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1 February 2023

NALA ENVIRONMENTAL CONSULTING FIRM
Arlene Singh: arlene@veersgroup.com

To whom it may concern:

ECOLOGICAL SPECIALIST INPUT FOR THE PART 2 AMENDMENT OF THE ENVIRONMENTAL AUTHORISATION (EA) FOR THE PROPOSED CONSTRUCTION OF THE 765 KV GAMMA SUBSTATION ON THE FARMS UIT VLUGT FONTEIN NO.265 AND SCHIETKUIL NO.3 IN THE PIXLEY KA SEMA AND CENTRAL KAROO DISTRICT MUNICIPALITIES; WESTERN CAPE PROVINCE AND NORTHERN CAPE PROVINCE (DFFE REF: 12/12/20/873).

1 The 2007 Ecological & Biodiversity Assessment: Faunal Specialist Study, conducted by M. Landman, GIH Kerley and AF Boshoff (Centre for African Conservation Ecology) and 2007 Vegetation Assessment by Centre for African Conservation Ecology (no authors provided) as part of the Environmental Impact Assessment (EIA) for the proposed Construction of the 765 KV Gamma Substation on the farms Uit Vlugt Fontein and Schietkuil in the Western Cape and Northern Cape (DEA REF. No. 12/12/20/873), refers.

2 The two abovementioned studies as part of the Environmental Authorisation (EA) process (DEA REF. NO. 12/12/20/873) have been reviewed by The Biodiversity Company (TBC) who conducted a site assessment in April 2022, followed by a Sensitivity Verification in October 2022. Associated site visits were conducted in March 2022, April 2022 and August 2022.

3 The construction date for the additional infrastructure for the Gamma Substation is not yet finalised. However, to optimize the proposed project, the following amendments are applied for in terms of the EIA Regulations, 2012:

3.1. Addition of Conditions to the EA regarding the Updated Layout (April 2023);

3.2. Amendment to the project description on Page 3 of the Environmental authorisation related to the updated layout and co-ordinates of the 765 kV Gamma Substation;

3.3. Amendment to the Title of the Environmental Authorisation; and

3.4. Change the name of the contact person and contact details for the Holder of the Environmental Authorisation.

4 This change in layout, although within the scope of the current EA, requires that the respective specialist studies hitherto undertaken as part of the original EA process must be reviewed by respective specialists in order to ascertain whether conditions on site have changed. This letter serves this purpose. Nala Environmental has requested confirmation regarding the assessed impacts in terms of the following:

- An assessment of all impacts (including cumulative impacts) related to the proposed changes

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- Discussion on the change in impact or any new impacts, if any
- Additional mitigation measures, if any
- Any disadvantages and advantages that may result due to the amendment.

5 Impact Assessment from the 2007 Ecological & Biodiversity Assessment: Faunal Specialist Study report included the following:

5.1. Impact Assessment

Impact	Rating after mitigation
Construction Phase: Substation	
Loss of faunal habitats	Low
Construction Phase: Construction camps	
Transformation of faunal habitats	Low
Poaching and incidental predation of fauna	Low
Construction Phase: Temporary storage of hazardous substances	
Transformation of faunal habitats	Low
Risks due to drowning or trapping of fauna in pits	Low
Construction phase: Access roads	
Transformation of faunal habitats	Low
Operational Phase	
Transformation of faunal habitats	Low
Increased impact on raptor-prey populations	Low
Decreased activity of herbivores	Low
Poaching and incidental predation of fauna by domestic dogs	Low

5.2. Cumulative impacts were not assessed

6 Conclusions from the 2007 Ecological & Biodiversity Assessment: Faunal Specialist Study report included the following:

6.1. Habitat for Riverine Rabbit (I) is present within the study area and surrounds but is considered of low quality. No individuals were recorded within the study site. Rehabilitation in partnership with the EWT Riverine Rabbit Working Group is important to achieve post construction.

6.2. With mitigation measures applied as recommended, resulting in low overall impacts on fauna, the development of the Gamma Substation is supported.

7 Impact Assessment from the 2007 Vegetation Assessment report included the listing of identified impacts but no impact tables. Impacts included:

7.1. Impact Assessment included a list of possible impacts in the construction phase which included:

7.1.1. Loss of 172ha of Eastern Upper Karoo for the substation.
7.1.2. Loss of additional areas of vegetation for construction of the access roads.

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7.1.3. An increased risk of alien infestation due to disturbance.
7.1.4. Destabilisation of soils due to removal of the vegetation with resultant erosion.
7.1.5. Poaching of harvested plant species due to increased access.
7.1.6. "Flash-overs" may cause unplanned fires.
7.1.7. Loss of plants of protected species.

7.2. Impact Assessment included a list of possible impacts in the operational phase which included:

7.2.1. Roads cause high intensity runoff from the surface during rainfall events with resultant erosion.
7.2.2. Poaching of harvested plant species due to increased access.
7.2.3. "Flash-overs" may cause unplanned fires.

7.3. No Impact tables with associated ratings were provided.

7.4. Cumulative Impacts were not assessed

8 Conclusions from the 2007 Vegetation Assessment report included the following:

8.1. One provincially protected species (*Boophone disticha*) and several protected families (Amaryllidaceae, Apocynaceae, Euphorbiaceae, Iridaceae and Mesembryanthemaceae) were recorded but considered to be of least concern as they are abundant and widely spread.

8.2. With mitigation measures applied as recommended, resulting in low overall impacts on flora and vegetation, the development of the Gamma Substation is supported.

9 Impact Assessment from the 2022 Terrestrial Biodiversity and Avifauna Assessment Report (L de Wet, L Steyn, J Jacobs and A Husted, TBC, 2022) included impact assessment tables for the full grid line, associated access roads, switching stations and the Gamma Substation.

9.1. Impact tables are summarised below (impacts specific to avifauna are excluded):

Impact	Rating after mitigation
Construction Phase	
Loss of Vegetation within the development footprint	Medium
Introduction of alien species, especially plants	Low
Destruction of protected plant species	Medium
Displacement of faunal (including avifaunal) communities due to habitat loss, direct mortalities and disturbance	Low
Operational Phase	
Continued fragmentation and degradation of habitats and ecosystems	Low
Spread of alien and/or invasive species	Low
Ongoing displacement and direct mortalities of faunal community (including SCC) due to disturbance (road collisions, collisions with infrastructure, noise, light, dust, vibration)	Low

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9.2. Cumulative impacts are assessed in context of the extent of the proposed project area; other developments in the area; and general habitat loss and transformation resulting from other activities in the area (all activities, as required for assessment of cumulative impacts including surrounding wind energy facilities, powerlines and associated infrastructure in the region).Cumulative impacts were assessed as Low for the project considered in isolation and High for the project considered as a cumulative impact with surrounding developments. The cumulative impact table is reproduced below.

Table 1 Cumulative Impacts to biodiversity associated with the proposed project.

The development of the proposed infrastructure will contribute to cumulative habitat loss, thereby impacting ecological processes in the region.		
	Overall impact of the proposed project considered in isolation	**Cumulative impact of the project and other projects in the area**
Extent	Moderate (3)	Moderate (3)
Duration	Short term (2)	Long term (4)
Magnitude	Low (4)	Moderate (6)
Probability	Probable (3)	Definite (5)
Significance	**Low (27)**	**High (65)**
Status (positive or negative)	Negative	Negative
Reversibility	Moderate	Moderate
Irreplaceable loss of resources?	Yes	Yes
Can impacts be mitigated?	Yes	
Mitigation:		
Should the vegetation be removed, the impact cannot be mitigated.		
Residual Impacts:		
Will result in the loss of: • **Less migratory species will be found in the area.** • **Road killings are still a possibility.** • **Migratory routes of fauna will change.** • **Fauna and flora species composition may change.** • **Avifauna SCCs will be influenced.**		

10 Conclusions from the 2022 Terrestrial Biodiversity and Avifauna Assessment[1] report (L de Wet, L Steyn, J Jacobs and A Husted, TBC, 2022) related to the Emoyeni Grid infrastructure with those applicable specifically to the Gamma Substation extracted included the following:

[1] This assessment was conducted in accordance with the amendments to the Environmental Impact Assessment Regulations. 2014 (GNR 326, 7 April 2017) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The approach has taken cognisance of the recently published Government Notices (GN) 320 (20 March 2020) and GN 1150 (30 October 2020): "Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation" (Reporting Criteria).

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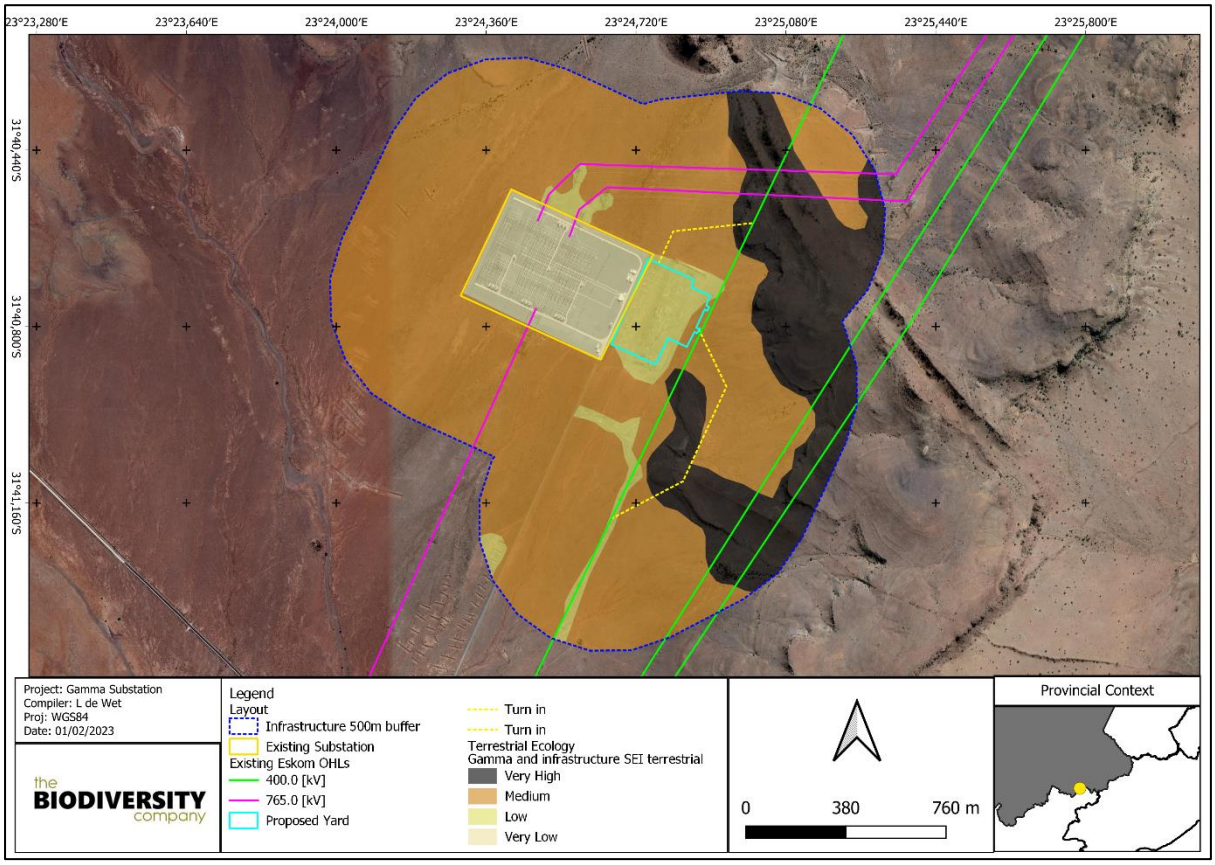
10.1. The Gamma Substation is located predominantly in an area of Low Site Ecological Importance (SEI) as shown below



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10.2. The Gamma Substation is located in an area of transformed vegetation, bordering on an area of flat Karoo Scrub.

10.3. Provincially protected plant species were recorded from the study area, and permits are required of these are to be relocated or destroyed prior to the construction of the facility (Appendix 1).

10.4. Provided all mitigation measures are adhered to, the development is supported.

11 The Site Sensitivity Verification (TBC 2022) for the 132KV grid connection infrastructure, associated access tracks and water course crossings associated with the authorised Emoyeni wind energy facilities, does not include an impact assessment and associated tables due to its nature as a Site Sensitivity Verification.

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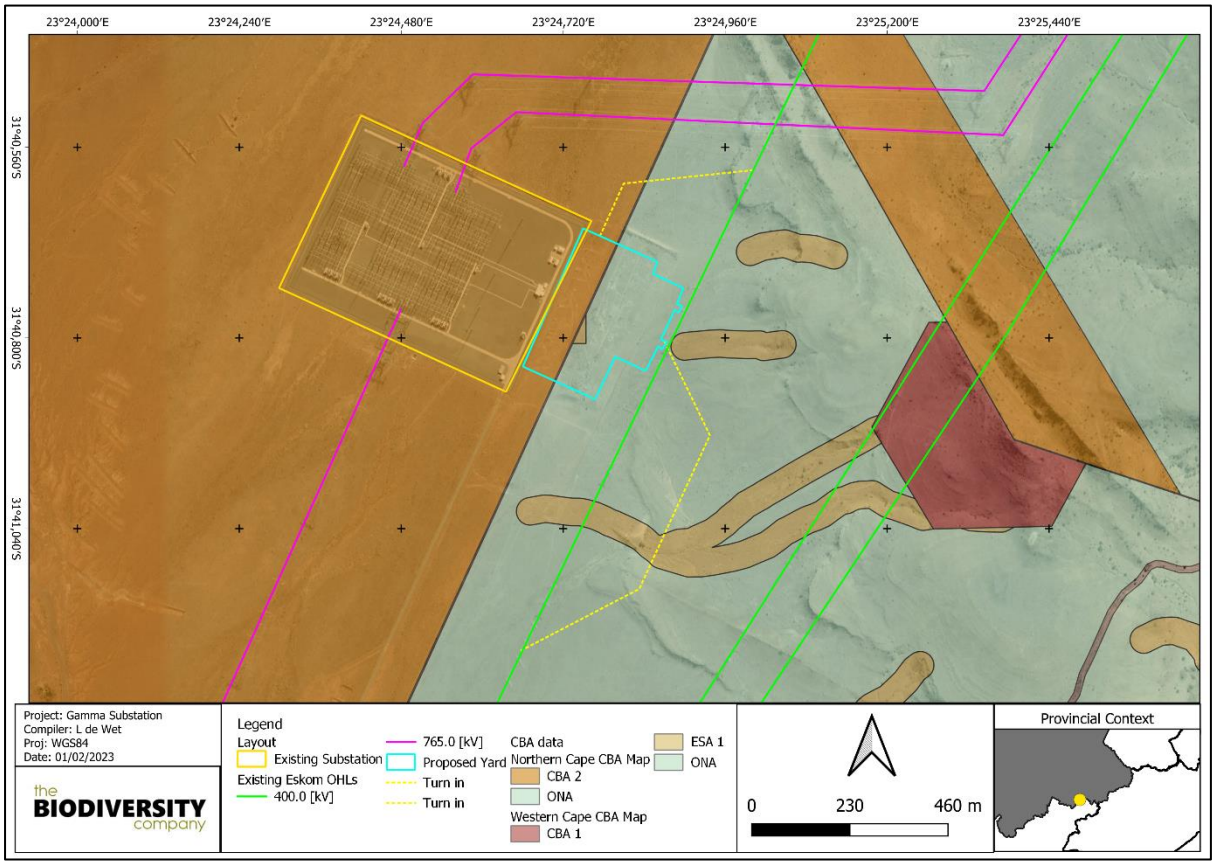
12 The conclusions of the Site Sensitivity Verification (TBC 2022) for the 132KV grid connection infrastructure, associated access tracks and water course crossings associated with the authorised Emoyeni wind energy facilities include the following:

12.1. The assessment area was identified with the screening tool as possessing a Very High sensitivity within a Terrestrial Biodiversity context with the area and surrounding landscape regarded as part of a CBA. The majority of the proposed infrastructure is located within an area designated as "Other Natural Area" with a portion of the substation extension located in a CBA 2. This CBA 2 area has been disturbed and is therefore not considered a CBA based on field data.



12.2. Presently there are natural habitats within the assessment area that possess a High and Very High SEI. This is due to the combination of their functional integrity and conservation importance.

12.3. Based on the habitat present, there is a high likelihood of select SCC occurring within the assessment area.

12.4. Several plant SCC that are provincially protected were recorded in the study area.

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12.5. The classification of the screening tool was considered to be accurate as far as the impact of the proposed powerline, substation and associated infrastructure is concerned based on actual conditions recorded on the ground during the site visit of March 2022, April 2022 and August 2022.

13 Mitigation measures prescribed by each of the reviewed specialist reports remain applicable and must be adhered to.

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14 In order to manage the impacts effectively, the following additional mitigation management should be put into place for the general impacts associated with flora and fauna:

Impact Management Actions	Implementation Phase	Responsible Party
Clearing of vegetation should be minimized and avoided where possible. All activities must be restricted to flat areas as far as possible. It is recommended that areas to be developed be specifically demarcated so that during the construction phase, only the demarcated areas be impacted upon. All disturbed footprints to be rehabilitated and landscaped after construction is complete. Rehabilitation of the disturbed areas existing in the project area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to the project area vegetation type.	Life of operation	Project manager, Environmental Officer
Existing servitudes, access routes, and especially roads must be made use of.	Construction/Operational Phase	Environmental Officer & Design Engineer
All laydown, chemical toilets etc. should be restricted to outside of the project area. No materials may not be stored within the project area, and all materials must be removed from the project area once the construction phase has been concluded. No permanent construction structures/formwork should be permitted. No storage of vehicles or equipment will be allowed outside of the designated project areas.	Construction/Operational Phase	Environmental Officer & Design Engineer
Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood and wind events. This will also reduce the likelihood of encroachment by alien invasive plant species. All livestock should always be kept out of the project area, especially areas that have been recently re-planted.	Operational phase	Environmental Officer & Contractor
A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment to take place within the project area unless necessary. All contaminated soil/yard stone shall be treated in situ or removed and placed in containers. Appropriately contain any diesel or oil storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment. Construction activities and vehicles could cause the spillage of lubricants, fuels and waste material potentially negatively affecting the functioning of the ecosystem. All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the project area.	Life of operation	Environmental Officer & Contractor
It should be made an offence for any staff to take/ bring any plant species into/out of any portion of the project area. No plant species whether indigenous or exotic should be brought into/taken from the project area, to prevent the spread of exotic or invasive species or the illegal collection of plants.	Life of operation	Project manager, Environmental Officer
A fire management plan needs to be complied and implemented to restrict the impact that fire might have on the surrounding areas.	Life of operation	Environmental Officer & Contractor

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Impact Management Actions	Implementation Phase	Responsible Party
Any protected plant that may be present needs a relocation or destruction permit for any individual that may be removed or destroyed due to the development. If left undisturbed the sensitivity and importance of these species needs to be part of the environmental awareness program. All protected and red-list plants should be relocated, along with as many other geophytic species as possible.	Life of operation	Project manager, Environmental Officer
Plant search and rescue must be conducted prior to construction.	Planning Phase, Pre-Construction	Project manager, Environmental Officer & Contractor
A qualified environmental control officer must be on site when construction begins. Should animals not move out of the area on their own relevant specialists must be contacted to advise on how the species can be relocated. Should any large nests be observed within the project area construction should stop immediately and a qualified specialist must be contacted.	Construction Phase	Environmental Officer, Contractor
The areas to be developed must be specifically demarcated to prevent movement of staff or any individual into the surrounding environments: • **Signs must be put up to enforce this.**	Construction/Operational Phase	Project manager, Environmental Officer
The duration of the construction should be minimized to as short term as possible, to reduce the period of disturbance on fauna.	Construction	Project manager, Environmental Officer & Design Engineer
Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to nocturnal mammals.	Construction/Operational Phase	Environmental Officer
No trapping, killing, or poisoning of any wildlife is to be allowed: • **Signs must be put up to enforce this.**	Life of operation	Environmental Officer
All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must still be enforced to ensure that road killings, dust and erosion is limited. The speed limits should be restricted to a maximum of 30 km/h within the project area.	Life of operation	Health and Safety Officer
Outside lighting should be designed and limited to minimize impacts on fauna. All outside lighting should be directed away from highly sensitive areas. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible.	Construction/Operational Phase	Project manager, Environmental Officer & Design Engineer
Schedule activities and operations during least sensitive periods, to avoid migration, nesting and breeding seasons: • **Driving on access roads at night should be restricted in order to reduce or prevent wildlife road mortalities which occur more frequently during this period.**	Life of operation	Project manager, Environmental Officer & Design Engineer
Any holes/deep excavations must be dug and planted in a progressive manner and should not be left open overnight: • **Should the holes remain open overnight they must be covered temporarily to ensure no small fauna species fall in.**	Planning and Construction	Environmental Officer & Contractor, Engineer
Ensure that cables and connections are insulated successfully and adequately to reduce electrocution risk.	Life of project	Environmental Officer & Contractor, Engineer

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Impact Management Actions	Implementation Phase	Responsible Party
Compilation of and implementation of an Alien Invasive Plant Management Plan for the project area.	Life of operation	Project manager, Environmental Officer & Contractor
The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. The footprint of the roads must be kept to prescribed widths.	Construction/Operational Phase	Project manager, Environmental Officer & Contractor
Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests from entering the site	Life of operation	Environmental Officer & Health and Safety Officer
A pest control plan must be put in place and implemented; it is imperative that poisons not be used due to the presence of faunal SCC in the area.	Life of operation	Environmental Officer & Health and Safety Officer
Dust-reducing mitigation measures must be put in place and must be strictly adhered to. This includes wetting of exposed soft soil surfaces: • **No non-environmentally friendly suppressants may be used as this could result in the pollution of valuable water sources.**	Life of operation	Contractor
Waste management must be a priority and all waste must be collected and stored effectively.	Life of operation	Environmental Officer & Contractor
Litter, spills, fuels, chemical and human waste in and around the project area must be cleared and safely/appropriately stored immediately.	Construction/Operation/Closure Phase	Environmental Officer & Health and Safety Officer
A minimum of one toilet must be provided per 10 persons. Portable toilets must be pumped dry to ensure the system does not degrade over time and spill into the surrounding area.	Life of operation	Environmental Officer & Health and Safety Officer
The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility.	Life of operation	Environmental Officer & Health and Safety Officer
Where a registered disposal facility is not available close to the project area, the Contractor shall provide a method statement with regard to waste management. Under no circumstances may domestic waste be burned on site or stored in pits.	Life of operation	Environmental Officer, Contractor & Health and Safety Officer
Refuse bins will be emptied and secured. Temporary storage of domestic waste shall be in covered waste skips. Maximum domestic waste storage period will be 10 days.	Life of operation	Environmental Officer, Contractor & Health and Safety Officer
All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within and in close proximity to the project area such as the nearby rocky outcrops and to inform contractors and site staff of the presence of red-listed faunal species (such as the Riverine rabbit), their identification, conservation status and importance, biology, habitat requirements and management requirements in line with the Environmental Authorisation and within the EMPr. The avoidance and protection of the high sensitivity areas must be included in a site induction. Contractors and employees must all undergo the induction and be made aware of the "no-go" areas to be avoided.	Life of operation	Health and Safety Officer

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Impact Management Actions	Implementation Phase	Responsible Party
Speed limits of 30 km/h must be put in place to reduce erosion: • **Dust generated, especially by earth moving machinery, must be minimised through wetting of the soil surface and putting up signs to enforce speed limits. Speed bumps must be built to force slow speeds;** • **Signs must be put up to enforce this.**	Life of operation	Project manager, Environmental Officer
Where possible, existing access routes and walking paths must be made use of.	Life of operation	Project manager, Environmental Officer
Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events and strong winds. This is to be done according to the Re-vegetation and Habitat Rehabilitation Plan.	Life of operation	Project manager, Environmental Officer
The stormwater must be managed as part of the plan for the existing Gamma substation.	Life of operation	Project manager, Environmental Officer

15 The desktop terrestrial biodiversity theme sensitivity according to the screening tool (refer to Figure 1-3) for a portion of the site area is 'Very High' due to the presence of Critical Biodiversity Area 2 with the remaining having a 'Low' sensitivity. A baseline assessment (April 2022) determined the sensitivity of the karoo habitat to be 'Low', with surrounding rocky outcrops a 'Very High' sensitivity. The rocky outcrops are not located within the construction and operational area.

16 Impacts assessed as part of the 2007 reports: Ecological & Biodiversity Assessment: Faunal Specialist Study, conducted by M. Landman, GIH Kerley and AF Boshoff (Centre for African Conservation Ecology) and Vegetation Assessment by Centre for African Conservation Ecology (no authors provided) as part of the Environmental Impact Assessment (EIA) for the proposed Construction of the 765 KV Gamma Substation on the farms Uit Vlugt Fontein and Schietkuil in the Western Cape and Northern Cape (DEA REF. No. 12/12/20/873) are considered to be relevant for the proposed new layout. Impacts identified and assessed as part of the Terrestrial Biodiversity and Avifauna Assessment Report (L de Wet, L Steyn, J Jacobs and A Husted, TBC, 2022) are also relevant, though assessed for the entire grid and associated infrastructure. No new impacts were identified in the most recent study, nor are any new impacts expected. It is considered that impacts so far identified and assessed are an accurate representation of the impacts associated with the proposed new layout of the Gamma substation.

17 Cumulative impacts were not assessed as part of the 2007 studies however, they are assessed as part of the 2022 studies and are considered accurate and applicable to the proposed layout change of the Gamma substation. Impacts of the proposed layout change in isolation are expected to be low overall and high when considered cumulatively.

18 In terms of terrestrial biodiversity (excluding avifauna), there are no advantages of the proposed new layout. However, the proposed new layout is not expected to result in an increase in expected impacts or their associated severities. Disadvantages include an increased area of indigenous

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vegetation and associated habitat lost and an increase in disturbance and resultant increase in alien invasive species, particularly plants, as identified in the specialist studies.

19 All prescribed mitigation measures and supporting recommendations presented here will help to achieve an acceptable residual impact. These measures and recommendations will remain applicable for the requested extension of the EA. To this end, these measures have been included in the updated EMPr for this development as per the requirements of the Environmental Authorisation.

20 As such, should the measures described above, and as included in the updated EMPr for this development be implemented, it is the reasoned opinion of the specialist that the proposed layout changes i.e. the inclusion of the proposed substation yard within the authorised footprint of the existing Gamma Substation and the proposed turn-in of the Hydra- Droerivier 2 400kV powerline be approved.

21 We trust you find the above in order. If there are any uncertainties or additional information required, please feel free to contact the undersigned.

Kind regards,

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TERMS OF REFERENCE AND ENVIRONMENTAL IMPACT METHODOLOGY

TERMS OF REFERENCE:

The report amendment report must reflect:

- An assessment of all impacts related to the proposed changes;
- Advantages and disadvantages associated with the changes;
- Comparative assessment of the impacts before the changes and after the changes; and
- Measures to ensure avoidance, management and mitigation of impacts associated with such proposed changes, and any changes to the EMPr.

The assessment must be clear on whether each of the proposed changes to the EA will:

- Increase the significance of impacts originally identified in the EIA report or lead to any additional impacts; or
- Have a zero or negligible effect on the significance of impacts identified in the EIA report; or
- Lead to a reduction in any of the identified impacts in the EIA report.

Please take note that should there be no change to impacts and their significance ratings as identified in the EIA process (as the corridor has already been assessed), no impact tables will be necessary to include. Should there be an increase or decrease in significance or additional impacts not identified within the EIA process, the Impact Assessment Methodology and table format should be used and additional mitigation measures, if any, should be included.

ENVIRONMENTAL IMPACT METHODOLOGY:

The impact significance rating methodology, as provided by Nala, is guided by the requirements of the NEMA EIA Regulations 2014 (as amended).

Direct, indirect and cumulative impacts associated with the projects must be assessed in terms of the following criteria:

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- The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- The **duration**, wherein it will be indicated whether:
  - the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - medium-term (5–15 years) – assigned a score of 3;
  - long term (> 15 years) - assigned a score of 4; or
  - permanent - assigned a score of 5;
- The **magnitude**, quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability** *of occurrence*, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- the **status**, which will be described as either positive, negative or neutral.
- the degree to which the impact can be reversed.
- the degree to which the impact may cause irreplaceable loss of resources.
- the *degree* to which the impact can be *mitigated.*

The **significance** is calculated by combining the criteria in the following formula:

S = (E+D+M) P

S = Significance weighting

E = Extent

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D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- < 30 points: Low (i.e., where this impact would not have a direct influence on the decision to develop in the area),
- 30-60 points: Medium (i.e., where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- > 60 points: High (i.e., where the impact must have an influence on the decision process to develop in the area).

Example of Impact table summarising the significance of impacts (with and without mitigation)

Nature: **[Outline and describe fully the impact anticipated as per the assessment undertaken]**		
	Without mitigation	**With mitigation**
Extent	High (3)	Low (1)
Duration	Medium-term (3)	Medium-term (3)
Magnitude	Moderate (6)	Low (4)
Probability	Probable (3)	Probable (3)
Significance	**Medium (36)**	**Low (24)**
Status (positive or negative)	Negative	Negative
Reversibility	Low	Low
Irreplaceable loss of resources?	Yes	No
Can impacts be mitigated?	Yes	
Mitigation: "Mitigation", means to anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible. Provide a description of how these mitigation measures will be undertaken keeping the above definition in mind		
Residual Impacts: "Residual Risk", means the risk that will remain after all the recommended measures have been undertaken to mitigate the impact associated with the activity (Green Leaves III, 2014).		

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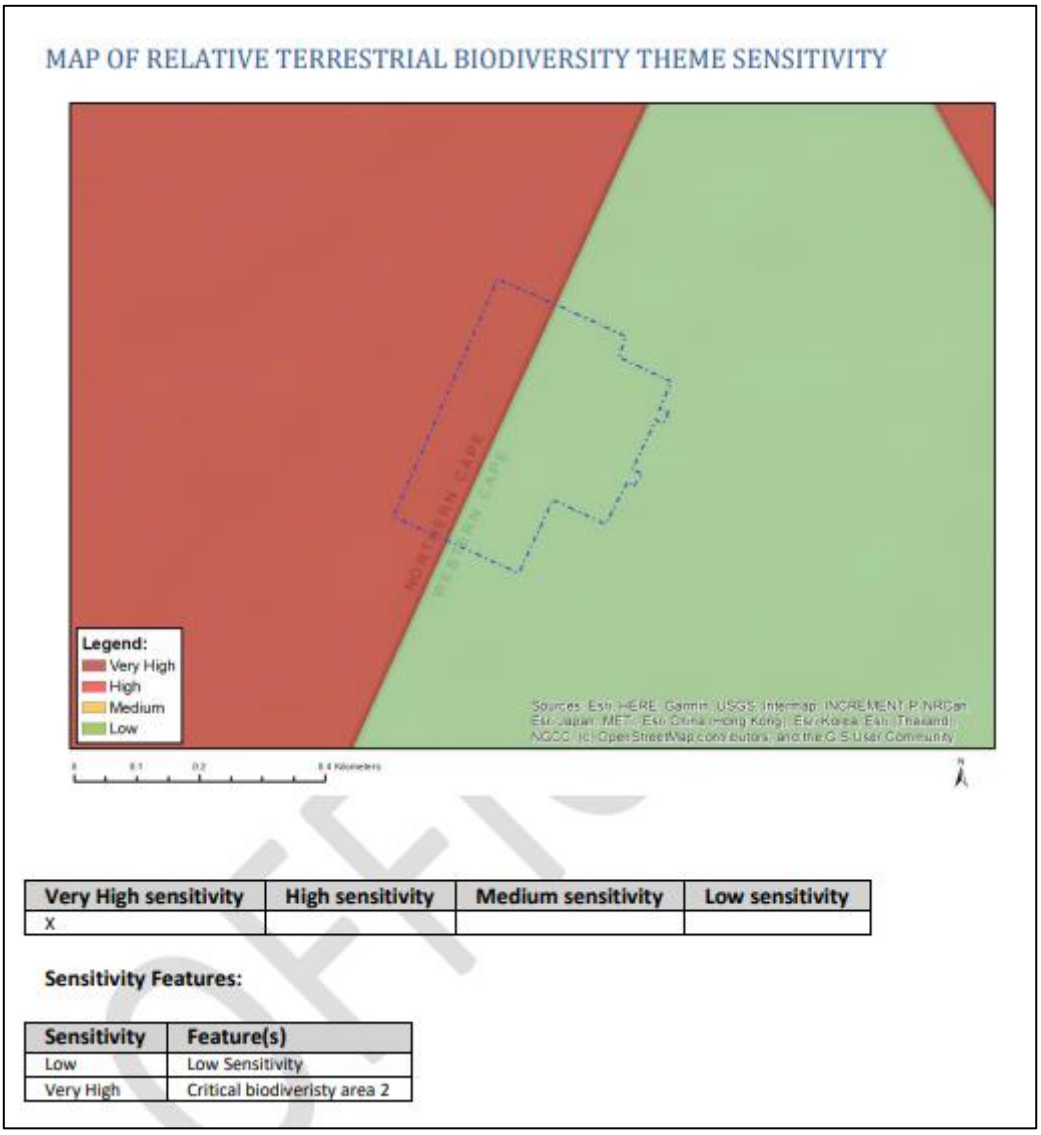

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	Critical biodiveristy area 2

Figure 1. Terrestrial Biodiversity Theme Sensitivity (Screening Tool) for the proposed Gamma Substation Yard

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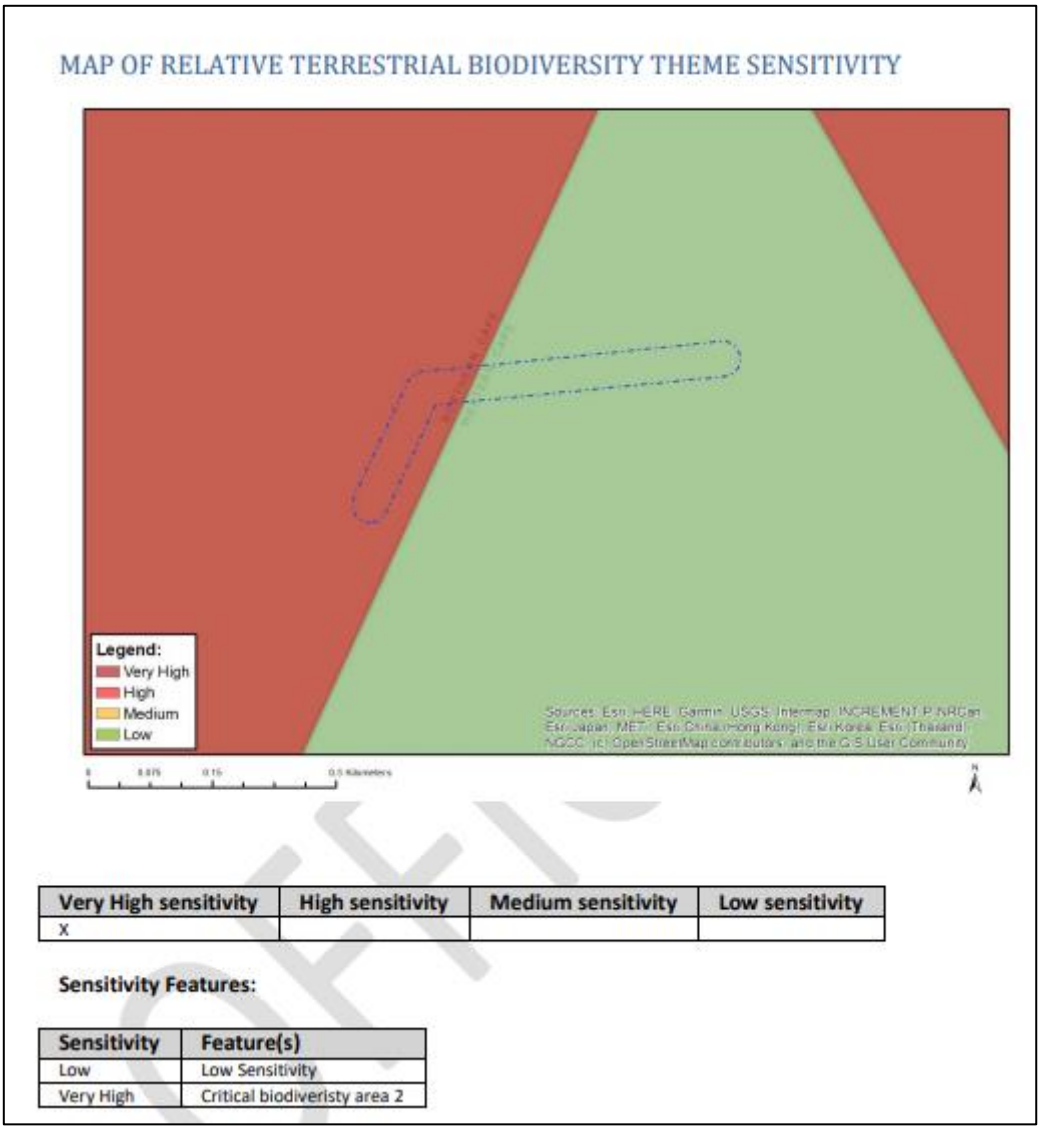

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Very High	Critical biodiveristy area 2

Figure 2. Terrestrial Biodiversity Theme Sensitivity (Screening Tool) for the 400kV Hydra-Droerivier 2 turn-in

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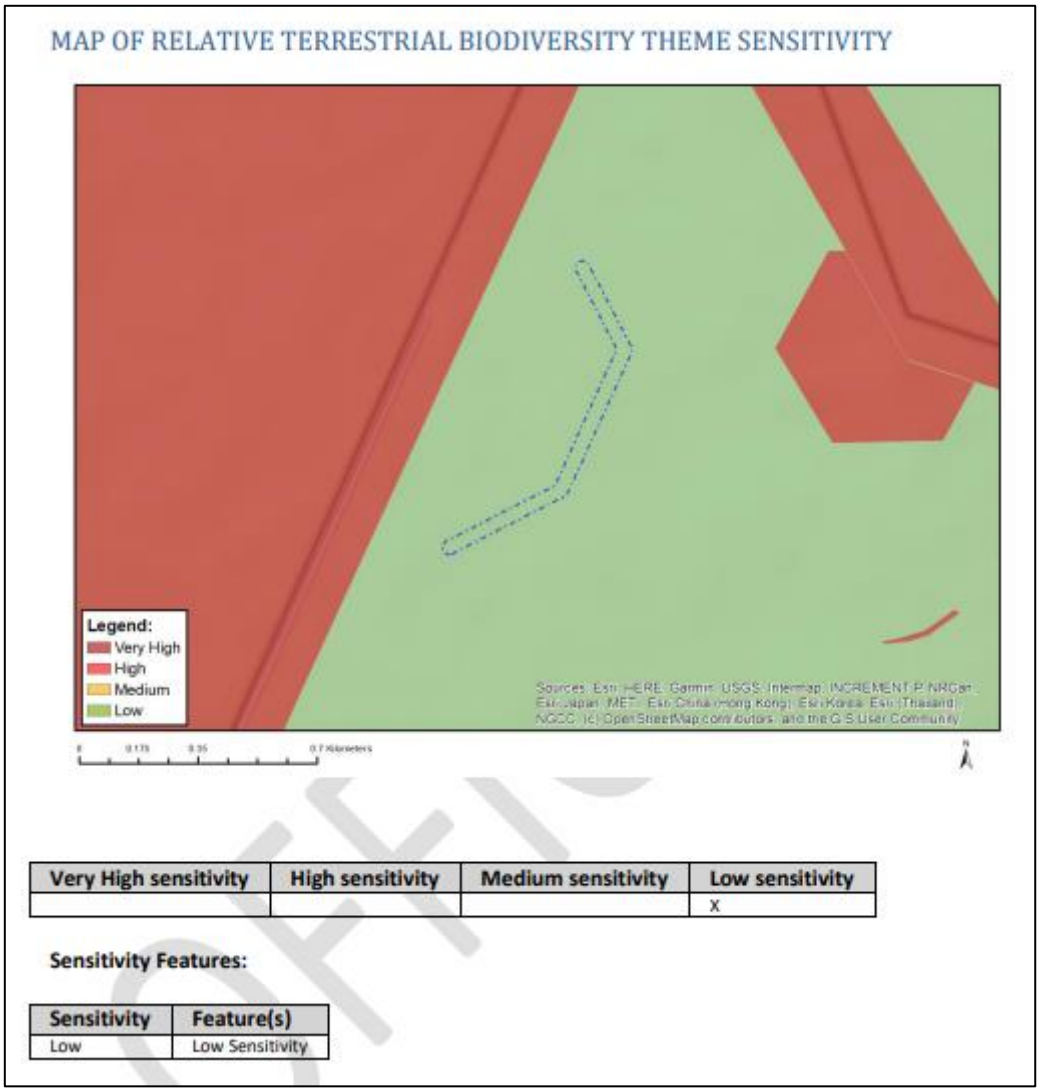

Figure 3. Terrestrial Biodiversity Theme Sensitivity (Screening Tool) for the 400kV Hydra-Droerivier 2 turn-in

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Appendix 1: Provincially Protected flora species recorded within the assessment area and their respective growth form and conservation status. Species in the Provincial column are protected by legislation. EN = Endangered, NT= Near Threatened, VU = Vulnerable, LC = Least Concern and NE = Not Evaluated

Family	Scientific name	Provincial	Red List
Aizoaceae	*Aizoon africanum*	Sch. 4	LC
Aizoaceae	*Delosperma multiflorum*	Sch. 4	LC
Aizoaceae	*Drosanthemum dejagerae*	Sch. 4	DDT
Aizoaceae	*Drosanthemum hispidum*	Sch. 4	LC
Aizoaceae	*Malephora lutea*	Sch. 4	LC
Aizoaceae	*Mesembryanthemum coriarium*	Sch. 4	LC
Aizoaceae	*Ruschia intricata*	Sch. 4	LC
Aizoaceae	*Ruschia spinosa*	Sch. 4	LC
Aizoaceae	*Stomatium duthiae*	Sch. 4	LC
Amaryllidaceae	*Boophone disticha*	Sch. 4	LC
Apocynaceae	*Gomphocarpus fruticosus*	Sch. 4	LC
Apocynaceae	*Pachypodium succulentum*	Sch. 4	LC
Asphodelaceae	*Aloe broomii*	Sch. 4	LC
Asphodelaceae	*Aloe claviflora*	Sch. 4	LC
Asphodelaceae	*Haworthia semiviva*	Sch. 4	LC
Iridaceae	*Moraea polystachya*	Sch. 4	LC
Iridaceae	*Moraea* sp.	Sch. 4	
Iridaceae	*Romulea tortuosa*	Sch. 4	LC

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SITE SENSITIVITY VERIFICATION

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TERRESTRIAL ECOLOGY: SITE SENSITIVITY VERIFICATION: GAMMA SUBSTATION

CONTENTS

1. INTRODUCTION

The construction of the Eskom Gamma Substation was authorised by the Department of Environmental Affairs in 2007. The approval was for constructing the complete Gamma substation. However, it was noted that individual components would be constructed in a phased approach as determined by the electricity demand over several years.

As such, the first construction phase of the Gamma substation commenced during the original validity period of the EA and was completed in 2013 (**Figure 1**).

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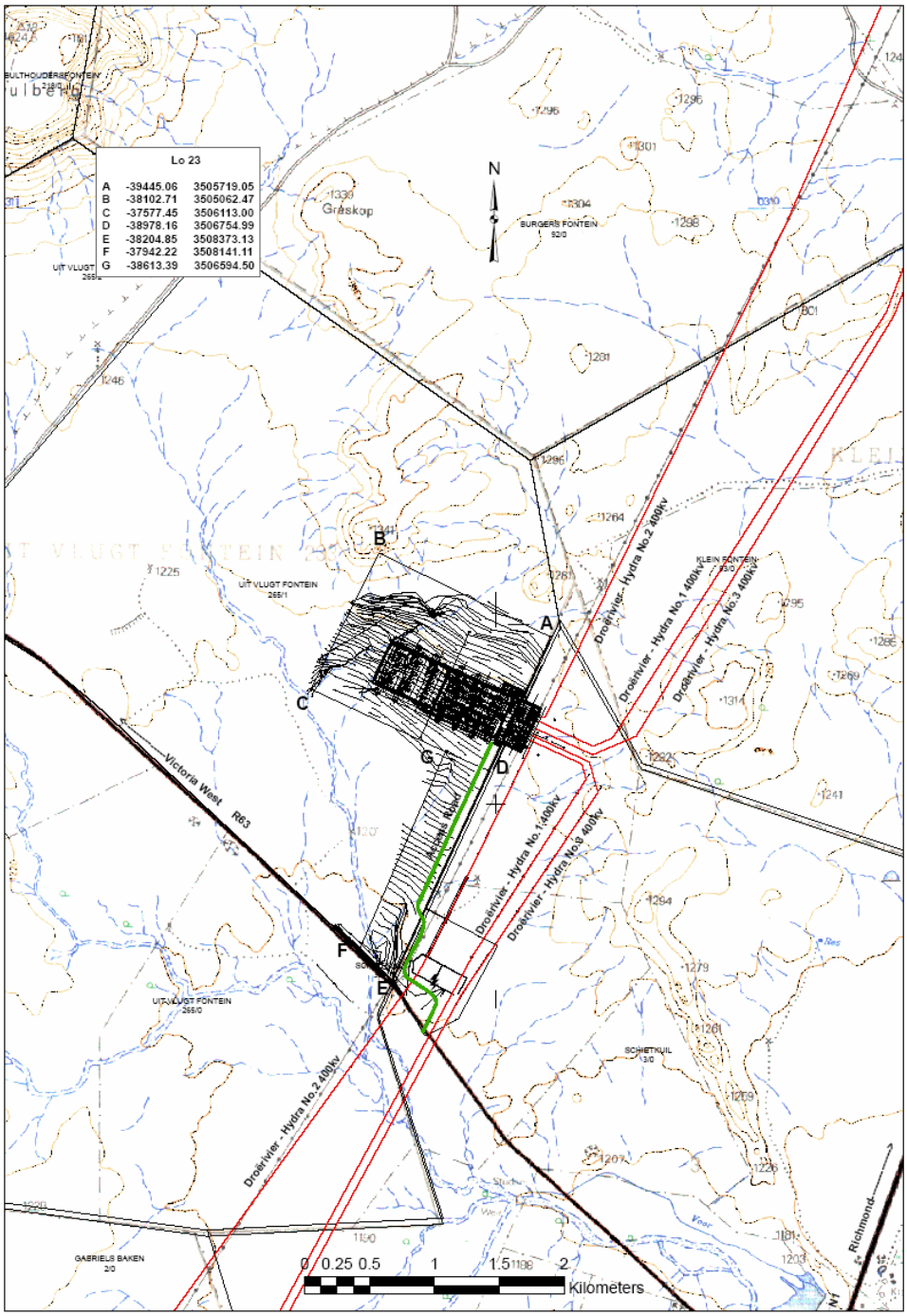

Figure 1 - As per the Final Environmental Impact Report (FEIR) (2007) indicating the layout of the 765kV Gamma Substation as authorised.

Proposed Second Phase

The holder of the EA proposes to commence construction of the second phase of the authorised substation development, specifically the development of a 132/400kV yard at the

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existing MTS and OHL turn-in of the existing 400kV Droer-Hydra 2 Overhead Powerline into the substation yard, as provided for in the current EA.

The next phase of construction activities associated with the EA is directly linked to the increased demand for grid infrastructure which is linked to upcoming Renewable Energy projects in the Northern and Western Cape Provinces. Notably, the 132kV/400kV yard and 400kV OHL turn-ins are needed to enable the connection of the authorised Umsinde Emoyeni Wind Farm (DFFE Ref: 14/12/16/3/3/2/686) with has been registered as Strategic Integrated Project (SIP).

The proposed 132kV/400kV yard and 400kV OHL turn-ins fall within the scope of the current EA. However – based on further technical analysis and design – it has been identified that the layout of the authorised infrastructure will need to be updated to reflect the updated configuration proposed (i.e., the 132kV/400kV substation yard and 400kV turn-in) to be implemented. The updated layout falls within the scope and footprint of what was originally assessed in the original EIA process, however for the avoidance of doubt the holder wishes to have the updated layout approved by DFFE prior to implementation thereof.

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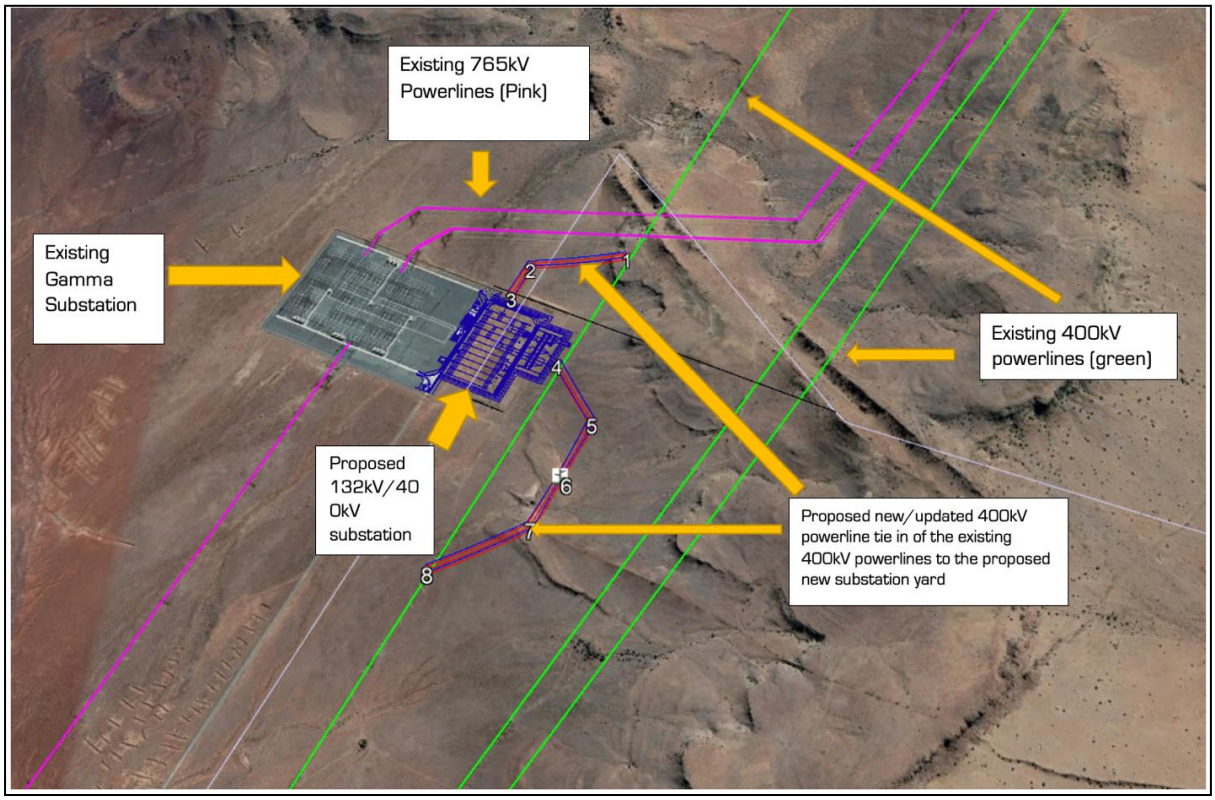

Figure 2 - Proposed Updated Layout depicting the existing Gamma Substation with the next phase of the authorised development now proposed for implementation (new proposed 132kV/400kV Substation yard and new reconfigured turn-in and turn-out of the existing 400kV powerline).

A Part 2 amendment application is proposed to be undertaken for the proposed update to the layout to the existing 765kV Gamma Substation and associated powerline turn-in infrastructure. The next phase of the Gamma MTS development that will now be implemented will consist of:

- A substation yard with a step-up voltage of 132kV/400kV on Farm Schietkuil 3 and Farm Uit Vlugt Fontein 265; and
- In addition, the existing Eskom 400kV overhead powerline that currently bypasses the existing Gamma Substation (i.e. the "Droerivier- Hydra No. 2" 400kV OHL) will be reconfigured to turn-in and turn-out of the new substation yard

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) Environmental Impact Assessment (EIA) Regulations [4 December 2014, Government Notice (GN) R982, R983, R984 and R985, as amended], various aspects of the proposed development may have an impact on the environment and are considered to be listed activities. These activities require authorisation from the National Competent Authority (CA), namely the Department of Forestry, Fisheries and the Environment (DFFE), prior to the

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commencement thereof. Further to this as per GN R. 2313 : ***Adoptions of the standard for the development and expansion of powerlines and substation with identified geographical areas and the exclusion of this infrastructure from the requirements to obtain Environmental Authorisation*** , the Standard was adopted in terms of section 24(10)(a) of the Act for the purpose of excluding the activities contemplated in paragraph 5.1 and 5.2 of the Schedule from the requirement to obtain environmental authorisation prior to commencement. In terms of the procedural requirement set out in the standard, screening tool reports have been undertaken for the updated gamma substation layout and associated infrastructure and site sensitivity verifications have been undertaken by the relevant specialists in accordance with the sensitivity themes. As per 6.1. of the GNR .2313, "Where any part of the infrastructure occurs on an area for which the environmental sensitivity for any environmental theme is identified as being very high or high by the national web based environmental screening tool and confirmed to be such through the application of the procedures set out in the Standard", the site sensitivity verifications have been performed as per the procedural requirements set out.

In accordance with GN 320 and GN 1150 (20 March 2020)[2] of the NEMA EIA Regulations of 2014 (as amended), prior to commencing with a specialist assessment, a site sensitivity verification must be undertaken to confirm the current land use and environmental sensitivity of the proposed project areas as identified by the National Web-Based Environmental Screening Tool (i.e., Screening Tool). Leigh- Ann De Wet, Andrew Husted and Jan Jacobs, as terrestrial specialists, have been commissioned to verify the sensitivity of the project sites under these specialist protocols.

The scope of this report is for one (1) application, namely the Part 2 ammendment application for the proposed update top the layout to the exisiting 765kV Gamma Substation and associated powerline turn-in infrastructure. The next phase of the Gamma MTS development that will now be implemented will consist of:

- A substation yard with a step-up voltage of 132kV/400kV on Farm Schietkuil 3 and Farm Uit Vlugt Fontein 265; and
- In addition, the existing Eskom 400kV overhead powerline that currently bypasses the existing Gamma Substation (i.e. the "Droerivier- Hydra No. 2" 400kV OHL) will be reconfigured to turn-in and turn-out of the new substation yard

2. SITE SENSITIVITY VERIFICATION METHODOLOGY

The following information sources were consulted to compile this report:

[2] GN 320 (20 March 2020): Procedures for The Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation

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- National Biodiversity Assessment 2018 (Skowno *et al,* 2019) - The purpose of the National Biodiversity Assessment (NBA) is to assess the state of South Africa's biodiversity based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors. The NBA deals with all three components of biodiversity: genes, species and ecosystems; and assesses biodiversity and ecosystems across terrestrial, freshwater, estuarine and marine environments. The two headline indicators assessed in the NBA are:
- Ecosystem Threat Status – indicator of an ecosystem's wellbeing, based on the level of change in structure, function or composition. Ecosystem types are categorised as Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT) or Least Concern (LC), based on the proportion of the original extent of each ecosystem type that remains in good ecological condition.
- Ecosystem Protection Level – indicator of the extent to which ecosystems are adequately protected or under-protected. Ecosystem types are categorised as Well Protected (WP), Moderately Protected (MP), Poorly Protected (PP), or Not Protected (NP), based on the proportion of the biodiversity target for each ecosystem type that is included within one or more protected areas. Not Protected, Poorly Protected or Moderately Protected ecosystem types are collectively referred to as under-protected ecosystems.
- Protected areas:
    - South Africa Protected Areas Database (SAPAD) and South Africa Conservation Areas Database (SACAD) (DEA, 2022) – The South African Protected Areas Database (SAPAD) and South Africa Conservation Areas Database (SACAD) contains spatial data for the conservation of South Africa. It includes spatial and attribute information for both formally protected areas and areas that have less formal protection. The database is updated on a continuous basis and forms the basis for the Register of Protected Areas which is a legislative requirement under the National Environmental Management: Protected Areas Act, Act 57 of 2003.
    - National Protected Areas Expansion Strategy (NPAES) (SANBI, 2018) – The National Protected Area Expansion Strategy (NPAES) provides spatial information on areas that are suitable for terrestrial ecosystem protection. These focus areas are large, intact and unfragmented and are therefore, of high importance for biodiversity, climate resilience and freshwater protection.
- Northern Cape Critical Biodiversity Areas (2016): The Northern Cape Department of Environment and Nature Conservation has developed the Northern Cape CBA Map which identifies biodiversity priority areas for the province, called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). These biodiversity priority areas, together with protected areas, are important for the persistence of a viable

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representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole.

  - The identification of Critical Biodiversity Areas for the Northern Cape was undertaken using a Systematic Conservation Planning approach. Available data on biodiversity features (incorporating both pattern and process, and covering terrestrial and inland aquatic realms), their condition, current Protected Areas and Conservation Areas, and opportunities and constraints for effective conservation were collated.
  - The Northern Cape Critical Biodiversity Area (CBA) Map updates, revises and replaces all older systematic biodiversity plans and associated products for the province.

- Western Cape Biodiversity Spatial Plan (WCBSP): The WCBSP has been developed by CapeNature Scientific Services Land Use Team in order to identify the priority biodiversity areas and ecological infrastructure that must be conserved to meet the provincial biodiversity mandate (Pool-Stanvliet *et.al*. 2017). The plan includes land use guidelines along with biodiversity priority areas, covering terrestrial, freshwater, coastal and marine areas. The plan identified areas as Critical Biodiversity Areas (CBAs) which cannot be lost if conservation goals are to be met, and Ecological Support Areas (ESAs) (Table 5-1), which are required to support the functioning of ecosystems and CBAs (Pool-Stanvliet *et.al.* 2017).
- Important Bird and Biodiversity Areas (BirdLife South Africa, 2015) – Important Bird and Biodiversity Areas (IBAs) constitute a global network of over 13 500 sites, of which 112 sites are found in South Africa. IBAs are sites of global significance for bird conservation, identified through multi-stakeholder processes using globally standardised, quantitative and scientifically agreed criteria.

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Desktop Flora Assessment

The Vegetation of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006) was used in order to identify the vegetation type that would have occurred under natural or pre-anthropogenically altered conditions. Furthermore, the Plants of Southern Africa (POSA) database was accessed to compile a list of expected flora species within the proposed development area and surrounding landscape. The Red List of South African Plants (Raimondo *et al.,* 2009; SANBI, 2020) was utilized to provide the most current national conservation status of flora species.

Desktop Faunal Assessment

The faunal desktop assessment comprised of the following:

- Compiling an expected amphibian list generated from the IUCN spatial dataset (2017) and the FrogMap database of the Animal Demography Unit (FitzPatrick Institute of African Ornithology. 2022a) using the 3128CB, 3128DA, 3123DB, 3123DD and 3124CC quarter degree squares;
- Compiling an expected reptile list generated from the IUCN spatial dataset (2017) and the ReptileMap database of the Animal Demography Unit (FitzPatrick Institute of African Ornithology. 2022b) using the 3128CB, 3128DA, 3123DB, 3123DD and 3124CC quarter degree squares; and
- Compiling an expected amphibian list generated from the IUCN spatial dataset (2017) and the MammalMap database of the Animal Demography Unit (FitzPatrick Institute of African Ornithology. 2022c.) using the 3128CB, 3128DA, 3123DB, 3123DD and 3124CC quarter degree squares.

Flora Assessment

The flora assessment consisted of timed meanders of the survey area. This primarily involved meandering through habitat types and identifying all species observed and particularly locating any species of conservation concern.

Relevant field guides and texts consulted for identification purposes included, but was not limited, to the following:

Identification Guide to Southern African Grasses: An Identification Manual with Keys, Descriptions, and Distributions (Fish *et al,* 2015);

- Karoo: South African Wild Flower Guide 6. (Shearing 2008);
- Problem Plants and Alien Weeds of South Africa (Bromilow, 2018);
- Field Guide to Succulents in Southern Africa (Smith *et al,* 2017);
- Field Guide to Wildflowers of South Africa (Manning, 2009); and
- iNaturalist. Available at https://www.inaturalist.org/home (the project specific data can be found at https://www.inaturalist.org/projects/kangela, where a full up-to-date species list of all photographed species resides).

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Faunal Assessment

The faunal assessment within this report pertains to herpetofauna and mammals. The faunal field survey comprised of the following active and passive techniques:

- Visual and auditory searches - This typically comprised of meandering and using binoculars to view species from a distance without them being disturbed as well as listening to species calls or locating tracks and scat;
- Active hand-searches - are used for species that shelter in or under particular micro-habitats (typically under rocks, rocky crevices, coarse woody debris, etc.);

Diagnostic features of the individuals that were captured were photographed at site and released.

Relevant field guides and texts consulted for identification purposes included the following:

- Field Guide to Snakes and other Reptiles of Southern Africa (Branch, 1998);
- A Complete Guide to the Snakes of Southern Africa (Marais, 2004);
- Atlas and Red List of the Reptiles of South Africa, Lesotho and Swaziland (Bates *et al,* 2014);
- A Complete Guide to the Frogs of Southern Africa (du Preez and Carruthers, 2009);
- Stuarts' Field Guide to Mammals of Southern Africa including Angola, Zambia & Malawi (Stuart and Stuart, 2015); and
- A Field Guide to the Tracks and Signs of Southern and East African Wildlife (Stuart and Stuart, 2000).

Site Ecological Importance

The different habitat types within the assessment area were delineated and identified based on observations during the field assessment as well as available satellite imagery. These habitat types were assigned Ecological Importance (EI) categories based on their ecological integrity, conservation value, the presence of species of conservation concern and their ecosystem processes.

Site Ecological Importance (SEI) is a function of the Biodiversity Importance (BI) of the receptor (e.g., SCC, the vegetation/fauna community or habitat type present on the site) and Receptor Resilience (RR) (its resilience to impacts) as follows.

BI is a function of Conservation Importance (CI) and the Functional Integrity (FI) of the receptor as follows. The criteria for the CI and FI ratings are provided in Table 1.5 and Table 1.6 respectively.

Table 1.5. Summary of Conservation Importance criteria

Conservation Importance	Fulfilling Criteria
Very High	Confirmed or highly likely occurrence of CR, EN, VU or Extremely Rare or Critically Rare species that have a global EOO of < 10 km^2.

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Conservation Importance	Fulfilling Criteria
	Any area of natural habitat of a CR ecosystem type or large area (> 0.1% of the total ecosystem type extent) of natural habitat of an EN ecosystem type.
	Globally significant populations of congregatory species (> 10% of global population).
High	Confirmed or highly likely occurrence of CR, EN, VU species that have a global EOO of > 10 km^2. IUCN threatened species (CR, EN, VU) must be listed under any criterion other than A.
	If listed as threatened only under Criterion A, include if there are less than 10 locations or < 10 000 mature individuals remaining.
	Small area (> 0.01% but < 0.1% of the total ecosystem type extent) of natural habitat of EN ecosystem type or large area (> 0.1%) of natural habitat of VU ecosystem type.
	Presence of Rare species.
	Globally significant populations of congregatory species (> 1% but < 10% of global population).
Medium	Confirmed or highly likely occurrence of populations of NT species, threatened species (CR, EN, VU) listed under Criterion A only and which have more than 10 locations or more than 10 000 mature individuals.
	Any area of natural habitat of threatened ecosystem type with status of VU.
	Presence of range-restricted species.
	> 50% of receptor contains natural habitat with potential to support SCC.
Low	No confirmed or highly likely populations of SCC.
	No confirmed or highly likely populations of range-restricted species.
	< 50% of receptor contains natural habitat with limited potential to support SCC.
Very Low	No confirmed and highly unlikely populations of SCC.
	No confirmed and highly unlikely populations of range-restricted species.
	No natural habitat remaining.

Table 1.6 Summary of Functional Integrity criteria

Functional Integrity	Fulfilling Criteria
Very High	Very large (> 100 ha) intact area for any conservation status of ecosystem type or > 5 ha for CR ecosystem types.
	High habitat connectivity serving as functional ecological corridors, limited road network between intact habitat patches.

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	No or minimal current negative ecological impacts with no signs of major past disturbance.
High	Large (> 20 ha but < 100 ha) intact area for any conservation status of ecosystem type or > 10 ha for EN
	ecosystem types.
	Good habitat connectivity with potentially functional ecological corridors and a regularly used road network between intact habitat patches.
	Only minor current negative ecological impacts with no signs of major past disturbance and good rehabilitation potential.
Medium	Medium (> 5 ha but < 20 ha) semi-intact area for any conservation status of ecosystem type or > 20 ha for VU ecosystem types.
	Only narrow corridors of good habitat connectivity or larger areas of poor habitat connectivity and a busy
	used road network between intact habitat patches.
	Mostly minor current negative ecological impacts with some major impacts and a few signs of minor past disturbance. Moderate rehabilitation potential.
Low	Small (> 1 ha but < 5 ha) area.
	Almost no habitat connectivity but migrations still possible across some modified or degraded natural habitat
	and a very busy used road network surrounds the area.
	Low rehabilitation potential.
	Several minor and major current negative ecological impacts.
Very Low	Very small (< 1 ha) area.
	No habitat connectivity except for flying species or flora with wind-dispersed seeds.
	Several major current negative ecological impacts.

BI can be derived from a simple matrix of CI and FI as provided in Table 1.7

Table 1.7 Matrix used to derive Biodiversity Importance from Functional Integrity and Conservation Importance

Biodiversity Importance (BI)		**Conservation Importance (CI)**				
		Very high	**High**	**Medium**	**Low**	**Very low**
Functional Integrity (FI)	**Very high**	Very high	Very high	High	Medium	Low
	High	Very high	High	Medium	Medium	Low
	Medium	High	Medium	Medium	Low	Very low
	Low	Medium	Medium	Low	Low	Very low
	Very low	Medium	Low	Very low	Very low	Very low

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The fulfilling criteria to evaluate RR are based on the estimated recovery time required to restore an appreciable portion of functionality to the receptor as summarised in Table 1.8

Table 1.8 Summary of Resource Resilience criteria

Resilience	Fulfilling Criteria
Very High	Habitat that can recover rapidly (~ less than 5 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a very high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a very high likelihood of returning to a site once the disturbance or impact has been removed.
High	Habitat that can recover relatively quickly (~ 5–10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a high likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a high likelihood of returning to a site once the disturbance or impact has been removed.
Medium	Will recover slowly (~ more than 10 years) to restore > 75% of the original species composition and functionality of the receptor functionality, or species that have a moderate likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a moderate likelihood of returning to a site once the disturbance or impact has been removed.
Low	Habitat that is unlikely to be able to recover fully after a relatively long period: > 15 years required to restore ~ less than 50% of the original species composition and functionality of the receptor functionality, or species that have a low likelihood of remaining at a site even when a disturbance or impact is occurring, or species that have a low likelihood of returning to a site once the disturbance or impact has been removed.
Very Low	Habitat that is unable to recover from major impacts, or species that are unlikely to remain at a site even when a disturbance or impact is occurring, or species that are unlikely to return to a site once the disturbance or impact has been removed.

Subsequent to the determination of the BI and RR, the SEI can be ascertained using the matrix as provided in Table 1.9

Table 1.9 Matrix used to derive Site Ecological Importance from Receptor Resilience and Biodiversity Importance

Site Ecological Importance		Biodiversity Importance				
		Very high	**High**	**Medium**	**Low**	**Very low**
Receptor Resilience	**Very Low**	Very high	Very high	High	Medium	Low
	Low	Very high	Very high	High	Medium	Very low

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Site Ecological Importance		Biodiversity Importance				
		Very high	High	Medium	Low	Very low
	Medium	Very high	High	Medium	Low	Very low
	High	High	Medium	Low	Very low	Very low
	Very High	Medium	Low	Very low	Very low	Very low

3. OUTCOME OF SITE SENSITIVITY VERIFICATION

The combined Terrestrial Biodiversity Theme Sensitivity for the assessment area was derived to be Very High as indicated in the National Environmental Screening Tool (Figures 1, 2 and 3). With the expansion of the substation located partially In an area of Very High sensivitity and the remainder In an area of Low sensitivity. The Turn-In points 1-3 are located parially In an area of Very High sensitivity and In an area of Low sensitivity. Turn-In points 4 - 8 are located In an area of Low sensitivity.

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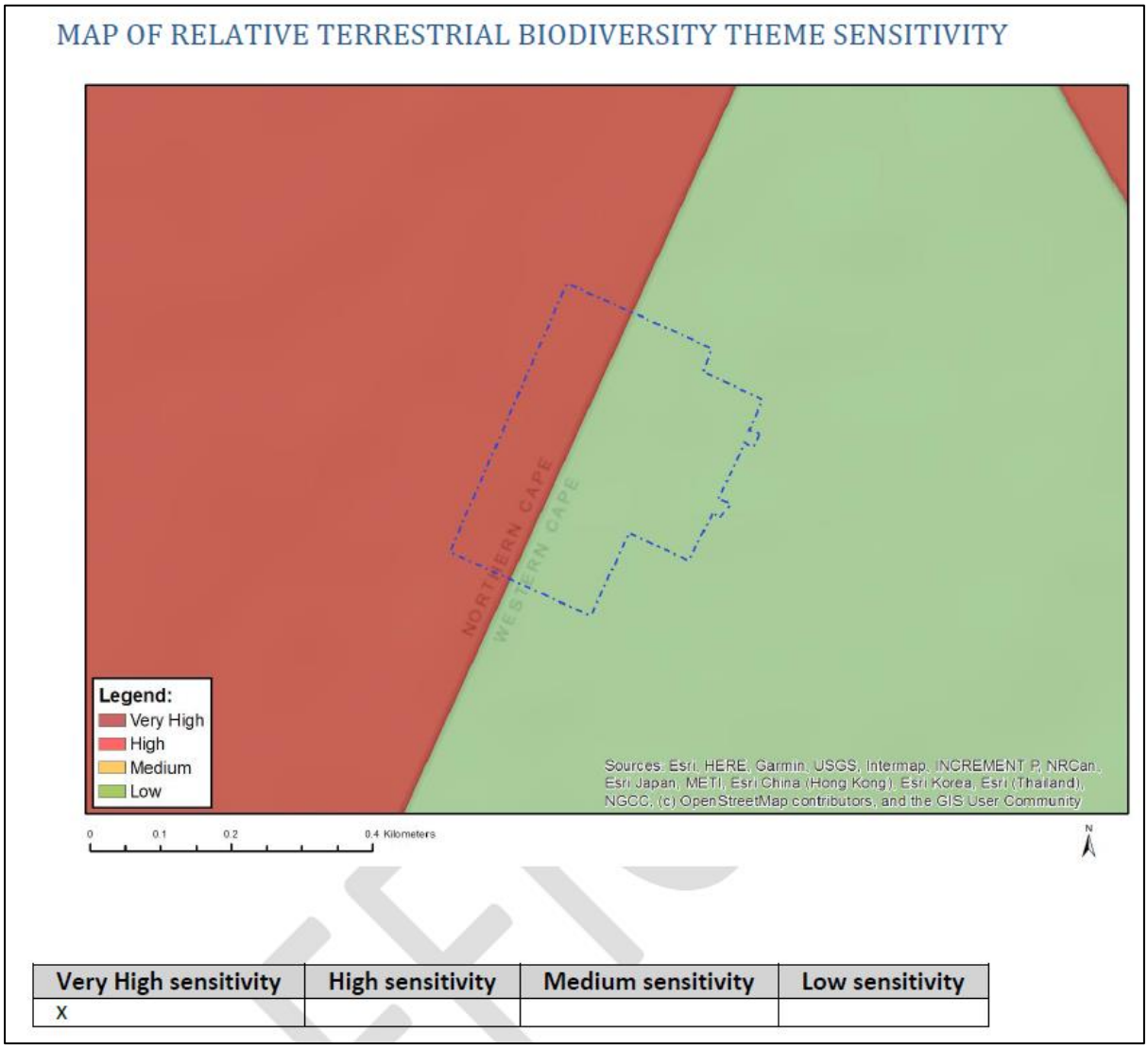

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Figure 2: The classification of the study area in the DFFE online screening tool: Gamma substation extension.

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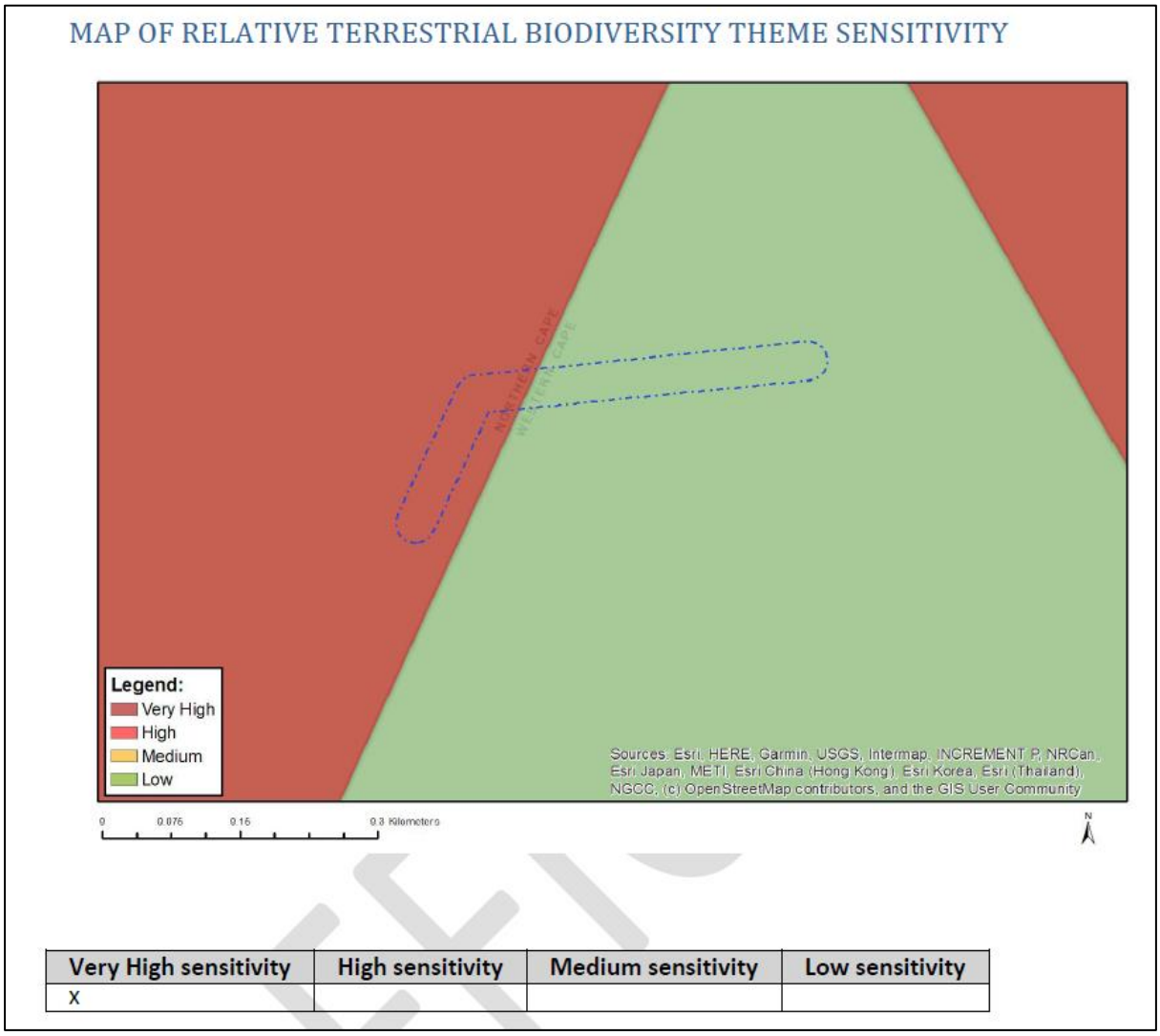

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Figure 3: The classification of the study area in the DFFE online screening tool: Turn-In Points 1-3

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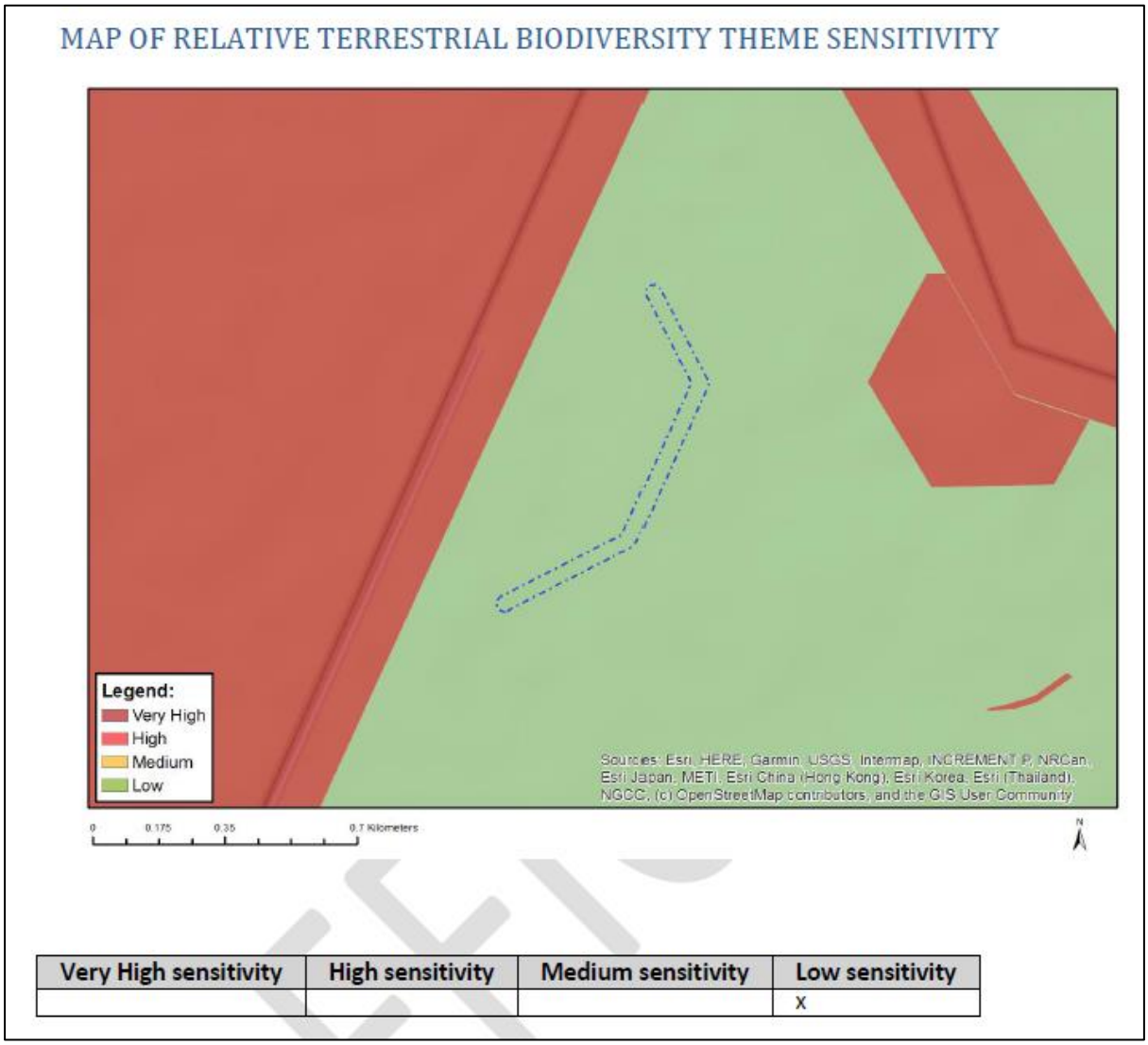

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Figure 4: The classification of the study area in the DFFE online screening tool: Turn-In points 4-8.

Four (4) different habitat types were delineated within the assessment area (Table 1.10). Based on the criteria provided in the species protocols for the site ecological sensitivity, all habitats within the assessment area of the proposed development were allocated a sensitivity category or SEI. The sensitivities of the habitat types delineated are illustrated in Figure 3.

Habitats categorised as Transformed consisted of buildings, roads, and cleared areas and were determined to be a 'Very Low' SEI.

Table 1.10 Summary of habitat types delineated within the field assessment area of the proposed development

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Habitat	Conservation Importance	Functional Integrity	Biodiversity Importance	Receptor Resilience	Site Ecological Importance
Transformed	Very Low	Very Low	**Very Low**	Very High	**Very Low**
Karoo scrub (flat)	Medium	High	**Medium**	Medium	**Medium**
Rocky outcrops	High	High	**High**	Low	**Very high**
Wash (wetland) areas	Medium	High	**High**	Medium	**High**

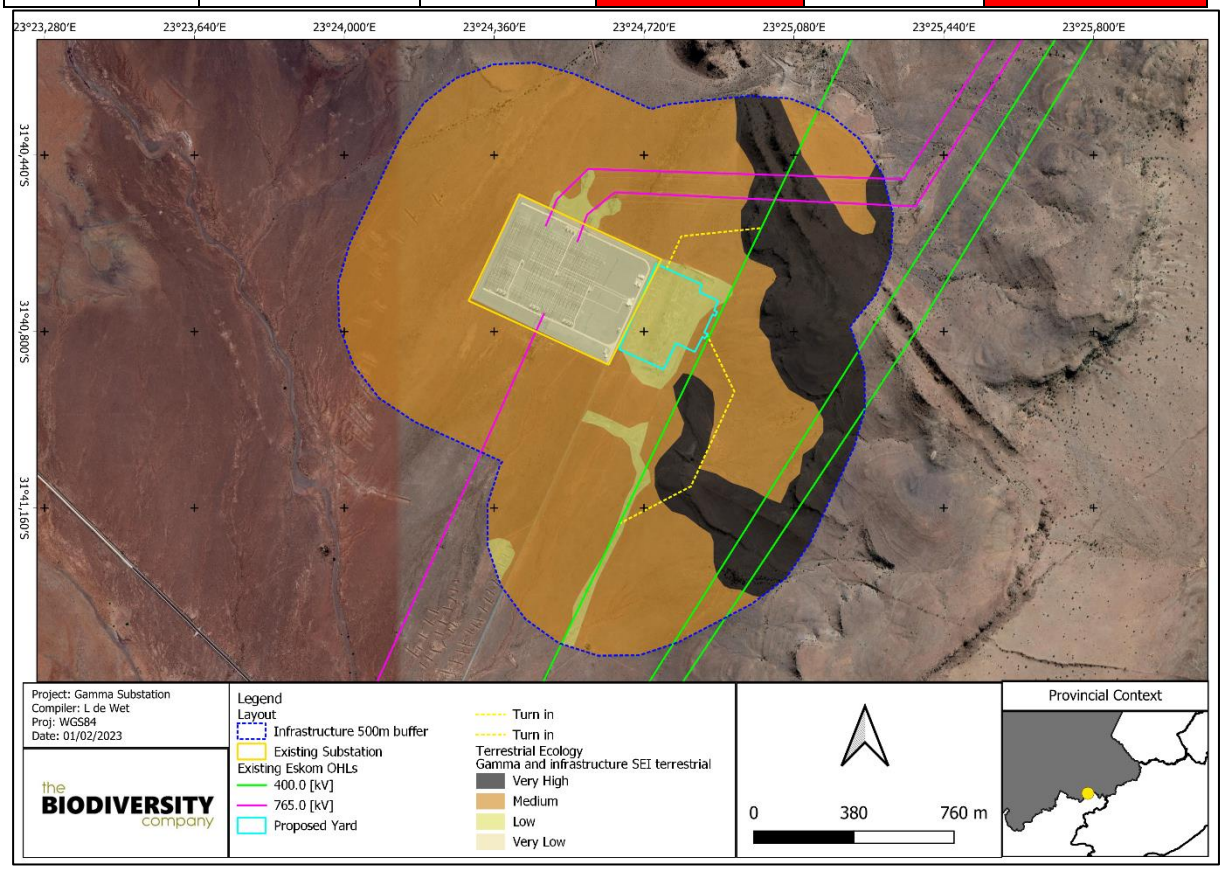

Figure 5: Map Illustrating Site Ecological Importance (SEI) of the terrestrial habitat types within the assessment area.

It can thus be said that the overall screening tool rating was confirmed by the field assessment, however the report disagrees with the low rating in certain portions based on the map provided.

4. CONCLUSION

The assessment area was identified with the screening as possessing a Very High sensitivity within a Terrestrial Biodiversity context, with the area and surrounding landscape regarded as part of a CBA. Presently, there are natural habitats within the assessment area that possess

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a Medium and Very High SEI. This is due to the combination of their functional integrity and conservation importance.

Based on the habitat present, there is a high likelihood of select SCC occurring within the assessment area. Several plant species that are provincially protected were recorded in the study area (Appendix 1).

This overall classification of the screening tool is thus confirmed to be accurate as far as the impact of the proposed substation and associated infrastructure is concerned, based on actual conditions recorded on the ground during the site visit of March 2022, April 2022 and August 2022.

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Appendix 1: Provincially Protected flora species recorded within the assessment area and their respective growth form and conservation status. Species in the Provincial column are protected by legislation. EN = Endangered, NT= Near Threatened, VU = Vulnerable, LC = Least Concern and NE = Not Evaluated

Family	Scientific name	Provincial	Red List
Aizoaceae	*Aizoon africanum*	Sch. 4	LC
Aizoaceae	*Delosperma multiflorum*	Sch. 4	LC
Aizoaceae	*Drosanthemum dejagerae*	Sch. 4	DDT
Aizoaceae	*Drosanthemum hispidum*	Sch. 4	LC
Aizoaceae	*Malephora lutea*	Sch. 4	LC
Aizoaceae	*Mesembryanthemum coriarium*	Sch. 4	LC
Aizoaceae	*Ruschia intricata*	Sch. 4	LC
Aizoaceae	*Ruschia spinosa*	Sch. 4	LC
Aizoaceae	*Stomatium duthiae*	Sch. 4	LC
Amaryllidaceae	*Boophone disticha*	Sch. 4	LC
Apocynaceae	*Gomphocarpus fruticosus*	Sch. 4	LC
Apocynaceae	*Pachypodium succulentum*	Sch. 4	LC
Asphodelaceae	*Aloe broomii*	Sch. 4	LC
Asphodelaceae	*Aloe claviflora*	Sch. 4	LC
Asphodelaceae	*Haworthia semiviva*	Sch. 4	LC
Iridaceae	*Moraea polystachya*	Sch. 4	LC
Iridaceae	*Moraea* sp.	Sch. 4	
Iridaceae	*Romulea tortuosa*	Sch. 4	LC

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APRIL 2023 UPDATED LAYOUT MAP

23°24'30"E 23°25'0"E 23°25'30"E 23°26'0"E

31°40'30"S 31°41'0"S 31°41'30"S

1/265 765kV 765kV RE/93 765kV RE/3

Northern Cape Western Cape Northern Cape Western Cape

Droërivier-Hydra No.2 (400kV) Droërivier-Hydra No.1 (400kV) Droërivier-Hydra No.3 (400kV)

1 start
2 middle
3 end
4 end
5
6 middle
7
8 start

Droërriver-Hydra 2 400kV (turn-in from the North)	Structure locations	Latitude	Longitude
Start	1	31° 40.592'S	23° 25.000'E
Middle	2	31° 40.609'S	23° 24.813'E
End	3	31° 40.673'S	23° 24.779'E
Droërriver-Hydra 2 400kV (turn-in from the South)			
End	4	31° 40.809'S	23° 24.871'E
	5	31° 40.923'S	23° 24.937'E
Middle	6	31° 41.022'S	23° 24.883'E
	7	31° 41.113'S	23° 24.834'E
Start	8	31° 41.188'S	23° 24.663'E

Legend

- Main roads
- Rivers
- Provincial boundaries

Land parcel no

- 1/265
- 1/3
- RE/3
- RE/93

Existing

- Existing Eskom 400kV powerlines
- Existing Eskom 765kV powerlines
- Existing Gamma substation

Proposed new/update

- Proposed new/updated 400kV powerline tie in of the existing 400kV powerlines to the proposed new substation yard
- Proposed 132kV/400kV substation yard
- Proposed structure locations

Prepared for:
Nala Environmental Consulting Firm

Prepared by:
Ecofluence Consulting

Gamma Substation:
Layout (400kV works Phase 1)

Layout map

Province	Municipality
Northern Cape	Ubuntu Local Municipality
Western Cape	Central Karoo District Municipality

N

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree
Scale: 1:10 000

Date: April 2023

0 300 600 1 200 m