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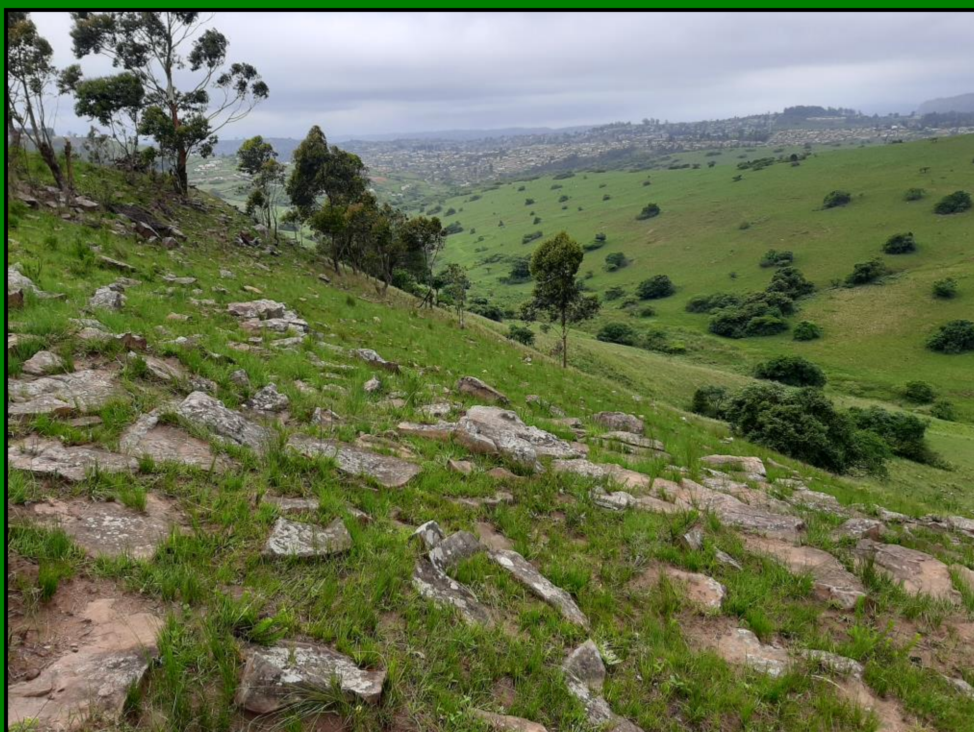
Addendum to Terrestrial Faunal Biodiversity Assessment for the Proposed Cato Ridge Land Development, eThekwini, KwaZulu-Natal

Performed for Zutari



Addendum

Prepared by Harvey Ecological

February 2023

DECLARATION OF INTEREST BY SPECIALIST

KWAZULU-NATAL PROVINCE
ECONOMIC DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS
REPUBLIC OF SOUTH AFRICA

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Provincial Reference Number:	
NEAS Reference Number:	KZN / EIA /
Waste Management Licence Number (if applicable):	
Date Received by Department:	

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

Submitted in terms of section 24(2) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) or for a waste management licence in terms of section 20(b) of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

KINDLY NOTE:

1. This form is current as of **May 2021**. It is the responsibility of the Applicant / Environmental Assessment Practitioner ("EAP") to ascertain whether subsequent versions of the form have been released by the Department.

PROJECT TITLE

Cato Ridge Land Development and Release Project

DISTRICT MUNICIPALITY

eThekwini

1. SPECIALIST INFORMATION

Specialist name:	Harvey Ecological		
Contact person:	James Harvey		
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Professional affiliation(s) (if any)	SACNASP (Pr. Sci Nat., No. 11861)

Project Consultant / EAP:	Zutari (Pty) Ltd		
EAPASA Registered EAP number:	2021-4095		
Contact person:	Patrick Killick (EAP)		
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2. DECLARATION BY THE SPECIALIST

I, **James Harvey** , declare that --

General declaration:

- I act as the independent specialist in this application;
- do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- 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 am aware that a person is guilty of an offence in terms of Regulation 48 (1) of the EIA Regulations, 2014, if that person provides incorrect or misleading information. A person who is convicted of an offence in terms of sub-regulation 48(1) (a)-(e) is liable to the penalties as contemplated in section 49B(1) of the National Environmental Management Act, 1998 (Act 107 of 1998).

Signature of the specialist:

Harvey Ecological

Name of company:

6/2/2023

Date:

EXPERTISE

James Harvey of Harvey Ecological has twenty years' experience with biodiversity-related work and fifteen years' experience in ecological consulting in sub-Saharan Africa. He is experienced and knowledgeable concerning species identification, ecology, conservation issues and methods for performing biodiversity surveys, and has performed biodiversity work widely in South Africa.

1. INTRODUCTION

Harvey Ecological was previously commissioned by Zutari Environmental Consulting to perform a terrestrial faunal biodiversity assessment for the proposed Cato Ridge Land Development project at Cato Ridge, eThekwini Municipality, KwaZulu-Natal. Given the potential constraints of the initial proposed layout, the proposed development footprint has been refined, on the basis of inputs by the ecological specialist team, discussions with EDTEA, and based on engineering bulk services requirements and costs and financial viability. A revised layout has now been provided, and this is evaluated in this amendment.

The objectives of the assessment were to:

- Assess the potential impacts of the revised development layout on the faunal communities (vertebrate fauna and selected invertebrate fauna) occurring within and adjacent to the study area, with particular emphasis on rare and threatened species, sensitive communities and ecological functionality; and

- Provide comment and recommendations concerning the effect of the development on these communities occurring on and adjacent to the site, and mitigation measures where appropriate.

2. METHODS AND BACKGROUND

The initial assessment (Harvey Ecological 2022) evaluated the site in terms of faunal biodiversity value and original layout. The details of that will not be repeated here, but are used as the basis for this re-assessment, most particularly the faunal sensitivity assessment map that was generated. Where relevant, updated details are provided below.

2.1 Study site and revised layout

The Project Boundary, which covers a total area of 1263.48 hectares, is located in Cato Ridge near the western boundary of the eThekwini Metropolitan Municipality, KwaZulu-Natal, and is situated to the north of the N3 highway. The large portion of the property west of these areas has been excluded from the proposed footprint, and is not directly considered in this assessment.

The study area (see Figure 1 and 2) is 789.02 hectares, which have been investigated as part of this EIA process. It is broken down into three areas – note that these have been relabelled since the previous study as follows:

Section label in previous study	Section label in previous study
Area 1	Phase 3
Area 2	Phase 1
Area 3	Phase 2

The previous proposed development footprint identified was approximately 609.46 hectares. The total development footprint in this revised layout is 352 hectares, with approx. 307.26 hectares available for Warehousing/ logistics/ light industry activities. The remaining areas spread across various pieces of infrastructure such as roads (including the Kwa-Ximba interchange corridor), reservoirs, sewerage package plant, substations, etc (Figure 3).

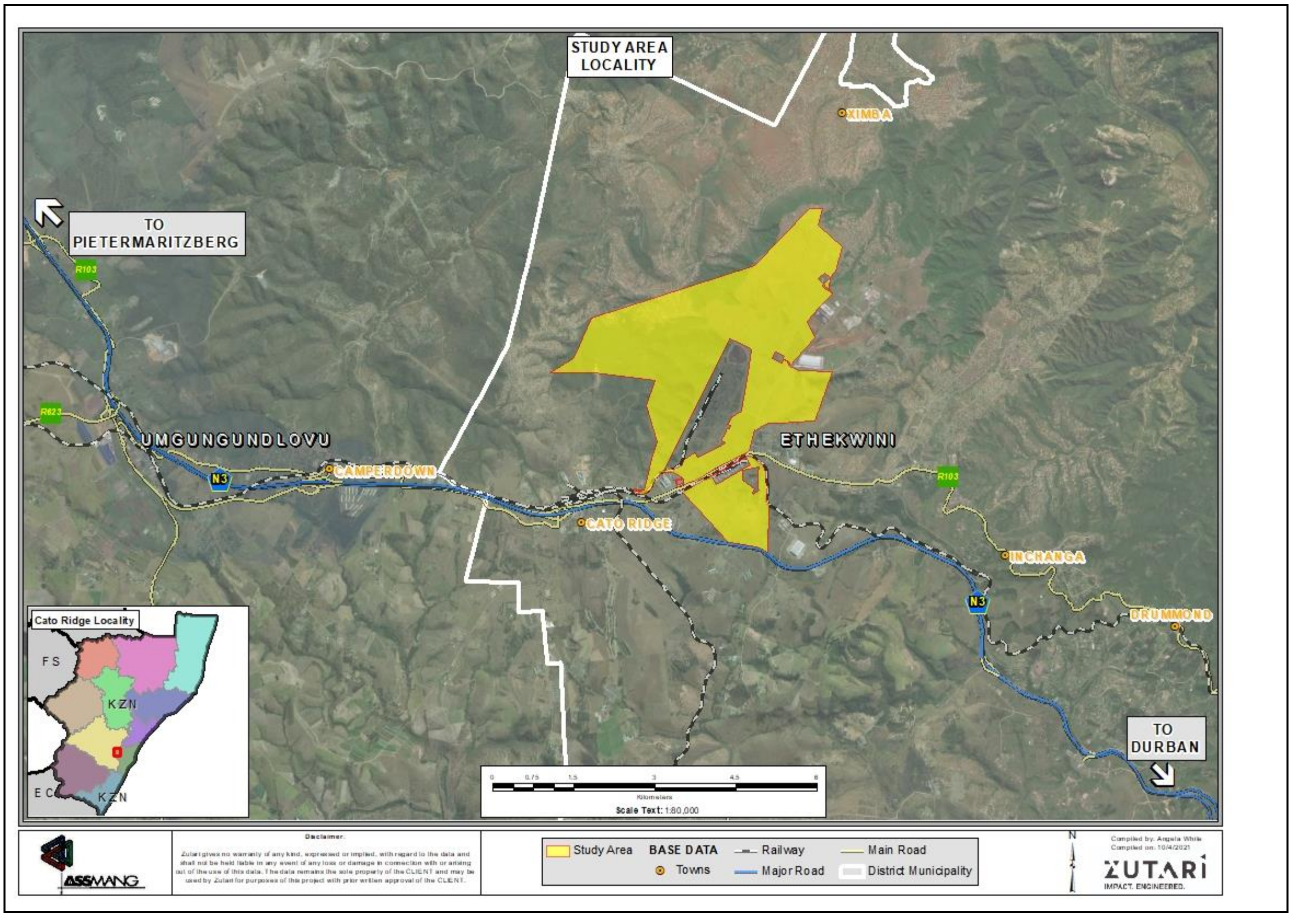

Figure 1. Locality of study site.

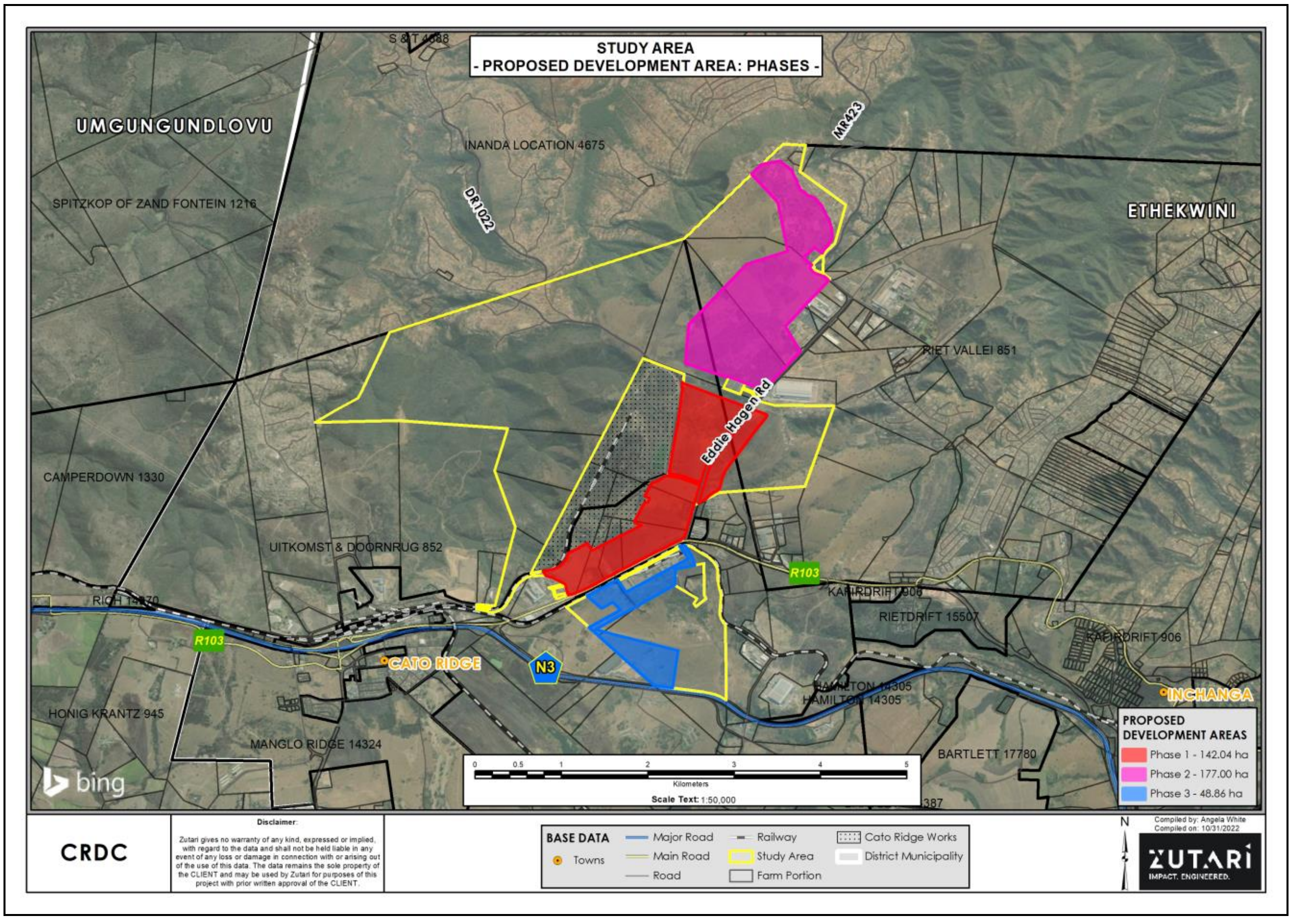

Figure 2. Property boundary and location of three phase study areas.

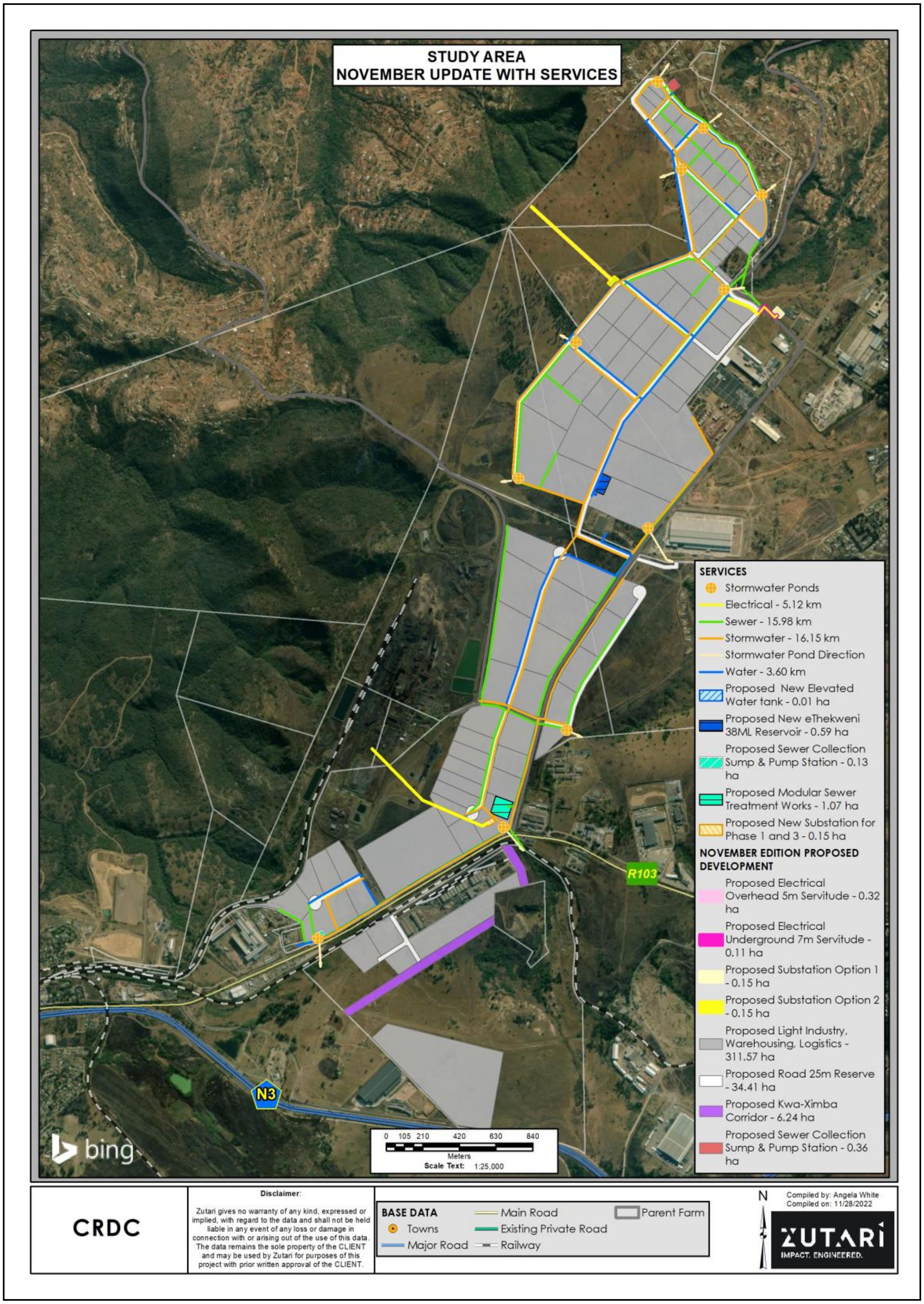

Figure 3. Property boundary and revised proposed project development footprint.

2.2 Survey Methods

The following methods were used:

- The methods used to assess the study area's sensitivity are detailed in the original assessment.

- The findings of the initial study's faunal sensitivity values were compared with the current revised proposed layout.

- Comments are provided on the revised layout relative to faunal communities, and the potential impacts to the faunal communities were described and evaluated using Zutari's impact assessment methodology, and recommendations relating to this are made.

3. RESULTS

3.1 Site Sensitivity and Revised Layout

The original and revised layouts are overlain with the faunal sensitivity map (Figure 4), It is apparent that large areas of the study area have been excluded from the revised layout in comparison with the original layout. Each of the three study areas/phases in relation to faunal communities are considered in further detail below.

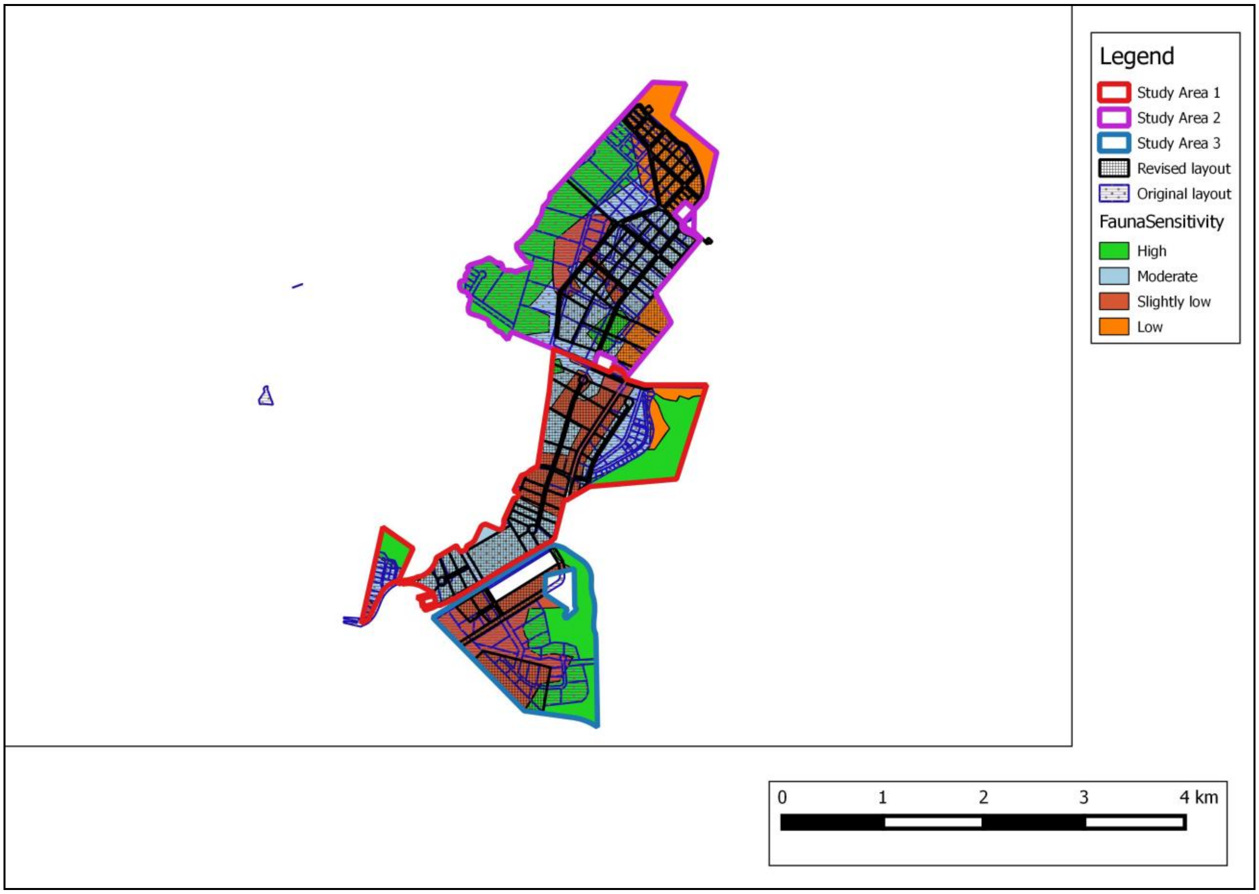

Figure 4. Original proposed layout and revised proposed layout overlain with faunal sensitivity map.

Phase 1

In the far western section, the proposed development plan has been discarded, and is no longer considered.

In the main section, the footprint continues to cover large areas of moderate value, including large grassland areas in fair to good condition. It excludes the steep valley and drainage system in the east, and has also been reduced in extent in adjacent areas of moderate sensitivity, situated to the east of Eddie Hagen Road.

A ca. 3ha area of grassland in the south-west corner of Phase 1 that had been designated as an undeveloped servitude has now been included into the development footprint.

An ecological corridor has also been provided between Phase 1 and Phase 2, and provides an east/west corridor through the development footprint.

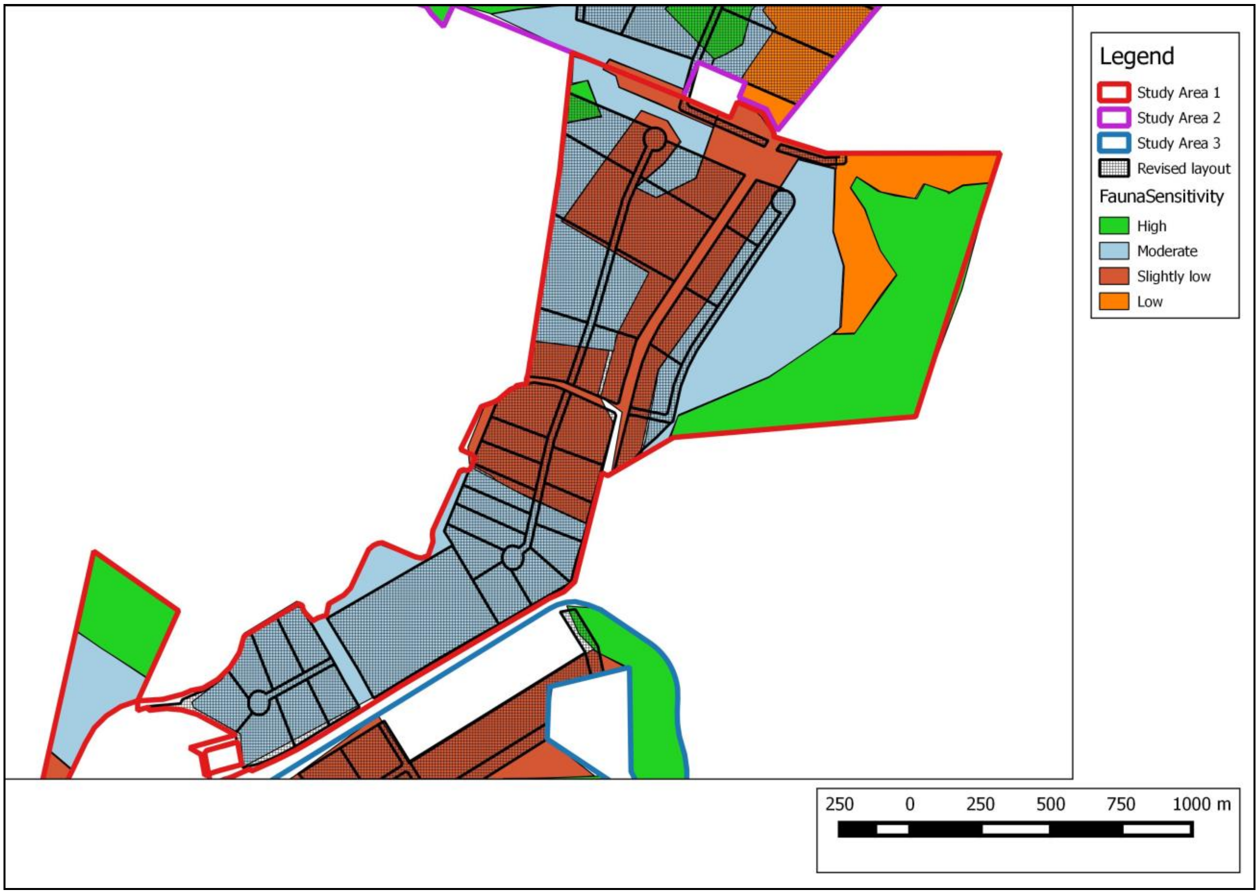

Figure 5. Revised proposed layout overlain with faunal sensitivity map for Phase 1.

Phase 2

Where the original layout covered essentially the entire area, with the exception of some rural residential areas in the extreme north, it has been reduced substantially in the west. As a result, the majority of areas considered of high faunal value are now excluded from the footprint. In addition, an ecological corridor connects undeveloped areas in the south to those in Phase 1 in the north. This represents a substantial improvement from the previous layout. Even so, large areas of natural grassland that are of moderate value will be lost under this proposed footprint.

An additional feature in the revised layout is a proposed Option 2 electrical connection which entails a 132kV overhead powerline, up to 638m long, with 36m servitude linking into the existing Eskom powerlines to the west of the precinct with a new up to 1.5ha substation to step down the current. The pylons would likely be the standard 28-32m high monopole-type pylons at 150 to 200m intervals (ca. 5 pylons). This would span the entirety of the centre of the sensitive grassland on Phase 2, to close to the cliff edge (Figure 3 and 6).

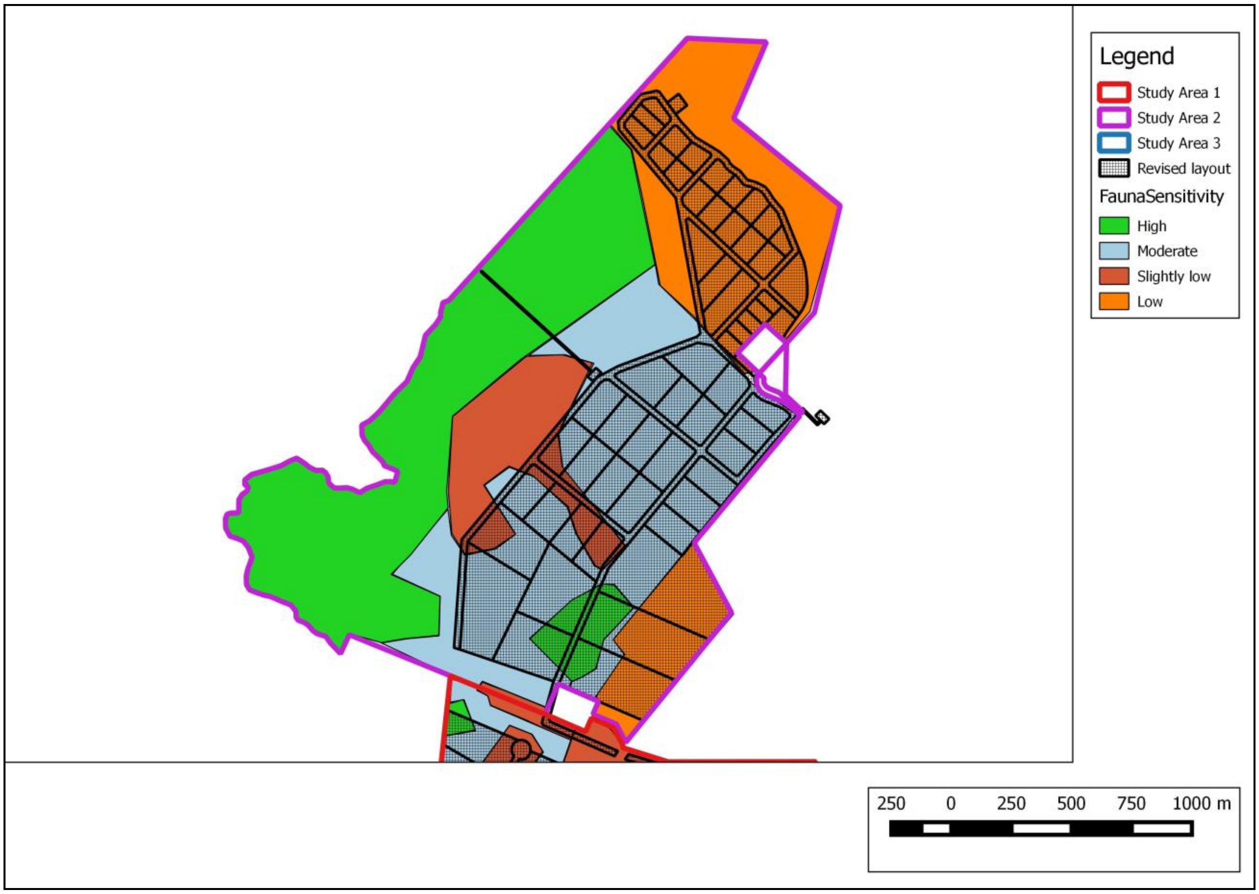

Figure 6. Revised proposed layout overlain with faunal sensitivity map for Phase 2.

Phase 3

The revised footprint now excludes the majority of the high value area including and associated with the main wetland and drainage line. It overlaps with high value area to a limited extent in the south. It has been indicated that this area is included in the footprint boundary, as it follows the cadastral boundary, but would not be developed and would be retained as natural/open space by the end user (P. Killick pers. comm.).

There is now a larger undeveloped area in the centre which connects to a drainage line on the western boundary.

Figure 7. Revised proposed layout overlain with faunal sensitivity map for Phase 3.

5. IMPACTS

The revised layout has reduced its potential impacts to a substantial extent. Nevertheless, the development is still anticipated to have substantial negative impacts on fauna, particularly if not mitigated. Potential negative impacts relating to these fauna as a result of the development are identified below and their significance evaluated in the Tables 1 - 8.

Habitat loss

Virtually complete habitat loss will take place within the development footprint. Given the large total size and permanence of the proposed total footprint and resulting development, and the loss of fairly large areas of moderate – high value within the proposed footprint, this will be the most significant impact for faunal populations. The loss of habitat affects all three phases, although the impact within the revised layout for Phase 3 will be much lower than assessed for the previous layout.

Powerline impact on grassland habitat and avifauna in Phase 2

One option for supplying electricity to Phase 2 (called 'Option 2') submitted in the revised layout, would be as follows - an up to 638m 132kV overhead powerline with 36m servitude linking into the existing Eskom powerlines to the west of the precinct with a new up to 1.5ha substation to step down the current. The pylons would likely be the standard 28-32m high monopole-type pylons at 150 to 200m intervals (ca. 5 pylons). This powerline would bisect a large continuous portion of sensitive grassland on Phase 2 and connect with the existing Eskom power line running along the cliff edge. This would likely to cause habitat disturbance to habitat, during installation of pylons, and the additional powerlines could pose an increased cumulative threat to avifauna, through collision or electrocution.

Alien Invasive Plant Spread

The development is likely to exacerbate the current level of alien plant infestation, as disturbance through construction processes encourages the establishment and spread of alien invasive plants which invade indigenous vegetation and alter the habitat, impacting the indigenous faunal communities.

Sedimentation and Pollution During and Following Construction

There is potential for sediment, waste products and construction materials to be deposited into adjacent areas (e.g. the adjacent river and wetland systems), during and following completion of the construction phase. This can impact the suitability of the habitat for some species.

Changes in hydrology

With the proposed large increase in impermeable surfaces within the infrastructure footprint area, there will likely be a change in the amounts and temporal patterns of stormflow runoff. This has the potential to negatively impact the receiving drainagelines and wetlands, through increased rates of erosion, sedimentation and introduction of contaminants from the footprint areas. This may negatively impact the diversity and density of fauna assemblages found in or utilising the aquatic systems.

Degradation of adjacent undeveloped areas

There is potential for undeveloped areas adjacent to the footprint to be degraded through dumping, storage of materials and other activities. Site creep can impact additional habitat but can also invite other non-native species which then compete and further impact the native faunal communities and ecosystems.

Disturbance

It is likely that some fauna in areas adjacent to the footprint will be disturbed during construction, and possibly during operation if noise levels are high causing them to retreat from these areas.

Light pollution

There is a growing body of evidence showing that night light pollution has multiple negative effects on faunal communities. If substantial lighting is used on and near the perimeters of the footprint, this could impact negatively on fauna.

Disturbance of Cliff-Nesting Birds Adjacent to Phase 2

It is likely that some specialist birds may nest in the cliffs immediately west of Area 2. These could include sensitive species, such as Lanner Falcon, Southern Bald Ibis and others, particularly raptors. Such birds could be vulnerable to disturbance from noise and other construction activities during construction and operational phases of the development. The revised layout means that the footprint currently sits at >350m away from the cliffs (other than in the extreme north, where housing exists between the boundary and the cliffs in any case) – as a result, this threat is likely minimised.

5.1 Cumulative Impact

Assessing the total proposed layout against the Cato Ridge Local Area Plan (Figure 6.22, Cato Ridge LAP 2018) shows that the development layout (specifically Phases 1 (east of Eddie Hagan Road) and 2) would still result in the loss of a substantial amount of the D'MOSS area within the Cato Ridge local area, and thus have a significant cumulative impact for faunal biodiversity for this local region.

5.2 Impact Assessments

Impact assessments have been performed and results of this are provided below. They have been performed individually for each phase, and finally with all phases combined. Note that it is considered that the effects and outcomes of construction and operation impacts are ultimately very similar, and that decommissioning impacts cannot be meaningfully considered, and are not included here, given the total permanent transformation of footprint areas, and the extreme unlikelihood that industrial infrastructure will ever be removed, and rehabilitation of natural habitats attempted.

It is clear that some impacts' ratings have reduced in comparison with the with the previous layout (refer to the previous report for details). Others however remain largely unchanged, which is in part due to the limitations of applying a simplified methodology to a complex system, which doesn't fully account for incremental reductions in impacts, and also because 1) some areas will still have similar impacts, based on this impact assessment scoring system, as large areas remain targeted for transformation, and 2) some impacts are largely unchanged by total layout area e.g. potential alien plant impacts are broadly similar regardless of the total footprint size.

Note that only mitigation measures that the client can commit to are included here; additional recommendations are provided in the Conclusion.

Table 1. Phase 1 Revised layout - Anticipated impact ratings: Construction phase.

Activity	Potential Impact	Significance (no mitigation)							Summary of mitigation	Significance (mitigation)						
		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance
Construction	Loss of habitat and associated fauna	5	7	5	7	17	-	119	• Biodiversity offset as determined by biodiversity offsetting process • Improved management of remaining undeveloped portions of the site.	4	7	4	7	15	-	105
Construction	Impacts on aquatic ecosystems – hydrology and water quality	5	6	4	6	15	-	90	• Specified buffers in place • Aquatic ecosystems not modified • Adequate stormwater management • Maximise permeable surfaces within footprint • Adequate pollution prevention and control systems • Monitoring of water quality and ecosystem health	3	6	3	6	12	-	66
Construction	Degradation of undeveloped areas adjacent to footprint	4	6	4	5	15	-	75	• All activities restricted to footprint area • Undeveloped area access controlled • External monitoring of these areas	3	6	3	5	12	-	60
Construction	Alien plant infestation	5	7	4	5	16	-	112	• Effective alien control programme and monitoring	2	2	3	5	7	-	35
Construction	Faunal Disturbance	4	6	4	6	14		84	• All activities restricted to footprint area • Noise levels regulated	3	6	3	5	12	-	60
Construction	Light pollution	4	3	3	5	10	-	50	• All activities restricted to footprint area • Light levels regulated and minimised	3	3	2	5	8	-	40

Table 2. Phase 1 Revised layout - Anticipated impact ratings: Operation phase.

Activity	Potential Impact	Significance (no mitigation)							Summary of mitigation	Significance (mitigation)						
		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance		State (pos/neg)	Significance	Extent	Probability	Total	State (pos/neg)	Significance
Operation	Loss of habitat and associated fauna	5	7	5	7	17	-	119	• Biodiversity offset as determined by biodiversity offsetting process • Improved management of remaining undeveloped portions of the site.	4	7	4	7	15	-	105
Operation	Impacts on aquatic ecosystems - hydrology and water quality	5	6	4	7	15	-	105	• Specified buffers in place • Adequate stormwater management • Maximise permeable surfaces within footprint • Adequate pollution prevention and control systems • Monitoring of water quality and ecosystem health	3	6	3	7	12	-	84
Operation	Degradation of undeveloped areas adjacent to footprint	5	6	4	5	15	-	75	• All activities restricted to footprint area • Undeveloped area access controlled • External monitoring of these areas	3	6	3	5	12	-	60
Operation	Alien plant infestation	5	7	4	5	16	-	112	• Effective alien control programme and monitoring	2	2	3	5	7	-	35
Operation	Faunal Disturbance	4	6	4	6	14		84	• All activities restricted to footprint area • Noise levels regulated	3	6	3	5	12	-	60
Operation	Light pollution	5	6	4	6	15	-	90	• Light levels regulated and minimised – lighting system designed so that outward lighting is avoided as far as possible, and has minimal spillage and effect on surrounding undeveloped areas.	4	6	3	6	13	-	78

Activity	Potential Impact	Significance (no mitigation)							Summary of mitigation	Significance (mitigation)						
		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance		State (pos/neg)	Significance	Extent	Probability	Total	State (pos/neg)	Significance
									o Use appropriate positioning (Low-level), directional (avoid outward facing lighting) and shielding to limit the spillage of light beyond site boundaries. Motion sensing lights (or other means) should be used for security to avoid prolonged lighting where possible.							

Table 3. Phase 2 Revised layout - Anticipated impact ratings: Construction phase.

Activity	Potential Impact	Significance (no mitigation)							Summary of mitigation	Significance (mitigation)						
		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance
Construction	Loss of habitat and associated fauna	5	7	5	7	17	-	119	• Biodiversity Offset as determined by biodiversity offsetting process • Improved management of remaining undeveloped portions of the site.	4	7	4	7	15	-	105
Construction	Impacts on aquatic ecosystems – hydrology and water quality	4	7	4	6	15	-	90	• Specified buffers in place • Aquatic ecosystems not modified • Adequate stormwater management • Adequate grassland management in undeveloped areas • Maximise permeable surfaces within footprint • Adequate pollution prevention and control systems • Monitoring of water quality and ecosystem health	3	6	3	6	12	-	72
Construction	Degradation of undeveloped areas adjacent to footprint	5	6	4	5	15	-	75	• All activities restricted to footprint area • Undeveloped area access controlled • External monitoring of these areas • Rehabilitation of damaged	3	6	3	5	12	-	60

									areas • Appropriate biodiversity management							
Construction	Alien plant infestation	5	7	4	5	16	-	112	• Effective alien control programme and monitoring	2	2	3	5	7	-	35
Construction	Overhead powerline across grassland	4	7	4	6	15		90	• Mechanisms to prevent collision/electrocution if overhead powerline is installed. This should be guided by an avian powerline specialist • Restricted installation sites • Rehabilitation of pylon sites	4	7	3	5	14	-	70
Construction	Faunal Disturbance	4	6	4	6	14		84	• All activities restricted to footprint area • Noise levels regulated	3	6	3	5	12	-	60
Construction	Light pollution	4	3	3	5	10	-	50	• All activities restricted to footprint area • Light levels regulated and minimised	3	3	2	5	8	-	40
Construction	Disturbance of cliff-nesting birds in Phase 2	1	1	1	1	3	-	9	• Ensure development footprint and activities are an adequate distance from the site edge (with possible exception of the powerline, and in that case disturbance activities must be kept to a minimum). Prevent any other activities from taking place within this area	1	1	1	1	3	-	9

Table 4. Phase 2 Revised layout - Anticipated impact ratings: Operation phase.

Activity	Potential Impact	Significance (no mitigation)							Summary of mitigation	Significance (mitigation)						
		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance
Operation	Loss of habitat and associated fauna	5	7	5	7	17	-	119	• Biodiversity Offset as determined by biodiversity offsetting process • Improved management of remaining undeveloped portions of the site.	4	7	4	7	15	-	105
Operation	Impacts on aquatic ecosystems - hydrology and water quality	4	7	4	6	15	-	90	• Specified buffers in place • Adequate stormwater management • Maximise permeable surfaces within footprint • Appropriate management of undeveloped areas • Adequate pollution prevention and control systems • Monitoring of water quality and ecosystem health	3	6	3	5	12	-	60
Operation	Degradation of undeveloped areas adjacent to footprint	5	6	4	5	15	-	75	• All activities restricted to footprint area • Undeveloped area access controlled • Routine inspection and monitoring of these areas for	3	6	3	5	12	-	60

								unauthorised activities							
Operation	Alien plant infestation	5	7	4	5	16	-	112	• Effective alien control programme and monitoring	2	2	3	5	7	-	35
Operation	Faunal Disturbance	4	6	4	6	14		84	• All activities restricted to footprint area • Noise levels regulated	3	6	3	5	12	-	60
Operation	Light pollution	5	6	4	6	15	-	90	• Light levels regulated and minimised	4	6	3	6	13	-	78
Operation	Disturbance of cliff-nesting birds in Phase 2	1	1	1	1	1	-	9	• Keep development footprint and activities an adequate distance from the site edge Prevent any other activities from taking place within this area.	1	1	1	1	1	-	9

Table 5. Phase 3 Revised layout - Anticipated impact ratings: Construction phase.

Activity	Potential Impact	Significance (no mitigation)							Summary of mitigation	Significance (mitigation)						
		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance
Construction	Loss of habitat and associated fauna	4	7	4	7	15	-	105	• Biodiversity Offset as determined by biodiversity offsetting process. • Improved management of remaining undeveloped portions of the site.	3	7	3	7	13	-	91
Construction	Impacts on aquatic ecosystems – hydrology and water quality	4	6	3	7	13	-	91	• Specified buffers in place • Aquatic ecosystems not modified • Adequate stormwater management • Maximise permeable	3	6	3	7	12	-	84

								surfaces within footprint • Adequate pollution prevention and control systems • Monitoring of water quality and ecosystem health							
Construction	Degradation of undeveloped areas adjacent to footprint	4	6	4	5	14	-	70	• All activities restricted to footprint area • Undeveloped area access controlled • External monitoring of these areas	3	6	3	5	12	-	60
Construction	Alien plant infestation	5	7	4	5	16	-	112	• Effective alien control programme and monitoring	2	2	3	5	7	-	35
Construction	Faunal Disturbance	5	6	4	6	13		78	• All activities restricted to footprint area • Noise levels regulated	3	6	3	5	12	-	60
Construction	Light pollution	4	3	3	5	10	-	50	• All activities restricted to footprint area • Light levels regulated and minimised	3	3	2	5	8	-	40

Table 6. Phase 3 Revised layout - Anticipated impact ratings: Operation phase.

Activity	Potential Impact	Significance (no mitigation)							Summary of mitigation	Significance (mitigation)						
		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance
Operation	Loss of habitat and associated fauna	4	7	4	7	15	-	105	• Biodiversity Offset as determined by biodiversity offsetting process. • Improved management of	3	7	3	7	13	-	91

								remaining undeveloped portions of the site.							
Operation	Impacts on aquatic ecosystems - hydrology and water quality	4	6	3	7	13	-	91	• Specified buffers in place. • Aquatic ecosystems not modified • Adequate stormwater management • Maximise permeable surfaces within footprint • Adequate pollution prevention and control systems • Monitoring of water quality and ecosystem health	3	6	3	7	12	-	84
Operation	Degradation of undeveloped areas adjacent to footprint	4	6	4	5	14	-	70	• All activities restricted to footprint area • Undeveloped area access controlled • External monitoring of these areas	3	6	3	5	12	-	60
Operation	Alien plant infestation	5	7	4	5	16	-	112	• Effective alien control programme and monitoring	2	2	3	5	7	-	35
Operation	Faunal Disturbance	4	6	4	6	14		84	• All activities restricted to footprint area • Noise levels regulated	3	6	3	5	12	-	60
Operation	Light pollution	5	6	4	6	15	-	90	• Light levels regulated and minimised	4	6	3	6	13	-	78
Operation	Disturbance of cliff-nesting birds in Area 3	5	6	4	4	15	-	60	• Keep development footprint and activities an adequate distance from the site edge	1	1	1	1	3	N	9

Table 7. Combined Phases Revised layout - Anticipated impact ratings: Construction phase.

Activity	Potential Impact	Significance (no mitigation)							Summary of mitigation	Significance (mitigation)						
		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance
Construction	Loss of habitat and associated fauna	6	7	5	7	18	-	126	• Biodiversity Offset as determined by biodiversity offsetting process • Improved management of remaining undeveloped portions of the site.	4	7	4	7	15	-	105
Construction	Impacts on aquatic ecosystems – hydrology and water quality	4	7	4	7	15	-	105	• Specified buffers in place • Aquatic ecosystems not modified • Adequate stormwater management • Maximise permeable surfaces within footprint • Adequate pollution prevention and control systems • Monitoring of water quality and ecosystem health	3	7	3	6	13	-	78
Construction	Degradation of undeveloped areas adjacent to footprint	5	6	4	5	15	-	75	• All activities restricted to footprint area • Undeveloped area access controlled • External monitoring of these areas	3	6	3	5	12	-	60
Construction	Overhead	4	7	4	6	15		90	• Mechanisms to prevent	4	7	3	5	14	-	70

	powerline across Phase 2 grassland								collision/electrocution • Restricted installation sites • Rehabilitation of pylon sites							
Construction	Alien plant infestation	5	7	4	5	16	-	112	• Effective alien control programme and monitoring	2	2	3	5	7	-	35
Construction	Faunal Disturbance	4	6	4	6	14		84	• All activities restricted to footprint area • Noise levels regulated	3	6	3	5	12	-	60
Construction	Light pollution	5	6	4	6	15	-	90	• All activities restricted to footprint area • Light levels regulated and minimised	4	6	3	6	13	-	78
Operation	Disturbance of cliff-nesting birds in Phase 2	1	1	1	1	3	-	9	• Keep development footprint and activities an adequate distance from the site edge	1	1	1	1	3	-	9

Table 8. Combined Phases Revised layout - Anticipated impact ratings: Operation phase.

Activity	Potential Impact	Significance (no mitigation)							Summary of mitigation	Significance (mitigation)						
		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance
Operation	Loss of habitat and associated fauna	6	7	5	7	18	-	126	• Biodiversity Offset as determined by biodiversity offsetting process • Improved management of remaining undeveloped portions of the site.	4	7	4	7	15	-	105
Operation	Impacts on aquatic ecosystems - hydrology and	4	7	4	7	15	-	105	• Specified buffers in place • Aquatic ecosystems minimally modified	3	7	3	6	13	-	78

	water quality								• Adequate stormwater management • Maximise permeable surfaces within footprint • Adequate pollution prevention and control systems Monitoring of water quality and ecosystem health							
Operation	Degradation of undeveloped areas adjacent to footprint	5	6	4	5	15	-	75	• All activities restricted to footprint area • Undeveloped area access controlled • External monitoring of these areas	3	6	3	5	12	-	60
Operation	Overhead powerline across Phase 2 grassland	4	7	4	6	15	-	90	• Mechanisms to prevent collision/electrocution • Restricted installation sites • Rehabilitation of pylon sites	4	7	3	5	14	-	70
Operation	Alien plant infestation	5	7	4	5	16	-	112	• Effective alien control programme and monitoring	2	2	3	5	7	-	35
Operation	Faunal Disturbance	4	6	4	6	14		84	• All activities restricted to footprint area • Noise levels regulated	3	6	3	5	12	-	60
Operation	Light pollution	5	6	4	6	15	-	90	• Light levels regulated and minimised	4	6	3	6	13	-	78
Operation	Disturbance of cliff-nesting birds in Phase 2	1	1	1	1	3	-	9	• Keep development footprint and activities an adequate distance from the site edge	1	1	1	1	3	-	9

Table 9. Combined Phases Revised layout - Anticipated Cumulative impact ratings

Activity	Potential Impact	Significance (no mitigation)							Summary of mitigation	Significance (mitigation)						
		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance		Intensity	Duration	Extent	Probability	Total	State (pos/neg)	Significance
Cumulative Effects	Cumulative impacts on fauna resources in the Cato Ridge area	6	7	5	7	18	-	126	• Biodiversity Offset as determined by biodiversity offsetting process • Improved management of remaining undeveloped portions of the site. • Specified buffers in place • Aquatic ecosystems minimally modified • Adequate stormwater management • Maximise permeable surfaces within footprint • Adequate pollution prevention and control systems • Monitoring of water quality and ecosystem health • All activities restricted to footprint area • Undeveloped area access controlled • External monitoring of these areas • Mechanisms to prevent collision/electrocution • Restricted installation sites	4	7	4	7	15	-	105

									• Rehabilitation of pylon sites • Effective alien control • All activities restricted to footprint area • Noise levels regulated programme and monitoring • Light levels regulated and minimised							

5.3. No Go Alternative

The No-Go Option should the Cato Ridge Land Development and Release Project not proceed would be that CRDC not pursue any development of the land. The site will remain in the ownership of CRDC/ Assmang and the status quo will be retained for the site.

For purposes of comparative assessment in terms of the EIA, a likely worst-case scenario approach for the no-go option is considered (Table 10) and compared with the impact assessment for the worst-case scenario preferred development alternative for consistency. Extrapolating the existing land use practices under a no-go development option, it is reasonable to assume that incursions onto the property for illegal sand mining, waste dumping, grazing (including inappropriate burning) and informal settlements would continue. The landowner would continue to manage the areas together with law enforcement to the extent reasonable. However, historical impacts and in the absence of additional income to facilitate an intensified management approach to the land, it would be reasonable to assume that these impacts would continue and possibly escalate as the surrounding rural communities continue to expand and densify, creating increasing demand for land and resources. These impacts are likely to be severe if not curtailed.

Table 10. No Go Alternative - Anticipated impact ratings.

ACTIVITY Description of proposed land use/	POTENTIAL ENVIRONMENTAL IMPACT Summary description of impact	APPLICABLE AREA Development Areas	SIGNIFICANCE Results of application of impact assessment methodology						
			Intensity	Duration	Extent	Probability	Total	Status (pos / neg)	Significance
NO GO Alternative	Sandmining	All	6	6	4	7	16	-	112
NO GO Alternative	Waste dumping	All	4	6	3	7	13	-	91
NO GO Alternative	Overgrazing and inappropriate burning regimes	All	5	6	4	7	15	-	105
NO GO Alternative	Informal settlements	All	5	6	4	6	15	-	90
NO GO Alternative	Alien plant proliferation	All	5	6	4	6	15	-	90

ACTIVITY Description of proposed land use/	POTENTIAL ENVIRONMENTAL IMPACT Summary description of	APPLICABLE AREA Development Areas	SIGNIFICANCE Results of application of impact assessment methodology						
NO GO Alternative	Poaching	All	4	6	4	6	14		84

6. CONCLUSIONS AND RECOMMENDATIONS

The revised layout is a substantial improvement on the original layout, from a faunal standpoint.

- The total footprint area is much reduced, and much larger areas are to remain undeveloped and are available as conservation areas.
- The majority of areas rated as high faunal sensitivity and some important areas rated as having moderate value have been excluded the development footprint.
- The additional corridors in the revised layout will allow for some continued connectivity between areas of natural habitat.

However, the revised layout will still impact large areas of semi-natural – natural habitat, much of which is in moderate condition, and which provides important ecological value, particularly within the broader ecological landscape and because of their large total extent. This is primarily in areas of Phases 1 and 2. Note that these areas also form part of the D'MOSS network, and much of these areas are considered a Nationally Listed Vulnerable Ecosystem (or higher threat classification – see vegetation reports (Styles 2022, 2023)). Other impacts as identified above, such as alien plant proliferation, inappropriate management of the undeveloped areas etc may further reduce the faunal value and ecological integrity of the remaining undeveloped areas, if these areas are not adequately monitored and effectively managed.

In additional to the recommended mitigation measures in the impact tables and considering the above finding, the following additional recommendations are made.

- Consideration should be given to the possibility of reducing the development footprint still further. This relates particularly to Phase 2 and 1.
    - In Phase 1, the greatest return on reducing footprint extent could probably be achieved by contracting the footprint east of the Eddie Hagen Road, out of the moderate value area, and ideally from that side of the road in total, and through expanding the corridor width that links Phase 1 and 2.
    - In Phase 2, this could be done by reducing the footprint eastwards in areas classified as moderate value, particularly in the north.
    - Phase 3 is considered largely acceptable (on condition that undeveloped areas are managed appropriately). However, it is recommended that the footprint component that extends into the area classified as being of high faunal value is removed, and the high faunal area boundary is adequately buffered, to prevent impacts from the amended footprint.
- Corridors – where large scale transformation to a landscape is considered, adequately sized and managed ecological corridors are crucial for the continued connectivity, functioning and processes of local ecosystems – these support among others genetic connectivity and continued viability of species' populations, pollinator-plant species inter-relationships, trophic processes and more. Research into the impacts of exotic commercial agroforestry shows that edge effects for invertebrate communities within natural grassland extend at least 32m away from the transformed

edge (Pryke and Samways 2012). Any corridor ca. ≤64m would therefore be entirely effected by impacts associated with edge effects, and any species intolerant of edge effects would thus be absent. It can reasonably be assumed that the edge effects of urbanisation would be as severe, and likely more so as those resulting from afforestation. Furthermore, it has been shown that corridor width impacts on the edge influence strength, and larger corridors are of greater conservation value than smaller ones (van Schalkwyk et al. 2020). As a result, larger corridors should be included as far as possible.

As a further consideration, grassland areas need to be managed through, among other things, routine use of controlled burning. From a practical standpoint, grassland corridors therefore need to be wide enough to allow for regular burning to take place without managed fires being a safety hazard.

A corridor has been included within the revised layout that links the undeveloped areas of Phase 1 and 2. This is commendable. Currently, it appears to have a minimum width of 120m. This is fair, but it would be preferable if this could be extended somewhat, to ca. 150m; even more would be more beneficial ecologically. In practical terms, it needs to be wide enough to be burned as part of biodiversity management, and without this causing threats to developed areas. Furthermore, some of this area is slightly degraded, and a concerted effort would need to be made to rehabilitate this area to a higher quality habitat in total (through alien plant removal, burning, cattle exclusion, possible revegetation activities etc).

- Where appropriate, negotiation and determination of acceptable offsets must take place through processes with relevant parties. This would likely require both onsite and offsite offsets, depending on the final conditions agreed upon with the authorities and relevant parties (Note that a separate biodiversity offsets process for the project is being conducted by other parties).

- The final layout must have an effective stormwater and water quality management plan in place.

- One option for supplying electricity to Phase 2 would be an overhead powerline, including ca. 5 pylons. This would span the entirety of the centre of the sensitive grassland on Phase 2, to close to the cliff edge. This would be likely to cause habitat disturbance, during installation of pylons, and the lines could be a threat to avifauna, through collision or electrocution. It is strongly considered that this component should be reconfigured so as to avoid this area if possible. In the event that it is included, it would need to be equipped with mechanisms to prevent collisions and electrocutions, and adequate measures to minimise and rehabilitate any grassland disturbance would be required.

- An alien plant management and monitoring plan must be put in place. Alien plants are an existing severe issue in parts of the study area and adjacent areas, and this would need to be prioritized.

- As indicated previously, valuable faunal areas on the property are currently poorly managed and under increasing duress from existing and ongoing negative impacts mentioned in the initial report, and need to be appropriately managed. Issues include alien plant control, appropriate burning regimes, exclusion and rehabilitation of undeveloped, sand mined areas, exclusion or management of cattle access and prevention of any other further degradation to these areas. Fencing that is permeable to fauna but prevents human access would need to be erected around undeveloped areas. A biodiversity management plan should be developed and implemented for all areas that area undeveloped.

- Some areas outside the proposed footprint in Phase 2 are in relatively poor condition, as a of result sandmining and alien plant invasion. These areas should be rehabilitated, and one option to be included in this could be the creation of one or more small artificial wetlands in these areas – these areas would provide breeding habitat for frogs and other aquatic fauna, which would replace some of the aquatic habitats lost under the development footprint.

- Monitoring of the following components as a minimum must be routinely performed, by external assessors, and appropriately addressed by the client
    - Stormwater management
    - Water quality and aquatic ecosystem health
    - Alien plants
    - Ecological condition of undeveloped areas

- During construction and operation, all efforts must be made to minimise sediment input, pollution and disturbance to areas away from the infrastructure footprint area - no waste or materials of any kind must be allowed to enter the surrounding areas during construction or operation. This should be monitored by an independent assessor.

- Any landscape planting within development footprints should use locally indigenous species, and the choice of these should be guided by a professional botanist.

Opinion on the acceptability of the proposed activities

It is considered acceptable for the proposed development to be authorised given that:

- The large majority of areas considered of high faunal value have been excluded from the proposed layout
- The layout allows for the continued functionality and connectivity of ecosystems and ecological processes to continue (assuming appropriate management of the undeveloped areas)
- The developer has committed to substantial investment in appropriate management of the undeveloped areas for biodiversity, and to adequately offsetting both on and beyond the property to compensate for biodiversity losses
- Several negative impacts are currently substantially reducing the biodiversity value of the property. Left unhindered this will continue. Permitting partial development in return for investment in halting these impacts and improving the management of the area will be of value for the biodiversity value of the site and broader region.

However, it must be acknowledged that the proposed development will result in the loss of a large area of land with biodiversity value. Given this, it is imperative that sufficient and substantial actions by way of appropriate management of undeveloped areas, and appropriate offsetting are performed to mitigate this loss.

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