Aquatic Biodiversity Compliance Statement

Unlawful Clearance of Indigenous Vegetation on Farm 7/259, Caledon, Western Cape

For: Lornay Environmental Consulting

November 2024

Report Information

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Executive Summary

The landowner of Portion 7 of Farm Rietfontein 259, located 11 km west from the town of Caledon within the Western Cape Province has been issued with a compliance notice in terms of section 31I (3) of the National Environmental Management Act No. 107 of 1998 ("NEMA"), dated 3/06/2024 from the Department of Environmental Affairs and Development Planning (DEADP). Following an investigation, DEADP determined that the landowner had performed a listed activity on Farm 7/259 without Environmental Authorisation (EA). The unauthorized activity was the clearing of 300 m square of indigenous vegetation for crop cultivation, within an identified geographical area as per Activity 12 of Listing Notice 3 (GNR 324 of 2017). The area cleared of indigenous vegetation, as well as its immediate surrounds, is further referred to as the "Study Area" in this report.

In a letter from Cape Nature dated 23 August 2024, it was noted that although there are no aquatic features within the affected footprint, there are non-perennial rivers and seep wetland mapped in the vicinity of the site.

In accordance with the compliance notice and the letter from Cape Nature, the landowner has appointed Delta Ecology to conduct a retrospective Aquatic Biodiversity Assessment, with the aim of assessing the potential impacts of the unauthorised activity on watercourses in the vicinity (if applicable), and to identify suitable mitigation / remediation measures where and as needed.

During the desktop assessment, it was determined that there were no rivers, or natural / artificial wetlands within the cleared area. Surrounding the area cleared of vegetation are various watercourses located downstream; a northern drainage line is located 51 m away, with an associated CVB wetland, which lies 90 m away. Both watercourses are separated by dense natural terrestrial vegetation. To the east, a CVB wetland is located 100 m from the cleared area, with a buffer comprising an agricultural field and natural vegetation. A south western drainage line and associated CVB wetland is located 217 m away and buffered by an agricultural field. To the south, the farm dam, and associated drainage line, and CVB wetland are situated at distances of 177 m, 214 m, and 270 m, respectively, all buffered by an agricultural field and / or natural vegetation.

These watercourses are all located more than 50 m away and are buffered by dense natural vegetation, and/or agricultural fields with associated furrows and associated vegetation. Therefore, it is the specialist's opinion that surrounding watercourses were not impacted by the upstream clearance of vegetation; and will not be impacted by the proposed cultivation within this area.

The following mitigation / management measures are recommended:

- Of importance is that the 50 m buffer of natural vegetation which surrounds the northern watercourses located closest to the activity, must be maintained as dense undisturbed indigenous vegetation for the lifecycle of the farming activities.
- Although no erosion or sedimentation was noted during the site visit, the surrounding watercourses, and particularly the northern 50 m buffer area, should be monitored for any potential erosion on a regular basis. Should erosion be observed, appropriate measures should be taken such as:
    - Covering steep/unstable/erosion prone areas with geotextiles.
    - Covering areas prone to erosion with brush packing, straw bales, mulch.
    - Stabilizing cleared/disturbed areas susceptible to erosion with sandbags.

  - Constructing silt fences / traps in areas prone to erosion, to retain sediment-laden runoff. Silt fences must be adequately maintained. Furthermore, the farm manager must monitor sediment fences / traps after every heavy rainfall event and any sediment that has accumulated must be removed by hand.
- Alien Invasive Plant Species (AIS), which might colonize disturbed areas and outcompete natural vegetation, should be monitored for and removed during ongoing management of the farm.
- Dumping and littering within any surrounding watercourses is strictly prohibited.
- All farming machinery and vehicles used must be regularly serviced, fuel must be stored more than 15 m away from any watercourse in a bunded area.

As there is no risk to surrounding watercourses, it is recommended that no Water Use Authorisation (WUA) in terms of Section c and i water uses with the Department of Water and Sanitation (DWS) is required. From an aquatic ecological perspective, there should be no reason the clearance and proposed cultivation cannot be approved.

Table of Contents

List of Figures

List of Tables

Specialist Details

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Kimberley van Zyl is an ecologist and environmental scientist with over 8 years' experience in the environmental management field. She holds a MSc. degree in Water Resource Management from the University of Pretoria and her professional affiliations include the South African Council for Natural Scientific Professions (SACNASP) and the Southern African Society of Aquatic Scientists (SASAqS). Kimberley's work experience has exposed her to a range of projects across various business sectors such as mining, agriculture, and construction, as well as the public sector. A full CV can be provided on request.

A signed statement of independence will be provided as a separate document.

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Robyn Morton has a MSc. degree in Conservation Sciences from the Cape Peninsula University of Technology. Throughout her studies, internships, and consultancy experience, she has gained valuable and informed insight into the functioning of natural and socio-ecological systems, as well as many key research and monitoring skills. Prior to her consulting career, Robyn worked for Zandvlei Estuary Nature Reserve for 4 years and gained experience in the field of urban wetland and estuary management. Robyn specialises in aquatic ecology and is currently working for Delta Ecology as a junior associate under the guidance of Kimberley van Zyl.

A signed statement of independence will be provided as a separate document.

1. Introduction

The landowner of Portion 7 of Farm Rietfontein 259, located 11 km west from the town of Caledon within the Western Cape Province (**Figure 1-1**) has been issued with a compliance notice in terms of section 31I (3) of the National Environmental Management Act No. 107 of 1998 ("NEMA"), dated 3/06/2024 from the Department of Environmental Affairs and Development Planning (DEADP). Following an investigation, DEADP determined that the landowner had performed a listed activity on Farm 7/259 without Environmental Authorisation (EA). The unauthorized activity was the clearing of 300 m square of indigenous vegetation (**Figure 1-2**) for crop cultivation, within an identified geographical area as per Activity 12 of Listing Notice 3 (GNR 324 of 2017). The area cleared of indigenous vegetation, as well as its immediate surrounds, is further referred to as the "Study Area" in this report.

In a letter from Cape Nature dated 23 August 2024, it was noted that although there are no aquatic features within the affected footprint, there are non-perennial rivers and seep wetland mapped in the vicinity of the site.

In accordance with the compliance notice and the letter from Cape Nature, the landowner has appointed Delta Ecology to conduct a retrospective Aquatic Biodiversity Assessment, with the aim of assessing the potential impacts of the unauthorised activity on watercourses in the vicinity (if applicable), and to identify suitable mitigation / remediation measures where and as needed.

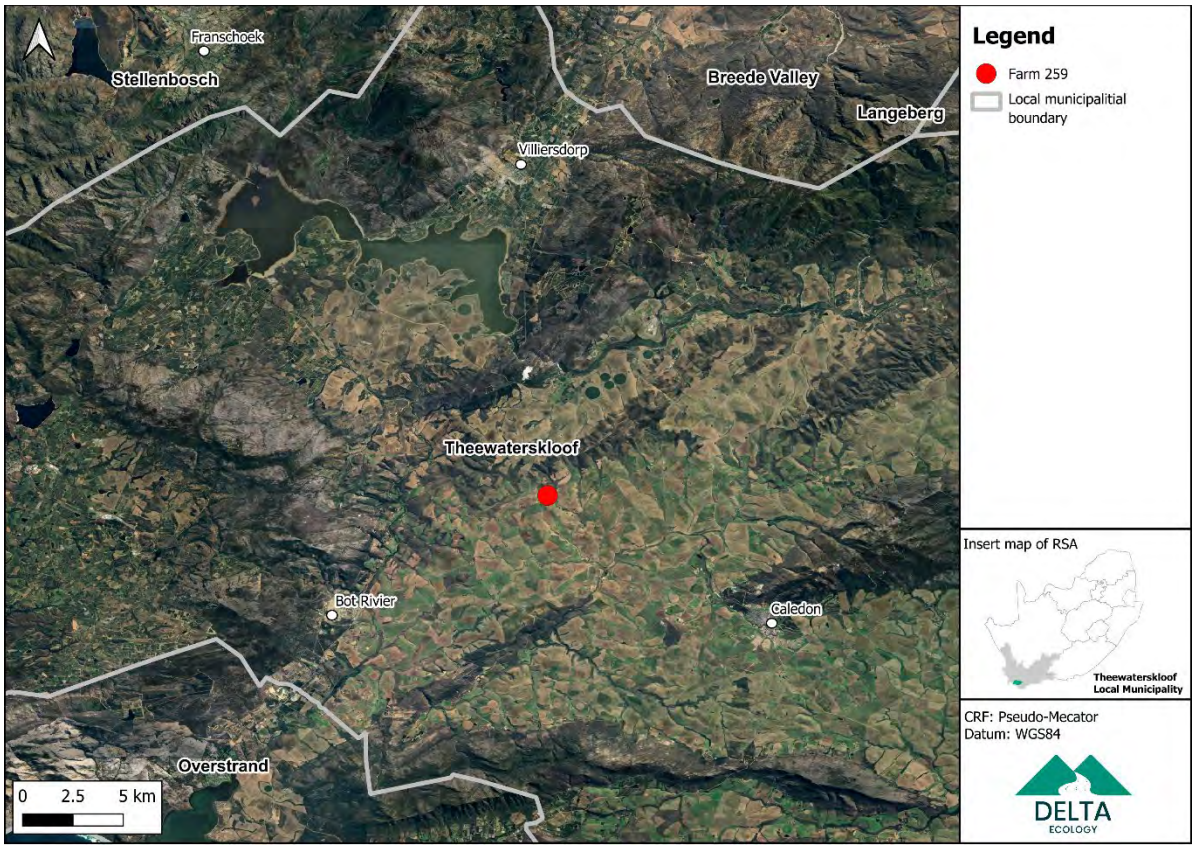

Figure 1-1: Regional location of Farm 7/259.

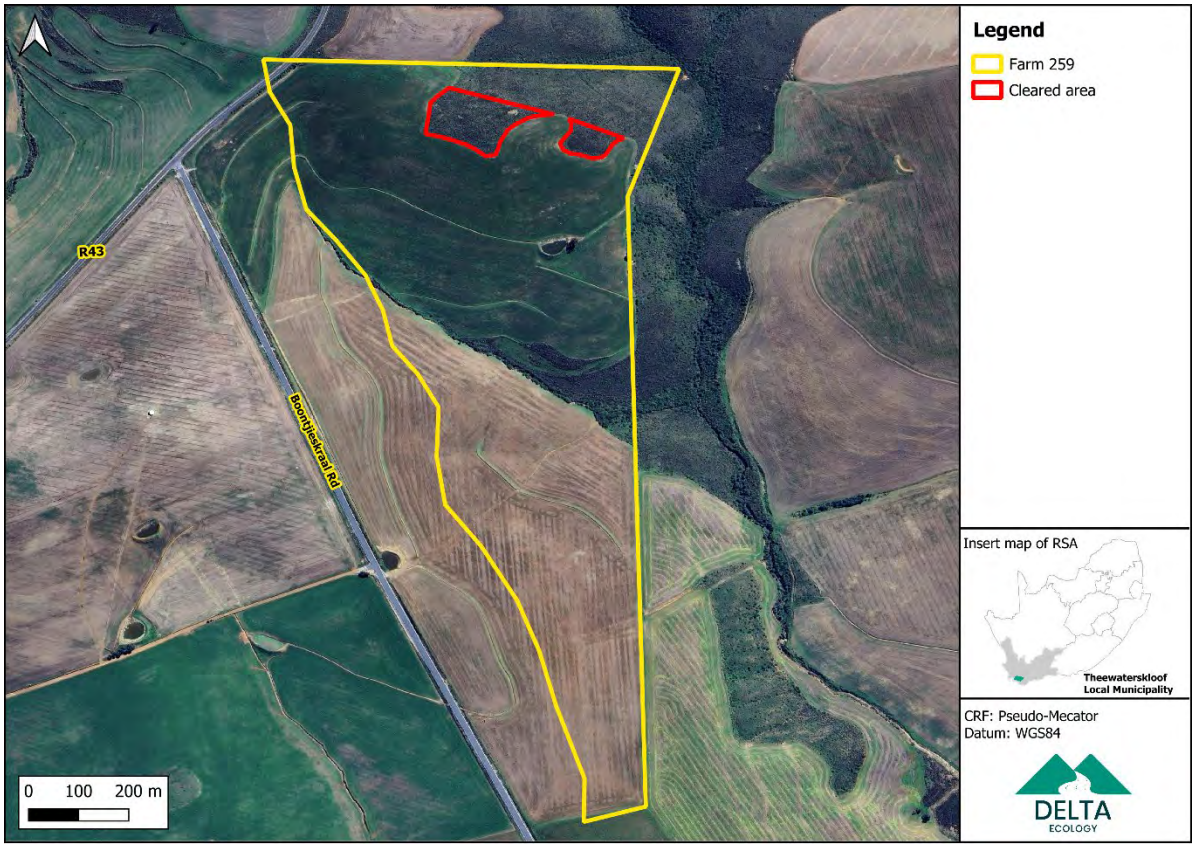

Figure 1-2: Location of the cleared area within the site.

1.1. Terms of Reference

The Terms of Reference (ToR) agreed upon for this aquatic biodiversity assessment include:

- A desktop background assessment to identify potential aquatic biodiversity constraints within the site and within the 500 m regulated proximity thereof.
- A field assessment to confirm aquatic biodiversity constraints.
- Delineation of potential at-risk or impacted watercourse (s) using a combination of site-based and desktop methodologies as appropriate.
- Drafting of an aquatic biodiversity compliance statement (as necessary) including the following:
    - General site description.
    - Site sensitivity verification.
    - Description of the drivers and key components of any watercourse (s) (as applicable) that are likely to be impacted by the development.
    - Clarification of the legislative implications and authorisation processes required for the development if applicable; and
    - Recommendations for minimisation of aquatic biodiversity impact if applicable.

1.2. Limitations and Assumptions

The following limitations and assumptions apply to this assessment:

- The site assessment was undertaken on the 15th of November 2024, during the spring season. Therefore, this assessment does not cover complete seasonal variation in conditions at the site. This is however, in the opinion of the specialist, of no material consequence to outcome of this assessment, as the mapped watercourse areas were verified infield using the necessary methodology described in Section 3.2 and 3.3.
- Additionally, topography and the presence of hydric vegetation could be used as determinants of watercourse presence.

1.3. Use of this report

This report reflects the professional judgement of its author and, as such, the full and unedited contents of this should be presented in any application to relevant authorities. Any summary of the findings should only be produced with the approval of the author.

2. Site Sensitivity Verification

According to the Department of Forestry, Fisheries, and the Environment (DFFE) national web-based environmental screening tool report generated for the cleared area, the Combined Aquatic Biodiversity Theme Sensitivity is classified as "Very High" for the site, and "Low" for the cleared areas or study area itself (DFFE, 2024) (**Figure 1-3**). The trigger is the presence of mapped aquatic Critical Biodiversity Areas (CBAs), along with mapped National Wetland Map 5 (NWM5) (SANBI, 2018) and National Freshwater Ecological Priority Areas (NFEPA) (CSIR, 2011) wetlands within the site.

As per the National Environmental Management Act (NEMA) (Act No. 107 of 1998) Regulations of 2020 (as amended) (GN R. 320 of 2020), prior to initiation of specialist assessments, the current land use, and the potential environmental sensitivity of the site (s) - as identified by the national web-based environmental screening tool - must be confirmed by undertaking an Initial Site Sensitivity Verification. This Initial Site Sensitivity Verification aims to confirm or dispute the current use of the land and environmental sensitivity as identified by the national web based environmental screening tool.

There are no mapped watercourses within the study area, however there are several Channelled Valley-Bottom (CVB) to the north, east, south, and southwest, according to the NWM5 (SANBI, 2018). Additionally, one northern drainages line and a farm dam are mapped within the 500 m (wetlands) and 100 m (rivers) regulated proximity according to the topographical and watercourse information from the Department of Rural Development and Land Reform (DRDLR). The NFEPA spatial data (CSIR, 2011) maps the northern CVBW as a seep wetland and the eastern, southern and southwestern CVBW as a floodplain wetland.

The Initial Site Sensitivity Verification was undertaken by a desktop assessment, and a field assessment conducted on the 15th of November 2024. The study area was deemed to be of "Low" aquatic sensitivity. During the field assessment, the cleared area was determined to be terrestrial, with no natural or functional watercourses present. Surrounding the area cleared of vegetation are various watercourses located downstream; however, these watercourses are located more than 50 m away and are buffered by dense natural vegetation, or agricultural fields with associated furrows and associated vegetation. Therefore, it is the specialist's opinion that surrounding watercourses were not impacted by the upstream clearance of vegetation.

To the north, a drainage line is located 51 m away, with an associated CVB wetland, which lies 90 m away. Both watercourses are separated by dense natural terrestrial vegetation.

To the east, a CVB wetland is located 100 m from the cleared area, with a buffer comprising an agricultural field and natural vegetation. A south western drainage line and associated CVB wetland is located 217 m away and buffered by an agricultural field. To the south, the farm dam, and associated drainage line, and CVB wetland are situated at distances of 177 m, 214 m, and 270 m, respectively, all buffered by an agricultural field and / or natural vegetation.

According to GN R. 320 of 2020, if the specialist determines that the Aquatic Biodiversity sensitivity of the site is "Low", then an Aquatic Biodiversity Compliance Statement Report must be compiled as part of the EA process.

3. Methodology

The methodology used in this Aquatic Biodiversity Compliance Statement Report, including a desktop background assessment and one site visit, is outlined in the subsections below.

3.1. Desktop Assessment

A review of desktop resources was undertaken to determine the nature of the proposed study area, the presence of watercourses in the vicinity, and the significance of the area in terms of biodiversity planning. The following desktop resources were consulted:

- Topographical and watercourse information from the Department of Rural Development and Land Reform (DRDLR).
- The South African Atlas of Climatology and Agrohydrology (1997, 2007, and 2009).
- Geological information from the Council for Geoscience.
- The South African National Biodiversity Institute (SANBI) (2018) National Vegetation Map (NVM).
- The National Wetlands Map Version 5 (NWM5 – SANBI, 2018).
- The National Freshwater Ecological Priority Areas (NFEPA – CSIR, 2011) wetland, wetland vegetation group classification, river, & Freshwater Ecological Priority Areas (FEPA) datasets.
- The Chief Directorate: National Geo-spatial Information (NGI) (DRDLR) Rivers and Topography dataset.
- The Western Cape Biodiversity Spatial Plan (WCBSP, 2017).

3.2. Wetland Identification & Delineation

Watercourses, if present, were identified and delineated using the method described in the Manual for the Identification and Delineation of Wetlands and Riparian Areas for field-based delineation (DWAF, 2008). This method is the accepted best practice method for delineating watercourses in South Africa and its use is required by GN 509.

For wetlands, the method makes use of four key field indicators to guide the delineation process (refer to **Box 1**):

Box 1. Four indicators of wetland presence as described in DWAF (2008):

1. The **position in the landscape** – Identifies parts of the landscape where wetlands are more likely to occur;
2. The presence of **aquatic vegetation communities**;
3. The presence of **hydromorphic soil features**, which are morphological signatures that appear in soils with prolonged periods of saturation (associated with anaerobic conditions). Key hydromorphic features include:
    a. Mottling – Formation of clumps of iron oxide within the soil matrix in the form of orange, yellow, black, or reddish-brown speckling. Mottling occurs in most soils and reaches maximum density in the centre of the seasonal zone with sparse mottling in the temporary zone and no mottling in the permanent zone.
    b. Gleying – Shift in soil colour from the terrestrial baseline towards a blue, green, or grey colour and an overall reduction in soil chroma. This phenomenon is normally difficult to identify in the temporary zone, noticeable in the seasonal zone and most significant in the permanent zone.
    c. Organic Surface Layers – surface layers with very high organic content that typically occur in the wetland seasonal and permanent zones.
    d. Organic Streaking – Streaks of organic matter within the soil column which may be present in all zones, but particularly the temporary and seasonal zones.

Soil samples were taken for inspection by hand augering to determine soil form and presence of redoximorphic and other hydromorphic soil features. Aquatic vegetation communities were identified using the (DWAF, 2008) classification of wetland plant species, along with auxiliary information (Van Ginkel *et al.,* 2011). Wetland plant species classification categories are as follows:

- Obligate species (occurring in wetlands >99% of the time – usually in the permanent or seasonal zone);
- Facultative Positive species (67 to 99% of the population occurs within wetlands – typically in the seasonal and temporary zones with the remaining 1 to 33% in the adjacent area on the wetland periphery);
- Facultative Species (33 – 67% of the population occurs within wetlands – usually in seasonal or temporary zones with the remaining 67 – 33% in the adjacent area on the wetland periphery);
- Facultative Negative Species (1 – 33% of the population occurs within wetlands – usually in the temporary zone with the remaining 99 to 67% in the adjacent area on the wetland periphery); and
- Wetland Cosmopolitan Species (No specific affinity for wetlands; colonise wetland and terrestrial areas).

3.3. Riparian Area Delineation

Riparian areas were identified using the method described in the DWAF, (2008) Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas. This method is the accepted best practice method for identifying and delineating riparian areas in South Africa and its use is required by GN 509. The method makes use of four key field indicators (refer to **Box 2**):

Box 2. Four indicators of riparian areas as described in DWAF (2008)

1. The **position in the landscape** – riparian areas are only likely to develop on valley bottom landscape units.
2. The **soil form** – Riparian areas are often (but not always) associated with alluvial soils and recently deposited material.
3. **Topography** associated with riparian areas – riparian areas may have clearly identifiable banks associated with alluvial deposited material adjacent to the active channel.
4. The presence of **aquatic vegetation communities.**

The identification of riparian areas relies heavily on vegetative indicators. Using vegetation, the outer boundary of a riparian area can be defined as the point where a distinctive change occurs in the:

- species composition relative to the adjacent terrestrial area; and
- physical structure, such as vigour or robustness of growth forms of species similar to that of adjacent terrestrial areas. Growth form refers to the health, compactness, crowding, size, structure and/or numbers of individual plants.

In addition to indicators of structural differences in vegetation, indicator species themselves can be used to denote riparian areas. Riparian plant species classification categories are as follows:

- Obligate riparian species occur almost exclusively in the riparian zone (> 90% probability)
- Preferential riparian species are preferentially, but not exclusively, found in the riparian zone (>75% probability). Preferential riparian species may harden to drought conditions but will always indicate sites with increased moisture availability.

3.4. Watercourse Classification

The Ollis *et al* (2013) Classification System for Wetlands and Other Aquatic Ecosystems in South Africa, as used in this assessment, is a tiered structured classification system that provides a uniform description of wetland types based on their hydrogeomorphic characteristics. This classification system categorises wetlands into 7 distinct hydrogeomorphic units described in **Figure 3-1**.

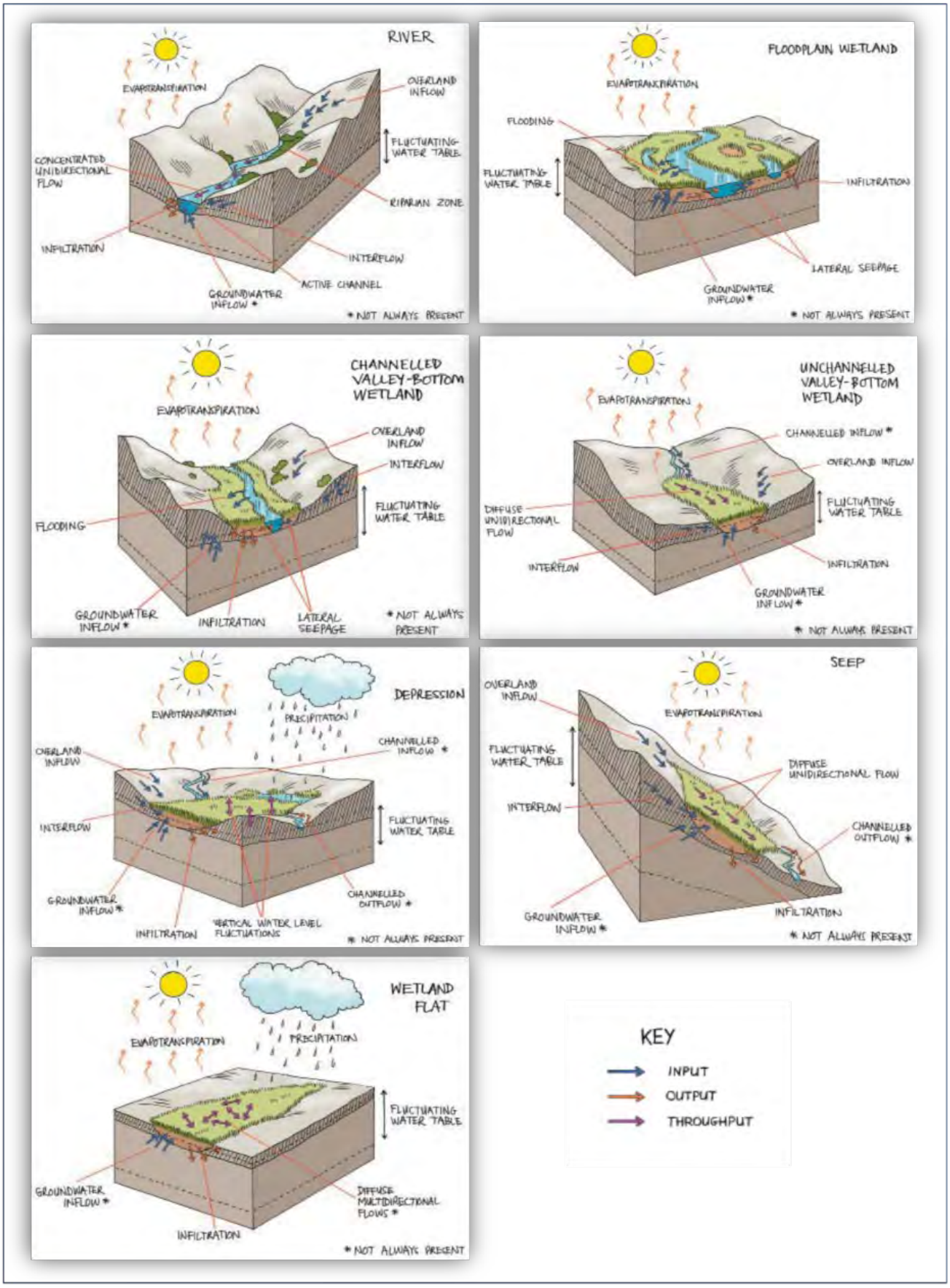

Figure 3-1: Wetland Hydrogeomorphic Types as defined in the Classification System for Wetlands and Other Aquatic Ecosystems in South Africa (Ollis *et al.*, 2013).

4. Desktop Assessment

A review of desktop resources was undertaken and a summary of key information relevant to this assessment is provided below.

4.1. Biophysical Context

The general biophysical characteristics of the study area under evaluation are summarised in **Table 4-1**. The study area is situated in quaternary catchment G40F. The catchment is predominantly characterised by hilly terrain and surrounded by steep mountain slopes. The study area is situated on top of a hill at approximately 320 m above sea level.

The study area falls within the CSB class of the Köppen-Geiger Climate Classification (Beck *et al.*, 2018), and therefore experiences warm dry summers characterised as warm-summer Mediterranean climate. The area receives a mean annual rainfall of 447 mm, which mostly occurs during the winter months of June to August (Schulze, 2009). The mean annual temperature is 16.70 °C, with a high average monthly temperature of 22 °C in February, and a low average monthly temperature of 12 °C during June to August (Schulze, 2009).

Geology of the area consists of mudstone, siltstone, shale and feldspathic sandstone of the Bokkeveld Group (ENPAT, 2021). Soils are characterised by Glenrosa and/or Mispah forms (other soils may occur), lime rare or absent in upland soils but generally present in low-lying soils (**Table 4-1**). During the site assessment it was noted that soil is shallow on hard / weathering rock, as per DAFF Soil Types and Descriptions for the Western Cape.

The surrounding natural terrestrial vegetation, where present, consists of the Western Ruens Shale Renosterveld. The Western Ruens Shale Renosterveld vegetation type is listed as Critically Endangered (CR) on the revised list of ecosystems that are threatened and is classified as Moderately Protected (MP). The natural wetland vegetation, where wetlands are present, comprises East Coast Shale Renosterveld (**Figure 4-1**) (CSIR, 2011) which is listed as CR and Zero Protected (ZP)- Poorly protected (PP) depending on wetland type.

There are no mapped watercourses within the study area, however there are several Channelled Valley-Bottom (CVB) to the north, east, south, and southwest, within the 500 m (wetlands) regulated proximity according to the NWM5 (SANBI, 2018). Additionally, one northern drainages line and a farm dam are mapped within the 500 m (wetlands) and 100 m (rivers) regulated proximity according to the topographical and watercourse information from the Department of Rural Development and Land Reform (DRDLR). The NFEPA spatial data (CSIR, 2011) maps the northern CVBW as a seep wetland and the eastern, southern and southwestern CVBW as a floodplain wetland (**Figure 4-2** & **Figure 4-3**).

Table 4-1: General biophysical characteristics of the proposed study area.

Site attribute	Description	Data source
Eco-region	Southern Coastal Belt	Department of Water Affairs Level 1 Ecoregions (Department of Water and Sanitation, 2011)
Terrestrial Vegetation Type	Western Ruens Shale Renosterveld (CR & MP)	National Vegetation Map of South Africa, 2018 (SANBI, 2018)
Dominant Geology and Soils	Mudstone, siltstone, shale and feldspathic sandstone of the Bokkeveld Group. Soils consist of glenrosa and/or Mispah forms (other soils may occur), lime rare or absent in upland soils but generally present in low-lying soils	Cape Farm Mapper (ENPAT, 2021)
Soil Erodibility Factor (K)	0.59 (High Erodibility)	SA Atlas of Climatology and Agrohydrology (Schultz, 2009)
Soil Depth & Clay Percentage (%)	<450 mm & >= 15% and < 35%	Soil types and descriptions for the Western Cape, Department of Agriculture, Forestry and Fisheries (DAFF, 2021)
Mean Annual Precipitation (mm)	447 mm	SA Atlas of Climatology and Agrohydrology (Schultz, 2009)
Rainfall seasonality	Winter rainfall	
Mean Annual Temperature (°C)	16.70 °C	
Water Management Area (WMA)	Breede-Olifants WMA	Water Management Areas (DWS, 2023)
Quaternary Catchment	G40F	South African Quaternary Catchments Database (Schulze et al., 2007)
Wetland Ecosystem Type	East Coast Shale Renosterveld (CR & ZP-MP)	NFEPA Wetland Ecosystem Types (CSIR, 2011)

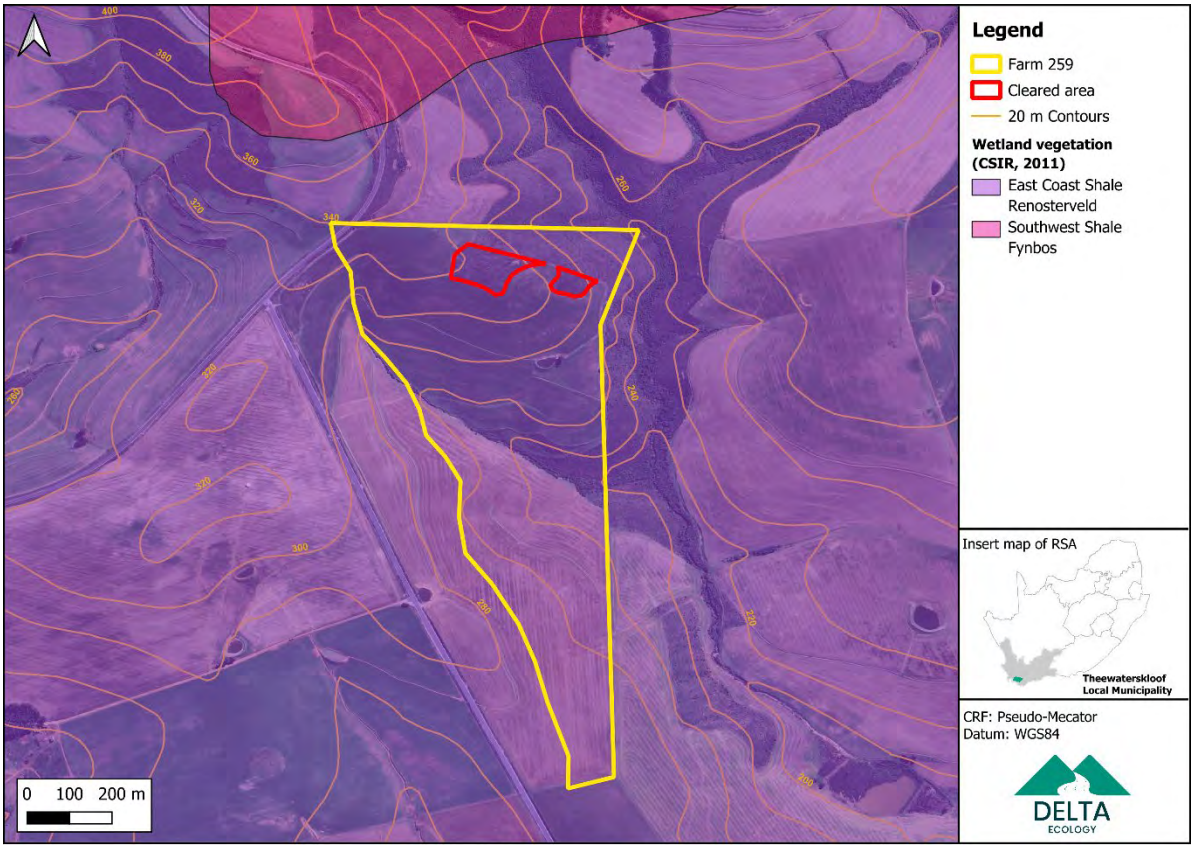

Figure 4-1: Natural wetland vegetation map.

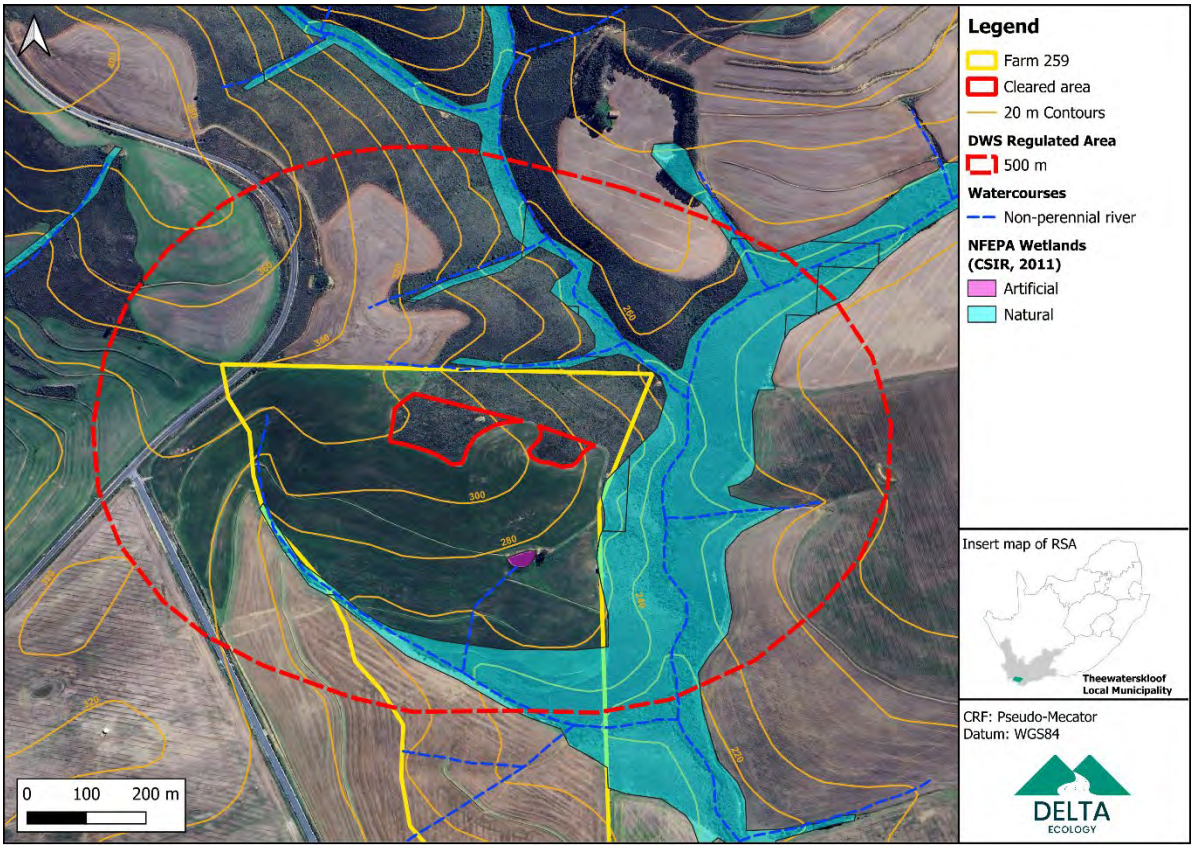

Figure 4-2: NFEPA (CSIR, 2011), and NGI (2019) watercourse map.

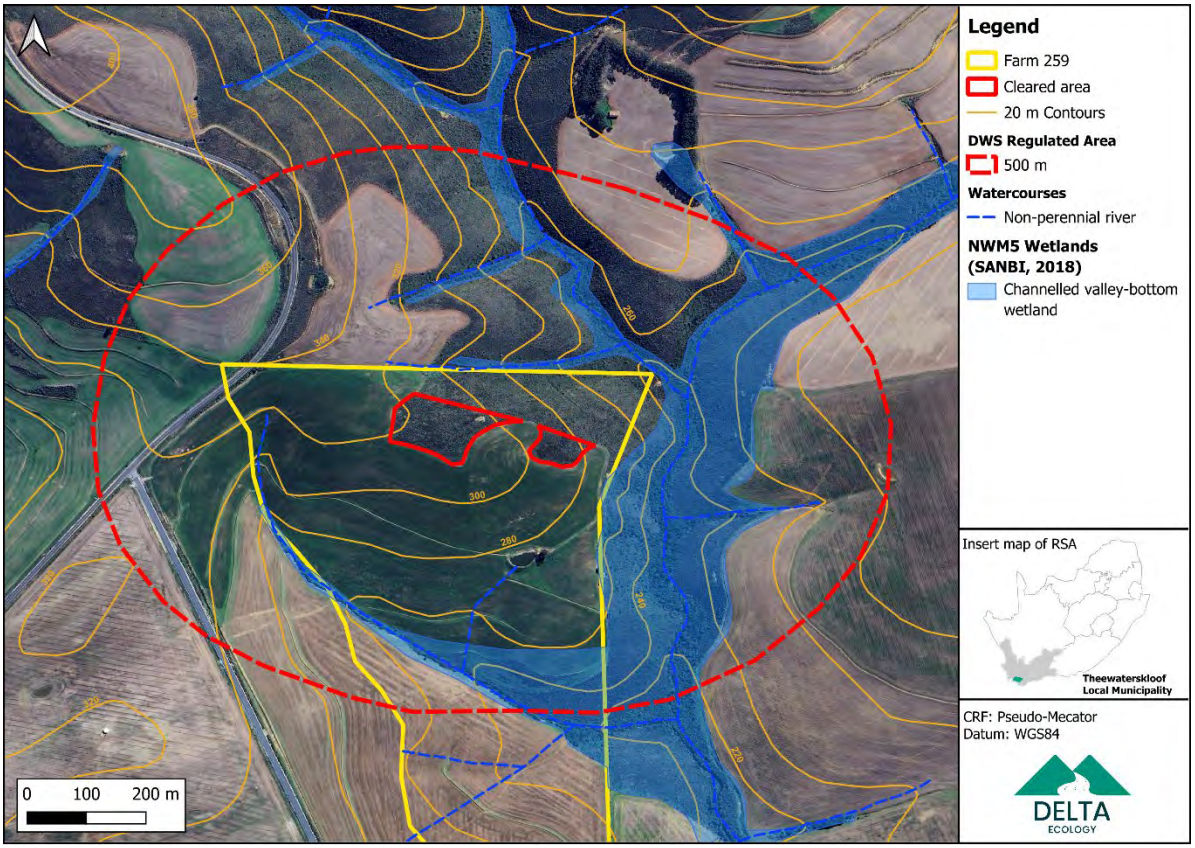

Figure 4-3: No mapped NWM5 (SANBI, 2018) watercourses indicated within the cleared area.

4.2. Biodiversity Planning Context

The study area under evaluation lies within the Breede-Olifants WMA. The area does not intersect any Strategic Water Source Area for Surface Water (SWSA-sw) or Groundwater (SWSA-gw) (Le Maitre *et al.*, 2018). The applicable sub-quaternary catchment is not demarcated as a Freshwater Ecosystem Priority Area (FEPA) (CSIR, 2011). In terms of delineated eco-regions for South Africa, this catchment falls within the Southern Coastal Belt eco-region (Level 1 Department of Water Affairs (DWA), now Department of Water and Sanitation) (**Table 4-1**).

According to the Western Cape Biodiversity Sector Plan (WCBSP, 2017), the cleared area overlays a mapped terrestrial Critical Biodiversity Area 1 (CBA) (**Figure 4-4**). No aquatic CBAs or Ecological Support Areas (ESA) were mapped within the cleared area. However, mapped aquatic CBAs and ESAs occur within the 500 m regulated area (**Figure 4-4**).

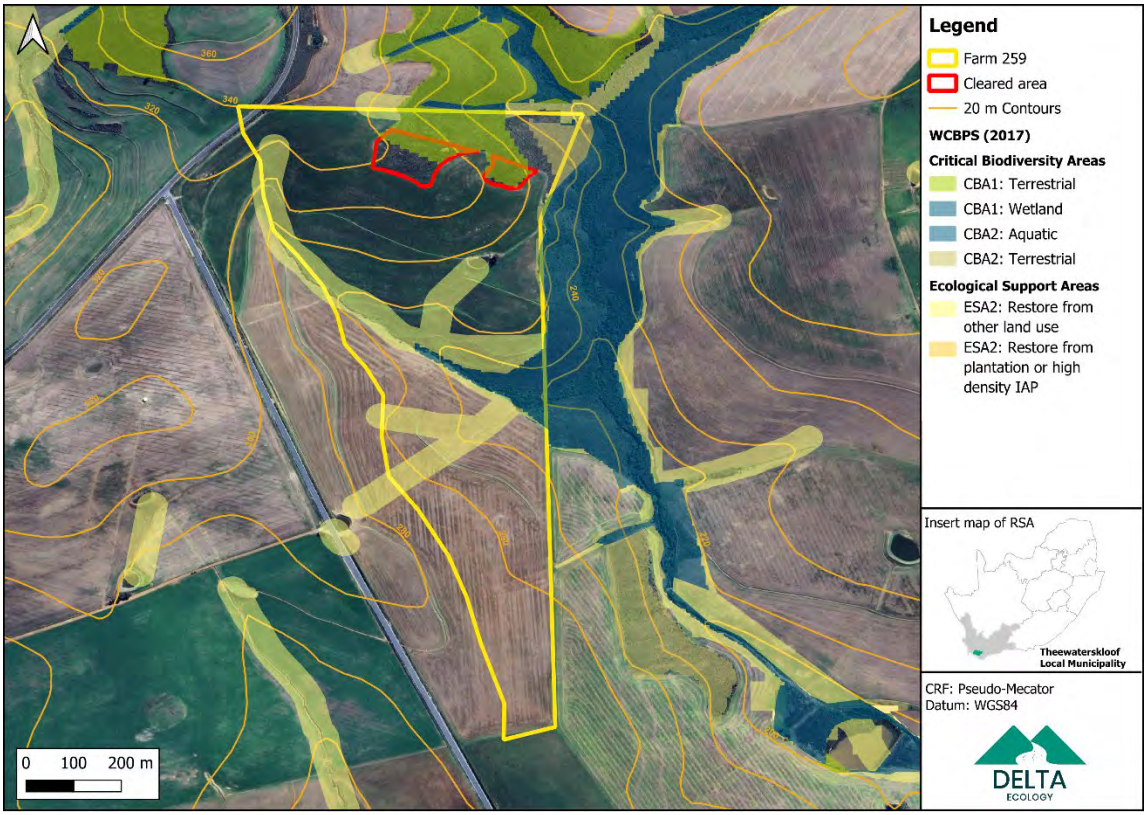

Figure 4-4: WCBSP, 2017 Map.

5. Site Description

The cleared area is located to the east of the R43 road, within the foothills of the Riviersonderend Mountain range. The cleared area is situated at the top of a hill, surrounded by undulating terrain. The cleared area is surrounded by agricultural fields to the west and south, and natural vegetation to the east, and north (**Figure 5-1**). The cleared area had hardly any vegetation present besides sparse herbaceous weeds. The substrate is very rocky interspersed with shallow brown soil (**Figure 5-2** & **Figure 5-3**). The terrestrial vegetation adjacent to the cleared area is dominated by *Dicerothamnus rhinocerotis* (Renosterbos). No watercourse conditions were present within the cleared area, i.e. no topographical (riverbed/channel or banks), hydric soils, hydrophytic or riparian vegetation. No criteria used to identify a watercourse as per the National Water Act (NWA) (Act 36 of 1998) were present within the cleared area.

Surrounding the area cleared of vegetation are various watercourses located downstream (**Figure 5-1**); however, these watercourses are located more than 50 m away and are buffered by dense natural vegetation, or agricultural fields with associated furrows and associated vegetation. To the north, a drainage line is located 51 m away, with an associated CVB wetland, which lies 90 m away. Both watercourses are separated by dense natural terrestrial vegetation. To the east, a CVB wetland is located 100 m from the cleared area, with a buffer comprising an agricultural field and natural vegetation. A south western drainage line and associated CVB wetland is located 217 m away and buffered by an agricultural field. To the south, the farm dam, and associated drainage line, and CVB wetland are situated at distances of 177 m, 214 m, and 270 m, respectively, all buffered by an agricultural field and / or natural vegetation. **Figure 5-4**-**Figure 5-12** provide an overview of the watercourses surrounding the cleared area.

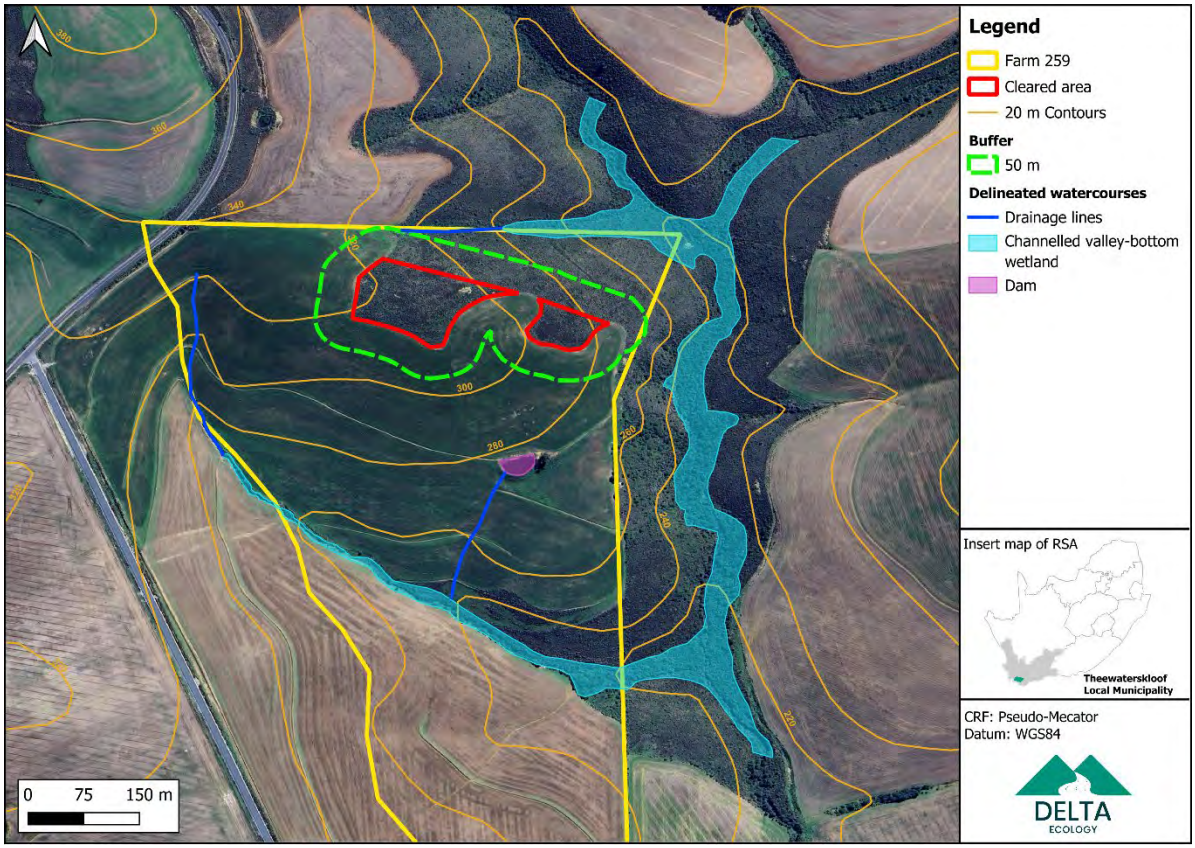

Figure 5-1: Watercourse Delineation Map. No watercourses are within 50 m of the cleared area.

Figure 5-2: Cleared area.

Figure 5-3: Rocky substrate within the cleared area.

Figure 5-4: Drainage line leading to the CVB wetland to the north of the cleared area.

Figure 5-5: View of the drainage line and associated CVBW to the north of the cleared area with dense terrestrial vegetation in between.

Figure 5-6: Terrestrial vegetation between the cleared area and the CVB wetland / drainage line to the north.

Figure 5-7: CVB wetland to the north of the cleared area.

Figure 5-8: CVB wetland to the northeast - east of the cleared area.

Figure 5-9: Dense terrestrial vegetation between the cleared area and CVB wetland to the east.

Figure 5-10: CVB wetland to the east of the cleared area, with an agricultural field in between.

Figure 5-11: Farm dam located to the south of the cleared area.

Figure 5-12: Drainage line flowing into the southern CVB wetland.

6. Conclusion and Recommendation

This report sets out the results from a desktop analysis, as well as a field assessment, to clarify aquatic biodiversity constraints associated with the unlawful clearing of indigenous vegetation on Portion 7 of Farm 259, located 11 km west from the town of Caledon within the Western Cape Province.

During the desktop assessment, it was determined that there were no rivers, or natural / artificial wetlands within the cleared area. Surrounding the area cleared of vegetation are various watercourses located downstream; a northern drainage line is located 51 m away, with an associated CVB wetland, which lies 90 m away. Both watercourses are separated by dense natural terrestrial vegetation. To the east, a CVB wetland is located 100 m from the cleared area, with a buffer comprising an agricultural field and natural vegetation. A south western drainage line and associated CVB wetland is located 217 m away and buffered by an agricultural field. To the south, the farm dam, and associated drainage line, and CVB wetland are situated at distances of 177 m, 214 m, and 270 m, respectively, all buffered by an agricultural field and / or natural vegetation.

These watercourses are all located more than 50 m away and are buffered by dense natural vegetation, and/or agricultural fields with associated furrows and associated vegetation. Therefore, it is the specialist's opinion that surrounding watercourses were not impacted by the upstream clearance of vegetation; and will not be impacted by the proposed cultivation within this area. The following mitigation / management measures are recommended:

- Of importance is that the 50 m buffer of natural vegetation which surrounds the northern watercourses located closest to the activity, must be maintained as dense undisturbed indigenous vegetation for the lifecycle of the farming activities.
- Although no erosion or sedimentation was noted during the site visit, the surrounding watercourses, and particularly the northern 50 m buffer area, should be monitored for any potential erosion on a regular basis. Should erosion be observed, appropriate measures should be taken such as:
    - Covering steep/unstable/erosion prone areas with geotextiles.
    - Covering areas prone to erosion with brush packing, straw bales, mulch.
    - Stabilizing cleared/disturbed areas susceptible to erosion with sandbags.
    - Constructing silt fences / traps in areas prone to erosion, to retain sediment-laden runoff. Silt fences must be adequately maintained. Furthermore, the farm manager must monitor sediment fences / traps after every heavy rainfall event and any sediment that has accumulated must be removed by hand.
- Alien Invasive Plant Species (AIS), which might colonize disturbed areas and outcompete natural vegetation, should be monitored for and removed during ongoing management of the farm.
- Dumping and littering within any surrounding watercourses is strictly prohibited.
- All farming machinery and vehicles used must be regularly serviced, fuel must be stored more than 15 m away from any watercourse in a bunded area.

As there is no risk to surrounding watercourses, it is recommended that no Water Use Authorisation (WUA) in terms of Section c and i water uses with the Department of Water and Sanitation (DWS) is required. From an aquatic ecological perspective, there should be no reason the clearance and proposed cultivation cannot be approved.

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