

Freshwater Rehabilitation Plan for the Unauthorised Activities that took place on Portion 22 of Farm 82, Caledon.

DECEMBER 2025

Compiled by: Ms. Jeanne Snyman (M.Sc. Env Water Sciences, Pr. Sci. Nat)

Executive Summary

The client, Cropmax, cleared approximately 1 hectare of indigenous vegetation on Portion 22 of Farm 82, Caledon, without obtaining an Environmental Authorisation. As a result, the client was issued a Section 24G directive. A freshwater impact assessment was commissioned in February 2025 as input into the 24G process, after which a rehabilitation plan was requested.

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 and the Wemmershoek Mountains further to the north. The property itself is positioned on a small hill, sloping gently in a north-westerly direction. The site falls within Quaternary catchment H60B, which forms part of the Breede-Gouritz Water Management Area (WMA).

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.

The freshwater assessment identified a pristine wetland on-site of high Ecological Importance and Sensitivity (EIS), which provides critical biodiversity functions. Subsequent clearing for a ±2,400 m² truck parking and fruit bin storage platform, alongside two newly excavated drainage channels, has degraded the wetland and encroached into the recommended 50 m buffer zone. Updated satellite imagery indicates that approximately 17 m of the buffer zone, or 1,286 m², has been affected, with additional erosion and vegetation loss downstream.

The affected area is classified as an aquatic Critical Biodiversity Area (CBA1) and a terrestrial Critical Biodiversity Area 2: Degraded, within a Fish Support Area according to NFEPA. The wetland is an East Coast Shale Renosterveld Floodplain Wetland, with a Recommended Ecological Category of Class A.

The rehabilitation plan aims to:

- Fully restore all cleared areas within the 50 m wetland buffer zone and revegetate the 1,286 m² affected area while leaving undisturbed areas intact.
- Maintain and enforce the 50 m buffer zone for all future activities.
- Rehabilitate drainage channels within the buffer zone, backfilling excavated areas with topsoil and revegetating the remainder.
- Establish a vegetated stormwater retention area at the property boundary and rehabilitate eroded areas outside the property to prevent downstream sedimentation.
- Monitor and maintain all rehabilitated areas for a minimum of two years to ensure vegetation recovery.

The plan provides a structured approach to restoring wetland functionality, protecting biodiversity, and mitigating the impacts of the unlawful clearing.

.

Table of Contents

Introduction 4
Background 4
Site location and regional description 4
Activity 5
Climatic conditions of the site 5
Vegetation and Fauna 6
Conservation Value 9
2017 Western Cape Biodiversity Spatial Plan (WCBSP) 9
NFEPA map 10
Summary of the Aquatic Assessment 11
Impact Assessment 12
Rehabilitation Plan 14
Rehabilitation objectives 14
Rehabilitation Plan 16
General 16
Prior to rehabilitation 16
Rehabilitation through revegetation: 19
Maintenance and Aftercare 22
References 24
Appendix A 26
Personal Details 27
Key Qualifications 27
Work Experience 27
List of 2024/2025 projects: 28

Introduction

The client, Cropmax, cleared approximately 1 hectare of indigenous vegetation on Portion 22 of Farm 82, Caledon, without obtaining an Environmental Authorisation. As a result, the client was issued a Section 24G directive. A freshwater impact assessment was commissioned in February 2025 as input into the 24G process, after which a rehabilitation plan was requested.

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 and the Wemmershoek Mountains further to the north. The property itself is positioned on a small hill, sloping gently in a north-westerly direction. The site falls within Quaternary catchment H60B, which forms part of the Breede-Gouritz Water Management Area (WMA).

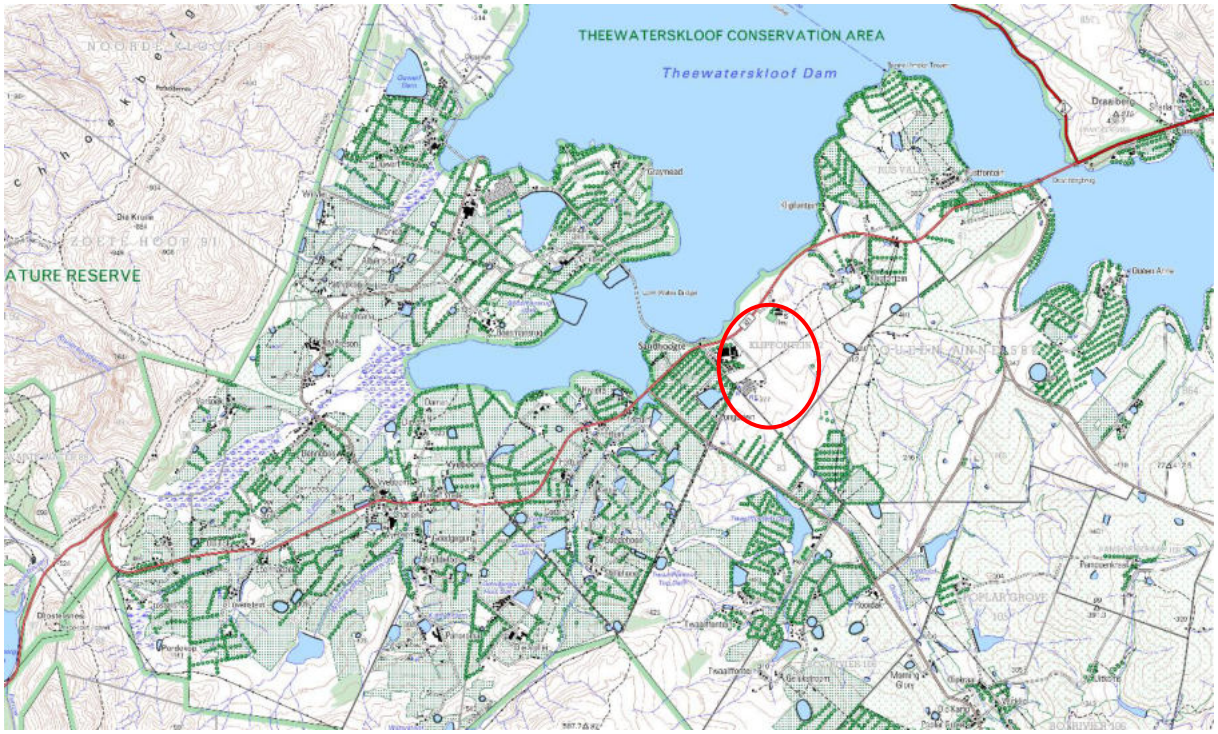


Figure 1: 1:50 000 Topographical map of the area with the location of the proposed development (3419AA)

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 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).

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.

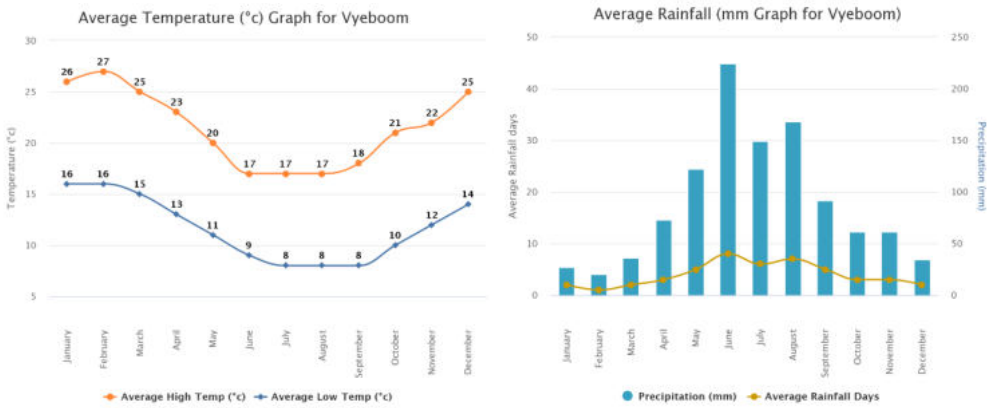


Figure 4: Climate graphs for the Vyeboom area (World weather online, 2022)

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.

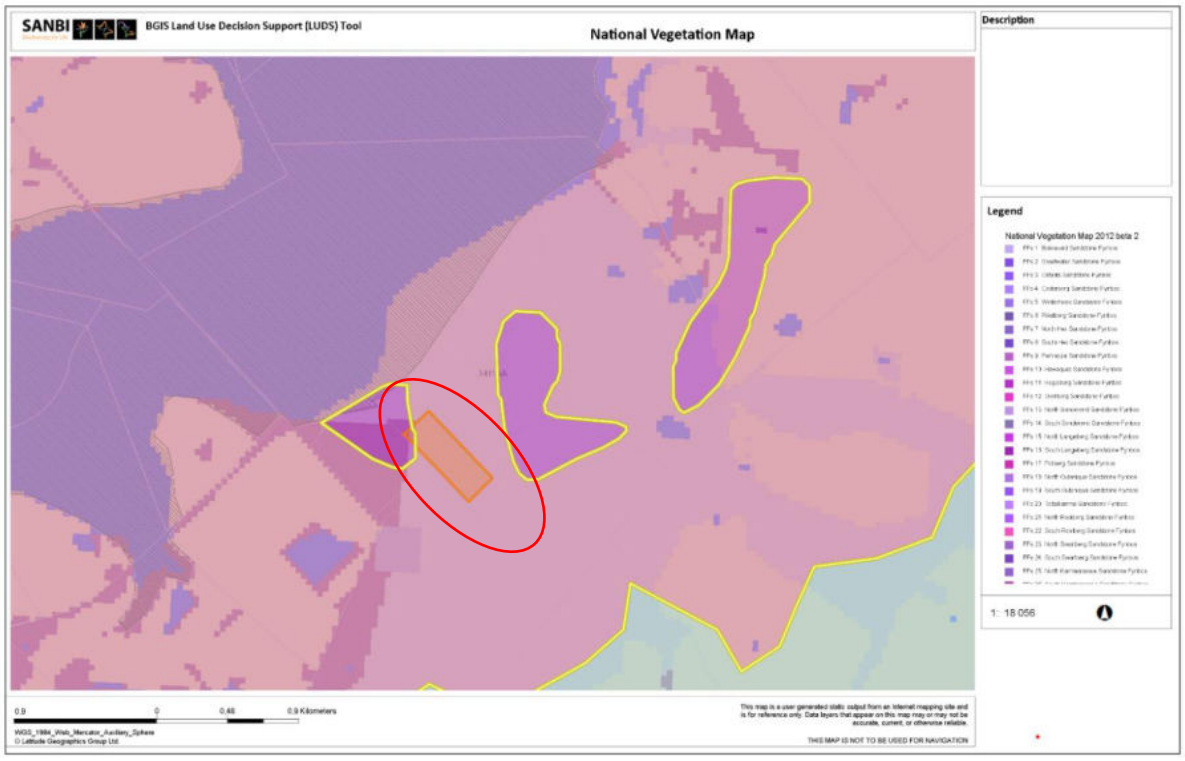


Figure 5: National vegetation map for the area (SANBI BGIS, 2022)



Figure 6: Vegetation around the upstream (top) and downstream (bottom) section of the wetland area during the 2022 visit.



Figure 7: 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.

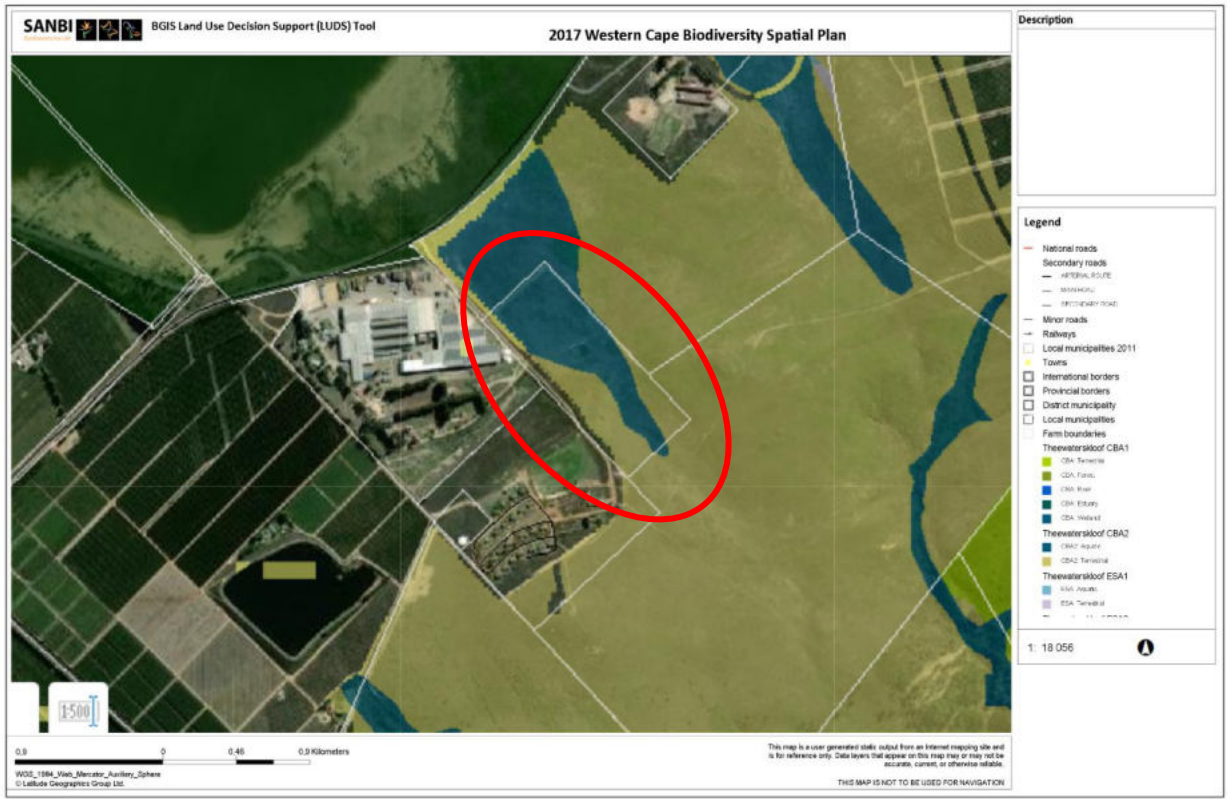


Figure 8: The 2017 Western Cape Biodiversity Spatial Plan for the area (SANBI GIS, 2022).

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.

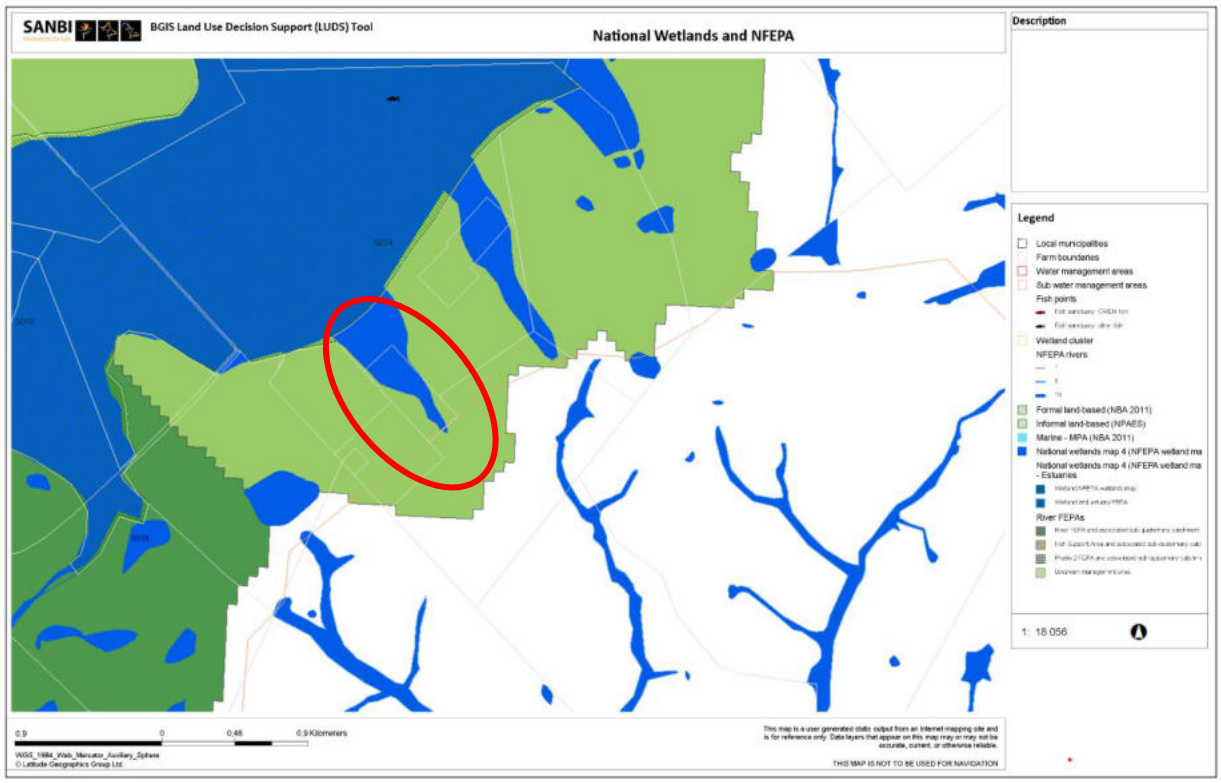


Figure 9: NFEPA map for the area (SANBI GIS, 2022).

Summary of the Aquatic Assessment

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.

Since the previous freshwater assessment (February 2025), more recent satellite imagery showing the cleared area has become available. From this imagery, it can be concluded that the cleared area encroaches approximately 17 m into the proposed buffer zone, rather than the 34 m previously reported. This has resulted in the loss of approximately 1,286 square metres of the buffer zone. Furthermore, it is also clear from the latest imagery that the new drainage channels have led to significant erosion and vegetation loss outside of the property (towards the Theewaterskloof dam), leading to the downstream wetland areas.

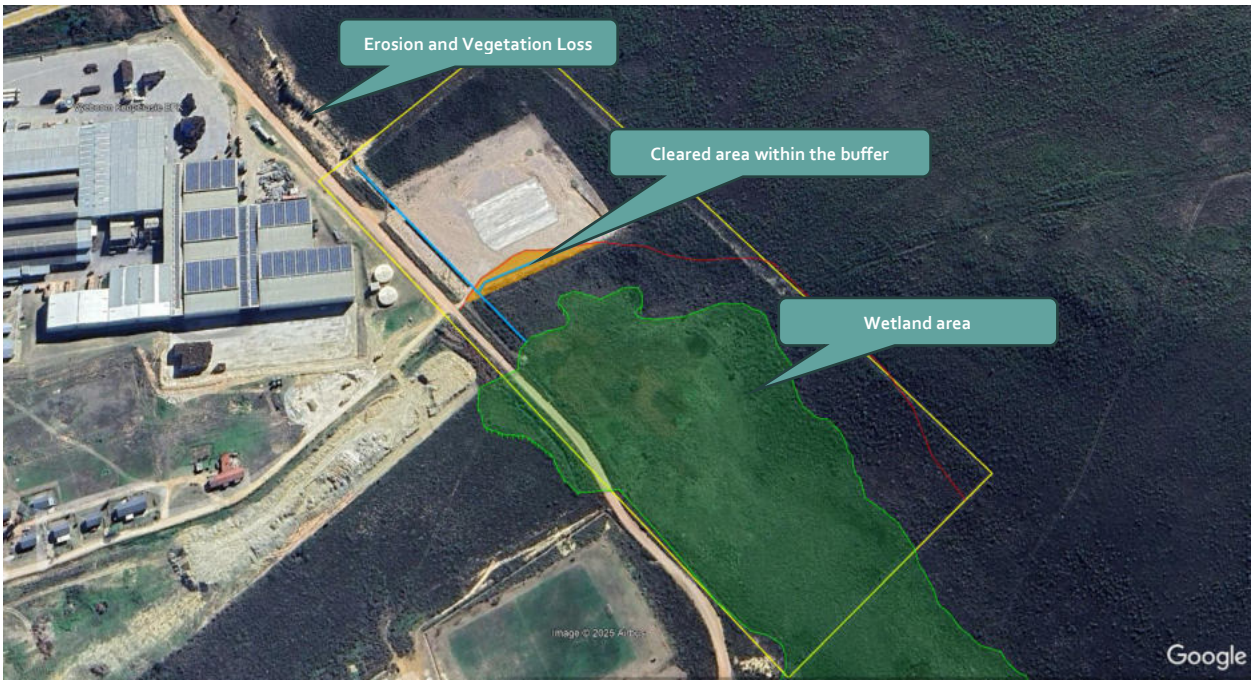


Figure 10: Satellite imagery from April 2025, clearly showing the real extent of the cleared area, the wetland area (Green polygon), as well as the impacted section of the buffer zone (orange polygon). (Google Earth, 2025)

Impact Assessment

As part of the Freshwater Assessment, an impact assessment was conducted, finding that 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.

The following mitigation measures set out in the impact assessment apply to this Rehabilitation Plan.

- The whole buffer zone should be completely rehabilitated and revegetated in order to prohibit any future loss of the pristine wetland area. This would entail the 1,286 square metres affected by the clearing activities, with the remainder of the area to be left as is.
- 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.
- 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. In addition, the newly degraded and eroded area located outside the property boundary, which was created by the previously excavated drainage channels, should be backfilled and rehabilitated through appropriate revegetation.

Rehabilitation Plan

Rehabilitation objectives

The rehabilitation plan will apply to all disturbed areas within the proposed buffer zone, the proposed new detention pond, and the disturbed area located outside the property, as indicated in Figure 11. Based on the findings from the field visit and the recommendations of the Freshwater Assessment Report, the plan aims to achieve the following objectives:

- **Full buffer zone rehabilitation**: All cleared areas within the 50 m wetland buffer zone, including the marked 1,286 m² area (Figure 10), shall be fully rehabilitated and revegetated to prevent further loss of pristine wetland habitat, while the remaining undisturbed areas will be left intact. This will be done in accordance with the rehabilitation plan as shown in Figure 11 and the proposed plant list.
- **Buffer zone protection**: A 50 m buffer zone around the wetland shall be maintained and enforced for all future activities on the property to safeguard the wetland from disturbance.
- **Rehabilitation of drainage structures**: The existing drainage channels falling within the buffer zone shall be rehabilitated and revegetated, with excavated areas backfilled using topsoil from the degraded site and managed to prevent soil compaction. The remainder of the drainage channels should be vegetated.
- **Stormwater management and external rehabilitation**: A small, vegetated stormwater retention area shall be established at the property boundary to promote infiltration and prevent downstream erosion and sedimentation. The existing newly degraded and eroded area outside the property boundary, resulting from previous drainage excavation, shall be backfilled with surrounding topsoil and rehabilitated through appropriate revegetation.
- **Monitoring and maintenance of rehabilitated areas**: Rehabilitated areas, including the new stormwater retention area, should be monitored for at least 2 years to ensure successful recovery and establishment of the vegetation within.

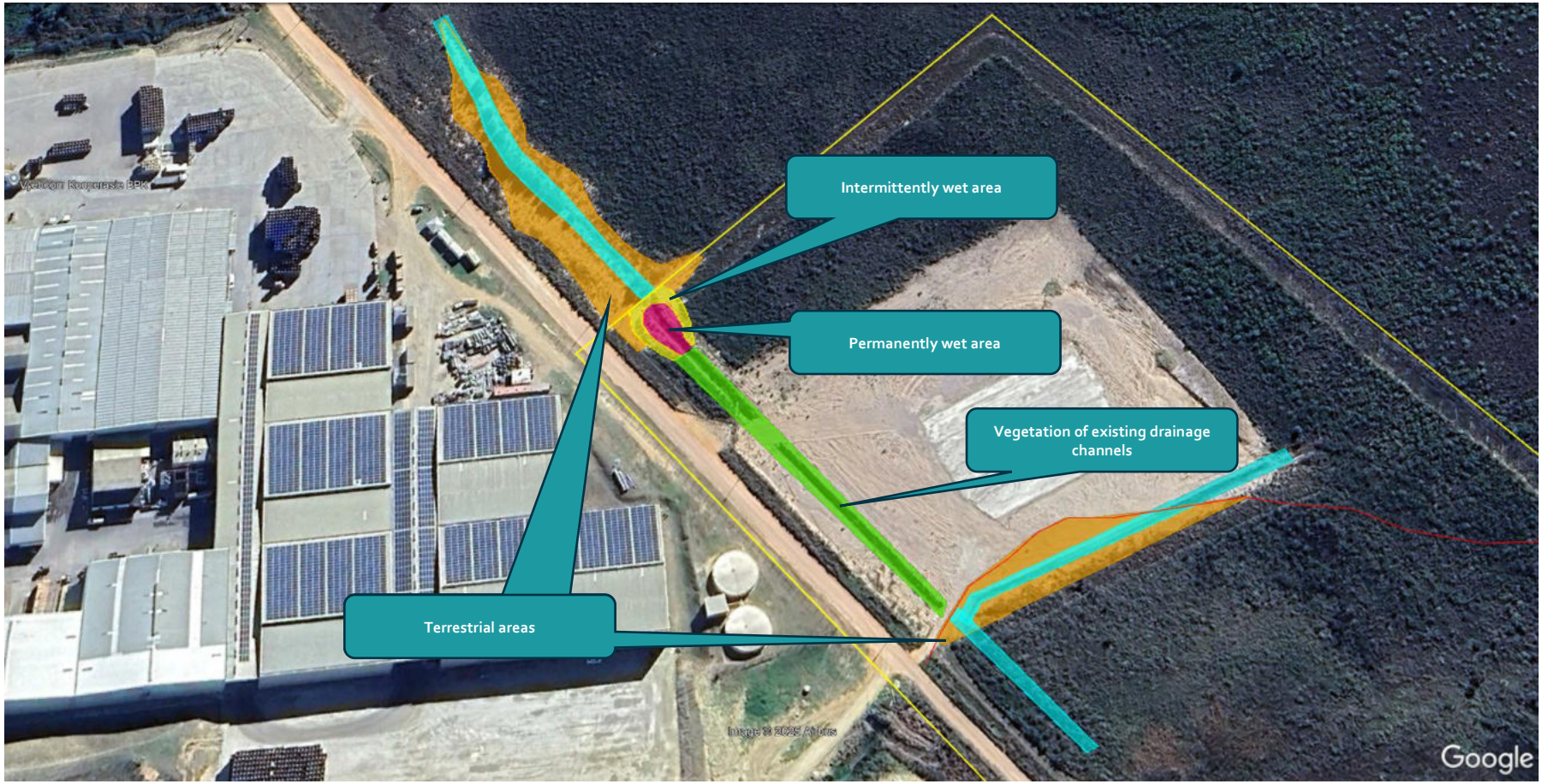


Figure 11: Rehabilitation plan for the affected area with the following areas:

A. Filled and rehabilitated drainage channels (turquoise polygons)
B. Vegetation of remaining drainage channels (green polygon)
C. The terrestrial zone (orange polygons)
D. The permanently wet zone (pink polygon)
E. The intermittently wet zone (yellow polygon)

Rehabilitation Plan

General

As mentioned, the rehabilitation plan specifically applies to the areas marked in Figure 11, which include:

A. Filled and rehabilitated drainage channels (turquoise polygons)
B. Vegetation of remaining drainage channels (green polygon)
C. The terrestrial zone (orange polygons)
D. The permanently wet zone (pink polygon)
E. The intermittently wet zone (yellow polygon)

The following general requirements shall apply:

- All exposed areas shall be rehabilitated once approval has been granted.
- Revegetation of all exposed soil must be completed before rehabilitation is considered complete.
- All areas that do not require landscaping shall be left in their natural state.
- The composition of vegetation used for rehabilitation shall follow the specifications in Table A-1 (Recommended Plant List).
- All areas within the buffer zone, as well as those outside the designated rehabilitation areas, shall be treated as No-Go zones.
- All foreign material not used in rehabilitation activities shall be removed from the site.

Prior to rehabilitation

Topsoil and Subsoil

a. It is preferred that topsoil be sourced from the surrounding soils.
b. If any soil is to be imported to act as bedding material, it shall be free of alien plant seeds, and its use shall be restricted to 500 mm below the soil surface.
c. No topsoil shall be imported unless topsoil is insufficient (or absent) from the site to be rehabilitated. In this instance, the topsoil shall be from a source that has comparable soil characteristics, as approved by the Freshwater specialist.
d. Natural topsoil shall not be stockpiled for longer than 6 months (preferably 3 months) prior to redistribution in order to preserve seeds and bulbs within the natural topsoil.

Recommended Plant list

Because hydrophilic vegetation has a specific niche in which it flourishes, it is important to note where specific vegetation should be planted/seeded. As mentioned above, the rehabilitation area would consist of the terrestrial zone (C - orange polygons), the permanently wet zone (D - pink polygon) and the intermittently wet zone (E - yellow polygon). All other natural areas falling within the wetland and its buffer zone should be left as is and allowed to further re-establish naturally. Plant species that would be suitable in each of these zones are specified below:

Table A-1: Proposed plant list

Plant species	Suitable planting area		
	Terrestrial zone	Permanently wet zone	Intermittently wet zone
Centella villosa			x
Elegia squamosa		x	x
Ficinia indica		x	x
Imperata cylindrica		x	x
Micranthus tubulosus			x
Ornithogalum thyrsoides			x
Restio capensis			x
Restio dispar			x
Restio papillosis			x
Restio tetragonus			x
Restio triflorus			x
Watsonia meriana		x	x
Cyperus thunbergii		x	
Cliffortia ruscifolia			x
Elegia nuda			x
Juncus acutus)		x	x
Restio paniculatus		x	x
Pennisetum macrourum			x
Typha capensis		x	
Wachendorfia paniculata		x	
Zantedeschia aethiopica		x	x
Agathosma sp.	x		
Anthospermum aethiopicum	x		
Anthospermum galioides	x		
Anthospermum spathulatum	x		
Aspalathus acuminata	x		

Aspalathus angustifolius	x		
Aspalathus hispida	x		
Aspalathus nigra	x		
Babiana patersoniae	x		
Berkheya herbacea	x		
Carpanthea cf. pomeridiana	x		
Cliffortia polygonifolia	x		
Cliffortia ruscifolia	x		
Corymbium villosum	x		
Cotula turbinata	x		
Crassula sp.	x		
Crossyne guttata	x		
Diosma hirsuta	x		
Diospyros glabra	x		
Ehrharta calycina	x		
Elytropappus rhinocerotis	x		
Empodium plicatum	x		
Erica setacea	x		
Eriospermum sp.	x		
Freesia caryophyllacea	x		
Helichrysum patulum	x		
Helichrysum teretifolium	x		
Leucadendron salignum	x		
Moraea bellendenii	x		
Moraea lewisiae	x		
Muralita rhamnoides	x		
Oxalis commutata	x		
Oxalis lanata	x		
Oxalis obtusa	x		
Oxalis polyphylla	x		
Passerina corymbosa	x		
Pelargonium proliferum	x		
Pelargonium triste	x		
Pentameris pallida	x		
Pentameris sp.	x		
Phylica gracilis	x		
Protea repens	x		
Rafnia sp.	x		
Staberoha distachyos	x		
Stoebe plumosa	x		
Tenaxia stricta	x		

Thamnochortus cinereus	x		
Thamnochortus lucens	x		
Themeda triandra	x		
Tribolium uniolae	x		
Vellereophyton dealbatum	x		
Wildenowia humilis	x		
Xiphotheca reflexa	x		

Rehabilitation through revegetation:

Materials

1.1 Plants

a. Plant material shall either be obtained from nurseries or harvested from an area in close proximity to, and of the same veld type as, the Site, as indicated by the Freshwater Specialist/Botanist. Living plant material obtained from the site shall include whole plants, cuttings (propagation material), bulbs, corms, runners, rhizomes, grass sods, restio sods and seeds.
b. Should plants be brought in from a nursery, the client shall ensure that each plant is handled and packed in the approved manner for that species or variety, and that all necessary precautions are taken to ensure that the plants arrive on Site in a proper condition for successful growth.
c. The potting materials used shall be weed-free.
d. There shall be sufficient topsoil around each plant to prevent desiccation of the root system. Where plants are stored on the Site prior to planting, they shall be maintained to ensure that the root systems remain moist.

1.2 Seed

a. If seed is to be used in the revegetation process, Indigenous seed shall be harvested in an area, or areas, free of alien/ invasive vegetation, either at the Site or from suitable neighbouring sites, as indicated by the Freshwater Specialist/Botanist.
b. Following harvesting, the seed shall be dried under cool airy conditions, or propagated immediately, where appropriate. The seed shall be insect- and pathogen-free and shall be stored in containers under cool conditions that are free of rodents or insects.

1.3 Mulch

a. Mulches and ground covers should be seen as critical for the rehabilitation of soil-eroded sites and other degraded areas.
b. Surrounding indigenous vegetation could be brush cut/trimmed and utilised as mulch – this will also enhance the opportunity for indigenous seed to spread and plants to re-establish.
c. The vegetative material shall be reduced by either mechanical means (chipper) or by hand-axing to sticks no longer than 100 mm. The chipped material shall be mixed with the topsoil at a ratio not exceeding 1:1.

1.4 Fertilization

No fertilisers or chemical soil ameliorants may be used due to close proximity to the wetland.

Planting

a. All exposed soil areas should be re-vegetated or re-seeded as set out in Figure A-1 and according to the recommended Plant list.
b. It would be advised that a greenhouse is set up on the property and that propagation of plant material commence as soon as approval/authorisation has been granted, and planting of the disturbed areas should begin in March/April the following year, just before the rain season starts.

Planting guidelines

- It is advised that planting takes place at the end of the dry season (during March/April) in order for them to establish in the wet season. In the event of seeding being used as a planting method, seeding is to take place right after the rainy season (October/November), with sufficient irrigation supplied during the dry season.
- The size of holes shall be sufficiently large to ensure that the entire root system is well covered with topsoil, without having to be compressed. The soil around the roots of the plants being transplanted shall not be disturbed. Topsoil and subsoil from the hole shall be stored nearby to be replaced to the same depth intervals from which it was originally removed.
- Before the placement of the plant specimens into prepared holes, the holes shall be watered substantially.
- NO bone meal shall be added to the holes before planting.
- Plants shall be carefully transplanted into holes.

- The topsoil shall be replaced at the same depth intervals at which it was excavated. The soil shall be lightly compacted and well-watered.
- Care shall be taken to keep root damage to a minimum when transplanting seedlings. Where plants have a taproot this shall not be cut. Excess foliage, flowers and side branches shall be pruned as directed by the Project Manager.
- Large rocks shall be placed around the base of planted trees in fire-prone environments.
- Plants shall be watered immediately after transplanting to ensure that the soil is wet around the plants. If necessary, additional soil must be added after initial watering to fill any subsidence back up to ground level

Seeding:

a. All seed supplied should be labelled in accordance with the Government Seed Act (Act No. 20 of 1961).
b. The soil should be loose and uniformly wet before any seeding commences.
c. The seeded area must be raked over after seed application and well-watered.
d. Irrigate as required until the vegetation is able to survive independently (i.e. depending on the rainfall).

Establishment

Irrigation

1. The Owner shall be responsible for maintaining the desired level of moisture necessary to maintain vigorous and healthy growth until plant communities are established. The quantity of water applied at one time shall be sufficient to penetrate the soil to a minimum depth of 800 mm, where appropriate, and at a rate that will prevent saturation of the soil.
2. Water used for the irrigation of revegetated areas shall be free of chlorine and other pollutants that will have a detrimental effect on the plants.
3. All seeded and planted perennials, shrubs, and trees shall be irrigated regularly at the specified intervals.
4. Revegetated areas shall require irrigation coverage of 100% and a modifiable watering programme.
5. Where an irrigation system is required, the Owner shall be responsible for its installation and maintenance.
6. In the event of a delay between the planting programme and installation of the irrigation system, a water truck, or other watering methods shall be utilised for watering.

7. The Owner shall water the planted areas as necessary, using a suitable fine spray/drip irrigation which shall not disturb the vegetation and which will not cause any erosion.
8. The Owner shall ensure that the planted area receives a minimum of 25 mm of irrigation water, including rain, per week, applied uniformly over the whole area.
9. The Owner shall supply all water required and shall provide all pipe-work, pumps, irrigation equipment and other plant necessary.

Maintenance and Aftercare

Throughout the lifecycle of the rehabilitation process, regular monitoring and adaptive management must be in place to detect any new degradation of rehabilitated areas. Once the planting phase has been completed, the client will be required to maintain the monitoring cycle and initiate adaptive management as soon as it is required.

The following are the minimum criteria that should be monitored:

- Composition and density of replanted vegetation.
- Any new erosion that might occur.
- Associated nature and stability of surface soils.
- Re-emergence of alien and invasive plant species – if noted, remedial action must take place immediately.

The initial revegetation period is estimated to be over a period of 2 months. Maintenance and aftercare must be planned for 2-3 years after the land preparation and replanting of vegetation have been completed. The following protocol is recommended:

- Re-vegetated areas should be monitored every 6 months for the first 12 months following rehabilitation.
- Re-vegetated areas showing inadequate surface coverage (less than 20% within 12 months of re-vegetation) should be prepared and re-vegetated.
- Continuous erosion monitoring of rehabilitated areas and slopes should be undertaken and zones with excessive erosion should be identified. The cause of the erosion should be identified, and rectified. Zones with erosion will need to be re-contoured and seeded/ replanted with locally occurring species which grow quickly.

If the plants have not established and the acceptable plant cover is not achieved within the specified maintenance period, maintenance of these areas shall continue until an acceptable plant cover is achieved.

References

Department of Water Affairs and Forestry. (1999). *Resource Directed Measures for Protection of Water Resources. Volume 3: River Ecosystems Version 1.0*. Resource Directed Measures for Protection of Water Resources, Pretoria, South Africa.

Department of Water Affairs and Forestry, 2005. A practical field procedure for identification and delineation of wetlands and riparian areas. Final Draft. DWAF, Pretoria, South Africa.

DWAF (2007). *Manual for the assessment of a Wetland Index of Habitat Integrity for South African floodplain and channelled valley bottom wetland types* by M. Rountree (ed); C.P. Todd, C. J. Kleynhans, A. L. Batchelor, M. D. Louw, D. Kotze, D. Walters, S. Schroeder, P. Illgner, M. Uys. and G.C. Marneweck. Report no. N/0000/00/WEI/0407. Resource Quality Services, Department of Water Affairs and Forestry, Pretoria, South Africa.

Driver, Nel, Snaddon, Murray, Roux, Hill. (2011). *Implementation Manual for Freshwater Ecosystem Priority Areas*. Draft Report for the Water Research Commission.

Kleynhans C.J., Thirion C. and Moolman J. 2005. A Level 1 Ecoregion Classification System for South Africa, Lesotho and Swaziland. Report No. N/0000/00/REQ0104. Resource Quality Services, Department of Water Affairs and Forestry, Pretoria

Kotze D.C., Marneweck G.C., Batchelor A.L., Lindley D.S. and Collins N.B. 2009. WETEcoServices: A technique for rapidly assessing ecosystem services supplied by wetlands. WRC Report No. TT 339/09. Water Research Commission, Pretoria.

Macfarlane, D.M., Bredin, I.P., Adams, J.B., Zungu, M.M., Bate, G.C. and Dickens, C.W.S. 2014. *Preliminary guideline for the determination of buffer zones for rivers, wetlands and estuaries. Final Consolidated Report.* WRC Report No TT 610/14, Water Research Commission, Pretoria

Macfarlane D; Kotze D; Ellery W; Koopman V; Goodman PS; Goge M; Walters D. 2009. WET-Health. WRC Report No TT 340/09, Water Research Commission, Pretoria

Marnewecke, G. & Kotze, D., 1999. Appendix W6: Guidelines for delineating the boundaries of a wetland and the zones within a wetland in terms of the South African Water Act. Version 1.0. Department of Water Affairs and Forestry, Pretoria, South Africa.

Mucina, L. and Rutherford, M. C. (eds.) (2004) *Vegetation map of South Africa, Lesotho and Swaziland*. Strlitzia 18. South African National Biodiversity Institute, Pretoria.

National Environmental Management Act (NEMA) 107 of 1998

National Water Act 36 of 1998. Section 21(c) and (i).

SANBI Biodiversity GIS. http://bgis.sanbi.org

SANBI (2009). Further Development of a Proposed National Wetland Classification System for South Africa. Primary Project Report. Prepared by the Freshwater Consulting Group (FCG) for the South African National Biodiversity Institute (SANBI).

Van Ginkel, C. E., Glen, R. P., Gordon-Gray, K. D., Cilliers, C. J., Muasya, M. and P. P. van Deventer (2011) *Easy identification of some South African wetland plants.* WRC Report No TT 479/10

WRC. (2011). *Atlas for Freshwater Ecosystem Priority Areas* – Maps to support sustainable development of water resources (WRC Report No. TT 500/11).



Appendix A

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 2024/2025 projects:

- 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.
- Snyman, J.C. July 2024. Freshwater Compliance Statement For The Proposed Extension Of The Quay Link Road, Saldanha Feeport Development, Saldanha, Western Cape
- Snyman, J.C. September 2024. Freshwater Assessment And RMMP For The Proposed Dam Repair Works On Farm 43, Stellenbosch, Western Cape
- Snyman, J.C. September 2024. Freshwater Assessment For The Proposed Upgrading Of The Klapmuts Wastewater Treatment Works (Wwtw), Portion 5 Of Farm 736, Paarl, Western Cape
- Snyman, J.C. September 2024. Freshwater Assessment For The Proposed New Development On Portion 14 Of Farm Slange Rivier 303, Swellendam, Western Cape.
- Snyman, J.C. September 2024. Freshwater Assessment For The Proposed Upgrading Of The Onrus Main Pump Station, On The Remainder Of Erf 2702, Caledon, Western Cape
- Snyman, J.C. October 2024. Freshwater Compliance Statement For The Proposed Works Within The Bok River As Part Of The Extension Of The Blue Bay Lodge Development, Saldanha, Western Cape
- Snyman, J.C. October 2024. Freshwater Monitoring Plan For The Proposed Operation Of The New Korhaanshoogte Dam, Portion 25 Of Farm 433, Clanwilliam
- Snyman, J.C. November 2024. Audit Report For The Rehabilitation Of A Section Of A Non-Perennial Watercourse, At Farm Sandfontein 232/5, Swellendam Rd
- Snyman, J.C. February 2025. Freshwater Assessment For The Proposed New Proposed Casa Maris Residential Development, Somerset West, Western Cape
- Snyman, J.C. February 2025. Freshwater Assessment For The New Water Use Of Biodegradable Effluent From The Remainder Of Farm 494, Clanwilliam, Western Cape
- Snyman, J.C. February 2025. Freshwater Baseline Report For The Proposed New Agricultural Development On The Remainder Of Farm 472, Vanrhynsdorp, Western Cape
- Snyman, J.C. March 2025. Freshwater Assessment For The Proposed New Development On Portion 14 Of Farm Slange Rivier 303, Swellendam, Western Cape
- Snyman, J.C. June 2025. Freshwater Assessment For The Proposed Development Of A Free-Range Poultry Broiler Facility On The Farm Numbers 563, 564, 565 And Farm Kleinfontein Number 954, Worcester, Western Cape
- Snyman, J.C. August 2025. Freshwater Assessment For The Vrygrond Housing Project , Muizenberg.
- Snyman, J.C. August 2025. Freshwater Assessment For The Proposed New Jebo Connect Fibre Cable, Bredasdorp, Western Cape