Freshwater Assessment for the New Development on Portion 22 of Farm 82, Caledon.

FEBRUARY 2025

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Executive Summary

The client, Cropmax, has cleared approximately 1 hectare of indigenous vegetation on Portion 22 of Farm 82, Caledon, without obtaining an Environmental Authorisation. As a result, the client has been issued a Section 24G directive. The freshwater assessment was commissioned as input into the 24G process to evaluate the impact of the unauthorized clearing on any potential freshwater features present on-site. The objective of this report is to describe the previous and current ecological state of the freshwater features surrounding the development site and to assess any potential impacts on the surrounding freshwater ecosystem.

The property is located approximately 14 km southwest of Villiersdorp, just off the R321 in the Western Cape. The project area lies within the westernmost section of the Riviersonderend River Valley, with the Theewaterskloof Dam situated directly north to northwest of the site. The Wemmershoek Mountains are located further north. The property itself is positioned on a small hill, sloping slightly in a north-westerly direction. The site falls within Quaternary catchment H60B, which forms part of the larger Breede-Gouritz Water Management Area (WMA).

From the 2017 Western Cape Biodiversity Spatial Plan and NFEPA maps, the area affected by the activity falls over an aquatic critical biodiversity area (CBA1) as well as a terrestrial Critical Biodiversity Area 2: Degraded. From the NFEPA map, the larger catchment in which the development took place, lies within a Fish Support Area, with the large wetland falling on site, classified as East Coast Shale Renosterveld_Floodplain wetland (FEPA rank 2).

The freshwater features within the proposed study area were assessed using the *Classification System for Wetlands and Other Aquatic Ecosystems in South Africa* (Ollis et al., 2013). Additionally, the *Wetland Index of Habitat Integrity (IHI)* and *Ecological Importance and Sensitivity (EIS)* methods together with the *Ecosystem services* assessment were applied to evaluate the ecological condition, functional performance, and overall importance of the wetland. Based on these assessments, the *Recommended Ecological Class (REC)* were determined. These findings were also compared to that from the previous Freshwater assessment (2022).

According to the freshwater assessment, the wetland identified on-site was in an unmodified state prior to the new activity (based on the presumption that rehabilitation of the existing drainage channels would be completed) but has since degraded to a largely natural state. It retains moderate to high Ecological Importance and Sensitivity (EIS) and continues to provide high wetland function, primarily supporting the maintenance of biodiversity.

The area affected by the alleged unlawful activity is classified as an aquatic Critical Biodiversity Area (CBA1) and a terrestrial Critical Biodiversity Area 2: Degraded. According to the National Freshwater Ecosystem Priority Areas (NFEPA) map, the larger catchment in which the development took place, is located falls within a Fish Support Area, while the large wetland on-site is classified as an East Coast Shale Renosterveld Floodplain Wetland (FEPA rank 2).

The Recommended Ecological Category (REC) for the wetland is Class A, and a 50m buffer zone was determined using the Buffer Zone Tool for the Determination of Aquatic Impact Buffers (DWA, 2014).

In the initial wetland assessment, due to its pristine state at the time and its critically endangered status, it was concluded that no loss of wetland should be permitted. However, the newly cleared area has encroached approximately 34 meters into the proposed buffer zone, with drainage channels extending right up to the edge of the wetland.

The long-term impacts of these activities were assessed as having a **medium to very high negative impact** on a **local to regional scale**, with a **high probability of significant wetland loss** over time.

Mitigation measures proposed for the operational phase of the development would include the following:

Operational Phase

- The whole buffer zone should be completely rehabilitated and revegetated in order to prohibit any future loss of the pristine wetland area.
- Rehabilitation should take place in accordance with a formal rehabilitation plan, and be monitored regularly (as stipulated in this plan), to ensure proper re-establishment of vegetation and habitat.
- The 50m buffer zone should be applied to the wetland area for all future activities on the property.
- No drainage structures should be allowed within the 50m buffer zone. All existing drainage channels within this zone must be rehabilitated and revegetated. Rehabilitation should involve infilling the excavated areas with similar soils, ensuring no soil compaction occurs in the newly filled channels.
- New drainage channels should be located outside the 50m buffer zone and should preferably be designed as vegetated, shallower, and wider stormwater swales.
- A small, vegetated stormwater retention area should be created at the property's boundary to allow for infiltration and to prevent erosion and sedimentation towards the downstream wetland areas.

CONCLUSION

If all mitigation measures are adhered to, the impact of the proposed project will most likely be of **Long-term, Low negative impact on the wetland and possibly on the larger freshwater system as well**.

As the larger wetland area would be defined as a watercourse, any activity taking place within 500mm radius of a wetland should also apply for a Water Use Licence or General Authorisation.

DOCUMENT GUIDE

The table below provides the specialist report requirements for the assessment and reporting of impacts on aquatic biodiversity in terms of Government Notice 320 as promulgated in Government Gazette 43110 of 20 March 2020 in line with the Department of Environmental Affairs screening tool requirements, as it relates to the National Environmental Management Act, 1998 (Act No. 107 of 1998).

No.	Requirements	Section in report/Notes
2.1	Assessment must be undertaken by a suitably qualified SACNASP registered specialist	Declaration Of Independence – pg.6 and Appendix B.
2.2	Description of the preferred development site, including the following aspects-	
2.2.1	a. Aquatic ecosystem type b. Presence of aquatic species and composition of aquatic species communities, their habitat, distribution and movement patterns	Vegetation and Fauna: pg. 14 Aquatic Assessment: pg. 19 - 27
2.2.2	Threat status, according to the national web-based environmental screening tool of the species and ecosystems, including listed ecosystems as well as locally important habitat types identified	Conservational value: pg.16-17
2.2.3	National and Provincial priority status of the aquatic ecosystem (i.e. is this a wetland or river Freshwater Ecosystem Priority Area (FEPA), a FEPA sub-catchment, a Strategic Water Source Area (SWSA), a priority estuary, whether or not they are free-flowing rivers, wetland clusters, etc., a CBA or an ESA; including for all a description of the criteria for their given status	Conservational value: pg.16-17
2.2.4	A description of the Ecological Importance and Sensitivity of the aquatic ecosystem including: a. The description (spatially, if possible) of the ecosystem processes that operate in relation to the aquatic ecosystems on and immediately adjacent to the site (e.g. movement of surface and subsurface water, recharge, discharge, sediment transport, etc.); b. The historic ecological condition (reference) as well as Present Ecological State (PES) of rivers (in-stream, riparian and floodplain habitat), wetlands and/or estuaries in terms of possible changes to the channel, flow regime (surface and groundwater)	Conservational value: pg.16-17 Aquatic Assessment: pg. 19 - 27
2.3	Identify any alternative development footprints within the preferred development site which would be of a "low" sensitivity	Not applicable

	as identified by the national web-based environmental screening tool and verified through the Initial Site Sensitivity Verification	
2.4	Assessment of impacts – a detailed assessment of the potential impact(s) of the proposed development on the following very high sensitivity areas/ features:	Impact Assessment: pg. 30-32
2.4.1	Is the development consistent with maintaining the priority aquatic ecosystem in its current state and according to the stated goal?	Yes, if all mitigation measures are implemented.
2.4.2	Is the development consistent with maintaining the Resource Quality Objectives for the aquatic ecosystems present?	
2.4.3	How will the development impact on fixed and dynamic ecological processes that operate within or across the site, including: a. Impacts on hydrological functioning at a landscape level and across the site which can arise from changes to flood regime (e.g. suppression of floods, loss of flood attenuation capacity, unseasonal flooding or destruction of floodplain processes); b. Change in the sediment regime (e.g. sand movement, meandering river mouth/estuary, changing flooding or sedimentation patterns) of the aquatic ecosystem and its sub-catchment; c. The extent of the modification in relation to the overall aquatic ecosystem (i.e. at the source, upstream or downstream portion, in the temporary / seasonal / permanent zone of a wetland, in the riparian zone or within the channel of a watercourse, etc.) and d. Assessment of the risks associated with water use/s and related activities.	Impact Assessment: pg. 30-32
2.4.4	How will the development impact on the functionality of the aquatic feature including: a. Base flows (e.g. too little/too much water in terms of characteristics and requirements of system); b. Quantity of water including change in the hydrological regime or hydroperiod of the aquatic ecosystem (e.g. seasonal to temporary or permanent; impact of over abstraction or instream or off-stream impoundment of a wetland or river); c. Change in the hydrogeomorphic typing of the aquatic ecosystem (e.g. change from an unchanneled valley-bottom wetland to a channelled valley-bottom wetland); d. Quality of water (e.g. due to increased sediment load, contamination by chemical and/or organic effluent, and/or eutrophication); e. Fragmentation (e.g. road or pipeline crossing a wetland) and loss of ecological connectivity (lateral and longitudinal); and	Impact Assessment: pg. 30-32

	f. Loss or degradation of all or part of any unique or important features associated with or within the aquatic ecosystem (e.g. waterfalls, springs, oxbow lakes, meandering or braided channels, peat soil, etc).	
2.4.5	How will the development impact on key ecosystem regulating and supporting services especially Flood attenuation; Streamflow regulation; Sediment trapping; Phosphate assimilation; Nitrate assimilation; Toxicant assimilation; Erosion control; and Carbon storage.	Impact Assessment: pg. 30-32
2.4.6	How will the development impact community composition (numbers and density of species) and integrity (condition, viability, predator-prey ratios, dispersal rates, etc.) of the faunal and vegetation communities inhabiting the site?	Discussed under Aquatic Assessment: pg. 19 - 27 and Impact Assessment: pg. 30-31
2.4.7	In addition to the above, where applicable, impacts to the frequency of estuary mouth closure should be considered, in relation to: size of the estuary; availability of sediment; wave action in the mouth; protection of the mouth; beach slope; volume of mean annual runoff; and extent of saline intrusion (especially relevant to permanently open systems).	N/A
3.	The report must contain as a minimum the following information:	
3.1	Contact detail of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae.	Appendix B
3.2	A signed statement of independence by the specialist.	Declaration Of Independence – pg.6
3.3	A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment.	Aquatic Assessment: pg. 19 - 27
3.4	The methodology used to undertake the site inspection and the specialist assessment, including equipment and modelling used, where relevant.	Aquatic Assessment: pg. 19 - 27
3.5	A description of the assumptions made, any uncertainties or gaps in knowledge or data.	Pg. 7
3.6	The location of areas not suitable for development, which are to be avoided during construction and operation, where relevant.	Impact Assessment: pg. 30-32
3.7	Additional environmental impacts expected from the proposed development.	Impact Assessment: pg. 30-32
3.8	Any direct, indirect and cumulative impacts of the proposed development on site.	Summary of the expected impacts: pg. 32
3.9	The degree to which impacts and risks can be mitigated.	Summary of the expected impacts: pg. 32
3.10	The degree to which impacts and risks can be reversed.	Summary of the expected impacts: pg. 32
3.11	The degree to which the impacts and risks can cause loss of irreplaceable resources.	Summary of the expected impacts: pg. 32
3.12	A suitable construction and operational buffer for the aquatic ecosystem, using the accepted methodologies.	Aquatic Assessment: pg. 19 - 27

3.13	Proposed impact management actions and impact management outcomes for inclusion in the Environmental Management Programme (EMPr).	Impact Assessment: pg. 30-32
3.14	A motivation must be provided if there were development footprints identified as per paragraph 2.3 for reporting in terms of Section 24(5)(a) and (h) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) that were identified as having a "low" aquatic biodiversity and sensitivity and that were not considered appropriate.	None
3.15	A substantiated statement, based on the findings of the specialist assessment, regarding the acceptability or not of the proposed development and if the proposed development should receive approval or not.	Conclusion – pg.35
3.16	Any conditions to which this statement is subjected.	Included in mitigation measures set out under the Impact Assessment: pg. 30-32, and Risk Matrix – Appendix A.

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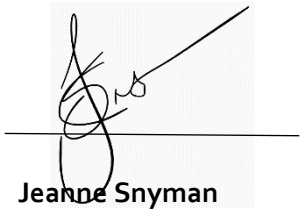
DECLARATION OF INDEPENDENCE

I, **Jeanne Snyman,** declare that -

- I am subcontracted as specialist consultant by PHS Consulting, for input in the 24G process for the alleged unlawful activities that took place on Portion 22 of Farm 82, Caledon.
- 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 National Environmental Management Act, 1998 (Act No. 107 of 1998), regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in Regulation 8;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



Jeanne Snyman

SACNASP Reg. No: 400091/17

Introduction

The client, Cropmax, has cleared approximately 1 hectare of indigenous vegetation on Portion 22 of Farm 82, Caledon, without obtaining an Environmental Authorisation. As a result, the client has been issued a Section 24G directive. This freshwater assessment was commissioned as input into the 24G process to evaluate the impact of the unauthorized clearing on any potential freshwater features present on-site. The objective of this report is to describe the previous and current ecological state of the freshwater features surrounding the proposed development site and to assess any potential impacts on the surrounding ecosystem.

Assumptions and limitations

Limitations and uncertainties often exist within the various techniques adopted to assess the condition of ecosystems. The following limitations apply to the techniques and methodology utilized to undertake this study:

- Analysis of the freshwater ecosystems was undertaken at a rapid level and did not involve detailed habitat and biota assessments (Ecosystem level III);
- The WET-health assessment was carried out using South African Department of Water and Sanitation developed methodologies. These assessments were carried out to provide information on the ecological condition and ecological importance and sensitivity of the river systems impacted;
- As the assessment was conducted at the end of the dry season, it could be possible that other seasonally wet areas were missed during the field assessment;
- Even though every care was taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time, and budget. Discussions and proposed mitigations are to some extent made on reasonable and informed assumptions built on *bona fide* information sources, as well as deductive reasoning. No biomonitoring or physical chemical aspects of the water found on the study was done.

Key Legislative Requirements

National Water Act (Act No. 36 of 1998)

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) allows for the protection of water resources, which includes:

- 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.

The NWA recognises that the entire ecosystem, and not just the water itself, and any given water resource constitutes the resource and as such needs to be conserved. No activity may therefore take place within a watercourse unless it is authorised by the DWS. For this project, a wetland area is defined according to the NWA (Act No. 36 of 1998): "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 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).

National Environmental Management Act (Act No. 107 of 1998)

The National Environmental Management Act (NEMA) (Act 107 of 1998) and the associated Regulations as amended in April 2017, state that prior to any development taking place within a wetland or riparian area, an environmental authorisation process needs to be followed. This could follow either the Basic Assessment Report (BAR) process or the Environmental Impact Assessment (EIA) process depending on the scale of the impact.

Background

Site location and regional description

The property is located approximately 14 km southwest of Villiersdorp, just off the R321 in the Western Cape. The project area lies within the westernmost section of the Riviersonderend River Valley, with the Theewaterskloof Dam situated directly north to northwest of the site. The Wemmershoek Mountains are located further north. The property itself is positioned on a small hill, sloping slightly in a north-westerly direction. The site falls within Quaternary catchment H60B, which forms part of the larger Breede-Gouritz Water Management Area (WMA).

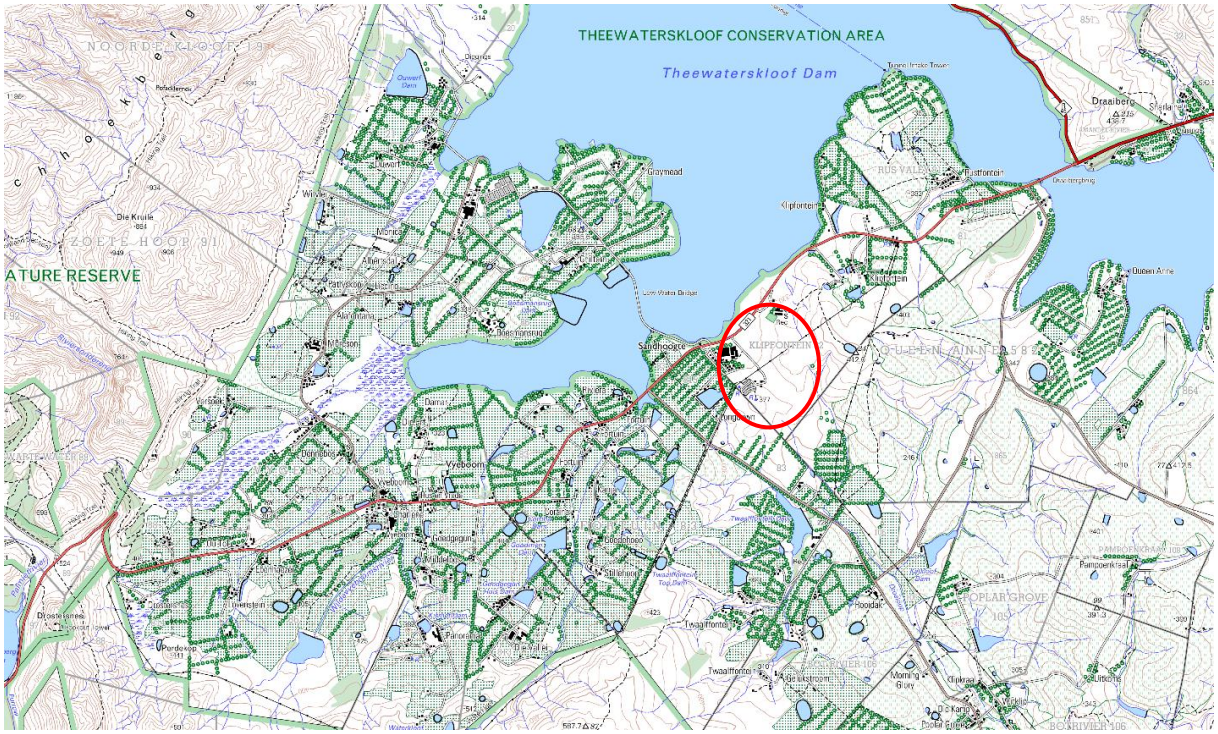


Figure 1: 1:50 000 Topographical map of the area with the location of the proposed development (3419AA)

Activity

An initial freshwater report was conducted for the client in June 2022 as part of the Environmental Impact Assessment (EIA) process. However, the client has since proceeded with clearing approximately 1 hectare of indigenous vegetation to establish a ±2,400m² platform for truck parking and fruit bin storage. The existing entrance road between this site and Idea Fruit was utilized, along with an additional entrance further east. Furthermore, two large drainage channels have been excavated over previously semi-rehabilitated drainage channels along the eastern and southern edges of the cleared area, currently actively draining the wetland. Since updated satellite imagery is not yet available, the approximate extent of the newly cleared area is illustrated in Figure 3, based on observations from the field assessment.

Figure 2: Proposed 2022 development area (orange polygon) in relation to the wetland area (as included in the 2022 report).

Figure 3: Approximate cleared area (orange polygon) and drainage channels (blue lines) in relation to the wetland area (green polygon) and previously proposed buffer line (red line).

Historical and current land use

Land use in the greater area consists primarily of agricultural use (vineyards and orchards), with the large Ideal Fruit Packing shed located directly west of the property. The closest urban development is Villiersdorp, lying 14km Northeast of the property, which is currently still vacant.

Google Earth's Timeline function was used as reference imagery (accessed June 2022) for historical land use as well as identification of any wet areas. Google Earth imagery from April 2004 is the earliest available clear footage covering the affected areas and was used together with a comparison from October 2009, January 2016 and April 2021 to look at historical land use and whether the site was extensively altered in the past or to detect large changes in the land use of the catchment. The maps are also used to identify areas where possible aquatic ecosystems occur or might have occurred.

When looking at these images, the land use on the property has for many years remained the same (mostly natural), with only small modifications made to the natural vegetation that occurs on the site. A large valley bottom wetland can be seen on all these images located from the middle of the property towards the southeast of the site, being connected with wet areas falling outside the property boundary as well. A large drainage channel, most probably in an attempt to drain the wetland area, was excavated in early 2017. This channel was rehabilitated between 2017 and the initial field visit in 2022. Rehabilitation of this channel was however never fully completed.

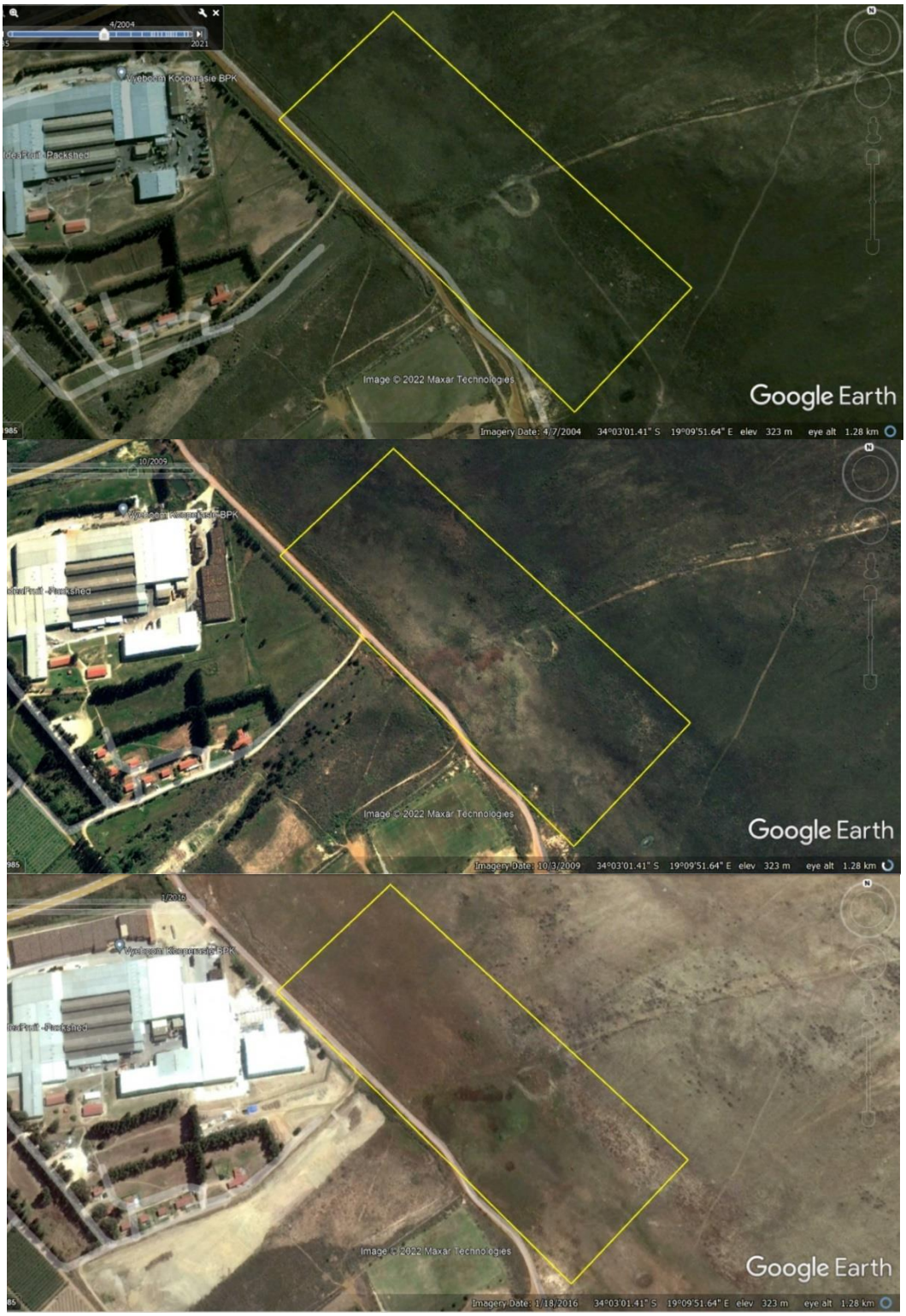


Figure 4: Google Earth imagery from 2004 (top) and 2009(middle) and 2016 (below) for the area affected by the proposed new development (Google Earth, 2022)

Figure 5: Google Earth imagery from 2021 for the area affected by the proposed new development (Google Earth, 2022)

Climatic conditions of the site

Vyeboom's climate would be the closest to that found on site and can be classified as warm and temperate. The area normally receives about 603mm of rain per year and because it receives most of its rainfall during winter, it has a Mediterranean climate. The chart below shows the average rainfall values for Vyeboom per month. It receives the lowest rainfall (20,7mm) in February and the highest (224.2mm) in June. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Vyeboom range from 17°C in July to 27°C in February. The region is the coldest during July when the mercury drops to 8°C on average during the night.

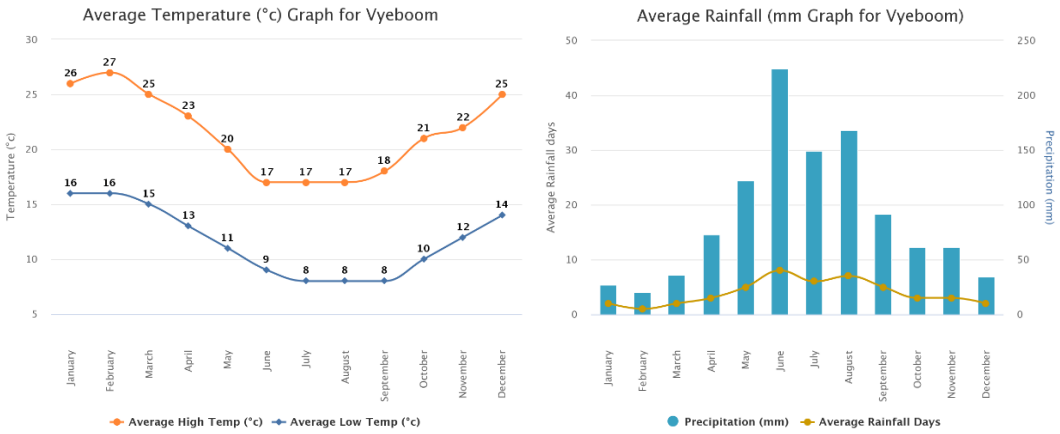


Figure 6: Climate graphs for the Vyeboom area (World weather online, 2022)

Vegetation and Fauna

The mapped natural vegetation type for the largest part of the property can broadly be classified as Elgin Shale Fynbos (FFh 6 – light pink area in Figure 7). This vegetation type is classified as a critically endangered vegetation and is generally found in the Elgin Basin east of Grabouw and Villiersdorp Basin around Vyeboom, with pockets to the north at the uppermost part of Stettynskloof, Kaaimansgat and Rooihoogte Pass, and at the Steenbras Dam to the west. Landscape features generally associated with this vegetation include undulating hills and moderately undulating plains and steep slopes of adjacent mountains. It usually includes an open to medium-dense tall proteoid shrubland over a matrix of moderately tall and dense evergreen shrubs, dominated by proteoid, asteraceous and closed-scrub fynbos, and ericaceous fynbos in the wetter facies. (Mucina & Rutherford 2006).

This vegetation type occupies most of the property. Although it was found to be largely in a natural state during the first field visit in 2022, approximately 20% of the property has been cleared, as noted above. Indigenous vegetation surrounding the wet areas on-site consists largely of bulrush (*Typha capensis*), *Agapanthus* species, arum lilies (*Zantedeschia aethiopica*), steekbos (*Cliffortia ruscifolia*), and various sedges, including knoppiesbiesie (*Ficinia indica*) and *Cyperus thunbergii*. Rushes such as spiny rush (*Juncus acutus*), restios including besemgoed (*Restio paniculatus*) and *Elegia nuda*, as well as African feather grass (*Pennisetum macrourum*), koffiepit (*Wachendorfia paniculata*), and suurkanol (*Watsonia* species) are also present.

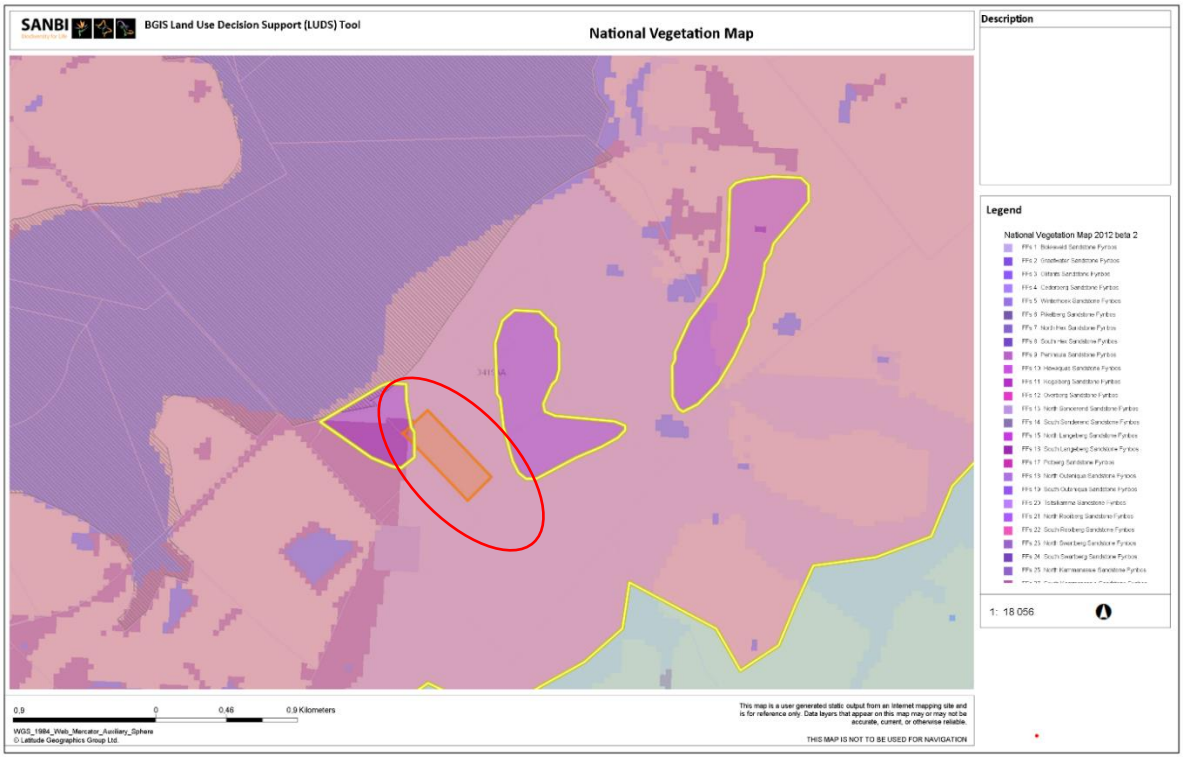


Figure 7: National vegetation map for the area (SANBI BGIS, 2022)

Figure 8: Vegetation around the upstream (top) and downstream (bottom) section of the wetland area during the 2022 visit.

Figure 9: The cleared area west of the wetland area during the 2025 visit.

Conservation Value

The 2017 Western Cape Biodiversity Spatial Plan (WCBSP) Map and the National Freshwater Ecosystem Priority Areas Map provide information regarding the conservation value and ecological importance of the freshwater features studied.

2017 Western Cape Biodiversity Spatial Plan (WCBSP)

From the 2017 Western Cape Biodiversity Spatial Plan (Figure 10) it is clear that a large wetland area indicated on site, is marked as an aquatic critical biodiversity area (CBA1) with the rest of the property marked as Critical Biodiversity Area 2: Degraded (terrestrial). Although the position of the wetland area is inaccurate, the CBA classification for the wetland itself would be considered valid. These areas are considered to be important on a national scale and required to meet biodiversity targets for ecosystems, species and ecological processes and should be maintained in a natural or near-natural state, with no further loss of natural habitat. Degraded areas should be rehabilitated and only low-impact, biodiversity-sensitive land uses are appropriate. The broader terrestrial CBA2 associated with the remainder of the vegetation, usually includes areas in a degraded or secondary condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure. Such areas are to be maintained in a natural or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated and only low-impact, biodiversity-sensitive land-uses are appropriate.

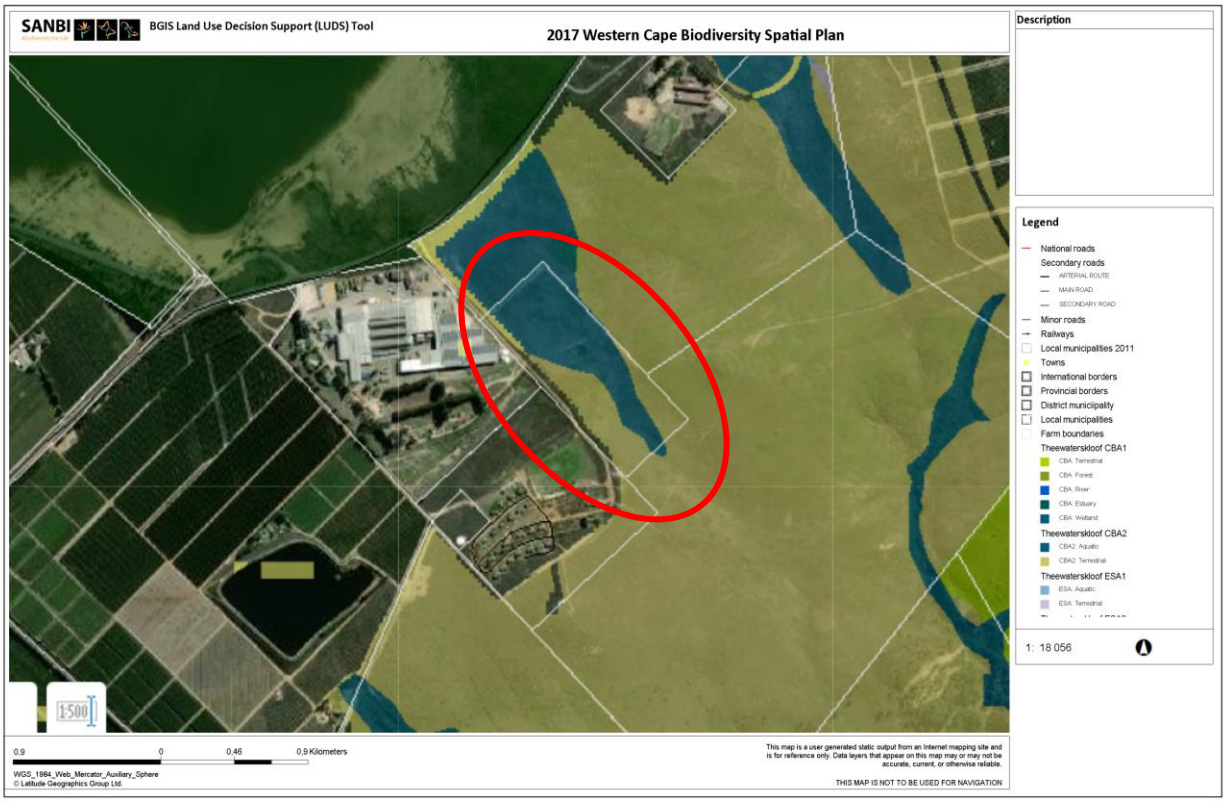


Figure 10: The 2017 Western Cape Biodiversity Spatial Plan for the area (SANBI GIS, 2022).

NFEPA map

FEPAs are strategic spatial priorities for conserving freshwater ecosystems and supporting sustainable use of water resources. From the NFEPA map (Figure 11), the larger catchment in which the development took place, lies within a Fish Support Area, with the large wetland falling on site, classified as East Coast Shale Renosterveld_Floodplain wetland (FEPA rank 2). Once again, the position of the wetland is slightly different from that stipulated on the map, but the FEPA status was nonetheless found valid.

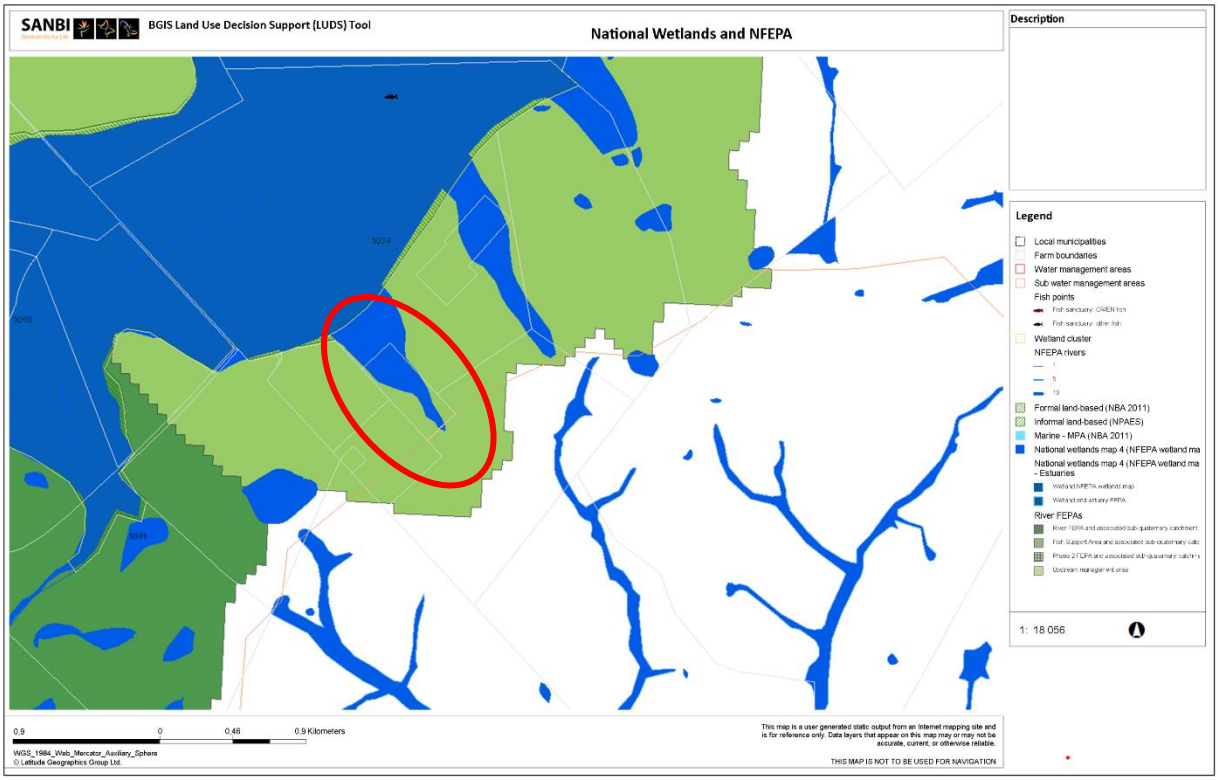


Figure 11: NFEPA map for the area (SANBI GIS, 2022).

Aquatic assessment

Aquatic System

The ecosystem and vegetation of the study area were assessed in their present state, as well as their likely pre-expanded and historical composition. The assessment is presented in the context of the area's freshwater systems, based on observations made at the end of the dry season before the onset of winter rains with the initial site visit conducted on 25 May 2022. The area was reassessed after the alleged unlawful activity in the middle of the dry season during a second site visit on 29 January 2025.

Freshwater features affected by the new development include a large valley-bottom wetland located on the property. To obtain a representative evaluation of the present ecological state of the affected wetland, a formal Habitat Integrity (Present Ecological State), Ecological Importance and Sensitivity (EIS) (EcoStatus Level III), as well as a Wetland Ecoservices assessment was conducted for the wetland area and compared to the findings of the 2022 study.

Figure 12: A satellite image indicating the affected freshwater features, marking the large wetland area (light green polygon) within the property boundary (yellow polygon).

Wetland:

A large valley-bottom wetland extends from the centre of the property toward the southeast. This wet area comprises a permanently saturated *Typha*-dominated zone, along with seasonally wet grassland areas.

Water inputs primarily originate from an upstream channel, where flow becomes dispersed, as well as from adjacent slopes and groundwater. Water movement through the wetland occurs mainly as diffuse surface flow and interflow, with temporary water retention in depressional areas. Under natural conditions, outflow primarily occurs through diffuse surface flow and infiltration.

The hydrodynamics of the wetland are predominantly characterized by horizontal, unidirectional diffuse surface flow.

Pre-activity impacts on the wetland included some drainage of water along the semi-rehabilitated existing channels. With the new development, two larger drainage channels have been excavated over these channels, east and south of the cleared area, currently leading to more aggressive channelled outflow of the wetland, which will in time lead to desiccation of large parts of the area.

Geomorphological and Physical Classification of the Wetland

The National Wetland Classification System for South Africa's Hydrogeomorphic (HGM) approach to wetland classification is used for this study and uses hydrological and geomorphological characteristics to distinguish primary wetland units.

The term "wetland" includes specific ecosystems such as bogs, coastal lakes, estuaries, fens, floodplains, mangroves, marshes, mires, moors, pans, peatlands, seeps, sloughs, springs, swamps, vlei and wet meadows (Mays, 1996; DWAF, 2005). Each of these types of wet areas reflects the driving force of all wetlands, which is the interplay between land and water and the consequent characteristics that reflect both (Cowan, 1999). Any part of the landscape where water accumulates for long enough and often enough to influence the plants, animals and soils occurring in that area, is referred to as a wetland (DWAF, 2005). According to the National Water Act (NWA) (Act 36 of 1998), a wetland is defined 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."

The HGM classification for the valley bottom wetland found on site is summarized in Table 1.

TABLE 1. GEOMORPHOLOGICAL AND PHYSICAL FEATURES OF THE VALLEY BOTTOM WETLAND

DWA catchment	H60B
Vegetation type	Elgin Shale Fynbos
Rainfall region	Winter
Level1: System	Inland System
Level2: Regional Setting	Southern Coastal Belt

Level 3: Landscape unit	Valley Floor	
Level 4: Hydrogeomorphic Unit	UNCHANNELLED VALLEYBOTTOM WETLAND (Water input from upstream channel and then disperses.)	
Longitudinal zonation / landform	Valley Floor	
Dominant hydrological characteristics	**Inputs**	Diffuse surface flow from upstream channel; overland flow from adjacent valley-side slopes; groundwater
	Through-puts	Diffuse surface flow, interflow, temporary containment and storage of water in depressional areas.
	Outputs	Diffuse surface flow, interflow, temporary containment and storage of water in depressional areas; Infiltration
Dominant hydrodynamics	Horizontal: bidirectional; vertical: bidirectional	
Level 5: Hydrological Regime	**Inundation periodicity**	Seasonal and Perennial zones
	Saturation periodicity (up to 0.5m below ground level)	Permanently to Seasonally saturated.
Level 6: Wetland Characteristics	**Natural vs Artificial**	Natural
	Vegetation cover type	Herbaceous (Grasses, Sedges, Herbs)
	Substratum type	Loam

Ecological Assessment

Wetland Habitat Integrity

Method

The Wetland Habitat Integrity (WETLAND-IHI) model was used as RAPID assessment of the depression, for the purpose of reporting on the Present Ecological state (PES) of the wetland system in question. The Wetland Index of Habitat Integrity (WETLAND-IHI) is a tool developed for use in the National Aquatic Ecosystem Health Monitoring Programme (NAEHMP), formerly known as the River Health Programme (RHP) (Department of Water Affairs and Forestry Resource Quality Services, 2007). The output scores from the WETLAND-IHI model are presented in the standard DWAF A-F ecological categories (Table 6) and provide a score of the Present Ecological State of the habitat integrity of the wetland system being examined.

TABLE 2. WETLAND-IHI ECOLOGICAL CATEGORIES

Ecological Category	PES % Score	Description
A	90-100 %	**Unmodified, natural.**
B	80-89 %	**Largely natural with few modifications:** A small change in natural habitats may have taken place but the ecosystem functions are essentially unchanged.
C	60-79 %	**Moderately modified:** Loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged.
D	40-59%	**Largely modified.** A large loss and change of natural habitat, biota and basic ecosystem functions has occurred.
E	20-39%	**Seriously modified.** The loss of natural habitat, biota and basic ecosystem functions is extensive.
F	0-20 %	**Critically / Extremely modified:** Modifications have reached a critical level and the system has been modified completely with an

		almost complete loss of natural habitat and biota. In the worst instances the basic ecosystem functions have been destroyed and the changes are irreversible.

This assessment was done for the valley bottom wetland located within the property boundary, as described in Table 1. The Decision Support Protocol (DSP) for rapid assessment of wetland ecological condition was used to determine the HGM unit's PES.

Results:

TABLE 3: WETLAND-IHI ASSESSMENT RESULTS FOR THE UNCHANNELLED VALLEYBOTTOM WETLAND

Components	Selected method	Overall PES%	Overall Ecological Category	Overall PES%	Overall Ecological Category
		Prior to clearing		After clearing	
Hydrology PES%	WET-Health Hydro Module	**100%**	**A**	**91%**	**A/B**
Geomorphology PES%	WET-Health Geomorph Module				
Water quality PES%	Wetland-IHI WQ Module				
Vegetation PES%	WET-Health Veg Module				

Findings

Based on the IHI assessment, the present ecological state of the natural, unchanneled valley-bottom wetland on-site—originally classified as Unmodified (indicating minimal changes to hydrological and hydraulic/geomorphological features)—has degraded to an A/B (Largely Natural) state.

This decline is primarily due to:

- The excavation of larger drainage channels over previously semi-rehabilitated channels, which currently leads to significant drainage of the wetland's summer flows.
- The loss of a section of the previously prescribed buffer zone, increasing the wetland's exposure to external impacts.

Although the current degradation is not yet severe, the presence of larger drainage channels and the reduction of the buffer zone will likely lead to a more significant decline in the coming years. Additionally,

the buffer zone loss has made the wetland more vulnerable to vegetation loss and an overall decline in water quality due to pollutants from the new parking area.

Ecological Importance and Sensitivity (EIS)

Ecological importance of a water resource 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.

The EIS assessment considers a number of biotic and habitat determinants construed to indicate either importance or sensitivity. The determinants are rated according to a four-point scale. The median of the resultant score is calculated to derive the EIS category. The EIS assessment was done for the unchanneled valley bottom wetland.

TABLE 4. DEFINITION OF THE SCALE USED TO ASSESS BIOTIC AND HABITAT DETERMINANTS

Scale	Definition
1	One species/taxon judged as rare or endangered at a local scale.
2	More than one species/taxon judged to be rare or endangered on a local scale.
3	One or more species/taxon judged to be rare or endangered on a Provincial/regional scale.
4	One or more species/taxon judged as rare or endangered on National scale (SA Red Data Books)

TABLE 5. ECOLOGICAL IMPORTANCE AND SENSITIVITY CATEGORIES (DWAF, 1999)

EISC	General description	Range of median
Very high	Quaternaries/delineations considered to be unique on a national and international level based on unique biodiversity (habitat diversity, species diversity, unique species, rare and endangered species). These rivers (in terms of biota and habitat) are usually very sensitive to flow modifications and have no or only a small capacity for use.	>3-4
High	Quaternaries/delineations considered to be unique on a national scale based on their biodiversity (habitat diversity, species diversity, unique species, rare and endangered species). These rivers (in terms of biota and habitat) may be sensitive to flow modifications but in some cases may have substantial capacity for use.	>2-≤3
Moderate	Quaternaries/delineations considered to be unique on a provincial or local scale due to biodiversity (habitat diversity, species diversity, unique species, rare and endangered species). These rivers (in terms of biota and habitat) are not usually very sensitive to flow modifications and often have substantial capacity for use.	>1-≤2

Low/ marginal	Quaternaries/delineations not unique on any scale. These rivers (in terms of biota and habitat) are generally not very sensitive to flow modifications and usually have substantial capacity for use.	≤1

TABLE 6. RESULTS OF THE EIS ASSESSMENT

Biotic Determinants	Wetland
Rare and endangered biota	3
Unique biota	3
Intolerant biota	2
Species/taxon richness	3,5
Aquatic Habitat Determinants	
Diversity of aquatic habitat types or features	3
Refuge value of habitat type	3
Sensitivity of habitat to flow changes	2.5
Sensitivity of flow related water quality changes	1.5
Migration route/corridor for instream and riparian biota	2.5
National parks, wilderness areas, Nature Reserves, Natural Heritage sites, Natural areas, PNEs	3
Total	2,7
EIS CATEGORY	**Moderate to High**

Findings:

The Ecological Importance and Sensitivity (EIS) score for quaternary catchment H60B is 3.1 (*High*) and is considered nationally unique due to its biodiversity. **This score aligns closely with the findings for the wetland on-site. East Coast Shale Renosterveld wetlands are critically endangered and generally poorly protected. The wetland's EIS remains unchanged from the previous assessment conducted in 2022.**

Wetland function assessment

The assessment of the ecosystem services supplied by the identified wetland was conducted according to the guidelines as described by Kotze *et* al (2005). An assessment was undertaken that examines and rates the services listed in Table 7. The characteristics were scored according to the general levels of services provided. It is important to manage wetlands to ensure that they can continue to provide the valued goods and services if considered sufficiently important:

TABLE 7: GOODS AND SERVICES ASSESSMENT RESULTS FOR THE WETLAND (WHERE HIGH =4 AND LOW=0)

Goods and services	Score	
	Prior to clearing	After clearing
Flood attenuation	2,4	2,0
Stream flow regulation	2,4	2,4
Sediment trapping	2	2
Phosphate trapping	2,5	2,5
Nitrate removal	2,3	2,3
Toxicant removal	2,2	2,2
Erosion control	2,6	2,6
Carbon storage	2,8	2,8
Maintenance of biodiversity	3	3
Water supply for human use	2,2	2,2
Natural resources	0,4	0,4
Cultivated foods	0	0
Cultural significance	0	0
Tourism and recreation	2,4	2,4
Education and research	2,2	2,2

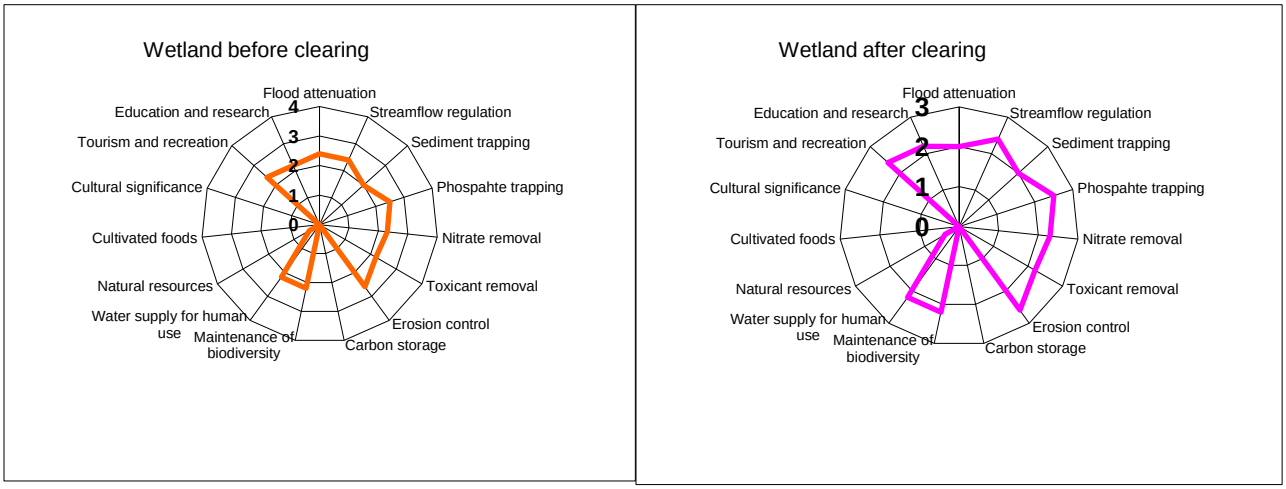


Figure 11: Ecosystem services provided by the wetland before (left) and after (right) the clearing activities.

The key services provided by wetland area focuses largely on the maintenance of biodiversity with some carbon storage and erosion control. The wetland function has remained the same after the clearing activities, except for a lowered ability to attenuate floods.

Recommended Ecological Category

The REC for the unchanneled valley-bottom wetland area was determined taking into account the results of the IHI, wetland function, and EIS assessments. These assessments show that the wetland area is still in a largely natural state, with moderate to high EIS and high maintenance of biodiversity as main wetland function. The REC deemed appropriate unnamed stream and wetland are presented in the table below and remain unchanged from the previous assessment.

TABLE 8: SUMMARY OF THE REC CATEGORIES ASSIGNED TO THE FRESHWATER FEATURES WITHIN THE STUDY AREA.

Aquatic features	REC
Unchanneled valley-bottom wetland	A

Wetland Delineation and buff zone determination

All wetland features were delineated on a desktop level with the use of digital satellite imagery (2004-2025) as well as topographical maps and verified during the field visit according to the guidelines suggested by DWA (2008). The watercourse/wetland delineations as presented in this report are regarded as a best estimate of the wetland boundaries based on the site conditions present at the time of assessment. Ground-truthing of wetland boundaries focused on the more permanent wet section at the middle of the site. Legislative requirements were used to determine the extent of the buffer zone required for the wetland area.

According to the Buffer Zone Tool for the Determination of Aquatic Impact Buffers developed by the Department of Water and Sanitation (2014), a 50m buffer zone is recommended for wet areas. **Considering the critically endangered status of both the wetland type and the associated vegetation, along with the fact that this wetland remains in a largely natural state, making it an excellent reference site, a 50m buffer zone was proposed in the initial freshwater assessment.**

However, the newly cleared area has encroached upon this buffer zone, with vegetation clearance occurring **within approximately 12m of the wetland**. Additionally, the newly constructed drainage channels extend **right up to the edge of the wetland,** further impacting its ecological integrity.

TABLE 9: PROPOSED BUFFER AREA

HGM unit	Buffer (m)
Unchanneled valley-bottom wetland	50 m

Figure 13: A satellite image showing the wetland area (green polygon) with the proposed 50m buffer zone (red line) as well as the approximate position of the development (orange polygon) and drainage channels (blue lines).

Figure 14: Footage of the western section of the cleared area with the drainage channel in the forefront.

Figure 15: Footage of the drainage channel and current water drainage.

Figure 16: Footage of the eastern section of the cleared area with the drainage channel in the forefront and the wetland area located to the right.

Impact Assessment

The freshwater impacts are rated in accordance with the Environmental Impact Assessment Regulations, 2010 and the criteria drawn from the IEM Guidelines Series, Guideline 5: Assessment of Alternatives and Impacts, published by the (DEAT, 2006) as well as the Guideline Document on Impact Significance (DEAT, 2002).

In the initial freshwater assessment, it was concluded that due to the wetland's pristine state and its critically endangered status, any loss of wetland would be deemed unacceptable. It was also stipulated that all development should remain outside the 50m buffer zone. However, the new activity has occurred within this buffer zone, resulting in certain impacts.

This section assesses the significance of the project's impacts on freshwater ecology within the study area, as well as on downstream freshwater features. Additionally, it outlines the necessary mitigation measures to minimize negative impacts and evaluates the significance of these impacts assuming full implementation of the proposed mitigation measures.

The construction and operational component of the activity has had an impact on the following:

- Loss of biodiversity, and ecological structure;
- Potential hydrology modification and change in aquatic habitat;

- Potential Water Quality impacts;

These impacts were largely caused through site access, clearing of vegetation, excavation of soils and the creation of drainage channels around the wetland area. Additionally, the operational phase might also lead to a decline in water quality within the wet areas.

Loss of biodiversity and ecological structure:

The clearing activities have encroached into approximately 36-40 meters of the proposed 50m buffer zone, leading to a loss of biodiversity and ecological structure of the surrounding buffer zone, with activities taking place within approximately 12m of the wetland. The purpose of a buffer zone is to protect the wetland's ecological integrity by providing a transition area between human activities and sensitive wetland ecosystems. Such key functions would include **Water Quality Protection, Erosion Control, Hydrological Regulation, Habitat and Biodiversity Support as well as creating a Barrier Against Disturbance**. All these functions have now been significantly compromised, and the possible future impact of this loss could lead to a **long-term, Medium to High negative impact on the wetland area**.

Mitigation measures:

Operational Phase:

- The whole buffer zone should be completely rehabilitated and revegetated in order to prohibit any future loss of the pristine wetland area.
- Rehabilitation should take place in accordance with a formal rehabilitation plan, and be monitored regularly (as stipulated in this plan), to ensure proper re-establishment of vegetation and habitat.
- The 50m buffer zone should be applied to the wetland area for all future activities on the property.

Hydrology modification:

The newly excavated drainage channels along the eastern and southern boundaries of the developed area are actively draining the wetland. These channels are deep enough to capture not only winter runoff but also low summer subsurface flows. Over time, this will lead to the desiccation of large portions of the wetland, resulting in a significant loss of aquatic habitat and ecological function.

Without mitigation, this activity is expected to have a **long-term, high to very high negative impact on the surrounding wetland area.**

Additionally, channelled flows from the surrounding area will compromise groundwater recharge, as well as increase the risk of erosion and sedimentation, impacting downstream freshwater features.

This is expected to have a **long-term, medium negative impact on groundwater and receiving freshwater systems.**

Mitigation measures:

Operational Phase:

- No drainage structures should be allowed within the 50m buffer zone. All existing drainage channels within this zone must be rehabilitated and revegetated. Rehabilitation should involve infilling the excavated areas with similar soils, ensuring no soil compaction occurs in the newly filled channels.
- New drainage channels should be located outside the 50m buffer zone and should preferably be designed as vegetated, shallower, and wider stormwater swales.
- A small, vegetated stormwater retention area should be created at the property's boundary to allow for infiltration and to prevent erosion and sedimentation towards the downstream wetland areas.

Potential Water Quality impacts:

Due to the nature of the proposed use of the developed area, which is primarily to be used as a parking lot for trucks and stacking of fruit bins, polluted runoff from the parking area towards the surrounding wet areas is a very probable future impact, especially during the wet rain season. **Should the 50m buffer zone be re-instated through the proposed rehabilitation proposed above, this will have a long-term Low to Negligible impact on the wetland area. If not, this impact would increase to being of a Medium-Low negative nature.**

Mitigation measures

Operational Phase:

- Rehabilitation and reinstatement of the 50 buffer zone as proposed above.
- The 50m buffer zone should be applied to the wetland area for all future activities on the property.

Summary of the expected impacts:

TABLE 10: SUMMARY OF THE EXPECTED IMPACTS RELATING TO THE OPERATIONAL PHASE OF THE PROJECT.

Newly cleared area on Portion 22 Of Farm 82, Caledon		
	Preferred Alternative	**No-go alternative**
Nature of impact:	Operation of the allegedly unlawfully developed area.	The significance of the impacts on the wetland area without rectification of the impacts will lead to a large loss of wetland – which is not deemed acceptable.

Newly cleared area on Portion 22 Of Farm 82, Caledon				
	Preferred Alternative		**No-go alternative**	
Description and consequence of impact or risk:	Loss of biodiversity, ecological and hydrological structure of the wetland area. Possible water quality impairment towards the surrounding freshwater features.		N/A	
Indirect impacts:			N/A	
	Without mitigation	**With mitigation**	**Without mitigation**	**With mitigation**
MAGNITUDE of impact:	**Medium to Very High (-)** This impact could result in a remarkable alteration, with the aquatic environment functioning in a modified way. The possibility exists that sections of the wetland can cease to function permanently	**Low (-)** Environment slightly altered, with cultural and social functions and processes disturbed.	N/A	N/A
DURATION:	**Long term** >10 years.		N/A	
EXTENT (special scale/ influence of impact):	**Local to Regional** The impact could extend to the surrounding area, the immediate and neighbouring properties.		N/A	
IRREPLACEABLE loss of resources:	**Medium to High potential** Resources can be replaced with effort, although functioning in an altered way.		N/A	
INTENSITY and degree to which the impact can be REVERSED:	**Medium** With no mitigation in place, the natural processes of the affected wetland areas could be remarkably affected, functioning in a modified way. Negative impacts cannot be fully reversed.		N/A	
PROBABILITY of occurrence:	**Medium to High** It is most likely that this impact will occur		N/A	
Significance rating of impact without and with mitigation:	**Medium to High (-)** Impacts are of great importance and mitigation is crucial	**Low (-)** With mitigation, the overall significance of the above potential impacts is predicted to be low, and within the acceptable range.	N/A	N/A

Results and recommendations

According to the freshwater assessment, the wetland identified on-site was in an unmodified state prior to the new activity (based on the presumption that rehabilitation of the existing drainage channels would be completed) but has since degraded to a largely natural state. It retains moderate to high Ecological Importance and Sensitivity (EIS) and continues to provide high wetland function, primarily supporting the maintenance of biodiversity.

The area affected by the alleged unlawful activity is classified as an aquatic Critical Biodiversity Area (CBA1) and a terrestrial Critical Biodiversity Area 2: Degraded. According to the National Freshwater Ecosystem Priority Areas (NFEPA) map, the larger catchment in which the development took place, is located falls within a Fish Support Area, while the large wetland on-site is classified as an East Coast Shale Renosterveld Floodplain Wetland (FEPA rank 2).

The Recommended Ecological Category (REC) for the wetland is Class A, and a 50m buffer zone was determined using the Buffer Zone Tool for the Determination of Aquatic Impact Buffers (DWA, 2014).

In the initial wetland assessment, due to its pristine state at the time and its critically endangered status, it was concluded that no loss of wetland should be permitted. However, the newly cleared area has encroached approximately 34 meters into the proposed buffer zone, with drainage channels extending right up to the edge of the wetland.

The long-term impacts of these activities were assessed as having a **medium to very high negative impact** on a **local to regional scale**, with a **high probability of significant wetland loss** over time.

Mitigation measures proposed for the operational phase of the development would include the following:

Operational Phase

- The whole buffer zone should be completely rehabilitated and revegetated in order to prohibit any future loss of the pristine wetland area.
- Rehabilitation should take place in accordance with a formal rehabilitation plan, and be monitored regularly (as stipulated in this plan), to ensure proper re-establishment of vegetation and habitat.
- The 50m buffer zone should be applied to the wetland area for all future activities on the property.
- No drainage structures should be allowed within the 50m buffer zone. All existing drainage channels within this zone must be rehabilitated and revegetated. Rehabilitation should involve infilling the excavated areas with similar soils, ensuring no soil compaction occurs in the newly filled channels.
- New drainage channels should be located outside the 50m buffer zone and should preferably be designed as vegetated, shallower, and wider stormwater swales.
- A small, vegetated stormwater retention area should be created at the property's boundary to allow for infiltration and to prevent erosion and sedimentation towards the downstream wetland areas.

Conclusion

If all mitigation measures are adhered to, the impact of the proposed project will most likely be of **Long-term, Low negative impact on the wetland and possibly on the larger freshwater system as well**.

As the larger wetland area would be defined as a watercourse, any activity taking place within 500mm radius of a wetland should also apply for a Water Use Licence or General Authorisation.

References

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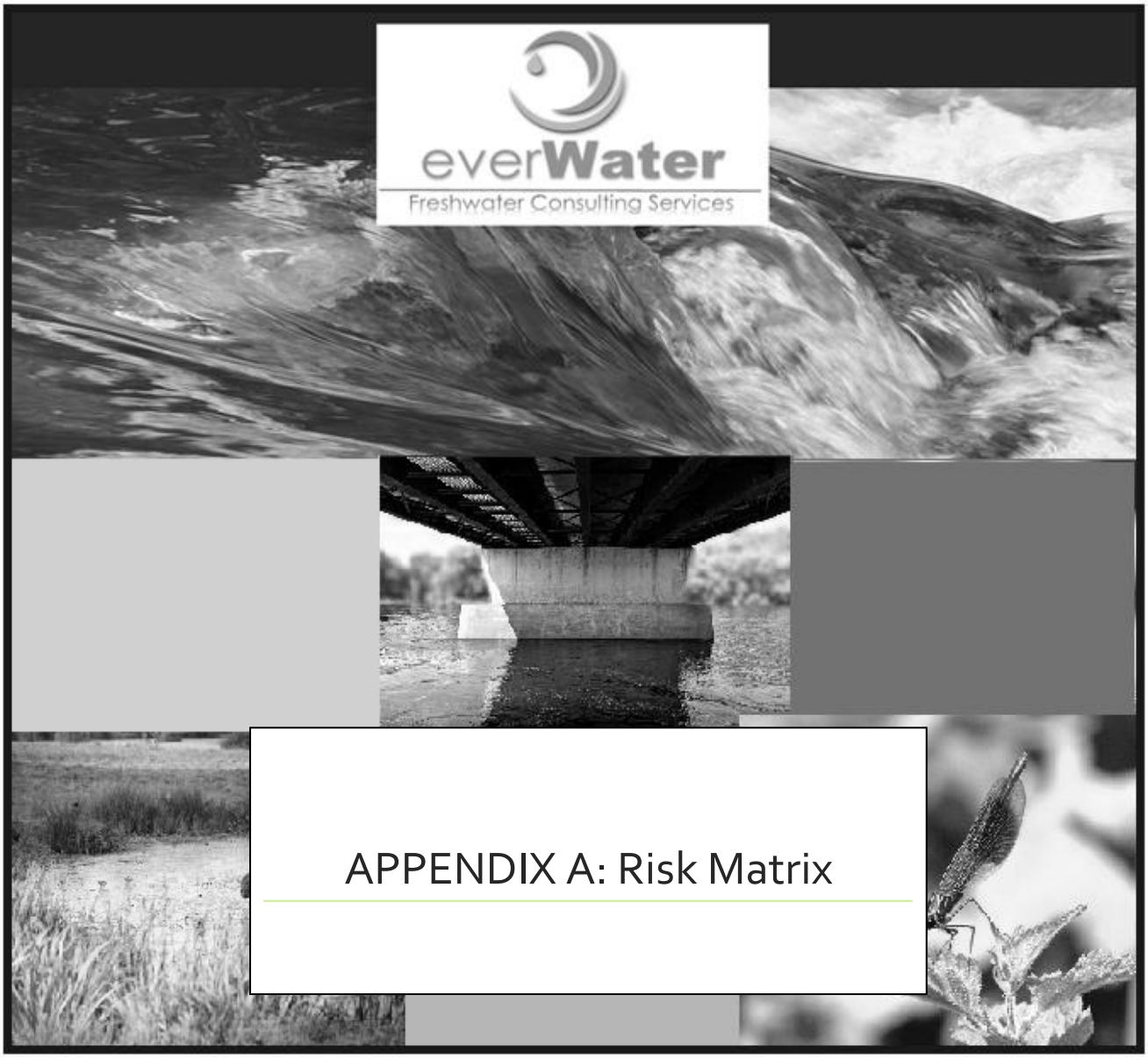

APPENDIX A: Risk Matrix

PROJECT:	**Risk Assessment for the Activities that took place on Portion 22 of Farm 82, Caledon.**
RISK ASSESSMENT MATRIX for Section 21 (c) and (i) Water Use activities - Version 2.1	
Name of Assessor:	Jeanne Snyman
SACNASP Registration Number:	400091/17
Date of assessment:	07/02/2025

Risk to be scored for all relevant phases of the project (**factoring in specified control measures**). MUST BE COMPLETED BY SACNASP PROFESSIONAL MEMBER REGISTERED IN AN APPROPRIATE FIELD OF EXPERTISE.

Phase	Activity	Impact	Potentially affected watercourses: Overall Watercourse Importance	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	Confidence level
	<1>Site access	<1a>Slight loss of biodiversity in the surrounding wetlands buffer zone.	High	2	1	1	4	4	16	40%	6.4	L	High
		<1b>Hardinging/compaction of soils around the wetland area.	High	4	1	1	6	4	24	40%	9.6	L	High
	<2>Excavation of soils associated with the rehabilitation (refilling) of the existing drainage channels and revetation of this area.	<2a>Altering the geomorphology surrounding the wetland	High	2	1	1	4	4	16	80%	12.8	L	High
		<2b>Improvement of already lost of Biodiversity	High	0	1	1	2	4	8	80%	6.4	L	High
		<3c>Possibility of Siltation and Sedimentation, as well as other pollutants within the buffer zone.	High	4	1	1	6	4	24	60%	14.4	L	High
		<3d>Improvement in current hydrology modification.	High	4	1	1	6	4	24	100%	24	L	High
	<3>Rehabilitation activities within the buffer zone.	<3a>Altering the geomorphology surrounding the wetlands	High	4	1	1	6	4	24	60%	14.4	L	High
		<3b>Improvement of already lost of Biodiversity	High	0	1	1	2	4	8	100%	8	L	High
OPERATIONAL	<1>Monitoring of rehabilitated area to ensure proper vegetation cover within 2 years of the start of the project.	<1a>Improvement of surrounding soils and biodiversity	High	-4	1	1	-6	4	-24	100%	-24	+	High
	<2>Strict application of the 50m buffer zone for all future activities with no activities allowed within this area.	<1b>Preserved wetland function and biodiversity	High	0	1	1	2	4	8	100%	8	L	High

Mitigation measures:

- The whole buffer zone should be completely rehabilitated and revegetated in order to prohibit any future loss of the pristine wetland area.
- Rehabilitation should take place in accordance with a formal rehabilitation plan, and be monitored regularly (as stipulated in this plan), to ensure proper re-establishment of vegetation and habitat.
- The 50m buffer zone should be applied to the wetland area for all future activities on the property.
- No drainage structures should be allowed within the 50m buffer zone. All existing drainage channels within this zone must be rehabilitated and revegetated. Rehabilitation should involve infilling the excavated areas with similar soils, ensuring no soil compaction occurs in the newly filled channels.

- New drainage channels should be located outside the 50m buffer zone and should preferably be designed as vegetated, shallower, and wider stormwater swales.
- A small, vegetated stormwater retention area should be created at the property's boundary to allow for infiltration and to prevent erosion and sedimentation towards the downstream wetland areas.

Appendix B

DETAILS, EXPERTISE AND CURRICULUM VITAE OF SPECIALIST

Abbreviated Curriculum Vitae

Personal Details

Surname : Snyman

Names : Jeanne Celeste

Date of Birth : 17 June 1983

Nationality : RSA

Profession : Freshwater Ecologist (SACNASP reg nr: 400091/17)

Key Qualifications

Academic Qualifications Institution (Date finished)	**Degree(s) or Diploma(s) obtained:**
North West University _ Potchefstroom campus. (2004)	BSc degree with Zoology and Microbiology
North West University _ Potchefstroom campus. (2006)	M.Env degree in Water Sciences (Cum laude),
North West University _ Potchefstroom campus. (2006)	Postgraduate Certificate In Education (PGCE)

Work Experience

Jeanne Snyman is Pr Sci Nat registered (400091/17) in the following fields of practice: Water Resource Science. Jeanne is an Aquatic, Wetland and Biodiversity Specialist with more than 13 years' experience in the environmental consulting field. She possesses a BSc. Masters in Freshwater Sciences and has worked on projects related to residential developments, infrastructural developments, sustainable energy and general natural resource management. Her work focusses mostly on doing Freshwater Impact Assessments, River Management and Maintenance plans, Rehabilitation plans and Audit Reports. Each project takes a total of approximately 24 (Supplementary Reports) to 50 hours (Freshwater assessments, RMMP's and Rehabilitation plans).

List of 2023/2024 projects:

- Snyman, J.C. August 2023. Freshwater Constraints and Opportunity Assessment for the Proposed New Development at Farm 264, Dollas Downs, Arniston, Western Cape Western Cape.
- Snyman, J.C. August 2023. Freshwater Assessment For The Proposed Periodic Maintenance Of MR00261 (Km 0.8 To 29.03 And 31.65 To 35.20), Western Cape
- Snyman, J.C. October 2023. Freshwater Impact Assessment for the Proposed Periodic Maintenance Activities Associated with MR 289, MR291, DR1365, DR1363 and DR1358, Bonnievale, Western Cape.
- Snyman, J.C. March 2024. Freshwater Assessment For Alleged Unlawful Activities That Took Place On Portion 16 Of Farm Derde Heuvel 149, Montagu Rd, Western Cape
- Snyman, J.C. March 2024. Freshwater Impact Assessment for the Proposed Maintenance Activities Associated with Main Road 174, Stellenbosch, Western Cape
- Snyman, J.C. May 2024. Freshwater Assessment For The Proposed Expansion Of The Berg River Boulevard, Paarl, Western Cape.
- Snyman, J.C. May 2024. Situation Assessment For The Rehabilitation Of A Section Of A Non-Perennial Watercourse, at Farm Sandfontein 232/5, Swellendam RD.
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