GAMMA 400KV GRIDLINE CORRIDOR:

SITE SENSITIVITY VERIFICATION

PRODUCED FOR CEN INTEGRATED ENVIRONMENTAL MANAGEMENT UNIT (CEN) ON BEHALF OF RED CAP ENERGY

3Foxes Biodiversity Solutions

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August 2022

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SHORT CV/SUMMARY OF EXPERTISE – SIMON TODD

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Ecological Solutions for People & the Environment

Simon Todd is Director and principal scientist at 3Foxes Biodiversity Solutions and has over 20 years of experience in biodiversity measurement, management and assessment. He has provided specialist ecological input on more than 200 different developments distributed widely across the country, but with a focus on the three Cape provinces. This includes input on the Wind and Solar SEA (REDZ) as well as the Eskom Grid Infrastructure (EGI) SEA and Karoo Shale Gas SEA. He is on the National Vegetation Map Committee as representative of the Nama and Succulent Karoo Biomes. Simon Todd is a recognised ecological expert and is a past chairman and current deputy chair of the Arid-Zone Ecology Forum. He is registered with the South African Council for Natural Scientific Professions (No. 400425/11).

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- I act as the independent specialist in this application;
- I perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
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- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
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- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist: 

Name of Specialist: ____Simon Todd_____

Date: ____23 August 2022_____

1 INTRODUCTION

Red Cap Energy (Pty) Ltd ('Red Cap') has received Environmental Authorisation for three wind farms and for a 400 kV grid corridor, collectively known as Nuweveld Wind Farm Development, located close to Beaufort West in the Western Cape Province. The approved grid corridor links the Nuweveld projects to the Droërivier Substation ~65 km to the south of the wind farms (refer to Figure 1).

Red Cap is also proposing to develop four additional wind farms and associated grid connections, known as the Hoogland Projects. The Hoogland Wind Farms are located north and south of the Nuweveld complex, and the Hoogland grid connections will terminate at the authorised Nuweveld Collector Substation (refer to **Figure 1**) and are the subject of separate applications.

To expand the capacity of Eskom grid and improve the functionality of the grid in the area, an additional 400 kV grid connection is required from the Nuweveld Collector Substation to the Gamma Substation, ~90 km to the east (the project). This additional line will improve functionality by creating a 400 kV ring-line between the Droërivier Substation, Gamma Substation and Nuweveld projects, and create opportunities for other wind farm developments (such as the proposed Hoogland projects) to tie-into the grid either at the Nuweveld Collector Substation or along the new 400 kV line.

A 300 m x 300 m expansion to the Gamma Substation (including transformers and other standard substation infrastructure) and access tracks for construction and maintenance of the line will also be required and form components of the project.

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 commencement thereof. In accordance with GN 320 and GN 1150 (20 March 2020) [1] of the NEMA EIA Regulations of 2014, 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 area as identified by the National Web-Based Environmental Screening Tool (Screening Tool). 3Foxes Biodiversity Solutions has been commissioned to verify the sensitivity of the Gamma 400kV Gridline Corridor under these specialist protocols.

[1] [1] 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

2 RELEVANT ASPECTS OF THE DEVELOPMENT

The Nuweveld Collector Substation is located north of Beaufort West in the Western Cape Province and received Environmental Authorisation as part of the Nuweveld Gridline Project in 2021. The Nuweveld Collector Susbtation has not been constructed. The existing Gamma Substation is located ~90 km to the east of the Nuweveld Collector Substation. Although the gridline starts in the Western Cape (Central Karoo District Municipality and Beaufort West Local Municipality), portions of the line would traverse land in the Northern Cape (Pixley ka Seme District Municipality and Ubuntu Local Municipality). The location of the Gamma 400kV Gridline Corridor is illustrated below in Figure 1.

It is proposed that electricity will be stepped-up to 400 kV at the Nuweveld Collector Substation for evacuation via the proposed ~110 km Gamma Gridline to the existing Gamma Substation. The new gridline will form part of the national grid. A 300 m x 300 m expansion to the Gamma Substation (including transformers and other standard substation infrastructure) and access tracks for construction and maintenance of the line will also be required and form components of the project. The route of the line must be pre-negotiated with the respective landowners, which includes obtaining in-principle agreements from the landowners that the line may go over their land. The specialist study assesses the full extent of the corridor and provides recommendations for the identification of a pre-negotiated route to be presented in the BA report, subject to micro-siting of infrastructure outside of No-Go areas.

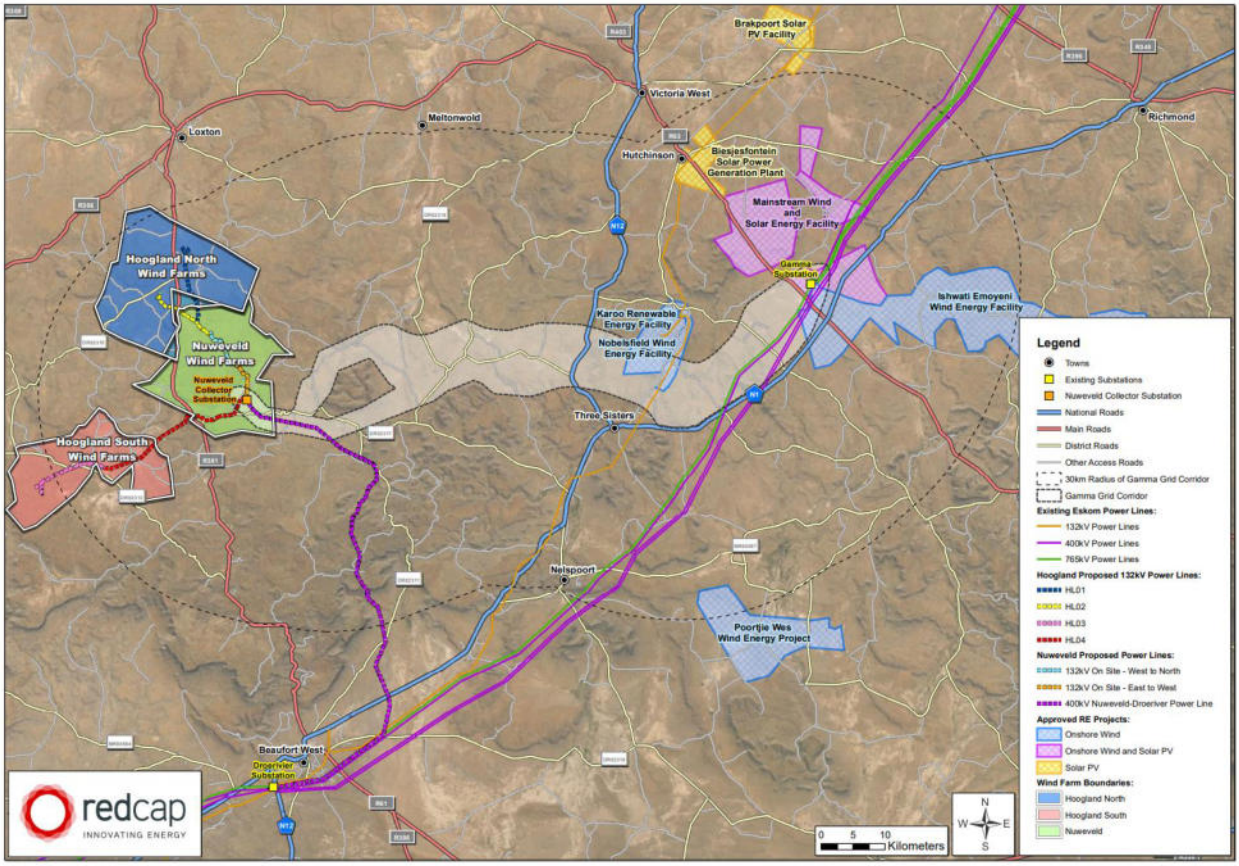

Figure 1. Image showing the regional context and location of the proposed Gamma 400kV Gridline Corridor which links the Nuweveld Collector Substation with the Eskom Gamma Substation in the east.

Table 1. Summary of the components and approximate areas of impact within the Gamma Grid Connection Corridor

Component	Description	Ha
Substation Infrastructure	Maximum of 300 m x 300 m expansion to the Gamma Substation (including transformers and other standard substation infrastructure)	< 9 ha (permanent)
Overhead lines and pylons	There will be a 400 kV overhead line supported by mostly lattice structure pylons. The spans (distance between pylons) on the pylons are on average 400 m. Each pylon is conservatively assumed to have a footprint of 100 m^2	110 km 2.75 ha (permanent)
Access roads and tracks	Existing access roads and tracks (upgraded to ± 2-4 m wide where needed) will be used as far as possible and new access tracks would be created where needed (±2-4 m wide).	46 ha (permanent)
Temporary areas	Temporary laydown areas will be identified along the alignment, with the main equipment and construction yards being located along the alignment or based in one of the surrounding towns. It is anticipated that the total area required for the temporary laydown areas is up to 5 ha.	5 ha (temporary)
Total disturbance footprint:	**Temporary**	**5 ha**
Total disturbance footprint:	**Permanent**	**57.75 ha**

3 DFFE SITE VERIFICATION

Government Notice No. 320, dated 20 March 2020, includes the requirement that an Initial Site Sensitivity Verification Report must be produced for a development footprint. The outcomes of the Site Verification Report determine the level of assessment required for the site (i.e. whether a Compliance Statement or Impact Assessment applies). The outputs of the Screening Tool are illustrated and briefly discussed below for terrestrial biodiversity, and plant and animal species themes as relevant to the current study, and related to the results of the field assessment and associated site verification.

4 ANIMAL SPECIES THEME

The DFFE Screening Tool identified the entire site as having a medium and high animal theme sensitivity due to the presence of the Riverine Rabbit in the area (medium and high sensitivity) and the modelled potential presence of the Karoo Dwarf Tortoise (medium sensitivity). In addition, avifauna are included under the animal theme and includes two bird species of concern; avifauna have been assessed separately. Refer to and Figure 2 below for the Animal Theme results.

In terms of the site verification, suitable habitat with confirmed sightings of the Riverine Rabbit can be confirmed present within the corridor (Figure 3). As such, an Animal Species Assessment is required for the Riverine Rabbit. The field verification also confirms that the corridor includes suitable habitat for the Karoo Dwarf Tortoise and while no living individuals were observed within the corridor, the likely presence of this species within the corridor can be confirmed. As such a full assessment for the Karoo Dwarf Tortoise is also required.

In terms of fauna of concern that may be present within the affected area, but which are not listed under the DFFE Screening Tool, there are several different species that are potentially present within the corridor including Mountain Reedbuck *Redunca fulvorufula* (EN), Black-footed Cat *Felis nigripes* (VU), Grey Rhebok *Pelea capreolus* (NT), and Brown Hyena *Hyaena brunnea* (NT). The Brown Hyena is largely conservation dependent and does not commonly occur outside of conservation areas as a result of general predator control measures that are commonly implemented within the livestock farming areas of the Karoo. The two antelope species, the Mountain Reedbuck and Grey Rhebok are not common in the affected areas and if present would be restricted to the areas of more rugged terrain within the corridor. As these are mobile species that respond quickly to disturbance, they move into and out of areas depending on disturbance and human activity. Should any individuals be present within the coriidor, within areas affected by the construction of the power line, they would quickly move away inot less disturbed area. During operation, there is little scope for negative impact on these two species as long-term habitat loss would be minimal and disturbance would be very occasional and transient, with little difference from the background farming activity. Consequently, the affected area is considered

low sensitivity for these two species in the context of the present application. The Black-footed Cat has been recorded from the broad area, but there are no iNaturalist or Virtual Museum records from in or near the grid corridor. This species is however shy and seldom recorded with the result that it's presence in the corridor cannot be excluded with much confidence. However, this shy nocturnal species is not likely to be significantly impacted by the construction and operation of the power line with the result that the corridor is considered low sensitivity for this species.

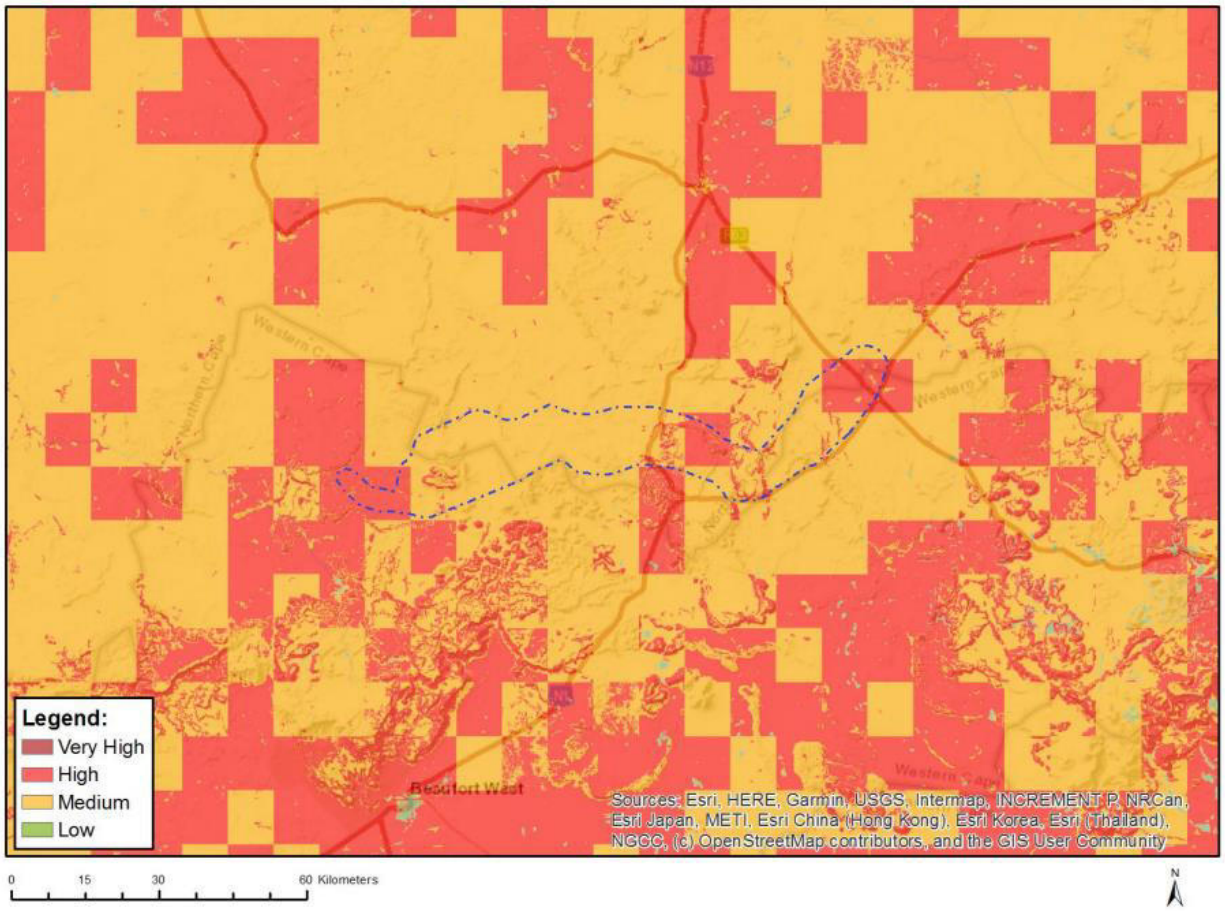

Figure 2. Animal Species Theme Sensitivity Map for the Gamma 400kV Gridline Corridor and surrounding area.

Table 2. Animal Species Theme Features for the Gamma 400kV Gridline Corridor.

Sensitivity	Feature(s)
High	Mammalia-*Bunolagus monticularis*
High	Aves-*Aquila verreauxii*
High	Aves-*Neotis ludwigii*
High	Aves-*Ciconia nigra*
Medium	Aves-*Ciconia nigra*
Medium	Aves-*Neotis ludwigii*
Medium	Aves-*Aquila verreauxii*
Medium	Mammalia-*Bunolagus monticularis*
Medium	Reptilia-*Chersobius boulengeri*

Figure 3. Riparian habitat considered suitable for the Riverine Rabbit, occurs along the major drainage features of the corridor.

4.1 PLANT SPECIES THEME SENSITIVITY

The DFFE Screening Tool indicates that there are several potential botanical sensitivities from the Gamma 400kV Gridline Corridor (Figure 4, Table 3). None of these species were observed within the Corridor during the field surveys, and while it is possible that they are present within

the Corridor, the potential for conflict between the development and these species is low beacuse any populations of sensitive species are likely to be avoided during micro-siting of infrastructure (which will be recommended as a condition of authorisation). Since these species have not been observed, and because of the ability to place powerline infrastructure so as to avoid populations of sensitivie species should they be observed (i.e. through micro-siting),the corridor is considered low sensitivity for these species in the context of the present application.

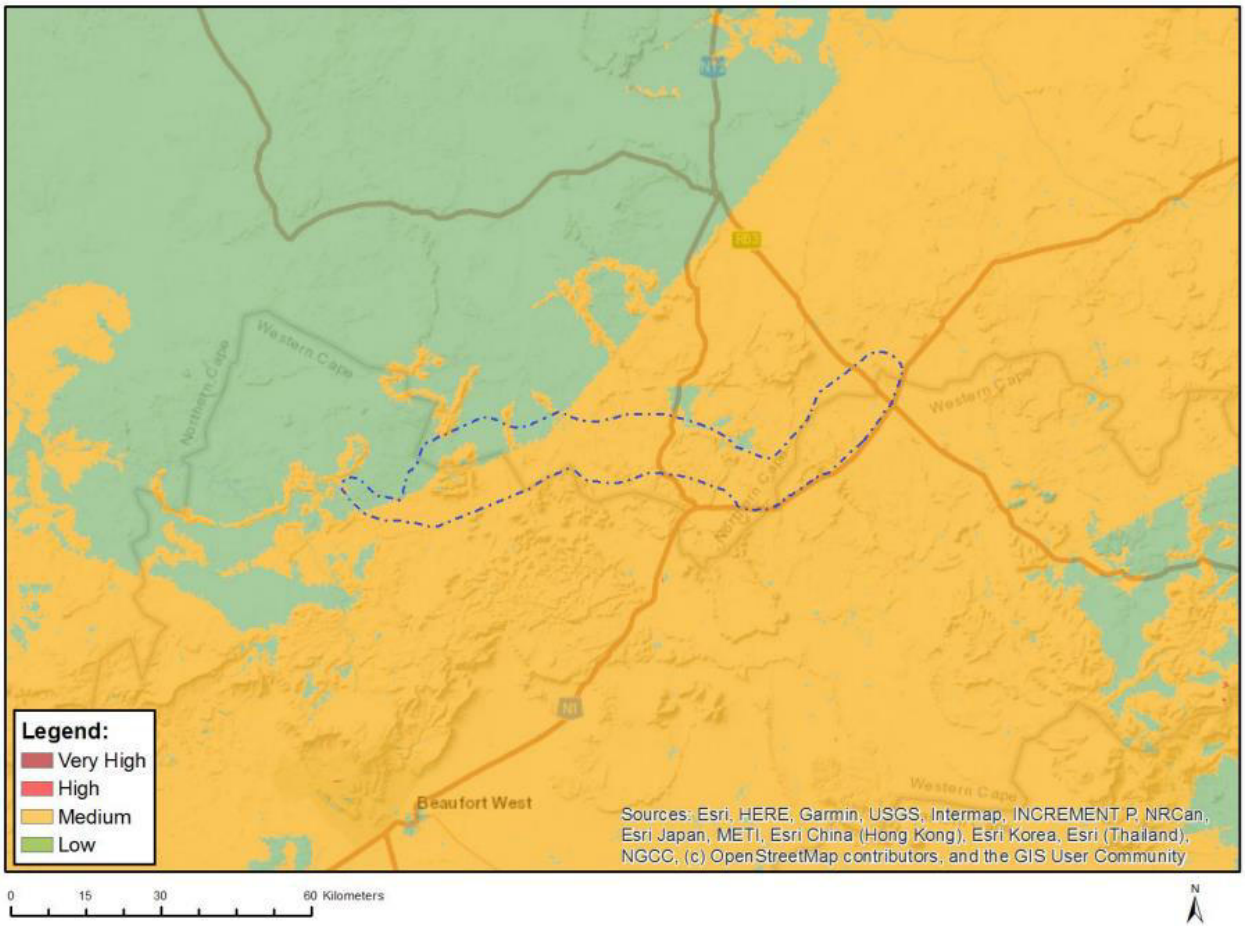

Figure 4. Plant Species Theme Sensitivity Map for the Gamma 400kV Gridline Corridor and surrounds.

Table 3. Plant species theme sensitivities for the Gamma 400kV Grid Connection Corridor.

Sensitivity	Feature(s)
Medium	*Isolepis expallescens*
Medium	*Hereroa concava*
Medium	Sensitive species 945
Medium	*Tridentea virescens*

Table 4. Plant species of concern which are listed for the Gamma 400kV Grid Connection Corridor and their potential presence within the corridor.

Species	Distribution & Habitat	Presence within Corridor
Isolepis expallescens	Nuweveld Mountains between Fraserburg and Victoria West. Its' distribution range is botanically very poorly explored. It is a localized habitat specialist, and current records indicate that it is endemic to the Nuweveld Mountains. It is associated with damp areas along stream channels.	Possibly present within the corridor but not observed and thus considered unlikely to be present. The habitat associated with this species (stream channels) would be largely avoided and any stream crossing required would be checked before construction. The development would thus not pose a threat to this species. The corridor is considered low sensitivity for this species.
Hereroa concava	It appears to be endemic to a small area in the Great Karoo between Beaufort West, Richmond and De Aar. Plants occur sheltered among shrubs on flats and plateaus with shale outcrops. There are very few records of this species, scattered over a wide area. The most recent collection, dating from 1988 indicate that it is common in the Karoo National Park. Its abundance elsewhere is not known. It may be overlooked due to taxonomic uncertainty in *Hereroa*, and also because its range is botanically poorly explored.	This species was not observed during the field assessment and has not been observed by the consultant in any of the areas previously studied in or near to the corridor, suggesting that this species is likely absent from within the corridor. However, as the corridor is large and not all areas could be sampled, the possibility that this species is present at least in come places within the corridor cannot be entirely eliminated.
Sensitive species 945	Sneeuberg, Agter-Sneeuberg and Nuweveld Mountains. Summits of rocky dolerite ridges. A relatively widespread, but rare species, typically occurring in small subpopulations. It is not currently threatened.	This is a relatively cryptic species that is easily overlooked, with the result that it may be present within the corridor despite not being observed. However, typical habitat for this species is not common within the corridor suggesting that it either does not occur within the corridor or is restricted to specific high-lying dolerite ridge areas that are likely to be avoided in the placement of power line infrastructure.
Tridentea virescens	A widespread species that occurs as sporadic small subpopulations of up to six plants. No threats are known to impact this species. Stony ground, or hard loam in floodplains.	This species was not observed within the corridor and it is thus considered unlikely to be present. This species is however inconspicuous with the result that it is easily overlooked.

Figure 5. Typical open plains present within the Gamma 400kV Gridline Corridor, corresponding with the Eastern Upper Karoo vegetation type. The typical plains of the study area contain relatively low plant speices richness with no observed SCC present and are considered low sensitivity for the Plant Species Theme

Figure 6. The Gamma 400kV Gridline Corridor also includes rocky hills which correspond with the Upper Karoo Hardeveld vegetation type and are more likely to harbour plant species of conservation concern than the open plains, although no such species were observed in the corridor during the current assessment.

5 TERRESTRIAL BIODIVERSITY THEME SENSITIVITY.

The overall combined Terrestrial Biodiversity theme indicates that the site consists of low sensitivity areas and areas of Very High sensitivity associated with the CBAs, ESAs and Protected Expansion Strategy Focus Areas (Figure 7 and Table 5). An assessment of their condition and characteristics is required. Based on the presence of these features within the site, a full terrestrial biodiversity assessment is required.

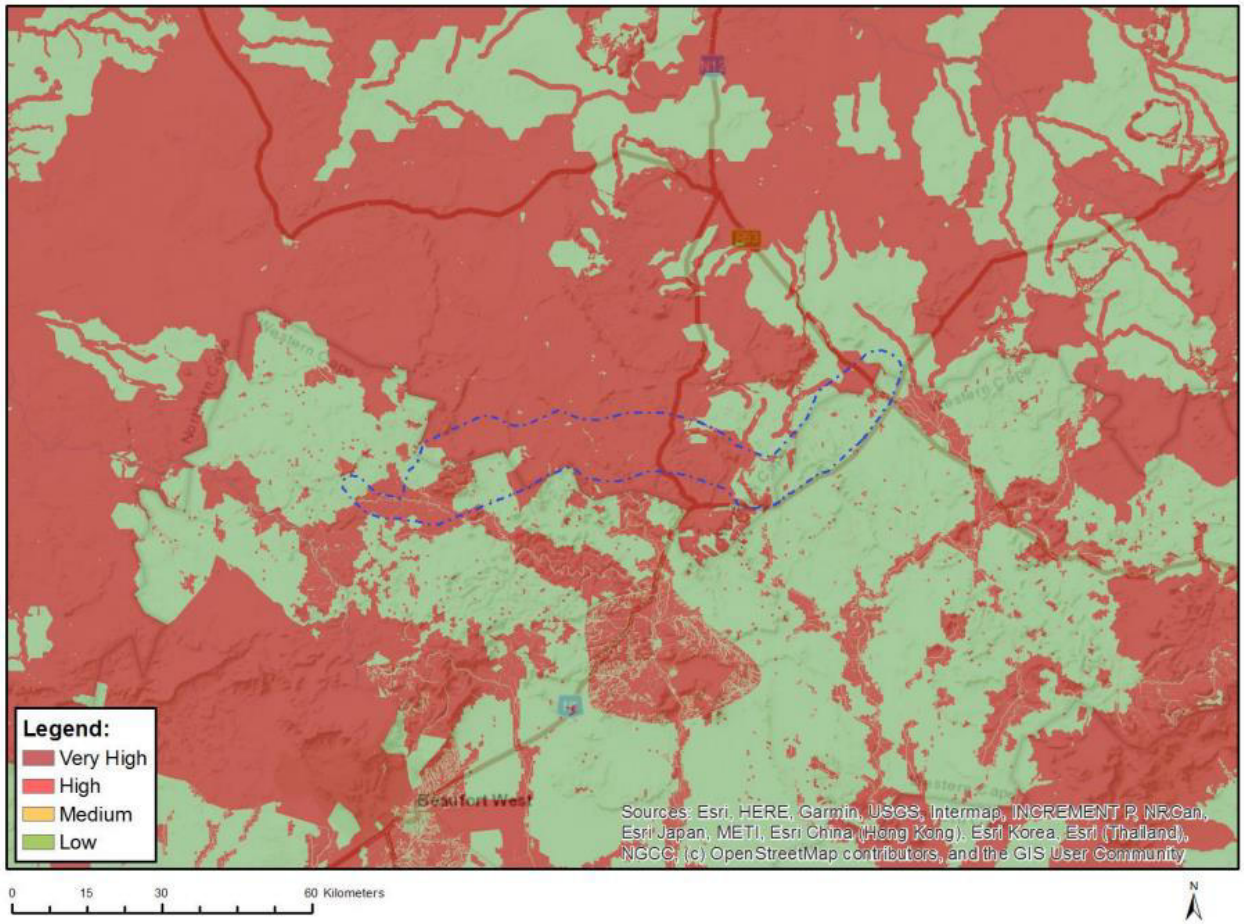

Figure 7. Terrestrial Biodiversity Theme Sensitivity Map of the Gamma 400kV Gridline Corridor and surrounds.

Table 5. Terrestrial Biodiversity Theme Features for the Gamma 400kV Gridline Corridor

Sensitivity	Feature(s)
Very High	Critical biodiversity area 1
Very High	Critical biodiversity area 2
Very High	Ecological support area 2
Very High	Ecological support area
Very High	FEPA Subcatchments
Very High	Protected Areas Expansion Strategy

6 CONCLUSIONS & IMPLICATIONS OF THE SITE VERIFICATION

Based on the results of the site verification for the Gamma 400kV Gridline Corridor, the following studies are required in the BA process for terrestrial ecology:

- Riverine Rabbit Species Assessment
- Karoo Dwarf Tortoise Species Assessment
- Plant Species Compliance Statement
- Terrestrial Biodiversity Assessment

TERRESTRIAL BIODIVERSITY THEME ASSESSMENT FOR THE GAMMA 400KV GRIDLINE CORRIDOR

PRODUCED FOR CEN ON BEHALF OF RED CAP ENERGY

3Foxes Biodiversity Solutions

Simon.Todd@3foxes.co.za

First Draft – August 2022

Final Draft – November 2022

NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT REGULATIONS, 2014 (AS AMENDED) – REPORTING REQUIREMENTS FOR SPECIALIST THEMES

GN 1150 of 30 October 2020: Terrestrial Biodiversity Specialist Assessment Report (Very High or High Sensitivity)	Section of Report
3.1.1 contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the assessment including a curriculum vitae;	P5
3.1.2 a signed statement of independence by thpecialist;	P7
3.1.3 a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 2
3.1.4 a description of the methodology used to undertake the site sensitivity verification, impact assessment and site inspection, including equipment and modelling used where relevant;	Section 2
3.1.5 a description of the mean density of observations/number of sample sites per unit area and the site inspection observations;	Section 2
3.1.6 a description of the assumptions made and any uncertainties or gaps in knowledge or data;	Section 2
3.1.7 details of all SCC found or suspected to occur on site, ensuring sensitive species are appropriately reported;	Section 2
3.1.8 the online database name, hyperlink and record accession numbers for disseminated evidence of SCC found within the study area;	Section 3.3
3.1.9 the location of areas not suitable for development and to be avoided during construction where relevant;	Section 3
3.1.10 a discussion on the cumulative impacts;	Section 3, Section 5
3.1.11 impact management actions and impact management outcomes proposed	Section 3, Section 5
3.1.12 a reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not of the development and if the development should receive approval or not, related to the specific theme being considered, and any conditions to which the opinion is subjected if relevant; and	Section 6
3.1.13 a motivation must be provided if there were any development footprints identified as per paragraph 2.2.12 above [of GN 1150 of 30 October 2020] that were identified as having “low” or “medium” terrestrial animal species sensitivity and were not considered appropriate.	Section 2.4

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Signature of the specialist: 

Name of Specialist: ____Simon Todd_____

Date: ____25 August 2022_____

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In 2021 Red Cap Energy (Pty) Ltd ('Red Cap') received Environmental Authorisation for three wind farms and for a 400 kV grid corridor collectively known as Nuweveld Wind Farm Development, located close to Beaufort West in the Western Cape Province. The approved grid corridor links the Nuweveld projects to the Droërivier Substation ~65 km to the south of the wind farms. Red Cap is also proposing to develop four additional wind farms and associated grid connections, known as the Hoogland Projects. The Hoogland Wind Farms are located north and south of the Nuweveld complex, and the Hoogland grid connections will terminate at the Nuweveld Collector Substation and are the subject of separate applications.

In order to expand the capacity of the Eskom grid and improve the functionality of the grid in the area, an additional 400 kV grid connection is required from the Nuweveld Collector Substation to the Gamma Substation, ~90 km to the east of the project site. This additional line will improve functionality by creating a 400 kV ring-line between the Droërivier Substation, Gamma Substation and Nuweveld projects, and create opportunities for other wind farm developments (such as the proposed Hoogland projects) to tie-into the grid either at the Nuweveld Collector Substation or along the new 400 kV line. As such, the proposed new line will allow Eskom to release further renewable energy potential in an area that is becoming a renewable energy development node in South Africa, thereby helping to alleviate South Africa's power crisis. A 300 m x 300 m expansion to the Gamma Substation (including transformers and other standard substation infrastructure) and access tracks for construction and maintenance of the line will also be required and form components of the project.

3Foxes Biodiversity Solutions has been appointed by RedCap Energy (Pty) Ltd to provide a Terrestrial Biodiversity Assessment for the proposed Gamma 400kV Grid Connection. The DFFE Screening Tool indicates that the grid corridor includes areas mapped as Very High Sensitivity for the Terrestrial Biodiversity Theme due to the presence of areas of CBA 1, CBA 2 and ESAs. Consequently, in terms of the regulations, a Terrestrial Biodiversity Assessment is required for the Gamma 400kV Grid Connection. To these ends, this Terrestrial Biodiversity Assessment for the Gamma 400kV Grid Connection, addresses the potential impacts of the Gamma 400kV Grid Connection on Terrestrial Biodiversity within a Gridline Corridor (also referred to as the site or study area) and must be included in the BA for the development and any mitigation and monitoring measures as identified, must be incorporated into the EMPr for the development.

1.1 SCOPE OF STUDY

In terms of GN 320 (20 March 2020) and GN 1150 (30 October 2020)of the NEMA EIA Regulations of 2014 (as amended), prior to the commencement of 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 Screening Tool. In terms of the findings of the Screening Tool, the corridor contains areas of Very High sensitivity for the Terrestrial Biodiversity Theme due to the presence of areas of CBA 1, CBA 2 and ESA within the study area. In terms of the Assessment Criteria, this implies the following outcome:

1. An applicant intending to undertake an activity identified in the Scope of this Protocol, on a site identified as being of "very high sensitivity" for terrestrial biodiversity on the national web based environmental screening tool must submit a Terrestrial Biodiversity Impact Assessment.
2. The Terrestrial Biodiversity Impact Assessment should meet the following terms of reference:

    2.1 The assessment must be undertaken by a SACNASP registered specialist, on the preferred development site.

    2.2 Description of the preferred site - the following aspects, as a minimum, must be considered in the baseline description:

        2.2.1 A description of the ecological drivers/processes of the system and how the proposed development will impact these;

        2.2.2 Ecological functioning and ecological processes (e.g. fire, migration, pollination, etc.) that operate within the proposed development site;

        2.2.3 The ecological corridors that the development would impede including migration and movement of flora and fauna;

        2.2.4 The description of any significant landscape features (including rare or important flora/faunal associations, presence of Strategic Water Source Areas (SWSAs) or Freshwater Ecosystem Priority Areas (FEPA) sub catchments;

        2.2.5 A description of terrestrial biodiversity and ecosystems on the proposed development site, including –

            a) Main vegetation types;
            b) Threatened ecosystems, including Listed Ecosystems as well as locally important habitat types identified;
            c) Ecological connectivity, habitat fragmentation, ecological processes and fine-scale habitats; and
            d) Species, distribution, important habitats (e.g. feeding grounds, nesting sites, etc.) and movement patterns identified.

    2.3 Identify any alternative development footprints within the preferred development site which would be of a "low" sensitivity as identified by the national web based

environmental screening tool and verified through the Initial Site Sensitivity Verification;

2.4 The Terrestrial Biodiversity Impact Assessment must be based on the results of a site inspection undertaken on the preferred development site and must identify:

2.5 Terrestrial Critical Biodiversity Areas (CBAs), including:

2.5.1 The reasons why an area has been identified as a CBA;
2.5.2 An indication of whether or not the development is consistent with maintaining the CBA in a natural or near natural state or in achieving the goal of rehabilitation;
2.5.3 The impact on species composition and structure of vegetation with an indication of the extent of clearing activities;
2.5.4 The impact on ecosystem threat status;
2.5.5 The impact on explicit subtypes in the vegetation;
2.5.6 The impact on overall species and ecosystem diversity of the site; and
2.5.7 The impact on populations of species of special concern in the CBA.

2.6 Terrestrial Ecological Support Areas, including;

2.6.1 The impact on the ecological processes that operate within or across the site;
2.6.2 The extent the development will impact on the functionality of the ESA; and
2.6.3 Loss of ecological connectivity (on site, and in relation to the broader landscape) due to the degradation and severing of ecological corridors or introducing barriers that impede migration and movement of flora and fauna.

2.7 Protected Areas as defined by the National Environmental Management: Protected Areas Act, 2004 including:

2.7.1 An opinion on whether the proposed development aligns with the objectives/purpose of the Protected Area and the zoning as per the Protected Area Management Plan;

2.8 Priority Areas for Protected Area Expansion, including:

2.8.1 The way in which in which the development will compromise or contribute to the expansion of the protected area network.

2.9 Strategic Water Source Areas (SWSA) including:

2.9.1 The impact(s) on the terrestrial habitat of a Strategic Water Source Area, and

2.9.2 The impacts of the development on the SWSA water quality and quantity (e.g. describing potential increased runoff leading to increased sediment load in water courses).

2.10 Freshwater Ecosystem Priority Area (FEPA) sub catchments, including:

2.10.1 The impacts of the development on habitat condition and/or species in the FEPA sub catchment.

2.11 Indigenous Forests, including:

2.11.1 Impact on the ecological integrity of the forest;

2.11.2 Extent of natural or near natural indigenous forest area lost.

3. The findings of the Terrestrial Biodiversity Impact Assessment must be written up in a Terrestrial Biodiversity Impact Assessment Report. This report must include as a minimum the following information:

3.1 Contact details and curriculum vitae of the specialist including SACNASP registration number and field of expertise and their curriculum vitae;

3.2 A signed statement of independence by the specialist;

3.3 Duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;

3.4 A description of the methodology used to undertake the impact assessment and site inspection, including equipment and modelling used where relevant;

3.5 A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;

3.6 Areas not suitable for development, to be avoided during construction and operation (where relevant);

3.7 Additional environmental impacts expected from the proposed development based on those already evident on the site and a discussion on the cumulative impacts;

3.8 Impact management actions and impact management outcomes proposed by the specialist for inclusion in the EMPr; and

3.9 A motivation where the development footprint identified as per section 2.3 were not considered stating reasons why these were not being not considered.

3.10 A reasoned opinion, based on the findings of the specialist assessment, regarding the acceptability or not of the development and if the development should receive approval or not, and any conditions to which the statement is subjected.

4. The findings of the Terrestrial Biodiversity Impact Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr. A signed copy of the Assessment must be appended to the Basic Assessment Report or Environmental Assessment Report.

The above Terms of Reference and reporting requirements are achieved in this study and report.

1.2 RELEVANT ASPECTS OF THE DEVELOPMENT

The approved (but not yet constructed) Nuweveld Collector Substation is located north of Beaufort West in the Western Cape Province. The existing Gamma Substation is located ~90 km to the east of the Nuweveld Collector Substation. Although the gridline starts in the Western Cape (Central Karoo District Municipality and Beaufort West Local Municipality), portions of the line would traverse land in the Northern Cape (Pixley ka Seme District Municipality and Ubuntu Local Municipality). The Gamma 400kV Gridline Corridor is illustrated below in Figure 1.

Electricity will be stepped-up to 400 kV at the Nuweveld Collector Substation for evacuation via the proposed ~110 km Gamma Gridline to the existing Gamma Substation (as well as the approved Nuweveld Gridline). The new gridline will form part of the national grid. The route of the line must be pre-negotiated with the respective landowners, which includes obtaining in-principle agreements from the landowners that the line may go over their land. The specialist study assesses the full extent of the corridor and provides recommendations for the identification of a pre-negotiated route to be presented in the BA report, subject to micro-siting of infrastructure within the corridor outside of No-Go areas.

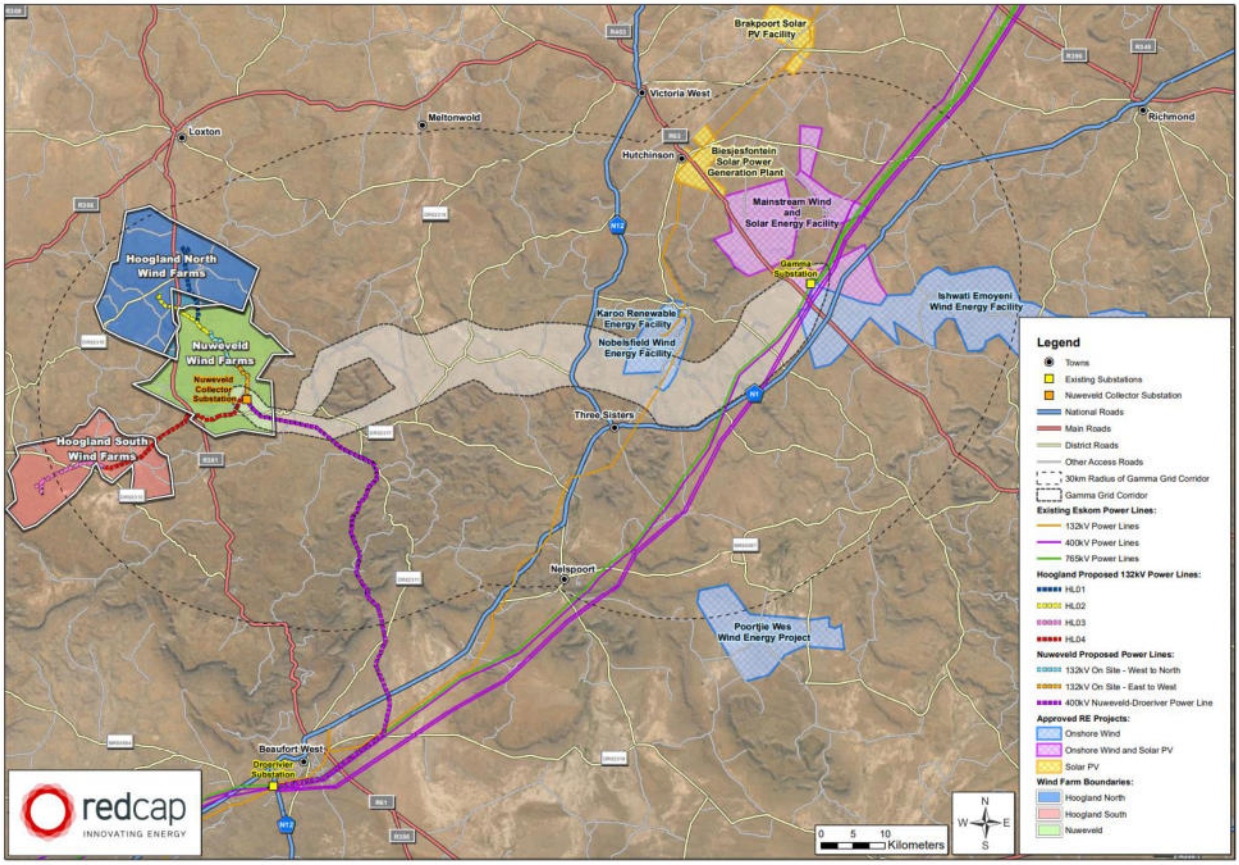

Figure 1. Image showing the regional context and location of the proposed Gamma 400kV Gridline Corridor which links the Nuweveld Collector Substation with the Eskom Gamma Substation in the east.

Table 1. Summary of the components and approximate areas of impact within the Gamma Grid Connection Corridor

Component	Description	Ha
Substation Infrastructure	300 m x 300 m expansion to the Gamma Substation (including transformers and other standard substation infrastructure)	9 ha (permanent)
Overhead lines and pylons	There will be a 400 kV overhead line supported by mostly lattice structure pylons. The spans (distance between pylons) on the pylons are on average 400 m. Each pylon is conservatively assumed to have a footprint of 100 m^2	110 km 2.75 ha (permanent)
Access roads and tracks	Existing access roads and tracks (upgraded to ± 2-4 m wide where needed) will be used as far as possible and new access tracks would be created where needed (±2-4 m wide).	46 ha (permanent)
Temporary areas	Temporary laydown areas will be identified along the alignment, with the main equipment and construction yards being located along the alignment or based in one of the surrounding towns. It is anticipated that the total area required for the temporary laydown areas is up to 5 ha.	5 ha (temporary)
Total disturbance footprint:	**Temporary**	**5 ha**

Component	Description	Ha
Total disturbance footprint:	**Permanent**	**57.75 ha**

2 METHODOLOGY

2.1 DATA SOURCING AND REVIEW

Data sources from the literature consulted and used where necessary in the study includes the following:

Vegetation:

- Vegetation types and their conservation status were extracted from the South African National Vegetation Map (2018 update).
- Information on plant and animal species recorded for the wider area was extracted from the South African Biodiversity Information Facility (SABIF)/ SANBI Integrated Biodiversity Information System (SIBIS) database hosted by the South African National Biodiversity Institute (SANBI). Data was extracted for a significantly larger area than the study area, but this is necessary to ensure a conservative approach as well as counter the fact that the site itself has not been well sampled in the past.
- The International Union for Conservation of Nature (IUCN) conservation status of the species in the list was also extracted from the database and is based on the Threatened Species Programme, Red List of South African Plants (2021).

Ecosystem:

- Freshwater and wetland information was extracted from the National Freshwater Ecosystem Priority Areas assessment, NFEPA (Nel *et al.* 2011) as well as the 2018 NBA.
- Critical Biodiversity Areas (CBAs) and ESAs in the study area were obtained from the 2017 Western Cape Biodiversity Spatial Plan (WC-BSP), for the Beaufort West Municipality, which includes the study area, as well as the Northern Cape CBA Map which covers those parts of the site within the Northern Cape Province.
- There are no threatened ecosystems within the Grid Corridor.
- Strategic Water Source Areas (SWSAs) for the corridor were extracted from the SWSAs map available on the SANBI BGIS data portal (Water Research Commission. 2017 Surface and Groundwater SWSA [Vector] 2017).

Fauna

- Lists of mammals, reptiles and amphibians which are likely to occur at the site were derived based on distribution records from the literature and the ADU databases (ReptileMap, Frogmap and MammalMap) http://vmus.adu.org.za.

- Literature consulted includes Branch (1988) and Alexander and Marais (2007) for reptiles, Du Preez and Carruthers (2009) for amphibians, EWT & SANBI (2016) and Skinner and Chimimba (2005) for mammals.
- The faunal species lists provided are based on species which are known to occur in the broad geographical area, as well as an assessment of the availability and quality of suitable habitat at the site.
- The conservation status of mammals is based on the IUCN Red List Categories (EWT/SANBI 2016), while reptiles are based on the South African Reptile Conservation Assessment (Bates *et al*. 2013) and amphibians on Minter *et al.* (2004) as well as the IUCN (2020).

2.2 SITE VISITS & FIELD ASSESSMENT DATES

The Gamma 400kV Grid Corridor was visited several times for the current study and numerous sections of the grid corridor have also been sampled in the past for a variety of other projects, most notably for the EWT Drylands Programme which included an assessment of riparian and terrestrial vegetation composition and health at several sites within the corridor. An initial field assessment of the corridor was conducted on the 8th of June 2022, which was aimed at identifying areas of potential concern. A follow-up field assessment was conducted on the 27th and 28th of June 2022. A total of more than 10 full days has been spent within the corridor for the current and previous studies within the corridor area. This is considered a sufficient amount of time to adequately assess the plant diversity patterns and likely presence of the SCC within the corridor with an adequate degree of confidence.

2.3 FIELD SAMPLING APPROACH

In order to characterise the biodiversity of the corridor, a number of sampling techniques were used, these are summarized below and are also detailed in the Plant Species Compliance Statement for the site as well as the Riverine Rabbit Species Assessment.

Vegetation & Ecosystems

Sensitivity mapping of the corridor was conducted by the consultant based on the identification of important/sensitive habitats using satellite imagery of the site as well as previous knowledge of the affected area. The identification of potentially sensitive areas included the mapping of wetlands and drainage features, steep slopes, mountains, rocky hills and larger areas of rock pavements. The sensitivity mapping was used to guide fieldwork within the corridor, where sampling was focused on sensitive habitats/ecosystems identified in the desktop exercise. The primary objective was to aid in the identification of grid routes that would minimise the potential impact on sensitive habitats and associated species of concern. As a result, the proposed routing will be, in effect, a mitigated route following an alternatives analysis that aims to reduce negative ecological impacts of the power line as far as the various different constraints allow.

Riverine Rabbit Habitat Delineation

As the Riverine Rabbit is key species of conservation concern within the site, the identification and mapping of potentially suitable habitat is considered an important element of risk mitigation at the site. In order to assess the availability, distribution and extent of potential Riverine Rabbit habitat within the grid corridor, satellite imagery was used to delineate and map areas of possible habitat. Such areas can be reasonably easily delineated from satellite imagery due to the specific habitat requirements of the Riverine Rabbit. According to the IUCN 2016 Mammal Red List Assessment "*The Riverine Rabbit inhabits dense riparian growth along the seasonal rivers in the central Karoo (Nama-Karoo shrubland). Specifically, it occurs in riverine vegetation on alluvial soils adjacent to seasonal rivers*." Such areas are readily visible on satellite imagery and can be mapped with a relatively high degree of accuracy and reliability. Within the study area, areas of habitat are restricted to the major drainage lines of the study site and in particular the Sout and Krom Rivers. Apart from areas deemed to be potentially suitable Riverine Rabbit habitat, all major and minor drainage features of the site were mapped and included into the overall sensitivity mapping of the corridor (refer to the Riverine Rabbit Species assessment for more details).

Karoo Dwarf Tortoise Habitat Delineation

In order to assess the availability, distribution and extent of potential Karoo Dwarf Tortoise habitat within the Gamma 400kV Grid Corridor, satellite imagery was used to delineate and map areas of potential habitat. Such areas can be reasonably easily delineated from satellite imagery due to the specific habitat requirements of the Karoo Dwarf Tortoise. According to the IUCN 2018 Red List Assessment for this species (Hofmeyr et al. 2018), *Chersobius boulengeri* is habitat specialist that occurs in association with dolerite ridges and rocky outcrops of the Nama and Succulent Karoo. The tortoises usually take shelter under rocks in vegetated areas or in rock crevices (Boycott and Bourquin 2000), but few rocky sites over the range offer suitable retreats for the species. Populations are considered to be relatively isolated within areas of suitable habitat and movement between such patches is expected to be low. As such, suitable areas of habitat can be relatively easily recognised and mapped from satellite imagery. In addition, it is also possible to at least some degree differentiate likely high-quality habitat associated with dolerite outcrops and ridges from lower quality shale and mudstone slopes that appear to be less favoured (refer to the Riverine Rabbit Species assessment for more details).

2.4 SAMPLING LIMITATIONS AND ASSUMPTIONS

The conditions during the current field assessment were excellent for sampling following exceptional rains across the majority of the corridor. As a result, the vegetation included a large abundance of forbs, annuals and grasses. The medium sensitivity of parts of the corridor under

the DFFE Screening Tool for the Plant Sensitivity Theme indicates the potential presence of the plant SCC as listed under the Plant Theme in the area based on the confirmed presence of these species in other areas of similar habitat, but not within the corridor itself. None of these species were observed within the corridor and as a result, the grid corridor is considered low sensitivity for these species. Some of these species are however cryptic and it is possible that given the large extent of the site, that some of these species may have been missed in some part of the grid corridor. When such a large grid corridor needs to be surveyed, this is inevitable as it is not possible to exhaustively search such large areas for small cryptic species. The low sensitivity of the grid corridor is therefore based on the likely absence of these species from the corridor, but also considers the low potential negative consequence of missing such species and the required level of confidence as related to the threat likely posed by the development on these species. Finally, a preconstruction walk-through of the final development footprint would enable any affected individuals of these species to be avoided, should they ultimately prove to be present. The cryptic species are associated with specialised habitats with the result that they tend to be highly localised and hence can be effectively avoided through micro-siting of pylons and access roads if required.

A number of limitations and assumptions are also inherent in the study regarding the fauna of the site including the following:

- The presence of the Riverine Rabbit within the areas of suitable habitat present within the corridor was not directly confirmed for the current study. However, data obtained from EWT indicate that all the larger tracts of habitat within the corridor have historical sightings of Rabbits. In addition, in order to ensure a conservative approach, all areas with suitable habitat are assumed to have Riverine Rabbits present, and are included in the 'no-go' layer.
- It is assumed that there are no Riverine Rabbits resident in areas outside of the riparian habitat which is typically associated with this species in the Upper Karoo. This is considered to be a reasonable assumption as this species is strongly associated with riparian vegetation within the study area. It is only in the southern population that Riverine Rabbits can usually be found outside of riparian areas.
- It is assumed that the Karoo Dwarf Tortoise is potentially present in all areas mapped as optimal habitat for this species. Clearly this is not the case in reality as not all areas of suitable habitat would be occupied. As such, the assessment is designed to assess the worst-case scenario with regards to the distribution of the tortoise within the corridor.
- It is assumed that there are no Karoo Dwarf Tortoises resident in areas outside of the rocky hills habitat typically associated with this species. This is considered to be a reasonable assumption as this species is known to be strongly associated with rocky hills and does not occur within areas without sufficient shelter.

3 GAMMA GRID CORRIDOR BASELINE DESCRIPTION

3.1 VEGETATION TYPES

The national vegetation map (Mucina & Rutherford 2006 & SANBI 2018 update) for the study area is depicted below in Figure 2. The majority of the Gamma 400kV Gridline Corridor is classified as falling within the Eastern Upper Karoo vegetation type with scattered sections of Upper Karoo Hardeveld across the route and some areas mapped as Southern Karoo Riviere along the larger drainage features. This is an oversimplification of the vegetation of the site and based on the fieldwork on the site and site validation, there are more extensive tracts of Upper Karoo Hardeveld within the corridor than mapped, as well as more extensive areas of riparian vegetation which would be considered to be the Southern Karoo Riviere vegetation type. These three vegetation types are described and illustrated briefly below.

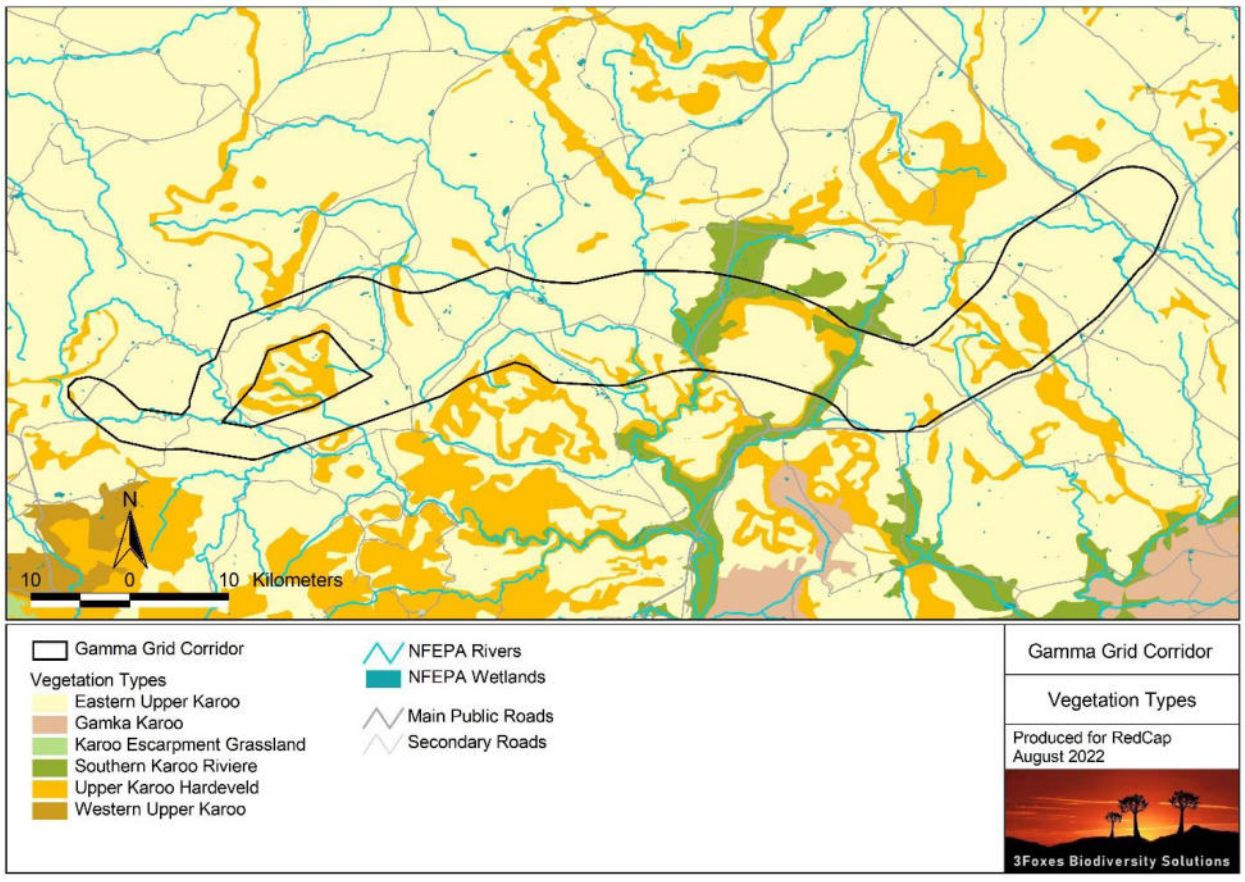

Figure 2. The national vegetation map (SANBI 2018 Update) for the Gamma 400kV Gridline Corridor and surrounding area.

Eastern Upper Karoo

The majority of the Gamma 400kV Gridline Corridor site is mapped under the Vegmap as falling within the Eastern Upper Karoo vegetation type. Eastern Upper Karoo has an extent of 49 821 km^2 and is the most extensive vegetation type in South Africa and forms a large proportion of the central and eastern Nama Karoo Biome. This vegetation type is classified as Least Threatened, and about 2% of the original extent has been transformed largely for intensive agriculture. Eastern Upper Karoo is however poorly protected and less than 1% of the 21% target has been formally conserved. Mucina & Rutherford (2006) list eight endemic species for this vegetation type, which considering that it is the most extensive unit in the country, is not very high. As a result, this is not considered to represent a sensitive vegetation type.

Dominant and characteristic species observed within the areas of Eastern Upper Karoo vegetation include low woody shrubs such as *Pentzia globosa*, *Rosenia humulis*, *Asparagus capensis*, *Eriocephalus ericoides*, *Pteronia sordida*, *Pteronia incana*, *Plinthus karooicus*, *Helichrysum luciloides*, *Felicia muricata*, with a varying density of low succulent shrubs such as *Roepera lichtensteinii*, *Aridaria noctiflora* and *Ruschia spinosa*, with a variable grass layer dominated by *Aristida adscenionis*, *Stipagrostis ciliata*, *Stipagrostis obtusa*, *Enneapogon desvauxii* and *Tragus berteronianus.*

Figure 3. Typical open plains present within the Gamma 400kV Gridline Corridor study area, corresponding with the Eastern Upper Karoo vegetation type. The typical plains of the study area are considered low sensitivity.

Upper Karoo Hardeveld

Although there are relatively limited areas mapped under the Vegmap as Upper Karoo Hardeveld within the grid corridor, the majority of rocky hills within the area can be considered to represent this vegetation type. The Upper Karoo Hardeveld vegetation type is associated with 11 734 km^2 of the steep slopes of koppies, buttes mesas and parts of the Great Escarpment covered with large boulders and stones. The vegetation type occurs as discrete areas associated with slopes and ridges from Middelpos in the west and Strydenburg, Richmond and Nieu-Bethesda in the east, as well as most south-facing slopes and crests of the Great Escarpment between Teekloofpas and eastwards to Graaff-Reinet. Altitude varies from 1000-1900m. Mucina & Rutherford (2006) list 17 species known to be endemic to the vegetation type. This is a high number given the wide distribution of most karoo species and illustrates the relative sensitivity of this vegetation type compared to the surrounding Eastern Upper Karoo.

Upper Karoo Hardeveld is usually consists of very rocky ground and is often associated with steep slopes, with the result that it is considered vulnerable to disturbance as such areas may take a long time to recover if the topsoil is lost. Although this vegetation type contains a higher diversity of species than the adjacent areas of Eastern Upper Karoo, no red-listed plant species were observed within these areas during the field survey.

Figure 4. Dolerite ridge within the Gamma 400kV Gridline Corridor, with the Upper Karoo Hardeveld vegetation type.

Southern Karoo Riviere

The vegetation along the major drainage lines of the corridor can be considered to represent the Southern Karoo Riviere vegetation type. This vegetation type is associated with the rivers of the central karoo such as the Buffels, Bloed, Dwyka, Gamka, Sout, Kariega and Sundays Rivers.

About 12% has been transformed as a result of intensive agriculture and the construction of dams. Although it is classified as Least Threatened, it is associated with rivers and drainage lines and as such represents areas that are considered ecologically significant. Within the grid corridor, these areas are of particular significance due to the association with the Riverine Rabbit which is a species of high conservation concern. Typical and dominant species observed from the drainage lines of the area includes *Vachellia karroo*, *Searsia lancea*, *Cenchrus ciliaris*, *Stipagrostis namaquensis*, *Searsia burchellii*, *Melianthus comosus*, *Lycium oxycarpum* and *Salsola aphylla*.

Figure 5. Riparian vegetation considered to represent the Southern Karoo Riviere vegetation type, observed here along the Krom River.

3.2 DFFE SENSITIVE PLANT SPECIES

The DFFE Screening Tool lists four sensitive plant species as potentially present within the site, which has medium sensitivity for these species (Table 2). The medium sensitivity indicates the potential presence of these species in the area based on the confirmed presence of these species in other areas of similar habitat, but within the corridor itself. None of these species were observed within the corridor and as a result, the grid corridor is considered low sensitivity for these species. Some of these species are however cryptic and it is possible that given the large extent of the site, that some of these species may have been missed in some part of the grid corridor. When such a large grid corridor needs to be surveyed, this is inevitable as it is not possible to exhaustively search such large areas for small cryptic species. The low sensitivity of the grid

corridor is therefore based on the likely absence of these species from the corridor, but also considers the low potential negative consequence of missing such species and the required level of confidence as related to the threat likely posed by the development on these species. Finally, a preconstruction walk-through of the final development footprint would enable any affected individuals of these species to be avoided, should they ultimately prove to be present. The cryptic species are associated with specialised habitats with the result that they tend to be highly localised and hence can be effectively avoided through micro-siting of pylons and access roads if required.

Table 2. Sensitive Species as listed by the DFFE Screening Tool for the Gamma 400kV Gridline Corridor. None of these species were observed within the corridor.

DFFE Site Status	Name	Distribution/Habitat	Possible presence within the Gamma 400kV Grid Corridor
Medium	*Isolepis expallescens* (Vulnerable)	Nuweveld Mountains between Fraserburg and Victoria West. Its' distribution range is botanically very poorly explored. It is a localized habitat specialist, and current records indicate that it is endemic to the Nuweveld Mountains. It is associated with damp areas along stream channels.	This species was not observed within the corridor. The habitat associated with this species would be avoided by the development with the result that the development would not pose a significant threat to this species even if present. The corridor is considered low sensitivity for this species.
Medium	Sensitive species 945 (Rare)	Rare This seasonal geophyte species is associated with dolerite outcrops in high-lying areas of the Sneeuberg, Agter-Sneeuberg and Nuweveld Mountains.	It was not observed within the Gamma 400kV Corridor and there is little to no habitat deemed suitable for this species within the corridor. As a result, this species is considered absent from the site and hence the site is considered low sensitivity for this species.
Medium	*Hereroa concava (VU)*	Appears to be endemic to a small area in the Great Karoo between Beaufort West, Richmond and De Aar. Plants occur sheltered among shrubs on flats and plateaus with shale outcrops. There are very few records of this species, scattered over a wide area. The most recent collection, dating from 1988 indicate that it is common	Although this species was not observed during the field assessment, it is considered plausible that this species is present within some parts of the corridor. However, the development is not considered to represent a threat to this species and as such the corridor is considered low sensitivity for this species.

		in the Karoo National Park. Its abundance elsewhere is not known. It may be overlooked due to taxonomic uncertainty in Hereroa, and also because its range is botanically poorly explored.	
Medium	*Tridentea virescens* (Rare)	A widespread species that occurs as sporadic small subpopulations of up to six plants. No threats are known to impact this species. Stony ground, or hard loam in floodplains.	This species was not observed within the corridor. However, as this species is inconspicuous, it is easily overlooked, even when searched for. Its' presence within some parts of the corridor therefore cannot be entirely excluded but if present at all, the development of the grid would not be likely to impact this species, with the result that the corridor is considered low sensitivity for this species.

The only plant species of potential concern observed within the corridor was *Rhinephyllum broomii* which is classified as Data Deficient. According to SANBI, this species is "*A poorly known taxon from the central parts of the Karoo Basin, it has been recorded from only three collection localities with an extent of occurrence of 5388 km². Only one recent record of this species exists, nothing is known about the current status and trends of the population, it is potentially threatened by livestock overgrazing and trampling and also possibly by future shale gas fracking*." It's range has been listed as being from Carnarvon to Fraserburg Road and Beaufort West, where the habitat is listed as "bare stony, gentle slopes, in shale". This is a seldom observed species and SANBI notes that "Nothing is known about the population size and current status there is only one recent record for this species collected from Carnarvon in 2013, this record has no notes on population status or abundance. Other records predate 1950 and are from Fraserburg and Beaufort West." A small population of this species numbering approximately 30 individuals was observed in the west of the corridor, on a small shale outcrop near to the Krom River. The affected area has been demarcated as a Very High sensitivity area (No-Go) with the result that the grid would not affect this species in any way. A record of this observation has been submitted to iNaturalist and can be viewed at the following link: https://www.inaturalist.org/observations/129512390.

Figure 6. A small population of the dwarf succulent *Rhinephyllum broomii* was observed within the corridor. As this species is vulnerable to illegal collection, the exact location has not been shared.

3.3 FAUNAL COMMUNITIES

Mammals

As many as 70 mammals are listed for the wider study area in the MammalMap database, but many of these are introduced or conservation dependent and approximately 48 can be considered to be free-roaming and potentially impacted by the development. This includes several red-listed species including the Riverine Rabbit *Bunolagus monticularis* (CR), Black-footed Cat *Felis nigripes* (VU), Grey Rhebok *Pelea capreolus* (NT), Mountain Reedbuck *Redunca fulvorufula* (EN) and Brown Hyena *Hyaena brunnea* (NT). The Brown Hyena is largely conservation dependent and does not commonly occur outside of conservation areas as a result of general predator control measures that are commonly implemented within the livestock farming areas of the Karoo. The Mountain Reedbuck and Grey Rhebok are likely present only within the areas of higher-lying more-rugged terrain present within the corridor. These areas would be avoided by the line as the likely route options all run along existing roads and power lines and generally tend to stick to the lower-lying areas. In addition, if present near the line, these are mobile species that would temporarily move out of any areas being disturbed into quieter areas. As such, the potential for impact on these two species due to the construction and operation of the power line is minimal and the area is considered low sensitivity for these two species. The Black-footed Cat is likely present in at least some parts of the corridor at typically low density but this shy nocturnal species is not likely to be significantly impacted by the construction and operation of the power line firstly as it is nocturnal and secondly as it has large home range and the ability to move away from any disturbance if required. As a result, the corridor is considered low sensitivity for this species. An analysis of the potential presence and the possible impact of the development on these species

is provided below in Table 3. Since only the Riverine Rabbit is confirmed present within the corridor, this species is dealt with in greater detail below.

In terms of sensitivity mapping relating to mammals, the intact and optimal riparian areas have been classified as Very High sensitivity based on their value as Riverine Rabbit habitat but also as a result of their general ecological significance. The rocky hills and steep slopes have been classified as High sensitivity on account of the value of these areas as habitat for mammals associated with rocky areas and the more general ecological value of these areas.

Table 3. Red-listed mammals known from the broad area and their likely presence in the Gamma 400kV site and the likely consequence thereof.

Species	Status	Likely Presence & Consequence	
		Wider Gamma 400kV Area	**Gamma 400kV Gridline Corridor**
Riverine Rabbit *Bunolagus monticularis*	CR	Confirmed present within the Sout, Krom and Kookfonteinspruit systems.	There are recent confirmed observations of this species from the corridor, confirming the presence of this species within the corridor. Significant avoidance and mitigation must be implemented to reduce the impact of the development on this species.
Black-footed Cat *Felis nigripes* (VU)	VU	There are historical records from the area and it is considered to be possibly present within the Karoo National Park but not confirmed.	This is a secretive species and while it may be present in the area, there are no recent records confirming its presence within the corridor. As such, the corridor is considered low sensitivity for this species.
Grey Rhebok *Pelea capreolus*	NT	This species is confirmed present in the broader area and can commonly be seen in most areas of high-lying ground in the Karoo and along the Great escarpment.	Appears to be restricted to high-lying ground along the Nuweveld Escarpment and unlikely to present within the corridor. This species has a wide distribution in the country and the grid connection is not likely to generate a significant impact on the local population of this species.
Mountain Reedbuck	EN	This species is confirmed present in the broader area, both within the Karoo National Park and	Restricted to mountainous terrain and while it may be present within the corridor, these areas have been

Redunca fulvorufula		more generally in high-lying areas with good grass cover.	demarcated as high sensitivity areas that would be avoided by the power line where possible. As with the Grey Rhebok, this species has a large range and it is not likely that the Grid development would generate a significant impact on this species.
Brown Hyena *Hyaena brunnea*	NT	This species occurs at a naturally low density within the Karoo and is known from a few records from the Karoo National Park but may also occasionally roam freely on farmland.	Although this species may pass through the area on occasion, it is considered highly unlikely to be present in the corridor on a regular basis.

Figure 7. Example of riparian vegetation present within the grid corridor near the Kookfonteinspruit, with good vegetation cover and plant species indicative of favourable habitat for Riverine Rabbits.

Reptiles

Reptile diversity in the wider area is relatively high which can be ascribed to the diversity of habitats present, especially along the Nuweveld escarpment. Approximately 63 reptile species are known from the general region and may potentially occur within the study area. Species of potential concern include the local endemic, Braack's Pygmy Gecko and the Karoo Padloper tortoise. Braack's Pygmy Gecko *Goggia braacki* is a Western Cape endemic with an extremely restricted distribution range that lies outside of the grid corridor.

The only threatened (Red Listed) reptile species in this region is the Karoo Dwarf Tortoise (EN). This small tortoise is seldom observed, even when specifically targeted during herpetofaunal surveys as it is active for only very short parts of the day and may also aestivate for extended periods during unfavourable environmental conditions. They are associated with dolerite ridges and rocky outcrops of the southern Succulent and Nama Karoo biomes. There is suitable habitat for this species within the Gamma Grid Corridor site as well as recent historical records from the corridor, indicating that this species is present within the corridor. While there may be some potential habitat loss resulting from the grid connection due to the construction of an access track under the power line as well as the pylon foundations, the long-term extent of habitat loss would be minimal. The power line may also create roosting, nesting and perching sites for crows which

are significant predators of small tortoises, with the result that the pylon structures should be designed so as to minimise this effect.

Amphibians

The diversity of amphibians in the study area is relatively low with only 11 species having being recorded in the broad area. Species observed within or near the grid corridor include the Karoo Toad, Clawed Toad, Boettger's Dainty Frog, Tandy's Sand Frog and Poynton's River Frog. There are no listed amphibian species known from the area although the Giant Bull Frog *Pyxicephalus adspersus* was previously listed as Near Threatened but has revised to Least Concern. This species is associated with temporary pans in the Karoo, Grassland and Savannah Biomes, but is not commonly recorded in the study area and its presence within the corridor is considered unlikely. Within the corridor, there are numerous drainage lines that have temporary pools that can be used by toads and frogs for seasonal breeding purposes. But given that these areas are also considered important for Riverine Rabbits and other ecological considerations, areas important for amphibians are captured through other sensitivities and there are no other areas that would need to be avoided on specific account of amphibians. Given the localised nature of important amphibian habitats at the site as well as the generally arid nature of the site and the low overall abundance of amphibians, a significant long-term impact on amphibians is unlikely.

3.4 CRITICAL BIODIVERSITY AREAS & BROAD-SCALE PROCESSES

There are several areas of extensive CBAs located within the Gamma Grid Corridor (Figure 8). Since some of these are extensive and extend well beyond the grid corridor itself, there does not appear to be a way in which it would it be possible to construct a power line in this Strategic Transmission Corridor from the Nuweveld Substation site to Gamma Substation without traversing some CBAs. As such, it is important to recognise that the CBAs that would be traversed cannot be easily avoided and the alignment routes chosen should be selected based on minimising impact on important biodiversity features that are located in the corridor, especially within CBAs.

A summary of the various underlying features that drive the selection of the CBA 1 and CBA 2 areas within the Gamma 400kV Gridline Corridor are identified and discussed below in Table 4. The majority of the CBAs within the Western Cape are driven by the selection of areas of Eastern Upper Karoo, as well as water resource protection areas identified as Very High Sensitivity under the Shale Gas SEA, River Type and FEPA River Corridors. Within the Northern Cape, the extensive area of CBA is related to the selection of this area as a provincial Protected Area Expansion Strategy (PAES) Focus Area.

As none of the areas selected on the basis of vegetation type are seen as being unique or of specific significance to the study area, the affected CBAs are all seen as being of low irreplaceability with regards to vegetation type. In terms of the water resource protection and ecological process features, the development footprint within these areas would be limited and it is highly unlikely to compromise the ecological functioning of the study area or the future ability to meet conservation targets in the Upper Karoo given that the mapped No-Go areas would be avoided regardless of the final route chosen.

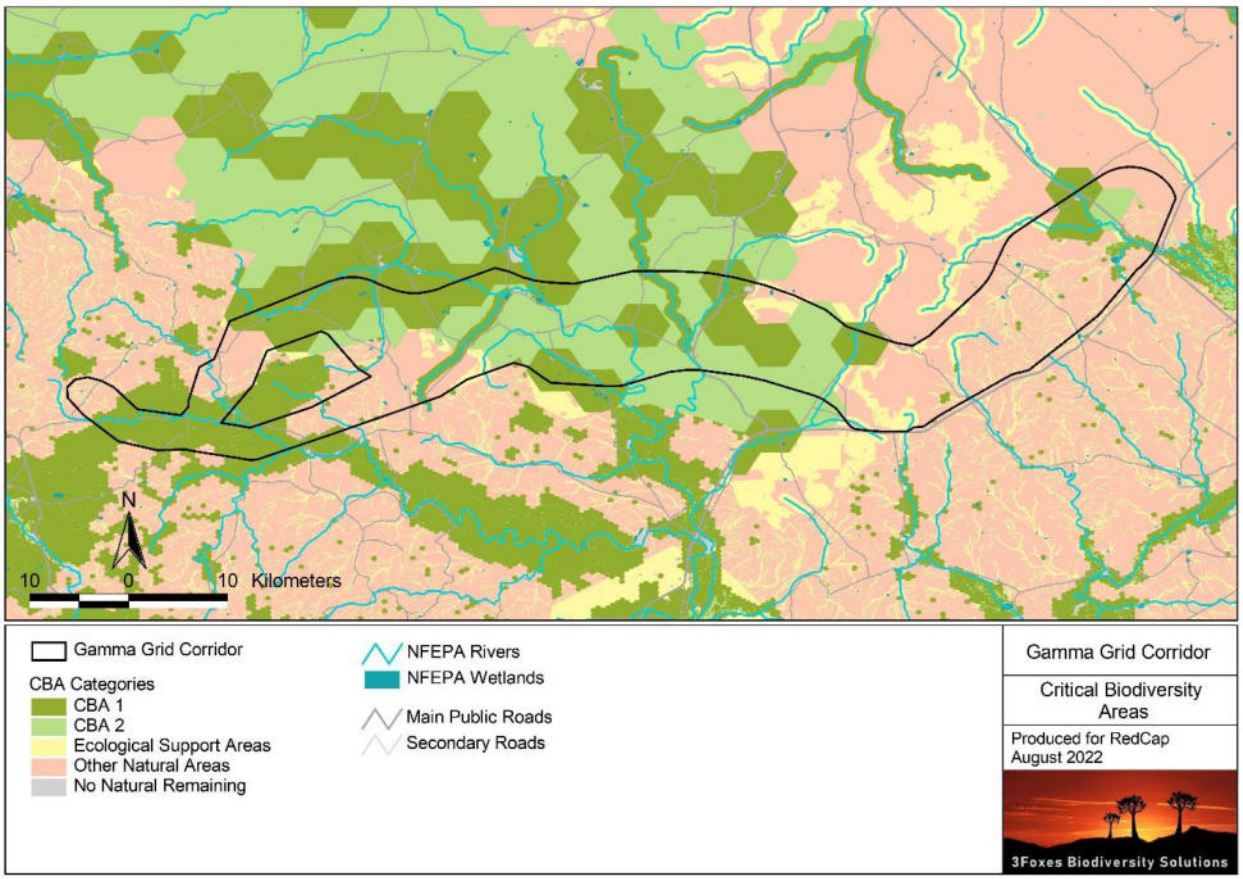

Figure 8. Extract of the Western Cape Biodiversity Spatial Plan and Northern Cape CBA map for the Gamma 400kV Gridline Corridor, showing that there are scattered CBAs along the corridor and numerous ESAs.

In terms of the Western Cape Land Use Guideline Handbook which provides land use guidelines for CBAs, these areas should be kept in a natural state as far as possible and transformation within these areas is considered undesirable (Pool-Stanvliet et al. 2017). However, in this regard it is important to note that the study area has not experienced a high degree of transformation, with the result that the irreplaceability of CBAs is generally low.

More importantly though, the CBA mapping for both CBA maps uses hexagonal planning units which tend to be more extensive than the features being protected (each 1 600 ha in extent in the Northern Cape), with the result that the underlying biodiversity objectives and ecological functioning of the CBAs may not be compromised even when there is development in close proximity or within the CBA. In the current case, the constraints mapping illustrated in Section 4, ensures that sensitive ecological features within the site are avoided and that the overall ecological functioning of the site and the CBAs is not compromised. It should also be noted that the entire Gamma 400 kV Gridline Corridor is located wholly within a strategic transmission corridor specifically identified for the placement of transmission infrastructure.

Table 4. Summary of the various underlying drivers of the CBAs present within the Gamma 400kV Gridline Corridor and the potential impact of the development on these features or reasons. The CBA basis is available within the CBA lookup layers associated with the CBA mapping and also available for download from the SANBI BGIS webpage.

CBA Basis	Feature Description & Irreplaceability	Consequence & Potential Impact Analysis
Eastern Upper Karoo	These areas have been selected in order to meet the representivity requirement for the Eastern Upper Karoo vegetation type. As this vegetation type is still largely intact and is classified as Least Threatened, it is considered to have low irreplaceability.	Habitat loss associated with the Gamma Grid within these areas would not compromise the ability to meet future conservation targets for this vegetation type. There are still extensive tracts of intact similar habitat available in the area and the affected areas have low irreplaceability. As a result, the implications of the development for habitat loss within the Eastern Upper Karoo are minimal and would not impact the conservation status of this vegetation type or the affected habitat types present within the study area in any meaningful manner.
Upper Karoo Hardeveld	These areas have been selected in order to meet the representivity requirement for the Upper Karoo Hardeveld vegetation type. As this vegetation type is still largely intact and is classified as Least Threatened, it is considered to have low irreplaceability.	Habitat loss of Upper Karoo Hardeveld associated with the Gamma Grid would be low as most of the areas of Upper Karoo Hardeveld would be avoided by the grid routes. The loss of the affected areas would not compromise the ability to meet future conservation targets for this vegetation type. There are still extensive tracts of intact similar habitat available in the area and the affected areas have low irreplaceability. As a result, the implications of the development for habitat loss within the Upper Karoo Hardeveld are minimal and

		would not impact the conservation status of this vegetation type in any meaningful manner.
Water Resource Protection	These areas have been designated CBA in order to protect drainage features or wetlands from development impact. This could be direct impact such as habitat loss within the wetlands or indirect impact such as damage through erosion and consequent siltation.	The development of the grid connection could potentially pose some threat to the integrity of the hydrological systems and processes operating within the affected CBAs. However, it is important to note that the CBAs are based on large hexagonal planning units and actual features that require protection have not been mapped in detail. These features have however been mapped in detail here in this report in an ecological context and have also been mapped in the freshwater specialist study. The mapping, along with the required mitigation and avoidance measures suggested in this and the freshwater study, would ensure that impacts on the hydrological systems of the study area are minimised.
Shale Gas Very High Sensitivity (WC only)	These areas have been identified as being very high sensitivity in the Shale Gas SEA.	The sensitivities mapped in the Shale Gas SEA were specific to shale gas development and exploration and different development options such as power transmission pose very different risks to these areas. While these are generally still considered to represent more sensitive parts of the landscape, the potential impacts posed by the grid connection are very different from those posed by Shale Gas development, which has a far more intensive and intrusive nature compared to a power line. Areas considered unsuitable for Shale Gas development are not necessarily unsuitable for a power line development. The detailed, ground-truthed sensitivity mapping produced as part of this study are considered to represent a more realistic representation of the sensitivity of the site and the actual development constraints for the power line.
Ecological Processes/Landscape Structural Elements	These areas have been identified as being important for ecological processes such as dispersal.	Given the low overall footprint of the development and the low existing level of impact in the broader study area, the development is unlikely to impact important ecological processes. In addition, the avoidance that has been implemented for the major drainage systems of the site and areas of potential Riverine Rabbit habitat are intended to

		ensure that the ecological functioning of the affected area is maintained.
Implications for optimal design	Although one can break down the various reasons an area has been identified as a CBA, the overall pattern also attempts to meet the required targets with the optimal design that requires the least land. As a result, if an area required for optimal design can no longer be used as a CBA, a significantly larger area may be required to meet the same target.	The actual features of significance that are present within the CBAs of the study area would be protected from impact through the detailed sensitivity mapping conducted as part of this study. As a result, the overall impact of the development within the areas of CBA is seen as being low and would not compromise the ability to meet these targets elsewhere or significantly compromise the biodiversity value or ecological functioning of the affected CBAs.
Northern Cape PAES	The whole of the area identified as CBA 1 and CBA 2 within the Northern Cape section of the corridor falls within a provincial Protected Area Expansion Strategy Focus Area.	While transformation within PAES Focus Areas is undesirable, the overall development footprint is estimated at less than 60 ha, which is not significant in terms of habitat loss within the PAES Focus Area. The construction and operation of the grid connection would not compromise the ecological and conservation value of the PAES Focus Area. There are already several power lines in the affected area (a Strategic Transmission Corridor) and the sensitive ecological features that would ultimately be the target for formal conservation would be largely avoided by the power line.

In terms of the conservation planning priorities and features of the corridor, the entire CBA 1 and CBA 2 extent within the Northern Cape section of the corridor is classified as an NPAES Focus Area. The development footprint of the power line would be less than 60 ha and this would be distributed linearly along the whole length of the power line (~110 km). As a result, the extent of habitat loss and disruption in any one area or habitat would be low and would not compromise the ecological value of these areas. Given the low transformation rate and extensive nature of the affected vegetation types, the development would have minimal impact on the future ability to meet conservation targets for these vegetation types.

3.5 CUMULATIVE IMPACTS

In terms of cumulative impacts in and around the Gamma Corridor, the only existing development is the Noblesfontein WEF located east of the N12. There are also several approved facilities in the broader area including the three Nuweveld projects associated with the current development, as well as the Ishwati Emoyeni WEF in the northeast, the Mainstream WEF around the Gamma Substation and several other developments located more distantly from the corridor (Figure 1). Assuming that each development has a footprint of approximately 100ha, the current baseline includes approximately 100ha of existing habitat loss associated with the Noblesfontein WEF and then approximately 500-600ha of planned facilities in the broader area. It is really only the Noblesfontein WEF and Mainstream WEF at Gamma that occur within a similar environment to the area affected by the Gamma Grid Connection. The contribution of the grid connection at less than 60 ha distributed along the whole length of the power line is not considered highly significant.

In terms of specific cumulative impacts, impacts on the Riverine Rabbit and Karoo Dwarf Tortoise would be a concern. However, in actuality, the contribution of the Gamma Grid Connection to cumulative impact on these two species would be low as the total footprint within the associated habitats would be low and would not impact the functioning of local populations of these species. As the broader area is still largely intact, and most direct impacts are associated with the relatively short, transient, construction phase, cumulative impacts associated with the current project are considered low and acceptable. There do not appear to be any ecological processes or corridors that would be specifically disrupted by the Gamma Grid Connection. In addition, should all the planned projects in the area be built, the overall extent of habitat loss would not be significant relative to the overall extent of the affected vegetation types. As such, the contribution of the current Gamma Grid Connection to habitat loss would not change the overall threat status of any vegetation types or special habitats and the overall level of cumulative impact in the area is considered acceptable.

4 GAMMA 400KV GRID CONNECTION CONSTRAINTS

In order to ensure the maintenance of ecological processes within the grid corridor and the minimisation of impacts on terrestrial biodiversity, a constraints map for the corridor was produced (Figure 9). This has been used to inform the grid routing and ensure that impacts on the sensitive features of the site are maintained within acceptable limits. The constraints/sensitivity map for the Gamma 400kV Gridline Corridor is depicted below in Figure 9. It should be noted that the constraints mapping applies to the physical footprint of the development (i.e pylon placement and access roads), but no-go features can be traversed by the overhead lines themselves. There are numerous constraints operating across the corridor, associated firstly with the drainage features of the corridor and associated Riverine Rabbit habitat and secondly with the mountains, slopes and dolerite outcrops of the corridor which are ecologically significant in their own right, but also

represent Karoo Dwarf Tortoise habitat. The development footprint within the high sensitivity areas should to be reduced to the minimum possible, a significant impact on these features would not occur provided that this is achieved. The major drainage features with areas of confirmed Riverine Rabbit habitat are mapped as no-go features as this is a restricted habitat that is vulnerable to disturbance and is home to a species with very high conservation concern. The areas of Karoo Dwarf Tortoise habitat have been mapped as high sensitivity since this habitat does not have confirmed presence of Karoo Dwarf Tortoises and is not highly threatened by the development of the power line through these areas. As a result, the sensitivity of Karoo Dwarf Tortoise habitat is considered to be somewhat lower than the areas of optimal Riverine Rabbit habitat. Provided that the development footprint can avoid/be minimised within the areas identified as High sensitivity, the grid connection would be considered acceptable and would generate a low impact on fauna, flora and terrestrial biodiversity generally.

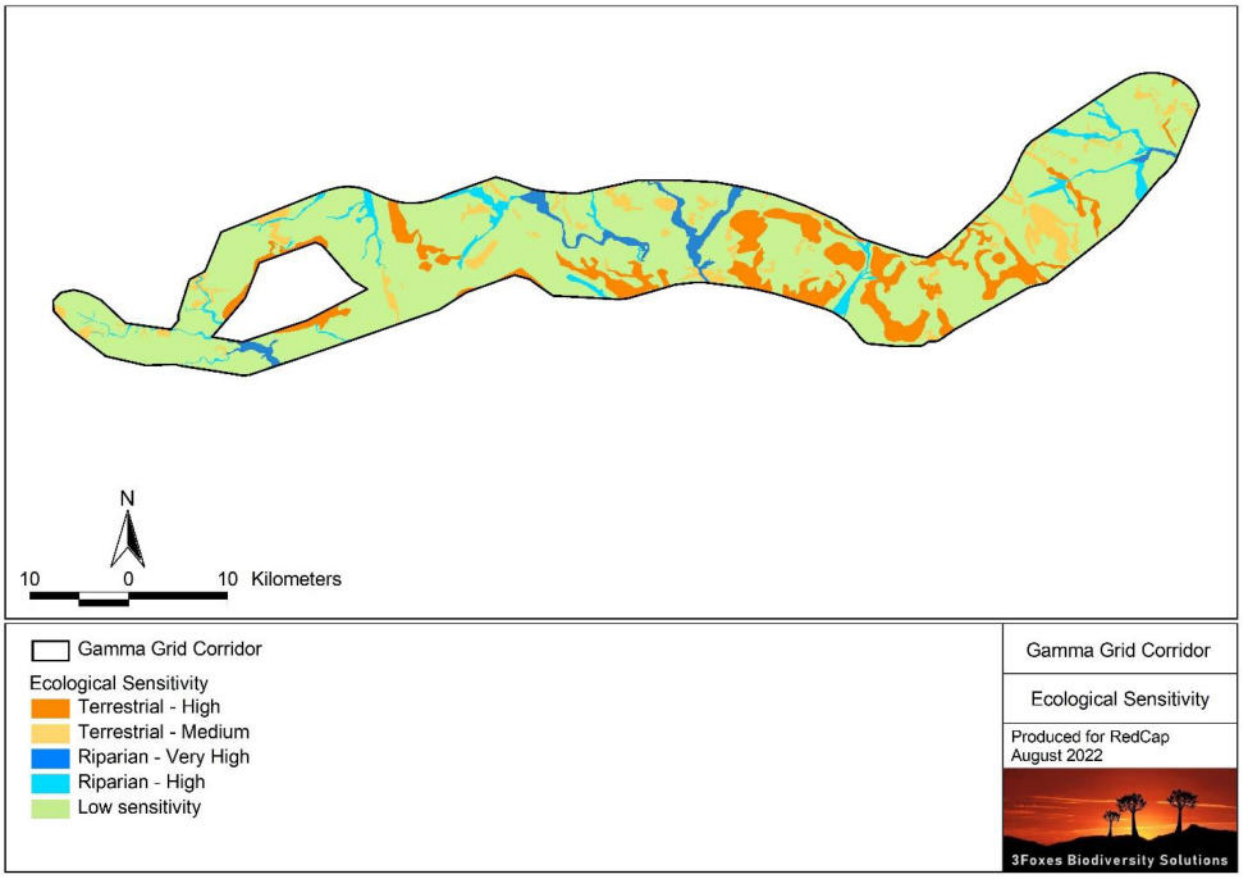

Figure 9. Ecological constraints map for the Gamma 400kV Gridline Corridor when considering pylon placement and access tracks.

5 IMPACTS AND ISSUES IDENTIFICATION

5.1 IDENTIFICATION OF POTENTIAL IMPACTS

The development of the Gamma 400kV Grid Connection would result in a number of potential impacts on Terrestrial Biodiversity during the construction and operational phases of the development. During construction, the major impact would likely be habitat loss and anthropogenic disturbance while during the operational phase, direct disturbance would be much reduced although there may be some potential impact from operational and maintenance activities. The following impacts are identified as the major impacts that are likely to be associated with the development of the Gamma 400kV Grid Connection on Terrestrial Biodiversity.

Impact 1. Impacts on CBAs and broad-scale ecological processes

As the CBAs of the corridor cannot be avoided completely, there would be some habitat loss within the affected CBAs as well as the ESAs of the site. During operation, the levels of disturbance along the grid route would be significantly reduced as compared to the construction phase, but there may still be some disturbance related to operational and maintained activities. As such, the assessment considers the direct habitat loss associated with the development as well as disturbance due to noise or maintenance activities.

Impact 2. Impacts on NPAES Focus Areas and the ability to meet future conservation targets

The majority of the corridor through the Northern Cape lies within a NPAES Focus Area. Habitat loss within the NPAES Focus Areas may compromise the ability to meet conservation targets and reduce the value of the affected area for future conservation. The total footprint of the power line has been estimated at less than 60 ha and less than half of that would be within the NPAES Focus Area. In addition, several sections of the line would run adjacent to existing power lines and public roads which would serve to reduce the impact of the power line (i.e., habitat loss quoted represents a worst-case scenario where a new access track would need to be cleared for the length of the line – this will not be the case in reality as existing roads and access tracks will be used wherever possible).

Impact 3. Cumulative Impacts

The development of the Gamma 400kV Grid Connection would result in habitat loss and an increase in overall cumulative impacts on fauna and flora in the area. The contribution of the Gamma Grid at less than 60ha is not considered highly significant, especially given the linear nature of the development. Although the area currently experiences a relatively low level of impact, there are numerous renewable developments authorised or currently being planned in the area and it is likely that cumulative impacts will increase into the future. The affected vegetation types are however all still largely intact and the grid connection would not significantly increase cumulative impacts on these vegetation types at the national scale.

6 ASSESSMENT OF IMPACTS ON TERRESTRIAL BIODIVERSITY– GAMMA 400KV GRID CONNECTION

An assessment of the likely significance of the impacts identified above is made below for the impacts of the Gamma 400kV Grid Connection on Terrestrial Biodiversity.

6.1 CONSTRUCTION PHASE IMPACT ON CBAS & ECOLOGICAL PROCESSES

Project phase	**Construction**			
Impact	Construction phase impact on CBAs, ESAs and ecological processes within the site.			
Description of impact	Impacts on Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs) and general ecological processes within the site			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	• Minimise the development footprint as far as possible. • Locate temporary-use areas such as construction camps and lay-down areas in low sensitivity or previously disturbed areas. • Avoid mapped No-Go areas in the placement of pylons and access tracks. • Minimise the development footprint in areas mapped as high sensitivity (i.e. near watercourses and other ecologically significant features). • Clearly demarcate riparian areas near to the development footprint as No-Go areas with appropriate signage and barriers. • Appropriate design of roads and other infrastructure to minimise faunal impacts and allow fauna to pass over, through or underneath these features as appropriate. • The fencing around the substation should not have any electrified strands within 30cm of the ground as this may result in tortoises being electrocuted. • Monitoring of construction activities to ensure that the development footprint within CBAs is restricted to the authorised development footprint.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	On-going	Impact will last between 15 and 20 years	On-going	Impact will last between 15 and 20 years
Extent	Regional	Impacts felt at a regional / provincial level	Regional	Impacts felt at a regional / provincial level
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Likely	The impact may occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Medium - negative**		**Low - negative**	
Comment on significance	The footprint within areas of mapped high and very high sensitivity habitat would be low and with mitigation it is likely that negative impacts on important biodiversity features can be reduced to a low level.			

6.2 CONSTRUCTION PHASE IMPACT ON *NPAES FOCUS AREAS*

Project phase	Construction			
Impact	Construction phase impact NPAES Focus Areas			
Description of impact	Impacts on NPAES Focus Areas and the ability to meet conservation targets			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	• Existing roads through the NPAES areas should be used as far as possible. • Locate temporary-use areas such as construction camps and lay-down areas in low sensitivity or previously disturbed areas. • Avoid mapped Very High sensitivity areas in the placement of pylons and access tracks. • Minimise the development footprint in areas mapped as high sensitivity (i.e. near watercourses and other ecologically significant features).			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	On-going	Impact will last between 15 and 20 years	On-going	Impact will last between 15 and 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	Medium - negative		Very Low - negative	
Comment on significance	The footprint within NPAES Focus Areas is less than 30ha and considered acceptable as it will not significantly impact the availability of habitat for inclusion in future conservation areas.			

6.3 OPERATIONAL PHASE IMPACT ON CBAS & ECOLOGICAL PROCESSES

Project phase	Operation			
Impact	Operational phase impact on CBAs and ESAs			
Description of impact	Impacts on Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs) and general ecological processes within the site			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	• All service vehicles on site should adhere to a low speed limit on site. Heavy vehicles should be restricted to 30km/h and light vehicles to 40km/h. • Service staff should remain within the power line footprint areas and access routes and should not be allowed to wander into the veld. • No fauna including tortoises should be disturbed or removed from the veld. • A log should be kept detailing and fauna-related incidences or mortalities that occur on site, including roadkill, electrocutions etc. These should be reviewed annually by the Environmental Officer and used to inform operational management and mitigation measures.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	On-going	Impact will last between 15 and 20 years	On-going	Impact will last between 15 and 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Likely	The impact may occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	Medium	The affected environment will only recover from the impact with significant intervention
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	**Low - negative**		**Low - negative**	
Comment on significance	The power line would require maintenance activities which would generate some disturbance within the areas of CBA. However, this would be occasional and the overall impacts associated with the operation of the power line would be very low.			

6.4 CUMULATIVE IMPACT 1. CUMULATIVE IMPACTS ON BROAD-SCALE ECOLOGICAL PROCESSES

Project phase	**Operation**			
Impact	Cumulative impact on broad-scale ecological processes			
Description of impact	Cumulative habitat loss and impact on broad-scale ecological processes			
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts		
Potential mitigation	• Avoid mapped No-Go areas in the placement of pylons and access tracks. • Minimise the development footprint in areas mapped as high sensitivity (i.e. near watercourses and other ecologically significant features). • Clearly demarcate riparian areas near to the development footprint as No-Go areas with appropriate signage and barriers.			
Assessment	**Without mitigation**		**With mitigation**	
Nature	Negative		Negative	
Duration	On-going	Impact will last between 15 and 20 years	On-going	Impact will last between 15 and 20 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Probable	The impact has occurred here or elsewhere and could therefore occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	High	The affected environmental will be able to recover from the impact	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	**Low - negative**		**Low - negative**	
Comment on significance	The long-term contribution of the Gamma grid to cumulative impact on ecolgical processes would be low. Much of the line is already in close proximity to existing roads and power lines and the dispersed nature of the footprint would result in low impacts on ecological processes.			

6.5 NO-GO ALTERNATIVE

Assuming that the project does not go ahead, the grid would not be built and the current land use would continue into the future. The area is currently used for extensive livestock and/or game farming which are considered to be largely compatible with long-term biodiversity maintenance. Many fauna species are to some degree negatively affected by farming including many predators which are targeted due to their negative impact on livestock, while some species may also be vulnerable to habitat loss or degradation and may experience depressed populations within the farming landscape. In terms of vegetation and plant species, extensive grazing may result in changes in composition towards less palatable species and a reduction in plant cover. It is however important to recognise that the development does not represent an alternative to extensive livestock farming, but rather an additional impact independent of the current land use. Overall, the no-go alternative is considered to result in a low negative impact on terrestrial biodiversity.

7 CONCLUSION & RECOMMENDATIONS

The Gamma 400kV Gridline Corridor is mapped as falling primarily within the Eastern Upper Karoo vegetation type with a lesser extent of Upper Karoo Hardeveld and Southern Karoo Riviere. All of these vegetation types have only been impacted to a limited extent by transformation, and are classified as Least Threatened. In terms of fauna, there are several listed mammals which occur in the area and which would potentially be impacted by the development. This includes the Riverine Rabbit, Black-footed Cat, Brown Hyena, Grey Rhebok and Mountain Reedbuck. The Riverine Rabbit is of greatest potential concern as it has the highest threat status and has also been confirmed present within the Gamma 400kV Gridline Corridor. The extent of habitat loss within the areas of Riverine Rabbit habitat would however be minimal and would not compromise the local population of this species. The Karoo Dwarf Tortoises is also present within the corridor and is associated with the rocky hills of the area. The footprint within these areas would also be relatively low and would not significantly impact habitat availability for the Karoo Dwarf Tortoise.

A large proportion of the grid route would traverse CBAs and ESAs. These features cannot easily be avoided as they occupy a significant proportion of the area between the Nuweveld site and the Gamma Substation. The footprint within the CBAs would be less than 30 ha and located entirely outside of areas mapped to be of very high ecological sensitivity and largely located outside of areas mapped to be of high ecological sensitivity. Given the linear, distributed nature of impact along the length of the power line, it would not compromise the ecological functioning of the CBAs or destroy the underlying biodiversity features present. The impact of the development on CBAs and ESAs is therefore considered acceptable.

The majority of the corridor where it goes through the Northern Cape lies within a NPAES Focus Area. While development within NPAES Focus Areas is considered undesirable, the overall footprint of the power line within the NPAES would be less than 30 ha and as this would be linear and distributed along the power line route, the impact in any one place would be minimal and would not compromise the value of the area for future conservation expansion or compromise the ability to meet conservation targets.

In terms of the sensitivity mapping conducted as part of this study, there are numerous constraints operating across the corridor, associated firstly with the drainage features of the corridor and associated Riverine Rabbit habitat and secondly with the mountains, slopes and dolerite outcrops of the corridor which are ecologically significant in their own right, but also represent Karoo Dwarf Tortoise habitat. The development footprint within the very high sensitivity areas will be avoided by pylon placement and access roads and disturbance to high sensitivity areas will be reduced to the minimum possible and a significant impact on these features is not expected to occur. The power line is considered acceptable and would generate low impacts on fauna, flora and ecological processes, provided that key mitigation is strictly applied.

Impact Statement – Gamma 400kV Grid Connection Impact on Terrestrial Biodiversity

There are no impacts associated with the development of the Gamma 400kV Grid Connection on terrestrial biodiversity that cannot be mitigated to an acceptable level. As such, should all the proposed mitigation be implemented, the Gamma 400kV Grid Connection development is deemed acceptable from a terrestrial ecological impact perspective. In terms of cumulative impacts, the affected area has not been significantly impacted by renewable energy development to date and the contribution of the current power line development to cumulative impact is considered low and acceptable. It is thus the reasoned opinion of the specialist that the Gamma 400kV Grid Connection development should be authorised subject to the various mitigation and avoidance measures as indicated.

8 REFERENCES

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environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

GAMMA 400KV GRIDLINE CORRIDOR PROJECT

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.environment.gov.za/documents/forms.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

1. SPECIALIST INFORMATION

Specialist Company Name:	3Foxes Biodiversity Solutions			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition	100%
Specialist name:	Simon Todd			
Specialist Qualifications:	BSc. (Zool. & Bot.), BSc Hons (Zool.), MSc (Cons. Biol.)			
Professional affiliation/registration:	SACNASP 400425/11			
Physical address:	23 De Villiers Road, Kommetjie 7975			
Postal address:	23 De Villiers Road, Kommetjie			
Postal code:	7975	Cell:	082 3326502	
Telephone:		Fax:		
E-mail:	Simon.Todd@3foxes.co.za			

2. DECLARATION BY THE SPECIALIST

I, _____Simon Todd_____, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist

3Foxes Biodiversity Solutions

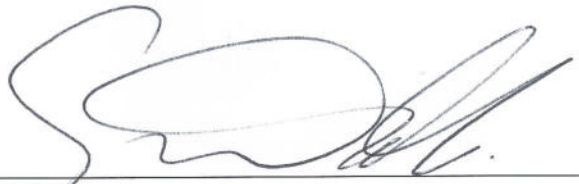
Name of Company:

11 November 2022

Date

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, ____Simon Todd_____, swear under oath / affirm that all the information submitted o
to be submitted for the purposes of this application is true and correct.



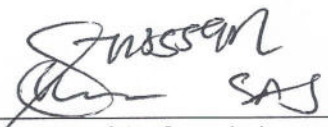
Signature of the Specialist

3Foxes Biodiversity Solutions

Name of Company

11 November 2022

Date



Signature of the Commissioner of Oaths

SUID-AFRIKAANSE POLISIEDIENS
COMMUNITY SERVICE CENTRE
11 NOV 2022
OCEAN VIEW W.C.
SOUTH AFRICAN POLICE SERVICE

2022-11-11

Date