) medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),

(**>60**) high (i.e. where the impact must have an influence on the decision process to develop in the area).

2. AN ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK, INCLUDING:

The following tables present the nature, significance, consequences, extent, probability and duration of the impact associated with the 4.5km 50kV Bypass powerline. Further, the mitigation measures to ensure environmental management are also presented.

2.1. PLANNING AND DESIGN PHASE IMPACTS

2.1.1. EMPLOYMENT CREATION

The planning and design of the project required input from various individuals, resulting in the employment opportunities for such persons. This additional employment would include both direct (e.g. Engineers, Project Managers, Planners, etc.) and indirect (e.g. reviewing and commenting authorities such as the local authorities, and the planning authorities). The extent and magnitude of this impact is relatively low compared to the other economic impacts, and is typically restricted to a limited number of professionals.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
	No	Positive	3	2	8	4	(30-60) Medium

Employment Creation							
Mitigation measure	No mitigation measures have been identified.						
Indirect Impacts	None Identified						
Cumulative Impacts	No cumulative impacts were identified.						

2.2. CONSTRUCTION PHASE IMPACTS

2.2.1. IMPACT ON CULTURAL AND HERITAGE RESOURCES

Several isolated stone tools as well as archaeological sites were noted by the specialist during the Archaeological and Heritage Phase walk-down. Two sites containing isolated tools and one farming activity have been identified on site. No heritage resources were uncovered during excavation.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Cultural and heritage resources	No	Negative	2	1	2	2	<30=Low
	Yes	Negative	1	1	1	1	<30 = Low
Corrective	• The site was subjected to a heritage walk-down prior to the construction of the Bypass powerline.						

Actions	• In the event that any artifacts are unearthed, construction on the affected pylon site would have ceased and the area demarcated by a danger tape. Accordingly, a professional archaeologist or SAHRA officer would have been contacted immediately. • No person may exhume or collect such remains, whether of recent origin or not, without the endorsement by SAHRA.

2.2.2. IMPACT ON AVIFAUNA

Habitat destruction during the construction phase of the project was inevitable and this had an impact on birds breeding, foraging and roosting in or near the servitude, both through modification of habitat and disturbance. Given the absence of sensitive bird habitat on site, this impact is definite and of medium significance. Further electrocution and collision of birds during the operational phase is highly likely. This impact is of low significance with proper mitigation.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Avifauna	No	Negative	1	2	4	4	(30-60)=Medium
	Yes	Negative	1	2	2	2	<30 =Low
Corrective Actions	• Construction activities were limited to the project footprint. • The steel monopole design was used for the new powerline towers. This mitigated the impact of electrocutions as well as the impact of bird induced faulting. • All poles were fitted with a Bird Perch on top to provide safe perching space for large birds. • The bypass powerline built adjacent to the existing power line to mitigate for the impact of collisions.						

	• An avifaunal walkdown was commissioned once the line was surveyed and pegged to indicate the exact spans requiring marking.

2.2.3. LOSS OF VEGETATION AND IMPORTANT HABITATS

Vegetation was cleared for the construction of the Bypass powerline. The vegetation clearance activities resulted in the disturbance of the surrounding habitat. However, very sensitive habitats were avoided.

The increased levels of noise, disturbance, and human presence during the construction phase impacted on the fauna utilising the site. Sensitive and shy fauna would have move away from the area during the construction phase due to the noise and human activities present. Some mammals and reptiles would also be vulnerable to illegal collection or poaching. The nature of the impacts were negative and of medium significance prior to mitigation.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fauna	No	Negative	2	3	6	4	(30-60) Medium
	Yes	Negative	2	2	4	2	<30 Low
Corrective Actions	• Poaching of animals was prohibited during construction. • Contractors were informed to inform the EO of any fauna threatened by construction activities. • During construction, all drivers were instructed to adhere to demarcated tracks or roads and not to exceed the speed limit of 40km/h on larger roads and 20-30km/h on smaller access tracks.						

2.2.4. INCREASED RISK OF ALIEN PLANT INVASION

Currently a small number (2) of alien species were found within the site, and with disturbance coupled to the fact that plant / machinery brought to site may contain soil/debris from other sites with seed, the potential for an increased spread of alien plants was possible.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fauna	No	Negative	2	3	4	4	(30-60) Medium
	Yes	Negative	2	2	4	2	<30 Low
Corrective Actions	• Only manual removal of weed was permitted on site. Chemical and Mechanical (TLB, bulldozer) control was not allowed on site. • Implement an alien invasive plant monitoring and management plan whereby the spread of alien and invasive plant species into the areas disturbed by the construction of the power are regularly removed and re-infestation monitored						

2.2.5. IMPACT ON FLORA

No species of special concern (IUCN Red Data species) were observed, but all the species are listed under the NCNCA as protected as these are indigenous to South Africa. In addition, loss of habitat resulting from site clearing within the development footprint was an inevitable consequence of the development. The nature of the impact is negative, however, of low significance after the implementation of mitigation measures.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fauna	No	Negative	2	2	6	4	(30-60) Medium
	Yes	Negative	2	2	4	2	<30 Low
Corrective Actions	• There was a pre-construction walk-through of the Bypass powerline route to identify species of conservation concern that should be avoided or translocated. • Existing tracks were used for access wherever possible. • No open fires were permitted within naturally vegetated areas. • A vegetation rehabilitation plan must be implemented on areas affected by the Bypass powerline.						

2.2.6. IMPACT ON FAUNA

During construction of the Bypass powerline, some activities resulted in the disturbance or destruction of the surrounding habitat. However, the very sensitive habitats were avoided, impacts occurred within the vegetation units found throughout the greater region. This coupled to the fact that the observed species, with the exception of the slower moving tortoises are highly mobile and they dispersed to other available habitat within the region.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fauna	No	Negative	2	3	6	4	(30-60) Medium
	Yes	Negative	2	2	4	2	<30 Low

Corrective Actions	• Active faunal burrows within the development footprint were located and marked before construction and avoided until the occupant animals have moved away due to the nearby construction activities. • Existing roads and access routes were used as far as possible. • During construction, vehicles adhered to demarcated tracks or roads and a speed limit not exceeding 40km/h on larger roads 20-30km/h on smaller access tracks.

2.2.7. SOIL AND EROSION

The loss of topsoil in South Africa is of national concern, and thus, erosion control should be taken seriously. Ineffective stormwater management systems can result in soil erosion. Where soils are highly erodible, adequate measures must be implemented to prevent undue soil erosion.

Extensive soil erosion was not expected during the construction of the activities. However, it was anticipated that occurrence of such might occur during wet seasons especially on the stockpiles (Topsoil and Subsoil).

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Soils and erosion	No	Negative	2	2	4	3	<30 Low
	Yes	Negative	1	1	2	1	<30 Low
Corrective Actions	• Stockpiles were piled up to 2m or less. • Stockpiles were not be piled within a 32m distance from any river bank or within wetlands. • Foundation excavations for each structure were inspected by a foreman during construction.						

	• Implementation of anti-erosion measures such as the construction of berms to reduce the water velocity is essential. • Excavation were not left open for longer than two weeks. • Construction was mostly during the dry season.

2.2.8. TRAFFIC IMPACT ASSESSMENT

During construction, an increase in traffic was anticipated due to the delivery of construction materials to and from the construction site. The impact of increased traffic was local in extent, short term in duration, with the overall impact been negative with low significance. However, with the implementation of proper mitigation measures, the impact was further reduced.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Traffic	No	Negative	2	2	4	4	(30-60) Medium
	Yes	Negative	2	2	2	2	<30 Low
Corrective Actions	• The delivery of construction material and equipment was limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads. • Delivery vehicles had to comply with all traffic laws and bylaws.						

2.2.9. AIR POLLUTION

Construction activities on the site included land clearing and disturbance of the soil resulting in dust generation. During construction, movement of construction vehicles presented temporary but significant sources of inhalable particulates and dust deposits. Given the nature and magnitude of the project, very little dust

was generated from the construction activities. The potential impact on air quality was short term and controlled. Proper implementation of recommended corrective measures reduced the impact to low significance.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Air pollution	No	Negative	2	1	4	4	<30 =Low
	Yes	Negative	2	1	2	3	<30 =Low
Corrective Actions	• Unnecessary clearing of vegetation was avoided. • The stipulated speed limit was implemented. • All exposed surfaces subject to dust generation was managed with appropriate dust suppression methods including amongst others, the use of water tankers etc. • Unnecessarily exposed surfaces are to be rehabilitated after the construction period.						

2.2.10. IMPACT ON HYDROLOGY

The construction phase disturbance within or near drainage lines may impact on hydrological function and ecological integrity of the drainage systems. Although the area is arid, it may experience occasional intense summer thunder showers and capture of overland flow along vehicle tracks or through disturbed areas. This may result in large amounts of erosion and silt movement into drainage lines, with negative consequences for fauna and flora in these areas. An impact of medium significance is expected, with proper mitigation, it can be reduced to low.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Surface and ground water pollution	No	Negative	3	3	6	4	(30-60)= Medium
	Yes	Negative	2	2	4	2	<30 = Low
Corrective Actions	• Fuel as stored in a bunded and confined areas on site. • Adequate measures were taken during construction to manage storm water runoff. • Care was taken not to spill fuels during service or re-fuelling of construction equipment. • Drip trays were placed under the machinery or vehicle to prevent contamination of soil in case of spillages. • Disturbance within or near the drainage lines were kept to a minimum. • The existing access route along the existing power line is being used during operation.						

2.2.11. WASTE GENERATION

During the construction phase, general waste material and construction offcuts were produced by contractors and sub-contractors. The impact was negative, site- specific, and low in significance and will last the duration of the construction and rehabilitation phases.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Waste generation and management	No	Negative	2	2	6	4	(30-60) Medium
	Yes	Negative	1	2	4	3	<30 Low
Corrective Actions	• No waste will be buried on site or incorporated into the foundation trenches. • The work force must be encouraged to sort waste into recyclable and non-recyclable waste. • No burning of waste will be allowed on site. • Waste was stored in scavenger-proof bins and skips. • Waste was regularly removed from site and disposed of at a registered waste disposal facility.						

2.2.12. NOISE POLLUTION

At present, the land-use in the area is predominantly agricultural and partly commercial land uses. There was an increase in noise levels during the construction period. The majority of the noise emanated from construction vehicles, machinery, and workers. The impact of noise was almost of insignificant levels given the small scale of the development, the locality, which is far removed from other landowners, and the short span of the construction period.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	

Noise pollution	No	Negative	2	2	4	3	<30 Low
	Yes	Negative	2	2	2	2	<30 Low
Corrective Actions	• Vehicles used during construction were serviced and well maintained. • Working hours were restricted to daytime (7am – 6pm).						

2.2.13. FIRE HAZARDS

Onsite storage of fuel and other flammable solvents, during construction, increased the risk of fire. It is anticipated that the uncontrolled fires on- site could cause damage to infrastructure and the biophysical environment and impact on the social environment. This impact was considered to be of medium significance. Due to the implementation of mitigation measures during construction, the significance of the impact remained negative but low in significance.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fire hazards	No	Negative	2	2	6	3	(30-60) medium
	Yes	Negative	2	1	4	2	<30 Low

Corrective Actions	• Warning signs were placed at flammable substances storages (Highly flammable, No smoking etc.) to warn personnel on site of risk associated with such areas. • No burning of waste or cooking was allowed on site. • Contracting personnel were conversant in the relevant existing fire and safety management procedures and activities on site. • Fire hazard sensitive on- and offloading procedures were implemented. • A site safety official was assigned to ensure that personnel are adequately trained regarding fire hazards and procedures.

2.3. IMPACTS ASSOCIATED WITH OPERATIONAL PHASE

2.3.1. IMPROVED ENERGY SUPPLY

In the short and longer term, the operation of the 4.5km 50kV substation will result in reliable power supply to meet Transnet's development plans. This is a positive however short-term impact.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Improved energy supply	No	Positive	3	4	8	5	(>60) = High

Corrective Actions	• Regular maintenance of the facility should be done continuously to ensure uninterrupted supply of energy.						

2.3.2. EMPLOYMENT CREATION

The proposed development will have the capacity to produce considerable opportunities of employment mainly during the construction phase. During operation, employment opportunities will arise as a result of the actual maintenance work required to keep the facility running. The significance of this impact is anticipated to be *positive and medium in significance.*

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Employment creation	No	Positive	3	4	6	3	(30-60) = Medium
Corrective Actions	• No mitigation						

2.4. IMPACTS ANTICIPATED DURING DECOMMISSIONING OF THE POWERLINE

2.4.1. WASTE MANAGEMENT

The decommissioning of the proposed project will contribute to the generation large amounts of waste material. Further, the decommissioning will contribute to a large portion of bare soil being exposed to erosion if not rehabilitated properly. This waste material should be disposed of in an appropriate manner.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Waste	No	Negative	3	4	8	4	(30-60) = Medium
	Yes	Negative	3	2	6	3	(30-60) = Medium
Corrective Actions	• Waste must be disposed at a registered waste disposal site. • Non-hazardous material should be recycled and utilised in other construction processes. • An appropriate rehabilitation plan should be in place.						

2.4.2. DUST GENERATION

Decommissioning of the facility and other infrastructure may lead to an increased amount of airborne particles in the local atmosphere as the infrastructure is dismantled and transported to the disposal site. The nature of this impact will be negative and of low significance.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Employment creation	No	Negative	2	1	4	4	(>30) = Low
	Yes	Negative	2	1	4	3	(>30) = Low
Corrective Actions	Use of dust suppression techniques to reduce the dust must be implemented.						

2.5. CUMULATIVE IMPACTS

Cumulative impacts concerning an activity means the past, present and reasonably foreseeable future impacts of an activity, considered together with the impacts of activities associated with that activity, which may not be significant but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities (DEA, 2014 EIA Regulations). This section provides cumulative impacts ratings associated with the proposed project, which includes waste generation, socio-economic, traffic, avifauna, biodiversity, visual impacts, soil erosion and heritage impacts.

2.5.1. WASTE GENERATION

Various waste materials such as construction rubble, papers, general waste, etc were produced during the construction phase of the bypass powerline and associated infrastructure. Further, no waste volumes are anticipated in the operational phase of the project.

2.5.2. SOCIO-ECONOMIC IMPACTS

The proposed project has resulted in positive socio-economic impacts as the demand for equipment, building material, and labour increased. Secondary service provision such as food supply, toilet hire, equipment maintenance, and many more items have also stimulated the local economy, especially during the construction phase.

2.5.3. AVIFAUNA

The impact of displacement due to habitat transformation was low on avifauna due to the largely transformed nature of the site. Further, the powerline poses a low collision risk and a low electrocution risk to the local avifauna.

2.5.4. VISUAL IMPACT

The bypass powerline did not change the visual character of the area particularly considering that there were exiting infrastructure (i.e., powerlines and railway lines) within the same servitude.

2.5.5. HERITAGE IMPACT

The construction of the 4.5km bypass powerline had a negative impact on the cultural heritage. Several isolated stone tools as well as archaeological sites noted during the Archaeological and Cultural Heritage Phase I Walk down in 2020 were moved.

2.5.6. FLORAL

The development could contribute to the cumulative fragmentation of the landscape and would potentially disrupt the connectivity of the landscape for fauna and flora and impair their ability to respond to environmental fluctuations.

2.5.7. TRAFFIC IMPACT

During the construction phase, increased heavy vehicle traffic was experienced. However, implemented mitigation measures such as the management of construction vehicles increased road safety during this period. Further, negative impacts on the environment were prevented by ensuring that all construction vehicles drove on already existing roads.