Proposed Amendment 2 Application for the Outeniqua Views Development, Erf 19741, Mossel Bay.

Compliance Statements: Aquatic and Terrestrial Biodiversity and Plant and Animal Species.

Prepared for HilLand Environmental

by

Dr. J.M. Dabrowski (james@confluent.co.za)
& Bianke Fouche (bianke@confluent.co.za)
of Confluent Environmental

confluent

07 St. Johns, Dormehlsdrift, George

November 2024

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DECLARATION OF SPECIALIST INDEPENDENCE

The consulting services comprise an assessment of the potential sensitivity of the aquatic and terrestrial ecosystems and flora that fall within the development footprint for the site. The following declaration is given by the appointed specialists:

- We consider ourselves bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP).
- At the time of conducting the field assessment and compiling this report we did not have any interest, hidden or otherwise, in the proposed development that this report has reference to, except for financial compensation for work done in a professional capacity.
- Work performed for this site was done in an objective manner. Even if this results in views and findings that are not favourable to the client/applicant, we will not be affected in any manner by the outcome of any environmental process of which this report may form a part, other than being members of the general public.
- We declare that there are no circumstances that may compromise my objectivity in performing this specialist investigation. We do not necessarily object to or endorse any proposed developments, but aim to present facts, findings and recommendations based on relevant professional experience and scientific data.
- We do not have any influence over decisions made by the governing authorities.
- We undertake to disclose 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 a competent authority to such a relevant authority and the applicant.
- We have the necessary qualifications and guidance from professional experts in conducting specialist reports relevant to this application, including knowledge of the relevant Act, regulations and any guidelines that have relevance to the proposed activity.
- This document and all information contained herein is and will remain the intellectual property of Confluent Environmental. This document, in its entirety or any portion thereof, may not be altered in any manner or form, for any purpose without the specific and written consent of the specialist investigators.
- All the particulars furnished in this document are true and correct.

Dr. James Dabrowski

Signed: 11 November 2024

Bianke Fouche

Signed: 11 November 2024

DR. JAMES DABROWSKI ABRIDGED CV

Qualifications

- B.Sc. (Zoology and Botany),
- B.Sc. Honours (Zoology),
- M.Sc. (Zoology)
- PhD (Zoology - specialising in aquatic ecology)

SACNASP Registration No: 114084 (Professional Natural Scientist)

NRF Rating: C2 Rated Researcher

Skills and Core Competencies

- Aquatic (including estuarine) biodiversity assessments.
- Wetland delineation and assessments.
- Ecological risk assessment.
- Water quality assessment, data analysis and guideline development.
- Catchment-scale hydrological and pollution modelling.

BIANKE FOUCHE ABRIDGED CV

Qualifications

- B.Sc. Environmental Sciences,
- B.Sc. Honours (Botany),
- M.Sc. Conservation Biology.

SACNASP Registration No: 141757 (Pr. Sci. Nat. - Botanical Scientist)

Skills and Core Competencies

- My MSc research will add to our understanding of plant community niche construction and Alternative Stable State (ASS) theory. The knowledge gained will be used to advise landscape stewardship practices, especially regarding reforestation initiatives in the Overstrand.
- I have worked closely with the conservation team of the Grootbos Foundation, where I assisted with vegetation surveys, mounting voucher specimens in the Grootbos herbarium, and taken part in controlled fynbos fires in the Overberg.
- Postgraduate studies of mine included assessing the allelopathic effects of *Eucalyptus* leaves on garden peas and leeks and assessing the accuracy of the climate leaf analysis multivariate programme (CLAMP) in predicting the climate of fynbos vegetation.
- In Cape Town I regularly took part in alien clearing activities and helped to identify relevant listed invasive plants.
- I am currently a member of the Botanical Society of South Africa and the custodians for rare and endangered wildflowers (CREW) in George.

References

Professor Michael D. Cramer
HW Pearson Building, University of Cape Town, Rondebosch
Phone: +27 21 650 2444
Email: michael.cramer@uct.ac.za

Professor Timm M. Hoffman
HW Pearson Building, University of Cape Town, Rondebosch
Phone: +27 21 650 5551
Email: timm.hoffman@uct.ac.za

Jan Vlok
Regalis Environmental Services, Oudshoorn
Phone: +27 44 279 1987
Email: janvlok@mweb.co.za

Dr David Hoare
David Hoare Consulting, Pretoria
Phone: +27 83 284 5111
Email: david@davidhoareconsulting.co.za

Dr. Paul-Pierre Steyn
Botany Building, Nelson Mandela University South Campus, Port Elizabeth
Phone: +27 41 504 4873
Email: paul.steyn@mandela.ac.za

Paula Strauss
Grootbos Foundation Conservation, Grootbos Private Nature Reserve, Overstrand
Phone: +27 72 611 7971
Email: paula@grootbosfoundation.org

Sean Privett
Grootbos Foundation Conservation, Grootbos Private Nature Reserve, Overstrand
Phone: +27 82 411 1008
Email: sean@grootbosfoundation.org

Mark Berry
Mark Berry Botanical Surveys, Cape Town, Western Cape
Phone: +27 83 286 9470
Email: mark@mbbotanicalsurveys.co.za

1. INTRODUCTION

HilLand Environmental are submitting an environmental amendment application to densify the approved development footprint at Outeniqua Views, Erf 19741, Dana Bay – just east of Mossel Bay. The application is for a Part 2 amendment and Confluent Environmental were appointed to provide a comparative biodiversity assessment between the originally approved application and the new higher density proposal. The purpose of the assessment is to determine whether the amendment application will result in any additional impacts to biodiversity relative to the originally approved application. This assessment covers the aquatic and terrestrial biodiversity themes and the plant and animal species themes.

The previously approved and new proposed development plans are provided in Figure 1. The footprint of the two development plans remains unchanged and the proposed conservation and open space areas will remain as intended in the original approval. A small wetland is indicated along the southern boundary of the development and a larger attenuation pond is planned toward the north-eastern section of the development.

Figure 1 The footprint of the new proposed development (the previously approved footprint is included and an inset).

2. AQUATIC BIODIVERSITY

2.1 Legislation

The Department of Water & Sanitation (DWS) is the custodian of South Africa's water resources and therefore assumes public trusteeship of water resources, which includes watercourses, surface water, estuaries, or aquifers. The National Water Act (NWA) (Act No. 36 of 1998) aims to protect water resources, through:

- The maintenance of the quality of the water resource to the extent that the water resources may be used in an ecologically sustainable way;
- The prevention of the degradation of the water resource; and
- The rehabilitation of the water resource.

A watercourse means:

- A river or spring;
- A natural channel in which water flows regularly or intermittently;
- A wetland, lake or dam into which, or from which, water flows; and
- Any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

For the purposes of this assessment, a wetland area is defined according to the NWA (Act No. 36 of 1998) as:

"Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil".

Wetlands therefore must have one or more of the following attributes to meet the NWA wetland definition (DWAF, 2005):

- A high water-table that results in the saturation at or near the surface, leading to anaerobic conditions developing in the top 50 cm of the soil;
- Wetland or hydromorphic soils that display characteristics resulting from prolonged saturation, i.e. mottling or grey soils; and
- The presence of, at least occasionally, hydrophilic plants, i.e. hydrophytes (water loving plants).

2.2 Wetland Delineation

Wetlands are described by the National Water Act (Act 36 of 1998) as:

"Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil."

According to DWAF (2005) wetlands must have one or more of the following attributes:

- Wetland (hydromorphic) soils that display characteristics resulting from prolonged saturation;

- The presence, at least occasionally, of plants that grow in water saturated conditions (hyrdophytes or obligate wetland plants);
- A high water table that results in saturation at or near the surface, leading to anaerobic conditions developing in the top 50cm of the soil.

The boundary of the wetland was delineated in accordance with DWAF (2005) guidelines which considers the following four specific indicators:

- The Terrain Unit Indicator: Identifies those parts of the landscape where wetlands are more likely to occur;
- The Soil Form Indicator: Identifies the soil forms, as defined by the Soil Classification Working Group (1991), which are associated with prolonged and frequent saturation;
- The Soil Wetness Indicator: Identifies the morphological "signatures" developed in the soil profile as a result of prolonged and frequent saturation (i.e. mottling and gleying within 50 cm of the soil surface); and
- The Vegetation Indicator: Identifies hydrophilic vegetation associated with frequently saturated soils.

The boundary of the wetland was determined by identifying the presence or absence of the combination of indicators mentioned above at selected points in the field. The location of soil augering points used to assess soil wetness were marked on a hand-held GPS and saturation zones were classified according to the soil wetness indicators as follows:

- Temporary Zone: Short periods of saturation (less than three months per annum) characterised by few high chroma mottles and minimal grey matrix (< 10 %).
- Seasonal Zone: Significant periods of wetness (at least three months per annum) characterised by many low chroma mottles and a grey matrix.
- Permanent Zone: Wetness all year round characterised by a prominent grey matrix and few to no high chroma mottles.

2.3 Site Visit

The site was visited on the 6th of November 2023. The wetland indicated in Figure 1 is a small depression wetland. The wetland is endorheic (i.e. it has no outflow) and was completely inundated at the time of the visit (Figure 2). The wetland is likely to receive some surface runoff from Flora Road to the south and the surrounding vegetated area to the north, east and west. Analysis of historical imagery indicates that the wetland does appear to dry out during drier periods. The surface area of the wetland consisted of relatively dense patches of *Typha capensis*, mixed with open water sections and there were a variety of wetland bird species, including water-fowl (i.e. Knob-billed Coot) and the southern red bishop (*Euplectes orix*) that were utilising the area. The shallower inundated perimeter of the wetland was dominated by species that included *Juncus effusus* and *Fuirena hirsuta*. The outer -most margin of the wetland was characterised by *Nidorella ivifolia* which favours temporarily saturated soil conditions.

The wetland is located at a relatively high elevation relative to its immediate catchment area and is likely to be influenced primarily by surface water input as opposed to sub-surface inputs from the surrounding landscape. There was another depression wetland located further to the west – on the western-most boundary of the property. This depression is significantly deeper than the one to the east and has most likely been formed as a result of historical excavation of the site. The entire wetland has

been heavily invaded by alien invasive plant species, most notably *Acacia saligna* and *Acacia mearnsii*. The central more saturated zone of the wetland was characterised by dense beds of *T. capensis.*

Neither of these wetlands have been included in any national or provincial wetland or water resource databases. The area planned as an attenuation pond is confirmed as an old, relatively shallow quarry area (Figure 3) and, given its location at the base of the north-facing slope would serve as an ideal location for a stormwater attenuation pond.

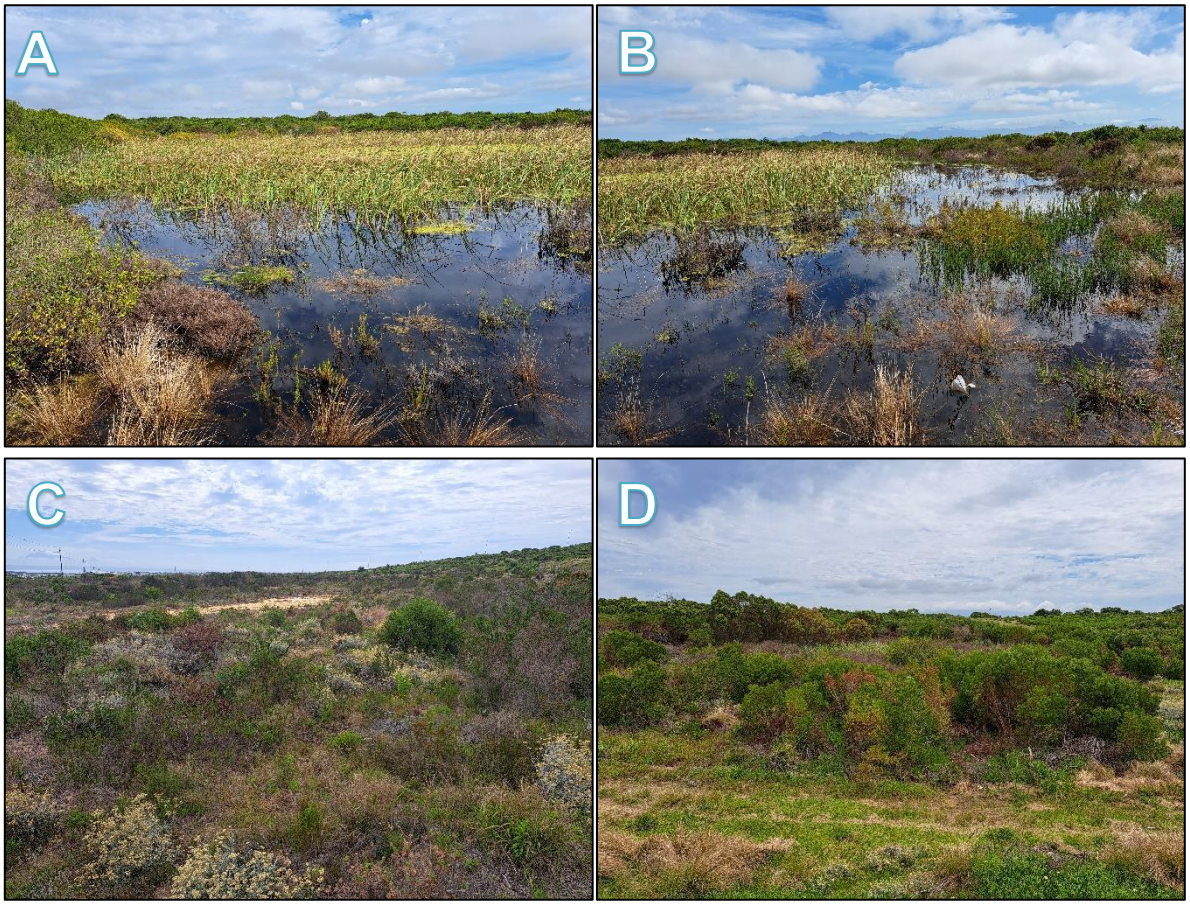


Figure 2: Photographs of the inundated eastern depression wetland (A and B), the quarry area that will be used as a stormwater attenuation pond (C) and the heavily invaded western depression wetland (D).

Figure 3: Aerial image of the proposed attenuation pond area indicating exposed soil and vegetated stockpiles of soil to the north and south of the exposed area.

2.3.1 Present Ecological State

Present Ecological State (PES) is a measure of aquatic ecosystem condition, compared to that of the system in its natural or "reference" condition. It is applicable only to natural systems, and not to artificial ones. Using the methodology outlined in Appendix A, the following ratings were accorded the wetlands classified in Section 2.3:

- Eastern Depression: **Largey Natural (B – 73 %) -** Minor impacts include stormwater input from Flora Road to the south, causing minor pollution and alteration of the natural hydroperiod due to increased surface flows.
- Western Depression: **Moderately Modified (C – 60 %) -** Heavily invaded by alien tree species and stormwater input from Flora Road to the south, causing minor pollution and alteration of the natural hydroperiod due to increased surface flows

2.3.2 Ecological Importance & Sensitivity

On the basis of the methodology outlined in Appendix B, the eastern wetland has been assessed as of **Moderate** ecosystem importance and sensitivity, representative of wetlands that:

- Contain small areas of habitat and species richness;
- Provide limited elements of habitat that has become fragmented by development (e.g. salt marsh, ephemeral pan; roosting sites and heronries);
- Are moderately sensitive to changes in hydrology, patterns of inundation, discharge rates and/or human disturbance;
- Perform a moderate degree of water quality enhancement, but are insensitive to sustained eutrophication and/or pollution;

The western wetland has been assessed as of **Low** ecosystem importance and sensitivity, representative of wetlands that:

- Contain large areas of coarse (e.g. reeds) wetland vegetation and invasive species with minimal floral and faunal diversity;
- Provide moderate to high levels of hydraulic buffering;
- Generally insensitive to nutrient loading and other pollution;
- Generally insensitive to changes in hydrology, patterns of inundation, discharge rates and/or human disturbance; and
- Contain large quantities of accumulated organic and inorganic sediments.

2.4 Anticipated Impacts

Main impacts associated with the originally approved layout will be associated with sedimentation due to clearance of vegetation and construction activities, increased stormwater runoff, and physical disturbance to wetland habitat (mainly during the construction phase – caused by vehicles, stockpiling of construction materials, construction of infrastructure in close proximity to the wetland etc.). Densification of the originally approved layout could lead to an increase in stormwater runoff (due to an increase in the surface area of paved and hardened surfaces). These impacts can however be largely avoided by establishing a suitable buffer width around the perimeter of the wetland.

Buffer zones are defined as a strip of land with a use, function or zoning specifically designed to act as barriers between human activities and sensitive water resources with the aim of protecting these water resources them from adverse negative impacts. Appropriate buffers were estimated based on buffer zone guidelines developed by Macfarlane and Bredin (2017). These guidelines estimate required buffer zone widths based on a combination of input parameters which include, inter alia, the nature of the activity and associated impacts, basic climatic and soil conditions and the implementation of appropriate mitigation measures. The characteristics of the immediate catchment area of the wetland and the soil and vegetation in the buffer that were used as input into the buffer tool and are summarised as follows:

- It was assumed that minimum basic mitigation measures will be implemented (see below).
- Mean Annual Precipitation Class: 600 - 800 mm.
- Rainfall Intensity: Zone 3 (High).
- The inherent runoff potential of soil in the catchment area is low (A/B soils).
- Average slope of the catchment contributing to the wetland is <10 %.
- Inherent erosion potential of the catchment soils is moderate (K factor 0.5 – 0.7).
- The slope of the buffer area is flat (< 2 %).
- Interception characteristics of the vegetation is considered to be ideal (i.e. robust vegetation is present with relatively high interception potential).

In addition to the implementation of the buffer, the following mitigation measures are recommended:

- The wetland and its associated buffer must be regarded as a No-Go area during the construction phase and no infrastructure must be constructed within this buffer or the wetland;
- Silt fences must be erected around the outside perimeter of each wetland;
- No stormwater from the development must be directed into the wetland or the buffer; and
- No stockpiling of materials or laydown areas are permitted within the buffer.

Based on these inputs, the buffer for the two depression wetlands (for both the construction and operational phase) is set to 15 m (Figure 4). Assuming the mitigation measures listed above will be implemented, and the buffer can be accommodated, it can be concluded that the new proposed layout is unlikely to result in any additional impacts to the wetland compared to the originally approved layout and that the ecological condition of the wetlands will not be further impacted upon.

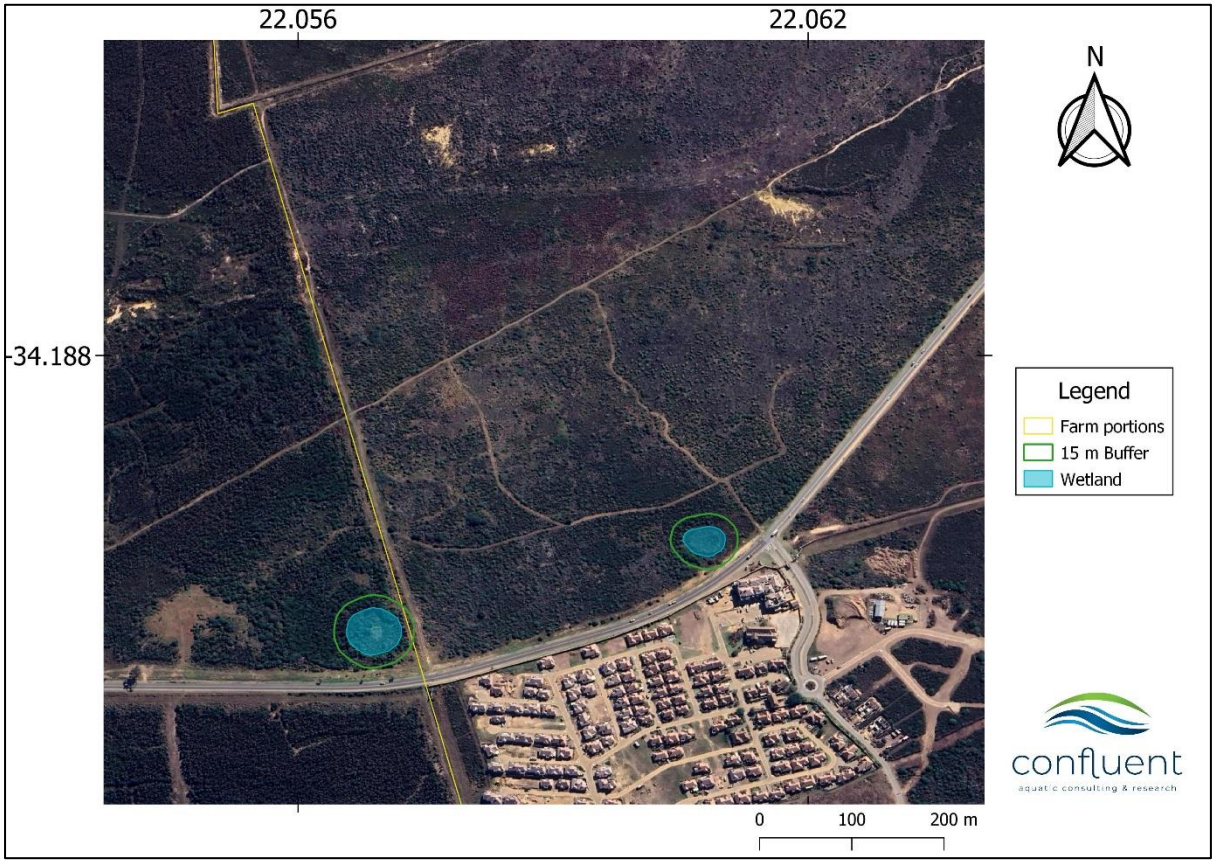


Figure 4: Map indicating the delineated wetlands and there recommended 15 m buffers.

2.5 DWS Risk Assessment

Risks of activities associated with the development to the adjacent wetlands were determined according to the risk assessment matrix developed as part of GN 4167 of 2023 (Section 21 (c) and (i) water use Risk Assessment Protocol) - Table 1. The first stage of the risk assessment is the identification of environmental activities, aspects and impacts. The intensity of impact to receptors and resources (i.e. hydrology, water quality, geomorphology, biota and vegetation) is rated (from 0 to 5, representing negligible and very high impact, respectively), which allows for an understanding of the impact pathway and an assessment of the sensitivity to change. Risks were then quantified based on the anticipated spatial scale, duration and likelihood of occurrence and assumed the full implementation of recommended mitigation measures described in Section 7.

Assuming the implementation of the recommended buffer and mitigation measures (as described in Section 2.4) for both the construction and operational phase, risks of activities to the wetlands are considered to be **Low** and the development would therefore require a General Authorisation.

Table 1: DWS Risk Assessment Matrix for activities associated with the Outeniqua Views development.

Phase	Activity	Impact	Potentially affected watercourses			Intensity of Impact on Resource Quality					Overall Intensity (max = 10)	Spatial scale (max = 5)	Duration (max = 5)	Severity (max = 20)	Importance rating (max = 5)	Consequence (max = 100)	Likelihood (Probability) of impact	Significance (max = 100)	Risk Rating (with mitigation)	Confidence level
						Abiotic Habitat (Drivers)			Biota (Responses)											
			Name/s	PES	Ecological Importance	Hydrology	Water Quality	Geomorph	Vegetation	Fauna										
PRE-CONSTRUCTION (DESIGN)	Site Development Plan	Loss of wetland habitat	Eastern Wetland	B	Moderate	2	2	0	0	0	**4**	1	5	**10**	**3**	**30**	40%	**12**	**L**	High
CONSTRUCTION	Clearing of vegetation for preparation of the site	Erosion and sedimentation of watercourses	Eastern Wetland	B	Moderate	1	2	1	2	2	**4**	1	2	**7**	**3**	**21**	40%	**8.4**	**L**	High
	Operation of construction vehicles and machinery	Physical disturbance of wetland habitat	Eastern Wetland	B	Moderate	0	0	0	0	0	**0**	1	2	**3**	**3**	**9**	20%	**1.8**	**L**	High
		Pollution of wetland habitat	Eastern Wetland	B	Moderate	0	1	0	0	1	**2**	1	2	**5**	**3**	**15**	40%	**6**	**L**	High
OPERATIONAL	Stormwater Discharge	Erosion of the bed and banks	Eastern Wetland	B	Moderate	2	2	0	2	2	**4**	1	5	**10**	**3**	**30**	40%	**12**	**L**	High

3. TERRESTRIAL PLANT SPECIES & BIODIVERSITY

3.1 Terrestrial biodiversity

3.1.1 Desktop level overview

The Terrestrial Biodiversity sensitivity according to the screening tool report is Very High. The reason given for the generated sensitivity includes the mapped Western Cape biodiversity spatial plan (BSP) layers. The BSP layers mapped here are terrestrial critical biodiversity areas (both CBA 1 & 2; Figure 5). Other than the BSP layer, the screening tool sensitivity is also triggered due to the presence of a mapped freshwater ecosystem priority area (FEPA) sub-catchment (discussed in the aquatic biodiversity section 5 of this report), and because the site is mapped as an endangered (EN) ecosystem, namely Hartenbos Dune Thicket (Figure 5). The Vlok vegetation map for the Erf 19741 highlights the area as "Heiderand Sandplain Fynbos", with several other vegetation communities mapped nearby (Figure 5). Already at a desktop level this may indicate that the habitats on the site are not uniform, i.e., it is likely the meeting place of several habitat types. Landscape heterogeneity adds to the biodiversity value of a site.

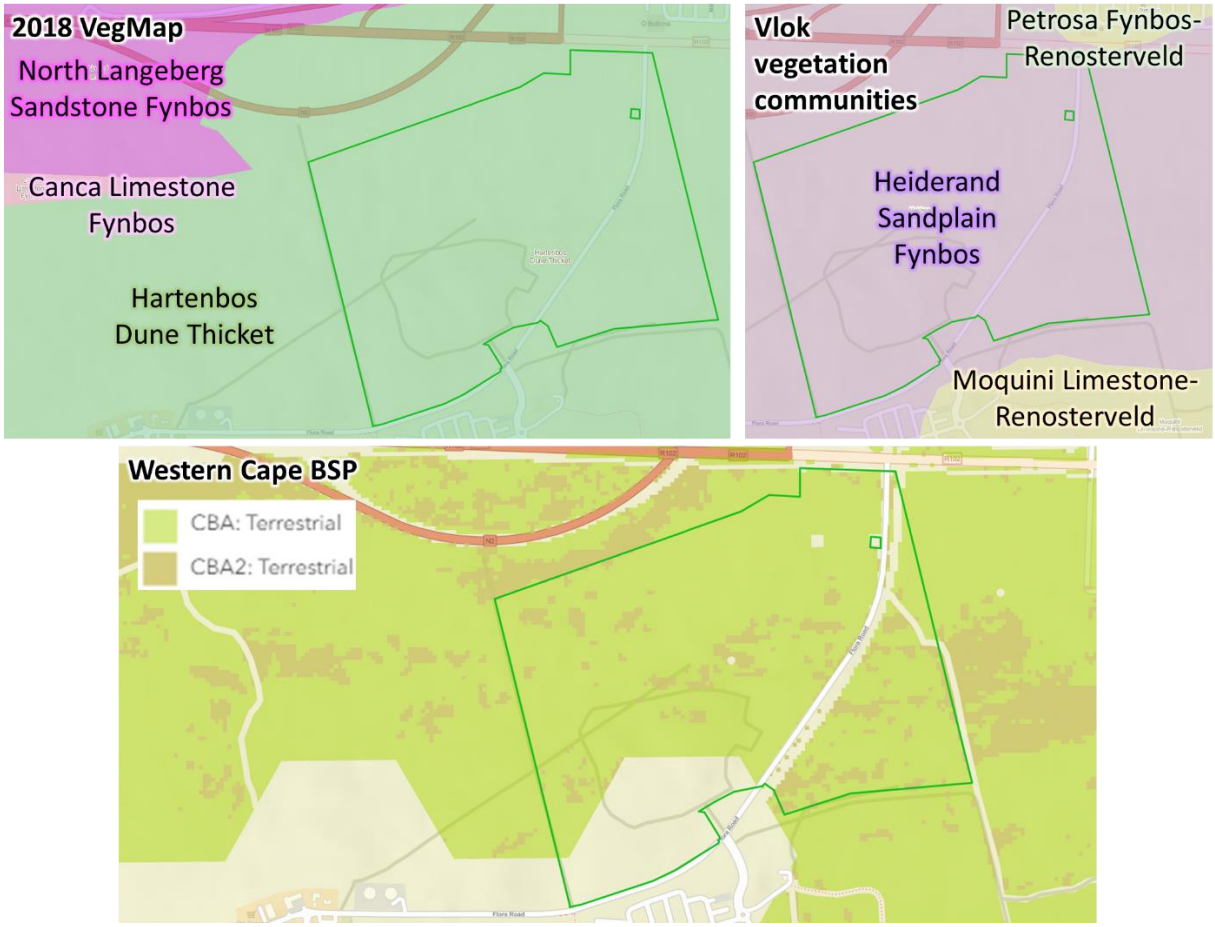


Figure 5: The left image is of the mapped vegetation type for Erf 19741 (i.e., EN Hartenbos Dune Thicket) according to the National vegetation map of 2018 and the right image illustrates the vegetation communities for the area according to the Vlok vegetation map. At the bottom the Western Cape BSP layers mapped on the Erf is illustrated.

3.1.2 Site inspection interpretation

A refined vegetation map for the Erf is provided in Figure 2. Most of the vegetation on the site contained some degree of invasion. The thicket north of the road is somewhat modified already, however most of the species found there are natural (Figure 6). *Opuntia ficus-indica* was observed in a small patch next to one of the dirt roads on the site. Relatively large sections for veld going into the "Partially invaded depression fynbos" contained spider gums (*Eucalyptus conferruminata*) that had recently been poisoned. The Partially invaded depression fynbos includes a wetland area (not delineated in Figure 6), which is reflected in the site development plans (SDPs) for the site, and which is mentioned in the aquatic sensitivity section of this report. The eastern section of the site south of Flora Road was not included the site assessment as this area is already planned as a conservation area on the site, which is appropriate. The unassessed invasion on the site is likely a combination of various woody invasive species.

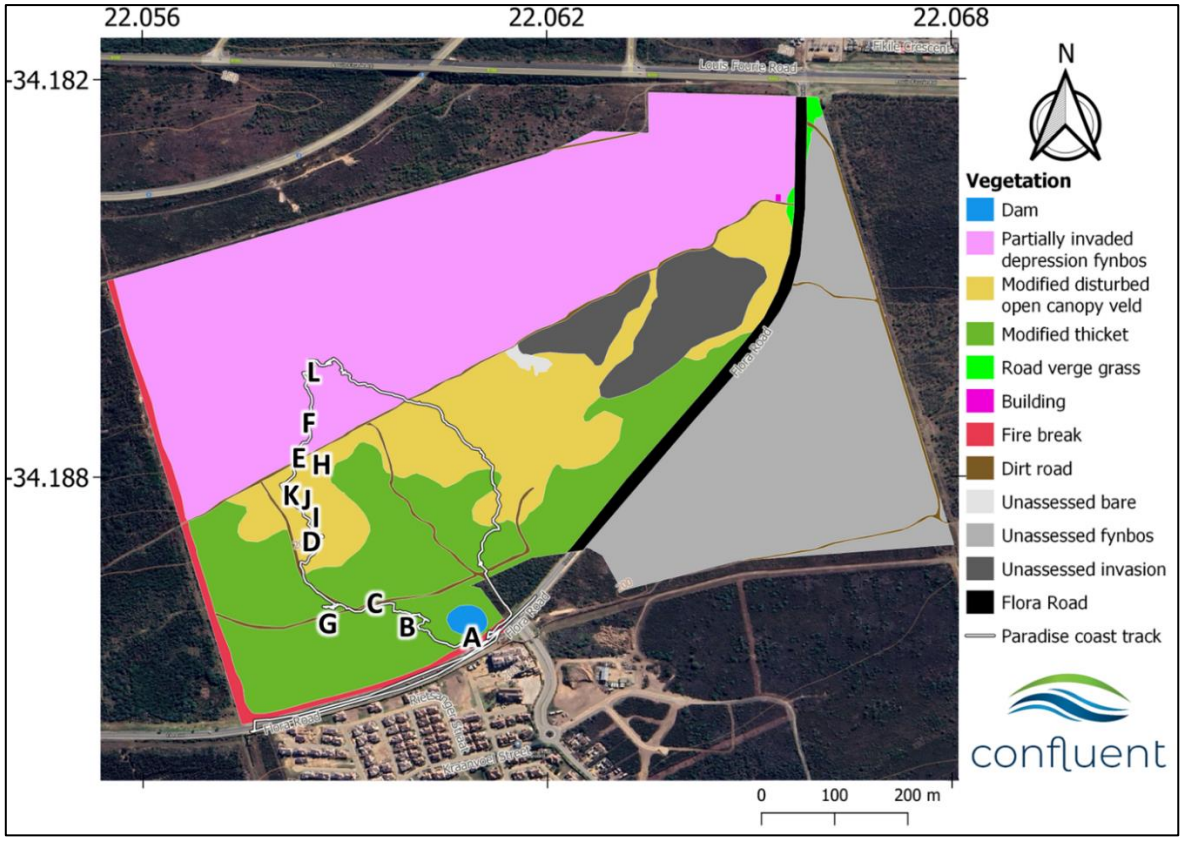


Figure 6: A map made of the vegetation on site following the site inspection. The letters correspond to the images that are presented in Figure 7.

Figure 7 represents a series of photographs taken to illustrate the vegetation that was observed during the site inspection on the 06th of November 2023. North of flora road a dam is visible on the site (Figure 7 A), and the sensitivity of this dam falls outside of the scope of the terrestrial flora & biodiversity discussion for the site (see the aquatic specialist findings in the section above). Surrounding this dam, a sizeable section of the site landscape is covered by a modified thicket, which is mostly closed canopy and full of ca. 2m tall bush forming woody species (e.g., *Searsia pallens*, *S. lucida*, *Diospyros dichrophylla*, *Grewia occidentalis*, *Osteospermum moniliferum* etc.; Figure 7 B). The gravel roads between the thicket on the site is currently covered in grass (Figure 7 C). Between some sections of thicket and further north over the site a modified open canopy habitat was observed. This open canopy vegetation was dominated in sections grasses, or *Helichrysum cymosum* and *H. patulum*, or in other parts by *Hermannia lavandulifolia* (VU) and *H. holosericea* (these two species look very similar, however *H. holosericea* flowers are slightly smaller and do not have entire leaf margins like *H. lavandulifolia*; Figure 7 D).

Sadly, it seemed that the herbicide was sprayed over the foliage of entire spider gum bushes (perhaps through the application of a foliar spray herbicide like Confront, Garlon, or Triclon etc., however the author of this section is not certain of the herbicide that was used in this case) so that most other species growing between them were likely also poisoned (Figure 7 E). This method is visibly effective at killing everything within the application area, but invasion continues outside of the application area (Figure 7 F). **This is not an acceptable method of alien control on the site, especially given that sensitive fynbos species are growing between and in close proximity to the invasive spider gums. Foliar spray methods are not suitable in the context of the sensitivity of the site and the flora and fauna that grow and live here**.

While it is nice to see an attempt at invasive alien plant clearing being undertaken on the site, there are still large sections on the site where spider gums and other invasive plant species are encroaching on the various habitats on the site (Figure 7 G-K). Rather than applying a foliar spray to spider gums, a more targeted approach must be followed, such as locally applying herbicide following bark frilling (larger trees) or cut stump treatments. The recommended cut stump application herbicide for spider gums is Lumberjack or Timbrel (according to Dr. Debbie Muir's herbicide spreadsheet, accessible from https://invasives.org.za/herbicides/), both of which contain Triclopyr as the active chemical. Appropriate research and planning must also be done before clearing other invasive species on the site, and an invasive plant species control program must be made for the site going ahead as part of the Environmental Management Programme (EMPr) for the site. Beyond the spider gums sections of near natural fynbos was observed (Figure 7 L). In the fynbos, *Leucospermum praecox* (VU) was a common species.

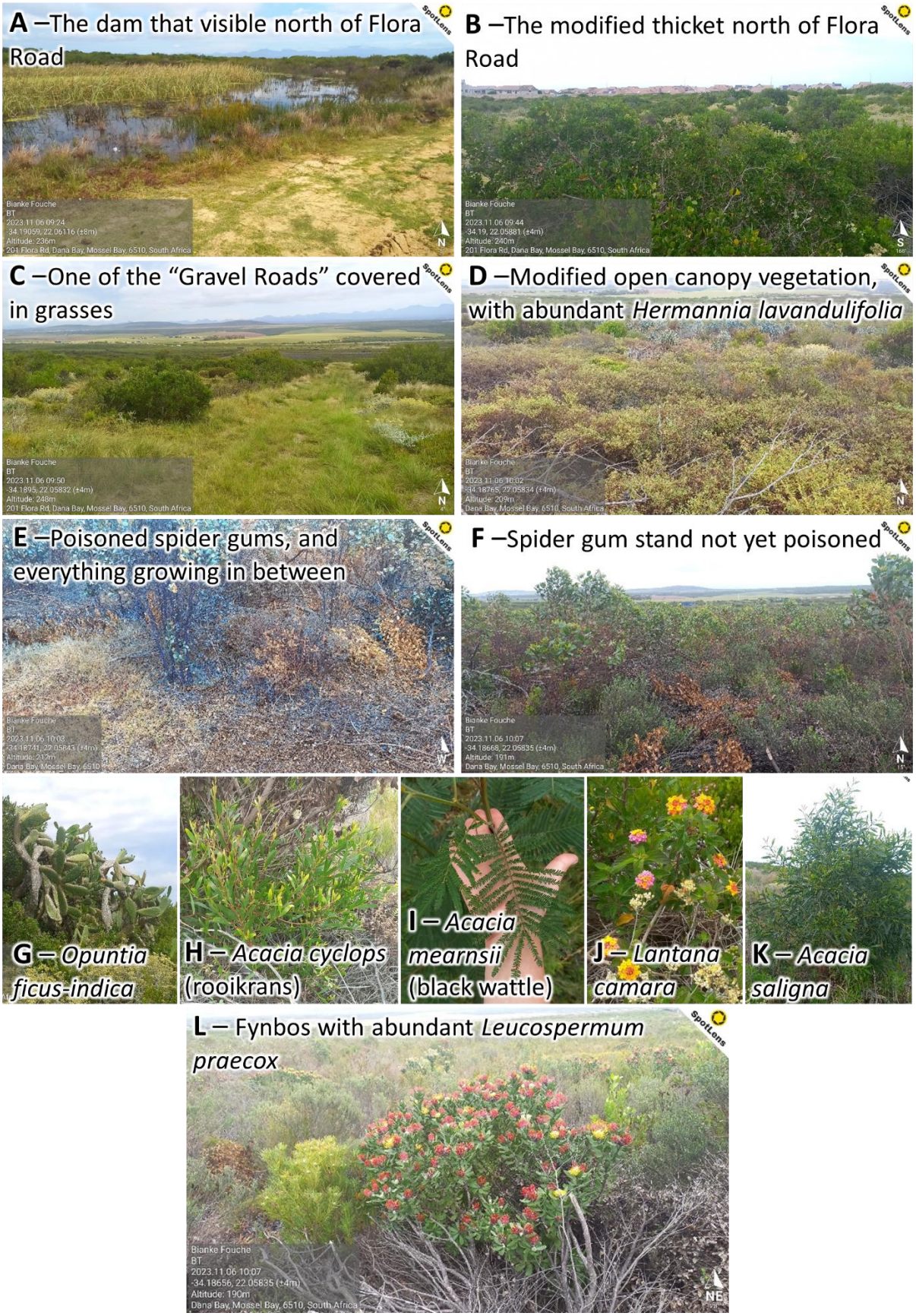


Figure 7: Images of the vegetation as observed during the site assessment on the 06th of November 2023.

3.2 Terrestrial Plant Species

The plant species theme sensitivity according to the screening tool report for the proposed area surrounding the fence-line is Medium. The threatened plant species that may potentially occur here according to the screening tool report are listed in Table 2 (blue entries were found along the proposed fence-line and nearby vegetation).

Table 2: List of plant species generated by the screening tool. Blue entries represent species that were observed during the site assessment.

Sensitivity	Feature(s)
High	Leucospermum praecox
Low	Low Sensitivity
Medium	Lampranthus ceriseus
Medium	Lampranthus diutinus
Medium	Lampranthus fergusoniae
Medium	Lampranthus foliosus
Medium	Lampranthus pauciflorus
Medium	Ruschia leptocalyx
Medium	Argyrolobium harmsianum
Medium	Aspalathus campestris
Medium	Aspalathus obtusifolia
Medium	Lebeckia gracilis
Medium	Leucadendron galpinii
Medium	Leucospermum muirii
Medium	Wahlenbergia polyantha
Medium	Selago glandulosa
Medium	Selago villicaulis
Medium	Erica unicolor subsp. mutica
Medium	Hermannia lavandulifolia
Medium	Sensitive species 153
Medium	Sensitive species 268
Medium	Thamnochortus muirii
Medium	Sensitive species 1024
Medium	Athanasia cochlearifolia
Medium	Agathosma eriantha
Medium	Agathosma muirii
Medium	Agathosma riversdalensis
Medium	Euchaetis albertiniana
Medium	Muraltia cliffortiifolia
Medium	Muraltia knysnaensis
Medium	Polygala pubiflora
Medium	Nanobubon hypogaeum
Medium	Sensitive species 516
Medium	Drosanthemum lavisii
Medium	Sensitive species 800
Medium	Sensitive species 500
Medium	Sensitive species 654
Medium	Agathosma microcarpa

- *Leucospermum praecox* is a stunning conebush species that occurs over large section of the site that is fynbos (it is not present in the modified thicket vegetation; however it is hard to know if the modified vegetation on the site was always thicket, or it that is the result of a long-term anthropogenically altered landscape). On the SANBI Red List it is Vulnerable A2c+3c+4c (Figure 8 A). The proposed development will not affect the majority of the sub-populations of this species growing on the Erf, however where it does a permit for their relocation to areas outside of the project area of influence (PAOI) that have been cleared of aliens prior to construction will be required.
- *Lampranthus pauciflorus* was observed in the modified thicket vegetation on the site and is listed as Endangered B1ab(ii,iii,iv,v) according to the SANBI Red List of South African Plants, however it is relatively abundant in the general wider area around the proposed development site (Figure 8 B). Luckily these succulent species do very well if they need to be transplanted. Transplanting these succulents (with the relevant permit from CapeNature) to areas outside of the PAOI that have been cleared of aliens is required prior to construction on the site.
- *Hermannia lavandulifolia* is listed as Vulnerable A2c, however this species has been found on several sites to thrive and dominate in modified and disturbed areas. This observation held true on this site (Figure 8 C). Transplanting some of these plants, together with some LC species into areas outside of the PAOI into areas that have been cleared of invasive alien species is recommended.
- In addition to the three confirmed species of conservation concern (SCC) from the screening tool report, past observations in the "Unassessed fynbos" included *Erica dispar* (observed by Jenny Potgieter on iNaturalist) which according to SANBI is listed as Near Threatened B1ab(ii,iii,iv,v)+2ab(ii,iii,iv,v) (Figure 8 D). No development will occur in the area where this species has been observed.

Due to the rapid site assessment on the 06th of November, it is highly likely that more SCC are present on the site, and that SCC were missed on the site. Any additional SCC, or suitable LC species that can be used to aid in the recovery of fynbos outside of the PAOI must be included in a rescue plan and must be prepared for rehabilitation transplanting outside of the PAOI.

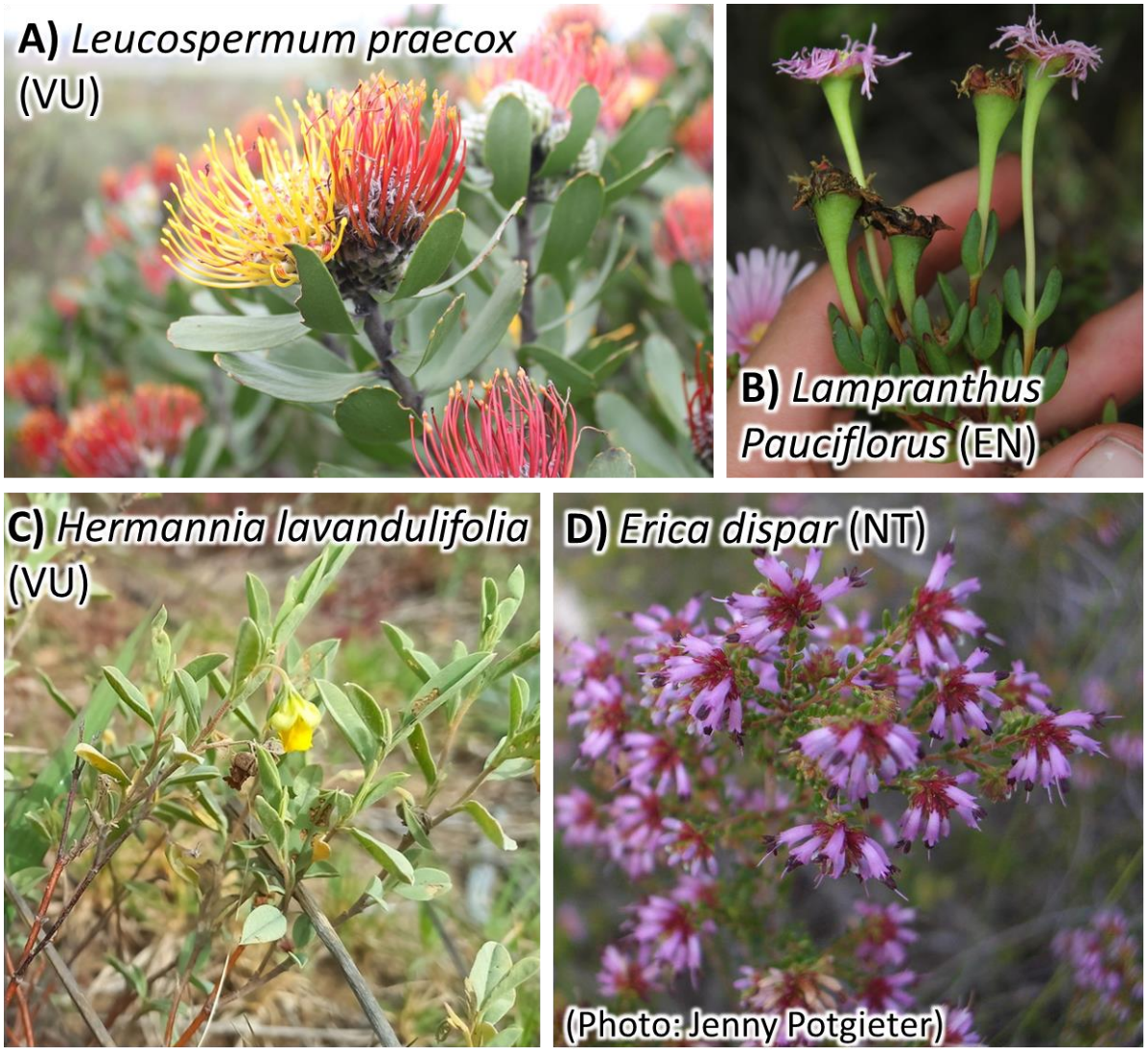


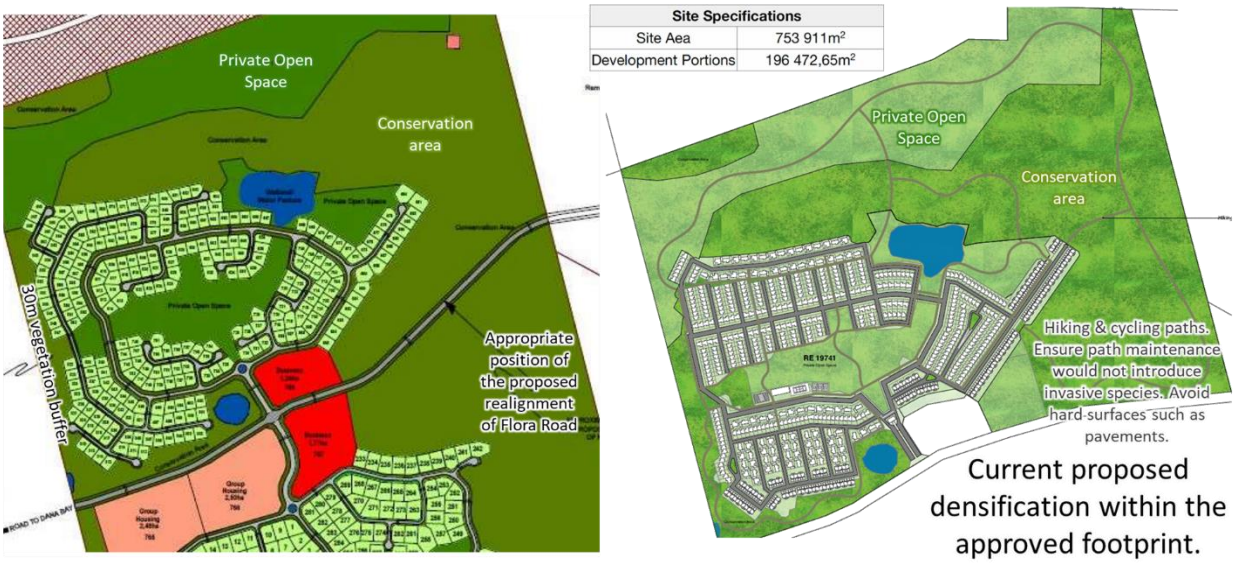
Figure 8: Photos of the four species of conservation concern that are confirmed in different areas on the site (see iNaturalist).

3.3 Site development plan comparison

The densification proposed on Erf 19741 is very similar to the original site development plan (SDP). However, closer inspection reveals that there are clear differences between the two. While the author of this section of the report is not an architect, some general recommendations are made in Figure 9 from the point of view of a terrestrial plant ecology principles. A section of the existing road that will run within the private open space area will be removed and rehabilitated, as stated in the current approval. Overall, the current proposed layout will not change the anticipated impacts on the site in a significant way, as long as the home-owners association (HOA) ensures that the following recommendations are implemented:

- No illegal dumping takes place in the public open space and conservation areas,

- Paths must be well maintained and deviation off these paths must be prohibited so as to avoid unnecessary disturbance to vegetation,
- Homeowners must plant indigenous species sourced locally (not “frankenflora” like some protea cultivars, or other exotic and invasive plants),
- Plant poaching incidents must be reported and residents must be informed that plant poaching is illegal.



Originally approved footprint for development as per Appeal record of decision (ROD).

Several studies have linked higher human population density to negative changes in biodiversity and increased invasion by invasive plant species (Krester et al. 2008; Luck 2007; Hansen et al. 2005; Rojas et al 2022). However, given the large open and conservation spaces, the effect of densification here is not significantly greater than the original layout plan.

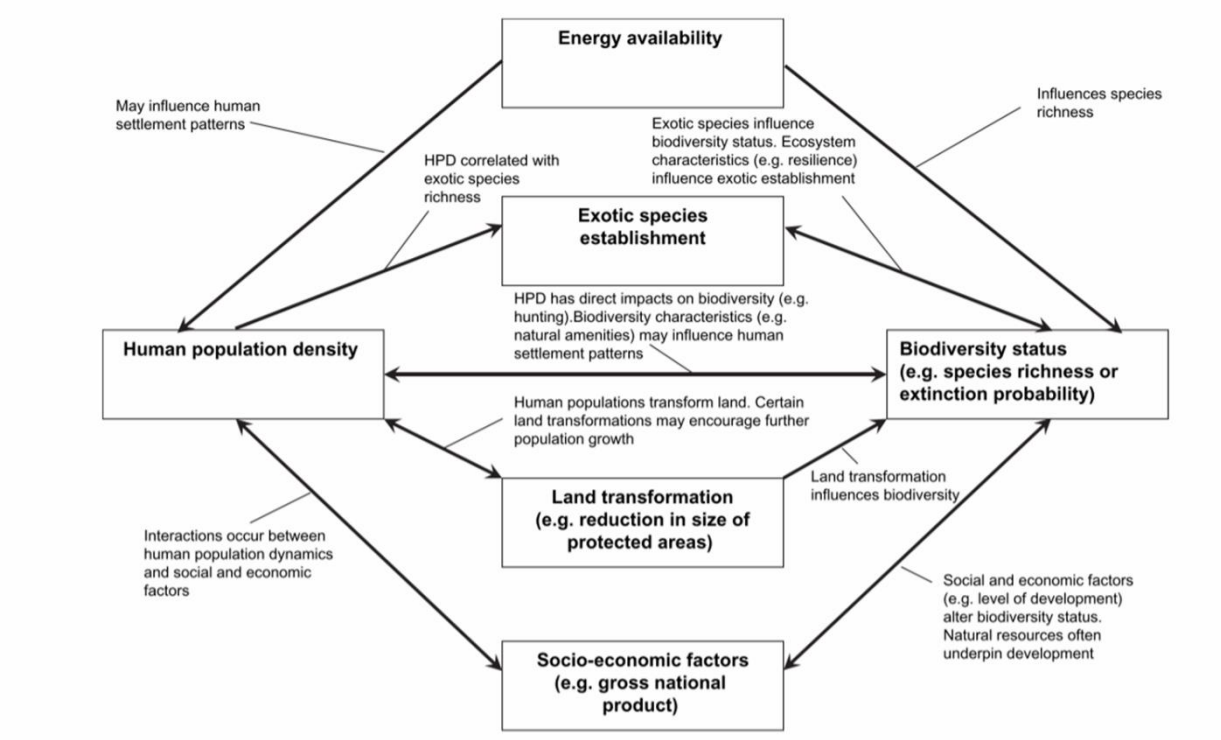


Figure 9: An illustration of the old and new site development plans (SDPs) with a diagram at the bottom illustrating the effects of human population density (HPD) on biodiversity (Luck, 2007). Some minor recommendations are proposed to avoid additional unnecessary impacts near sensitive habitats.

4. FAUNA

The Animal Species Theme screening tool report for the site indicated a medium to high sensitivity for 11 species, of which five are avifaunal species, three are insects and two are mammals. In addition, two mammal species have been listed (Species 5 and 8, respectively). Habitat availability and quality largely influences the likelihood of occurrence of animal species and in this respect, as per Section 3 and the site visit conducted on the 6th of November, the vegetation on site was dominated by a mixture of thicket and open veld to the south and partially invaded fynbos to the north (see Figure 6 above).

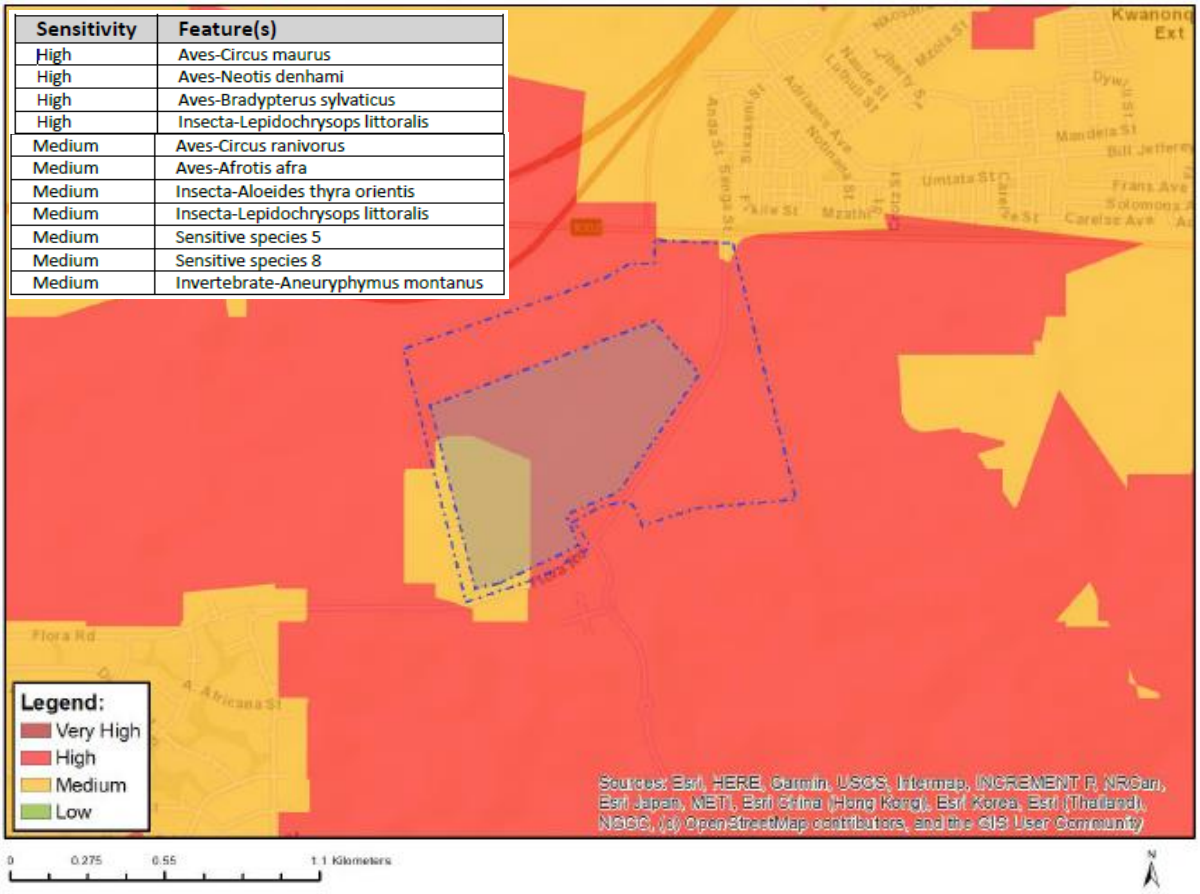


Figure 11: The animal species theme sensitivity map as generated via the screening tool.

4.1 Site Visit

None of the SCC included in Table 2 were observed during the site visit. *Circus maurus* has a preference for fynbos habitat and has a moderate likelihood of utilising the site for foraging. According to Curtis et al. (2004) almost no nests of this species occur in transformed lowland landscapes and the species is therefore unlikely to breed on the property. Other avifaunal SCC that could possibly occur include *Afrotus afra* and *Neotis denhami*, although the presence of the former is less likely due to fragmented habitat availability. *N. denhami* is known to utilise agricultural pasture areas and is more likely to occur due to better connectivity with suitable habitat in the surrounding landscape. *Bradypterus sylvaticus* and *Stephanoaetus coronatus* are not expected to occur due to unsuitable habitat availability throughout the development and conservation areas. A list of avifaunal species that were observed is included in Table 3. These species are all relatively common to the habitat that is available on site. The diversity of species is relatively low considering the extent of the area that was searched.

Table 3: Likelihood of occurrence of faunal SCC generated via the screening tool.

Common Name	Scientific Name	Likelihood of Occurrence
Southern Black Korhaan	*Afrotus afra*	Not observed or heard during site visit but suitable habitat is available. Fragmentation of habitat by built up areas, large roads and agriculture will reduce likelihood of occurrence. Moderate likelihood of occurrence.
Black Harrier	*Circus maurus*	Natural habitat range has been highly fragmented by development and agriculture. Has a preference for fynbos habitat and has a moderate likelihood of utilising the site for foraging.
African Marsh Harrier	*Circus ranivorus*	Most often associated with wetland areas and marshes and adjacent grassland habitat. May occur, but unlikely to rely heavily on the site for breeding or feeding
Denhams Bustard	*Neotis denhami*	Not observed or heard during site visit but suitable habitat is available. Frequently encountered in transformed agricultural pastures. Moderate likelihood of occurrence.
Knysna Warbler	*Bradypterus sylvaticus*	Prefers densely vegetated thickets and drainage lines. Unlikely to occur.
Crowned Eagle	*Stephanoaetus coronatus*	Prefers dense forest and woodland - unlikely to occur (unsuitable habitat).
Red Copper (Butterfly)	*Aloeides thyra orientis*	Preference for limestone fynbos – unlikely to occur.
Coastal Blue (Butterfly)	*Lepidochrysops littoralis*	Preference for Albertina sandstone fynbos – unlikely to occur.
Yellow-winged Agile Grasshopper	*Aneuryphymus montanus*	Favours fynbos vegetation – moderate likelihood of occurrence.
Sensitive Species 5		While opportunistic individuals of this species may it is highly unlikely that this species would be dependent on the site for breeding or foraging.
Sensitive Species 8		Prefer forested and wooded habitats, including primary and secondary forests, gallery forests, dry forest patches, coastal scrub farmland and regenerating forest (including alien invaded forest). Unlikely to occur due to lack of this habitat type throughout the site.

Table 4: List of avifaunal species observed on site.

Common Name	***Scientific Name***
Southern Red Bishop	*Euplectes orix*
Cape Robin-Chat	*Cossypha caffra*
Red-knobbed Coot	*Fulica cristata*
Red-faced Mousebird	*Urocolius indicus*
Common Starling	*Sturnus vulgaris*
Cape White-eye	*Zosterops virens*
Bar-throated Apalis	*Apalis thoracica*
Speckled Mousebird	*Colius striatus*
Cape Grassbird	*Sphenoeacus afer*
Yellow Canary	*Crithagra flaviventris*
Southern Fiscal	*Lanius collaris*
Neddicky	*Cisticola fulvicapilla*
Ring-necked Dove	*Streptopelia capicola*
Bokmakierie	*Telophorus zeylonus*
Karoo Scrub Robin	*Cercotrichas coryphoeus*
Cape Sugarbird	*Promerops cafer*
Karoo Prinia	*Prinia maculosa*
Cape Weaver	*Ploceus capensis*
Southern Tchagra	*Tchagra tchagra*
Fork-tailed Drongo	*Dicrurus adsimilis*

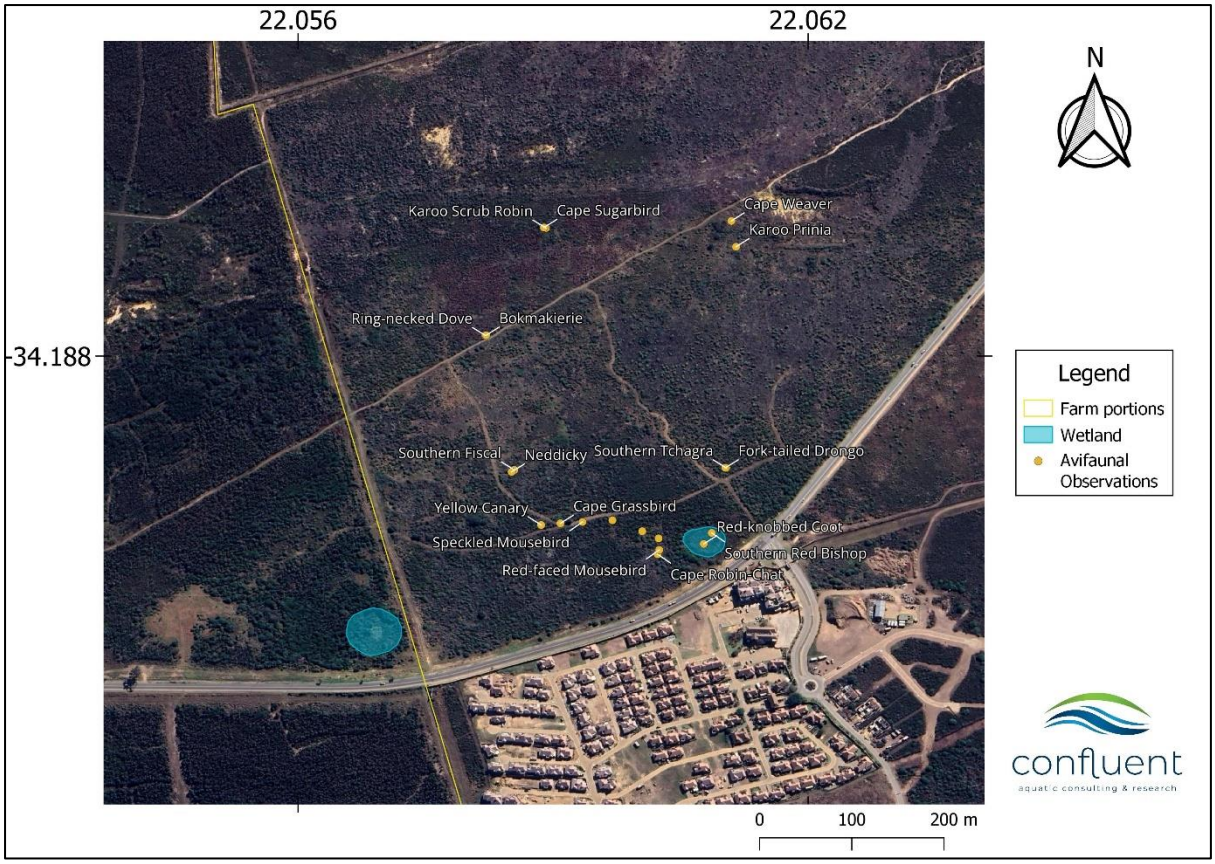


Figure 10: Location of avifaunal species observed during the site visit (many species were observed on more than one location within the property – the map refers to the first location the species was observed at).

Neither of the mammal species are expected to occur on the area ear-marked for development (Table 2). In terms of insects, the original butterfly assessment conducted by Edge (2006) found suitable habitat for *Aloeides thyra orientis* (limestone fynbos) and *Lepidochrysops littoralis* (transitional Albertina sandplain fynbos) in part of the Paradise Coast development area to the south Flora Road. Neither of these vegetation types occur in the Outeniqua Views development area and their likelihood of occurrence is therefore considered to be low.

4.2 Anticipated Impacts

The main impact affecting animal species listed in Table 2 is loss of habitat. The original approved layout consists of large private open space and conservation areas. Additional impacts to these areas are therefore the most crucial with respect to determining whether the new proposed layout will have any additional impact over the original layout. The surface areas of these areas will however remain unchanged and it therefore follows that the new proposed layout is unlikely to result in any additional impacts to SCC that may utilise these areas in the future. Further rehabilitation of the fynbos areas (i.e. removal of alien invasive species) and continued maintenance and management of the conservation areas is considered to be a more important factor with respect to mitigating the impact of the development on SCC. In this respect the recommendations made in Section 3 of this report must be implemented.

While vehicle traffic is expected to increase as a result of the densification, this activity will be concentrated within the built-up area and is not anticipated to result in any measurable increased impact in the open space and conservation areas. Densification will most likely result in increased recreational

traffic (e.g. walking, jogging and cycling) within the open space and conservation areas, however this is not expected to have any increased measurable impact on SCC that utilise the area. Education of residents with respect to the natural attributes and species is encouraged as this is likely to result in greater respect and care for the environment.

Given the proximity of the development to conservation areas the following measures must however be implemented:

- Traffic calming measures must be imposed and enforced, particularly along roads immediately adjacent to the conservation areas. This will help not only in terms of avoiding collisions with animal species but will also reduce the traffic noise and general disturbance.
- Adequate waste disposal facilities must be to cater for the increased numbers of people on site (in both the residential and recreational areas).
- Dumping of waste (including garden refuse) into open space and conservation areas must be strictly prohibited.

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APPENDIX A: PRESENT ECOLOGICAL STATE (PES) PROTOCOL FOR WETLANDS

Wetland condition was assessed using the desk-top Present Ecological State (PES) methodology, adapted from DWAF (1999). The methodology is based on a comparison of current attributes of the wetland, which are scored against those of a desired baseline or reference condition, resulting in the assignment of a wetland to one of six PES categories, as defined in DWAF (1999) and described in Table 5. The methodology is applicable to natural wetlands only.

Table 5: Wetland Present Ecological State categories and impact descriptions.

Ecological Category	Description	Impact Score
A	Unmodified, natural.	4 – 5
B	Largely natural with few modifications / in good health. A small change in natural habitats and biota may have taken place but the ecosystem functions are still predominantly unchanged.	3 – 4
C	Moderately modified / fair condition. Loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged.	2 – 3
D	Largely modified / poor condition. A large loss of natural habitat, biota and basic ecosystem functions has occurred.	1 – 2
E	Seriously modified / very poor condition. The loss of natural habitat, biota and basic ecosystem functions is extensive.	0 - 1
F	Critically modified / totally transformed. Modifications have reached a critical level and the lotic system has been modified completely with an almost complete loss of natural habitat and biota.	0

APPENDIX B: ECOLOGICAL IMPORTANCE AND SENSITIVITY (EIS) PROTOCOL FOR WETLANDS

The ecological importance of a river is an expression of its importance to the maintenance of ecological diversity and functioning on local and wider scales. Ecological sensitivity refers to the system's ability to resist disturbance and its capability to recover from disturbance once it has occurred (resilience) (Resh et al. 1988; Milner 1994). Both abiotic and biotic components of the system are taken into consideration in the assessment of ecological importance and sensitivity.

The ecological importance and sensitivity (EIS) of the northern and southern tributaries were assessed using a method developed by Kleynhans (1999). In summary, several biological and aquatic habitat determinants are assigned a score ranging from 1 (low importance or sensitivity) to 4 (high importance or sensitivity). These determinants include the following:

- **Biodiversity support:**
    - Presence of Red Data species;
    - Presence of unique instream and riparian biota;
    - Use of the ecosystem for migration, breeding or feeding.
- **Importance in the larger landscape:**
    - Protection status of the wetland;
    - Protection status of the vegetation type;
    - Regional context regarding ecological integrity;
    - Size and rarity of the wetland types present;
    - Diversity of habitat types within the wetland.
- **Sensitivity of the wetland:**
    - Sensitivity of wetland to changes in flooding regime;
    - Sensitivity of wetland to changes in low flow regime, and
    - Sensitivity to water quality changes.

The median value of the scores for all determinants is used to assign an EIS category according to Table 6.

Table 6: Ecological importance and sensitivity categories. Interpretation of average scores for biotic and habitat determinants.

Ecological Importance and Sensitivity Category (EIS)	Range of Median	Recommended Ecological Management Class
Very High: Representative of wetlands that: • support key populations of rare or endangered species; • have a high level of habitat and species richness; • have a high degree of taxonomic uniqueness and/or intolerant taxa; • provide unique habitat (e.g. salt marsh or ephemeral pan; physiognomic features, spawning or nursery environments); • is a crucial avifaunal migratory node (e.g. RAMSAR wetlands); • may provide hydraulic buffering and sediment retention for large to major rivers that originate largely outside of urban conurbations; • have groundwater recharge/discharge comprising a major component of the hydrological regime of the wetland; • are highly sensitive to changes in hydrology, patterns of inundation, discharge rates, water quality and/or disturbance; and • are of extreme importance for conservation, research or education.	>3 and <=4	A
High Representative of wetlands that: • support populations of rare or endangered species, or fragments of such populations that are present in other similar and geographically-adjacent wetlands; • contain areas of habitat and species richness; • contain elements of taxonomic uniqueness and/or intolerant taxa; • contain habitat suitable for specific species (e.g. physiognomic features); • provide unique habitat (e.g. salt marsh or ephemeral pan; spawning or nursery environments, heronries); • may provide hydraulic buffering and sediment retention for rivers that originate largely outside of urban conurbations, or within residential fringes of urban areas; • have groundwater recharge/discharge comprising a component of the hydrological regime of the wetland; • may be sensitive to changes in hydrology, patterns of inundation, discharge rates, water quality and/or human disturbance; and • are important for conservation, research, education or eco-tourism.	>2 and <=3	B
Moderate Representative of wetlands that: • contain small areas of habitat and species richness; • provide limited elements of habitat that has become fragmented by development (e.g. salt marsh, ephemeral pan; roosting sites and heronries); • provide hydraulic buffering for rivers that originate in urban areas; • are moderately sensitive to changes in hydrology, patterns of inundation, discharge rates and/or human disturbance; • perform a moderate degree of water quality enhancement, but are insensitive to sustained eutrophication and/or pollution; and • are of importance for active and passive recreational activities.	>1 and <=2	C
Low/marginal Representative of wetlands that: • contain large areas of coarse (reeds) wetland vegetation with minimal floral and faunal diversity; • have a high urban watershed:wetland area ratio; • are important for active and passive recreation; • provide moderate to high levels of hydraulic buffering; • may be eutrophic and generally insensitive to further nutrient loading; • are generally insensitive to changes in hydrology, patterns of inundation, discharge rates and/or human disturbance; • have regulated water; and	>0 and <=1	D

• contain large quantities of accumulated organic and inorganic sediments.		