Aquatic Biodiversity Screening

Remainder of Erf 1489, Vermont, Western Cape Province

For: Lornay Environmental Consulting

January 2025

Report Information

Document name	Aquatic Biodiversity Screening of the Remainder (RE) of Erf 1489, Vermont V1.0		
Number of pages	31		
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Citation

Van Zyl, K. and Morton, R. 2024. Aquatic Biodiversity Screening RE of Erf 1489, Vermont V1.0 Delta Ecology. RSA

Executive Summary

The owner of the Remainder (RE) of Erf 1489, Vermont, located within Overstrand Local Municipality, proposes subdivision of the property to create several erven for single residential development.

The proposed development would consist of 18 single residential units with a footprint of approximately 0.74 ha, 0,13 ha of open space and 0,38 ha of private road. The study area is bordered to the north by the R43 road reserve, to the west and south by low density residential housing, and to the east by Paradise Park holiday resort.

According to the national Department of Forestry, Fisheries and the Environment (DFFE) web-based environmental screening tool report generated for the proposed site, the Combined Aquatic Biodiversity Theme Sensitivity is classified as "Very High" (DFFE, 2024). The classification trigger is the location of the site within a Strategic Water Source Area (SWSA) for surface water (Boland).

Given the likelihood of potential aquatic biodiversity constraints associated with the proposed development area, Delta Ecology was contracted to undertake an aquatic biodiversity screening of the proposed site to clarify the aquatic biodiversity constraints. The aim of this screening is (1) to verify the site sensitivity with regards to aquatic biodiversity and (2) to map potential aquatic biodiversity constraints within the intended development site.

Extending across much of the proposed site and the southern 500 m DWS regulated area, the NFEPA wetland layer indicates the presence of a large unnatural Channelled Valley-Bottom (CVB) wetland system which ultimately augments the Vermont Salt Pan. In addition, the National Geospatial Information Service (NGI) topo-cadastral map indicates a non-perennial drainage line within the site. The Western Cape Biodiversity Spatial Plan (WCBSP) identifies an aquatic ESA 2 (Restore) associated with the non-perennial river flowing though the study area (WCBSP, 2017).

Following a site assessment on the 10th of December 2024, most of the site was considered to be terrestrial, with no indication of the mapped NGI non perennial drainage line present. A natural Unchanneled Valley-Bottom Wetland (UVBW), which drains into the Vermont Salt Pan located approximately 420 m downstream, was delineated along the southern boundary of the site (**Figure i**).

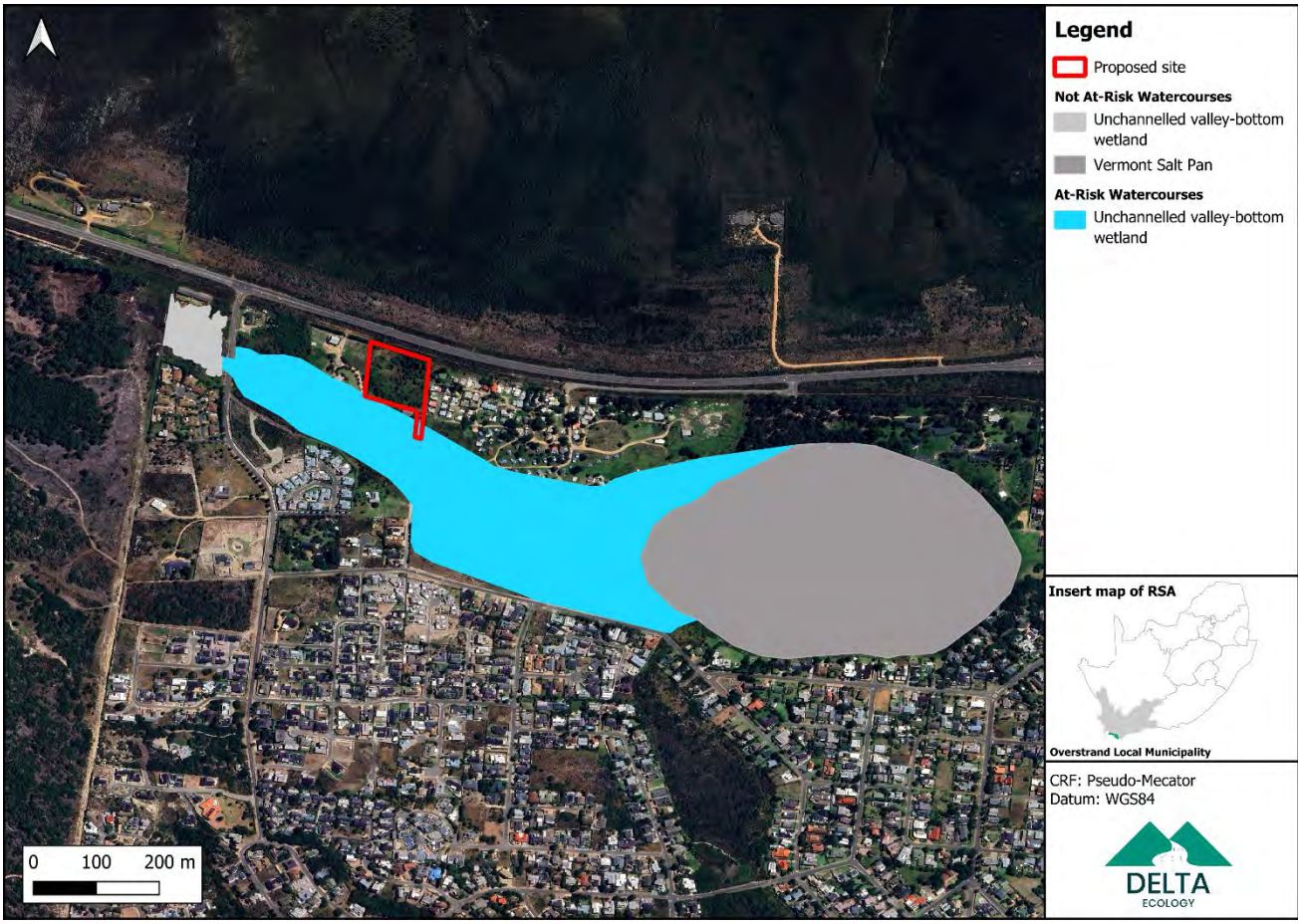

Figure i: "At Risk" UVBW associated with RE of Erf 1489, Vermont.

The UVB wetland area within, and directly adjacent to, the site, is considered to be relic or historical. Although there was sparse wetland vegetation present (such as *Cyperus textilis*), it is the specialist's opinion that this area has lost all wetland functionality and there is no rehabilitation potential due to the level of disturbance (**Figure ii**).

The vegetation within the functional UVBW downslope / adjacent to the access road, consists of wetland obligate species *Juncus krausii*, *Cyperus textilis,* with wetland facultative *Senecio halimifolius* and *Zantedeschia Aethiopica* along the outer boundary. This functional wetland area was determined to be of "Very High" Aquatic sensitivity (**Figure ii**) and may be impacted by the proposed development. Therefore, a full Aquatic Biodiversity Impact Assessment must be submitted as set out by the National Environmental Management Act (NEMA) (Act No. 107 of 1998) Regulations of 2020 (as amended) (GN R. 320 of 2020) (**Figure ii**).

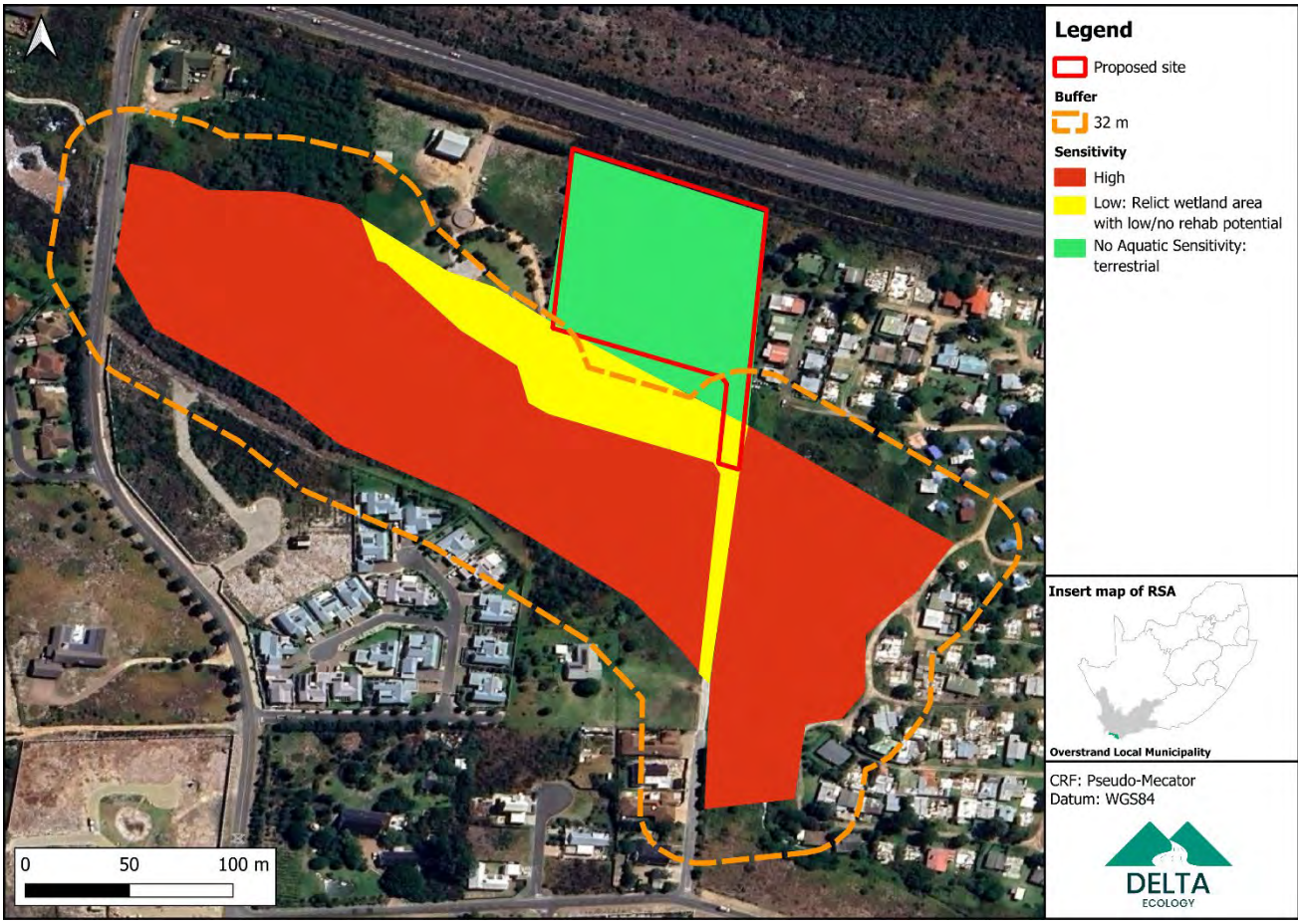

Figure ii: Aquatic Sensitivity Map.

In terms of the NEMA, Act No. 107 of 1998, a Basic Assessment (BA) will be required in terms of freshwater constraints if there is construction of 100 m^2 or more of infrastructure within a watercourse (i.e. wetland, river, drainage line, etc.) or within 32 m thereof or removal, deposition, or movement of 10 m^3 or more of sediment or any other substance within a watercourse (i.e. wetland, river, drainage line, etc.). It is considered likely that these two Listed Activities are triggered by the proposed development.

Furthermore, a water use authorisation, either in the form of a General Authorisation (GA) in terms of GN 4167 of 2023 promulgated in terms of the National Water Act ([NWA] 36 of 1998) or in the form of a Water Use Licence will also be required for any development within 500 m of a wetland deemed to be "At Risk", and within 100 m of an "At Risk" river. The majority of the site falls within the DWS regulated area for wetlands and will thus require a Water Use Authorisation. Which form of authorisation depends on the outcome of an aquatic risk assessment, to be completed as part of the Aquatic Biodiversity Impact Assessment Report.

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Kimberley van Zyl is an ecologist and environmental scientist with over 6 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 South African Society for Aquatic Scientists. 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.

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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 owner of the Remainder (RE) of Erf 1489, Vermont, located within Overstrand Local Municipality (**Figure 1-1**) proposes subdivision of the property to create several erven for single residential development (**Figure 1-2**). The proposed development would consist of 18 single residential units with a footprint of approximately 0.74 ha, 0,13 ha of open space and 0,38 ha of private road (**Figure 1-3**). The study area is bordered to the north by the R43 road reserve, to the west and south by low density residential housing, and to the east by Paradise Park holiday resort.

According to the national Department of Forestry, Fisheries and the Environment (DFFE) web-based environmental screening tool report generated for the proposed site, the Combined Aquatic Biodiversity Theme Sensitivity is classified as "Very High" (DFFE, 2024). The classification trigger is the location of the site within a Strategic Water Source Area (SWSA) for surface water (Boland).

Given the likelihood of potential aquatic biodiversity constraints associated with the proposed development area, Delta Ecology was contracted to undertake an aquatic biodiversity screening of the proposed site to clarify the aquatic biodiversity constraints. The aim of this screening is (1) to verify the site sensitivity with regards to aquatic biodiversity and (2) to map potential aquatic biodiversity constraints within the intended development site.

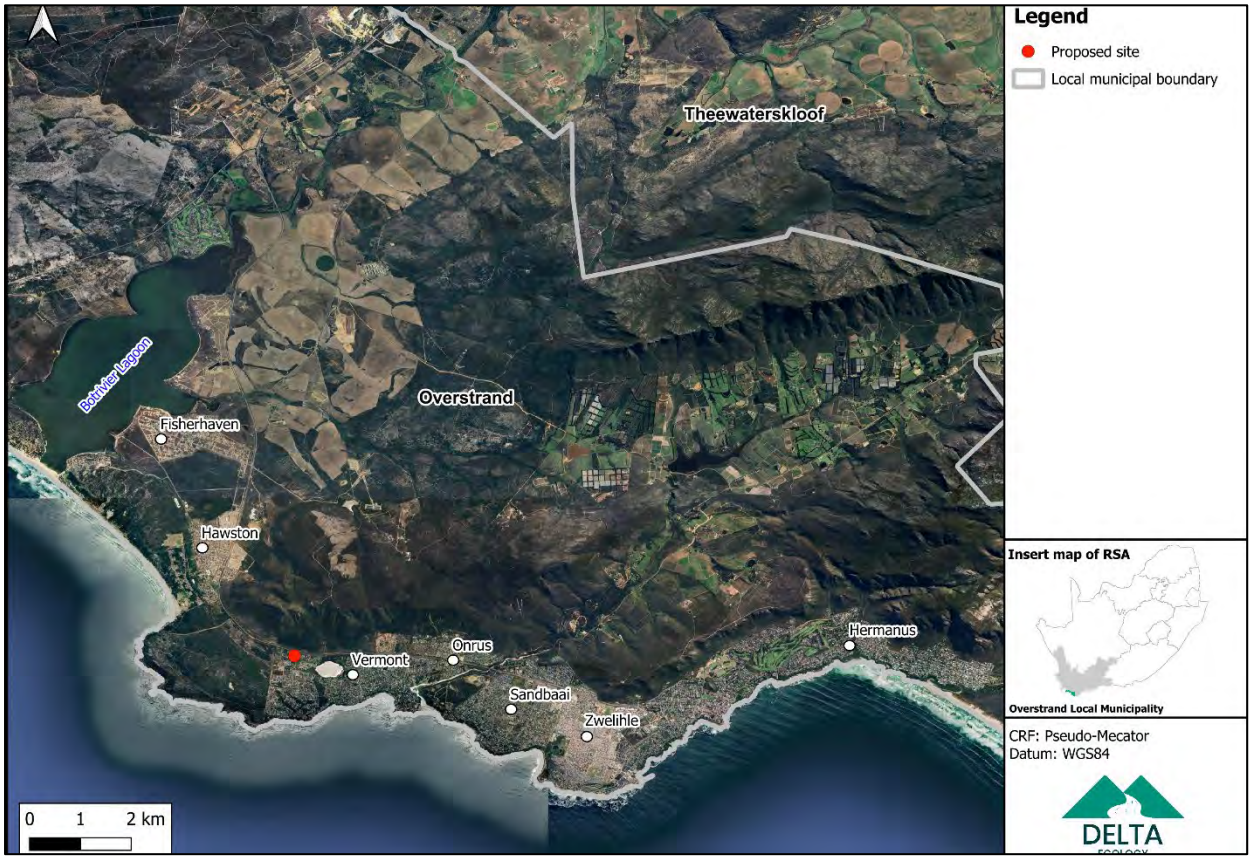

Figure 1-1: Location of the proposed development site, Erf 1489, Vermont.

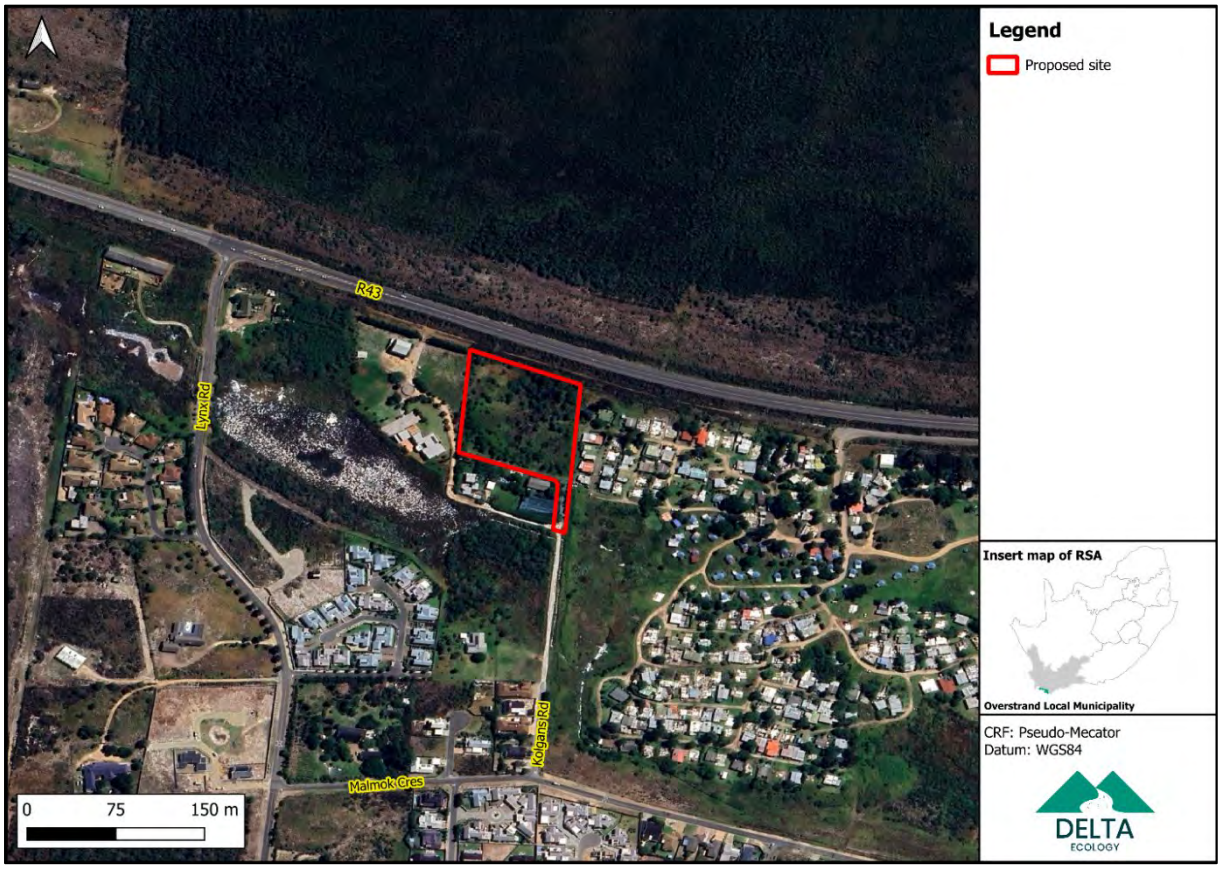

Figure 1-2: Erf RE/1489 Vermont.

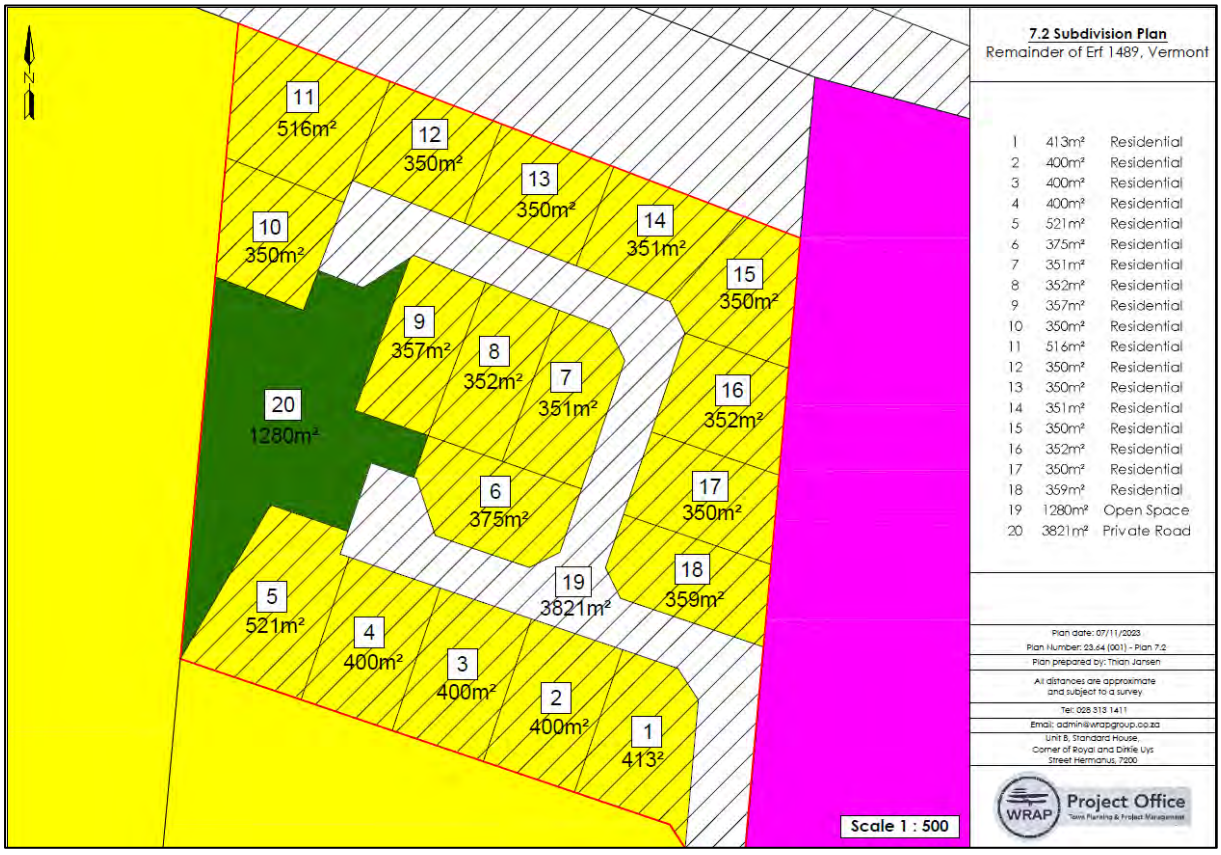

Figure 1-3: Proposed subdivision plan.

1.1. Terms of Reference

The terms of reference agreed upon for this screening study include:

- A desktop background assessment to identify potential aquatic biodiversity constraints within the proposed site, as well as within the 100 m regulated proximity for rivers/streams, and the 500 m regulated proximity for wetlands.
- A site assessment to confirm potential aquatic biodiversity constraints within the proposed site.
- Delineation of all watercourses likely to coincide with proposed infrastructure development activities using a combination of site-based and desktop methodologies as appropriate.
- Drafting of an aquatic biodiversity screening report including the following:
    - General site description;
    - Site sensitivity verification;
    - Description of the drivers and key components of all watercourses within the site;
    - Mapping of Low, Medium and High Aquatic Sensitivity within the proposed site;
    - Clarification of the legislative implications and authorisation processes required for various development scenarios; and
    - Aquatic biodiversity impact mitigation recommendations.

1.2. Limitations and Assumptions

The following limitations and assumptions apply to the screening study:

- The site visit, conducted on the 10th of December 2024 was conducted within Spring, at the start of the region's dry months, and does not cover complete seasonal variation in conditions at the site. This will however not have an impact on the aquatic screening outcome since hydrology, soil and vegetation indictors were present and adequate for the delineation and assessment of the watercourses, if present, onsite.
- The southern portion of the site currently consists of residential dwellings, roads, and associated lawn / vegetable garden, and therefore was highly disturbed, infilled, and compacted. This combination of factors caused difficulty when delineating the boundary of the natural wetland. Additionally, wetland soil indicators and vegetation communities may form artificially, as may be the case with the vegetable patch and one individual of *Cyperus textilis* observed along the south of the site.
- The "At-Risk" watercourses were delineated in the field, using methodology presented in **Section 3.2.**, while the watercourses deemed not to be "At-Risk" were delineated via desktop, such as the Google Earth, NWM5 (SANBI, 2018) wetland layer, and the Department of Rural Development and Land Reform (DRDLR) National Geo-spatial Information (NGI) river line vector data. This was deemed sufficient as these watercourses will not be impacted upon by the proposed development.
- The watercourse edge was delineated using a Garmin handheld GPSMAP 66i with an expected accuracy of 3 m or less at the 95% confidence interval. In the opinion of the specialist, this limitation is of no material significance to the assessment and all aquatic biodiversity constraints have been adequately identified.
- The information provided by the client forms the basis of the planning and layouts discussed.

- Formal vegetation sampling was not done by the specialist, however general observations pertaining to vegetation were recorded based on onsite visual observations. Furthermore, only dominant, and noteworthy plant species were recorded. Thus, the vegetation information provided has limitations for true botanical applications.
- Deriving a 100% factual report based on field collecting and observations can only be done over several years and seasons to account for fluctuating environmental conditions, species' seasonality, and migrations. Since environmental impact studies deal with dynamic natural systems, additional information may come to light at a later stage.
- Description of the depth of the regional water table and geohydrological and hydro pedological processes falls outside the scope of the current assessment.
- Flood line calculations fall outside the scope of the current assessment.
- A Species of Conservation Concern (SCC) scan, fauna and flora assessments were not included in the current study.
- Watercourse delineation plotted digitally may be offset by at least five meters to either side. Furthermore, it is important to note that, while converting spatial data to final drawings, several steps in the process may affect the accuracy of areas delineated in the current report. It is therefore suggested that the no-go area identified in the current report be pegged in the field in collaboration with the surveyor for precise boundaries. The scale at which maps and drawings are presented in the current report may become distorted should they be reproduced by, for example, photocopying and printing.
- Watercourse delineation and calculation of buffer zones does not consider climate change or future land use changes to watercourses resulting from increasing catchment transformation.

Notwithstanding the above limitations, the specialist is of the opinion that the aquatic biodiversity constraints for the site have been adequately identified for the purposes of this aquatic biodiversity screening.

2. Site Sensitivity Verification

According to the national web-based environmental screening tool report generated for the site, the Combined Aquatic Biodiversity Theme Sensitivity is classified as "Very High" (DFFE, 2024). The classification trigger is the location of the site within a Strategic Water Source Area (SWSA) for surface water (Boland).

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 - 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.

Extending across much of the proposed site and the southern 500 m DWS regulated area, the NFEPA wetland layer indicates the presence of a large unnatural Channelled Valley-Bottom (CVB) wetland system which ultimately augments the Vermont Salt Pan. It is however the opinion of current assessment, that the wetland is a natural Unchanneled VB wetland system located along the southern boundary of the proposed site.

In addition, the National Geospatial Information Service (NGI) topo-cadastral map indicates a non-perennial drainage line within the site. The Western Cape Biodiversity Spatial Plan (WCBSP) identifies an aquatic ESA 2 (Restore) associated with the non-perennial river flowing though the study area (WCBSP, 2017). This drainage line, and therefore the associated WCBSP ESA, was determined to be absent.

Given the confirmed presence of a wetland along the south of the proposed development area, which may be impacted upon, the site as a whole was determined to be of "Very High" aquatic sensitivity as per the screening tool. If the specialist determines that the Aquatic Biodiversity sensitivity of the site is "Very High", the GN320 of 2020 requires that a full Aquatic Biodiversity Impact Assessment must be submitted as set out by the National Environmental Management Act (NEMA) (Act No. 107 of 1998) Regulations of 2020 (as amended) (GN R. 320 of 2020).

3. Methodology

The methodology used in this screening report, including a desktop background assessment, one site visit, and the delineation and classification of the watercourse(s) associated with the proposed development site, is outlined in the subsections below.

3.1. Desktop Assessment

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

- Topographical information from the National Geographical Information Service (NGI);
- The South African Atlas of Climatology and Agrohydrology (1997, 2007 and 2009);
- The SANBI (2018) National Vegetation Map (NVM);
- The South African National Biodiversity Institute National Wetlands Map 5 (NWM5 – CSIR 2018);
- The National Freshwater Ecological Priority Areas (NFEPA – CSIR, 2011) wetland, wetland vegetation group classification, river and FEPA datasets;
- The Western Cape Biodiversity Spatial Plan (WCBSP, 2017); and
- The Natural Agricultural Resource Atlas of South Africa: Version 1.2 (NAR, 2022).

3.2. Wetland Delineation

The wetland boundaries were delineated at the outer edge of the wetland temporary zone using the method described in the DWAF, (2008) Manual for the Identification and Delineation of Wetlands and Riparian Areas. This method is the accepted best practice method for delineating wetlands in South Africa and its use is required by GN 509. 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 soil features using a hand auger. Aquatic vegetation communities were identified using the DWAF (2008) classification of wetland plant species and descriptions of communities, along with auxiliary information from Van Ginkel et al., (2011). Wetland plant species classification categories are as follows:

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

3.3. 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**.

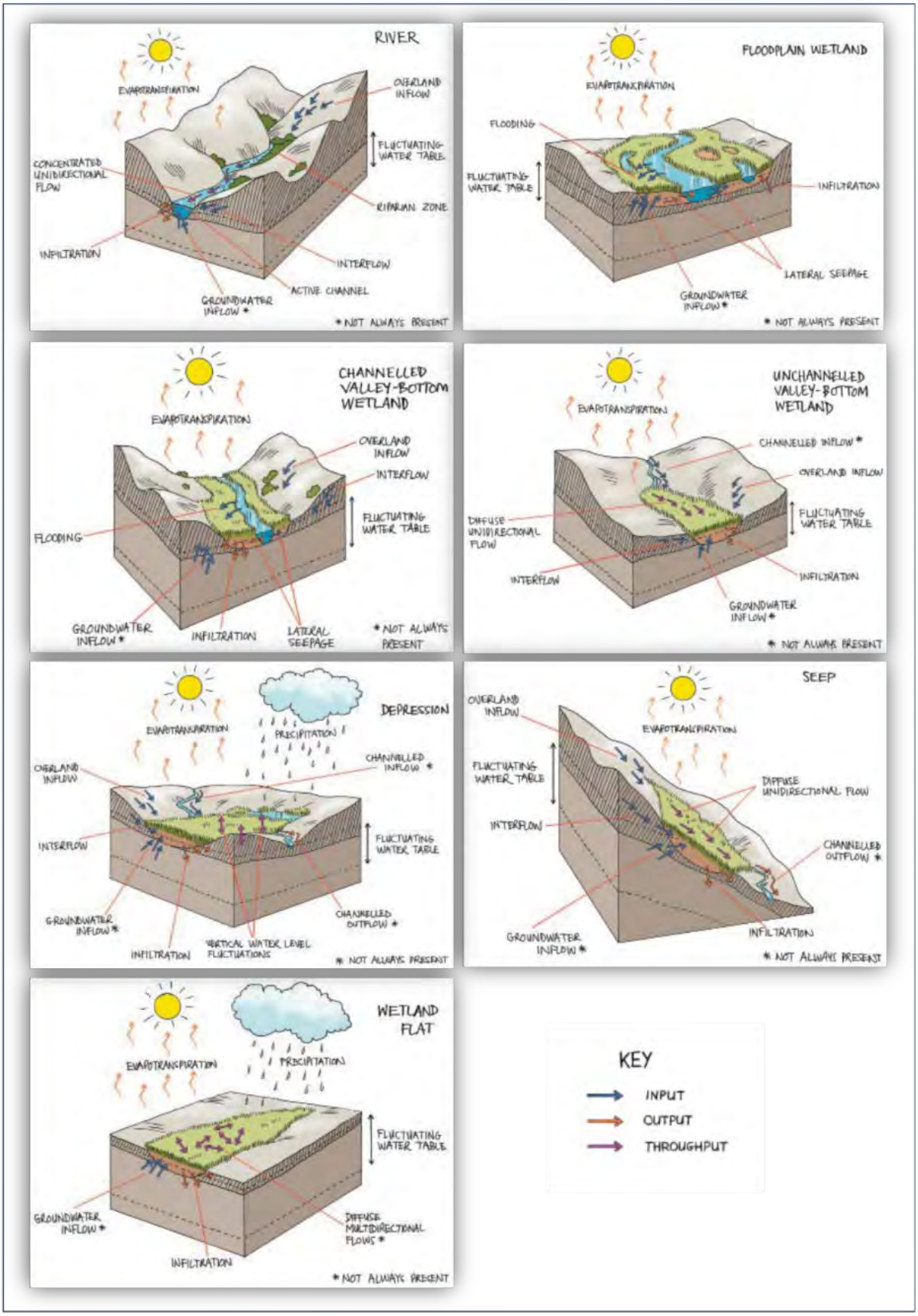

Figure 3-1: Wetland Hydrogeomorphic Types as defined in the Classification System for Wetlands and Other Aquatic Ecosystems in South Africa (Ollis et al., 2013).

4. Desktop Assessment

A brief review of desktop resources was undertaken during the aquatic biodiversity screening assessment. A summary of key desktop information relevant to this assessment is provided below. The general biophysical characteristics of the proposed site is summarised in **Table 4-1**.

4.1. Biophysical Context

The site is situated on a gentle slope in a southerly direction at a gradient of <3% across much of the site. The highest point of the area is at the northern boundary approximately 34 m above mean sea-level (AMSL), while the lowest point is the southern boundary at about 29 m AMSL. The mean annual rainfall received in the area is 587 mm, mostly during the winter months with the highest mean rainfall occurring in May-August and the lowest mean rainfall occurring in November-February (Schultz, 2009) (**Table 4-1**).

The soils in this are dominated by grey, regic sands and other soils. The geology onsite consists of recent coastal sand and dunes, with slight occurrence along the coast of shale of the Bokkeveld Group and sandstone of the Peninsula Formation, Table Mountain Group. The soil types and descriptions map developed by the Department of Agriculture, Forestry and Fisheries (DAFF) indicates that this region is characterised by greyish, sandy soils which are excessively drained. Soils tend to be poor in clay (<15%) (**Table 4-1**).

According to the SANBI Vegetation Map (SANBI, 2018), the natural vegetation in this area consists of Hangklip Sand Fynbos which is listed as Critically Endangered (CR) and Moderately Protected (MP) (**Table 4-1**). According to the NFEPA (CSIR, 2011) spatial dataset, this area corresponds to the wetland vegetation type Southwest Sand Fynbos (**Figure 4-1**), which where UVB wetlands are present, is listed as Critically Endangered (CR) and Poorly Protected (PP).

Table 4-1: General characteristics of the proposed site.

Site attribute	Description	Data source
Eco-region	Southern Coastal Belt	Department of Water Affairs Level 1 Ecoregions (DWS, 2011)
Terrestrial Vegetation Type	Hangklip Sand Fynbos (CR-MP)	National Vegetation Map of South Africa, 2018 (SANBI, 2018)
Dominant Geology and Soils	Recent coastal sand and dunes with slight occurrence along the coast of shale of the Bokkeveld Group and sandstone of the Peninsula Formation, Table Mountain Group	Cape Farm Mapper (ENPAT, 2021)
Soil Erodibility Factor (K)	0.64 (High)	SA Atlas of Climatology and Agrohydrology (Schulze, 2009)

Mean Annual Precipitation (mm)	>= 750 mm & <15%	Soil types and descriptions for the Western Cape, Department of Agriculture, Forestry and Fisheries (DAFF, 2021) SA Atlas of Climatology and Agrohydrology (Schulze, 2009)
Rainfall seasonality	Winter rainfall	
Mean Annual Temperature (°C)	16.10 °C	
Water Management Area (WMA)	Breede - Olifants	Water Management Areas (DWAF, 2011)
Quaternary Catchment	G40G	South African Quaternary Catchments Database (Schulze *et al.* 2007)
Wetland Vegetation Group (for wetlands within the applicable terrestrial vegetation type)	Southwest Sand Fynbos (CR-PP)	NFEPA Wetland Vegetation Types (CSIR, 2011)

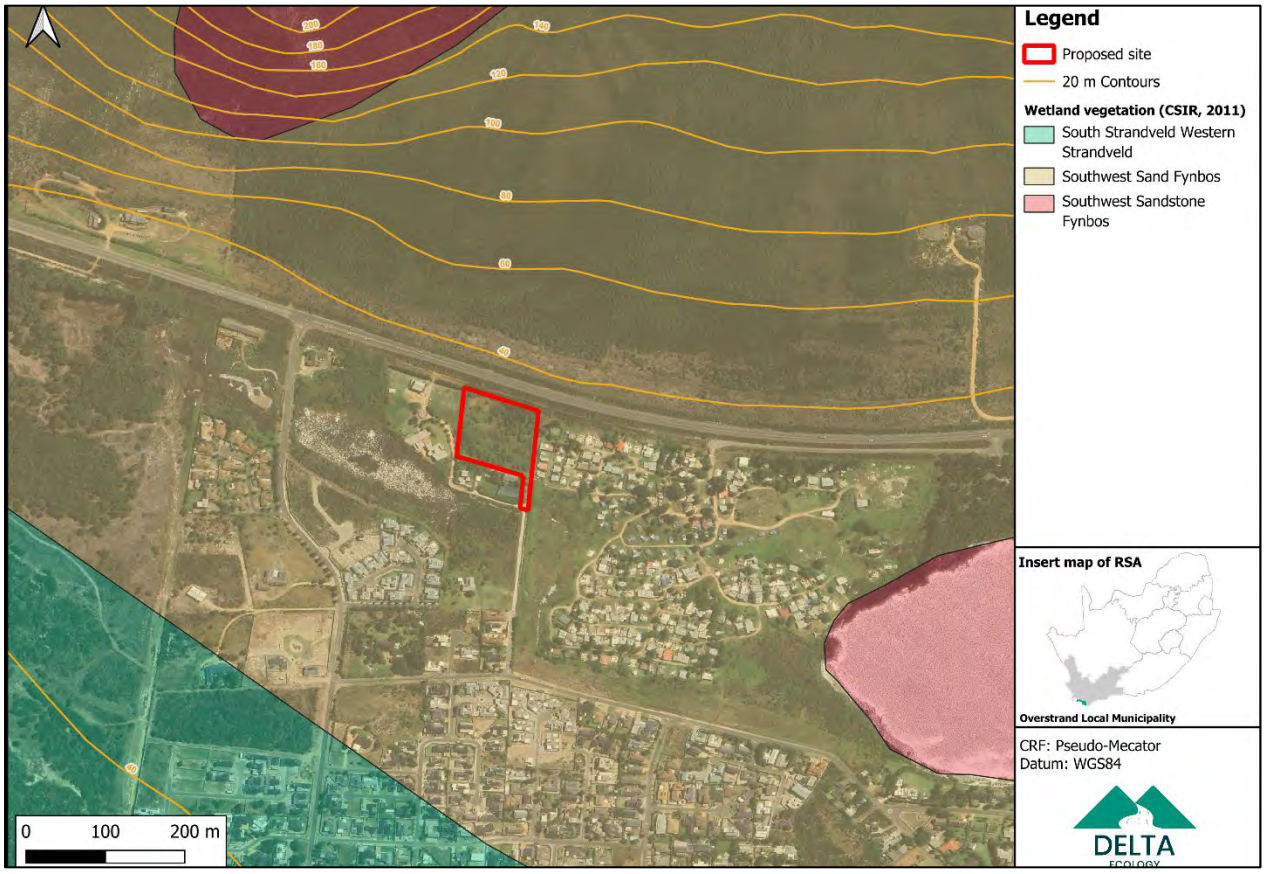

Figure 4-1: Wetland Vegetation Map (NFEPA, 2011).

4.2. Biodiversity Planning Context

The site under evaluation is located within the Breede-Olifants WMA, quaternary catchment G40G. The applicable sub-quaternary catchment is demarcated as a Fish Support Area and Fish Sanctuary (CSIR, 2011). The regional setting, in terms of the Level 1 DWA (now Department of Water and Sanitation) Ecoregions, is within the Southern Coastal Belt (**Table 4-1**).

Extending across much of the proposed site and the southern 500 m DWS regulated area, the NFEPA wetland layer indicates the presence of a large unnatural CVB wetland system which ultimately augments the Vermont Salt Pan downstream (**Figure 4-2** and **Figure 4-4**). It was however the opinion of Job and Ratcliff (2006), EnviroSwift (2018), Delta Ecology (2023), and this current assessment, that the wetland is a natural UVB wetland system. Additionally, after the site visit, the wetland was delineated along the southern boundary of the site, with the majority of the site exhibiting terrestrial conditions.

The NGI topo-cadastral map indicates a non-perennial drainage line within the site, which, after the site visit, was determined to be absent. The WCBSP identifies an aquatic ESA 2 (Restore) associated with the mapped non-perennial river which is absent (WCBSP, 2017) (**Figure 4-5**).

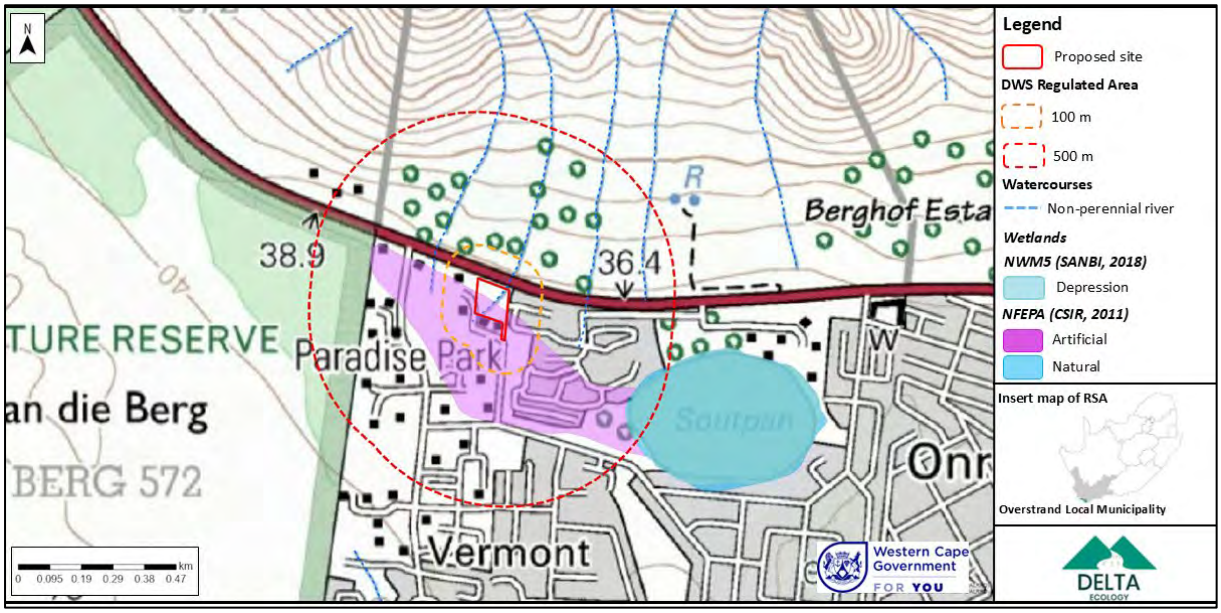

Figure 4-2: Regional Drainage Map (NGI Rivers, NWM5 Wetlands and NFEPA Wetlands).

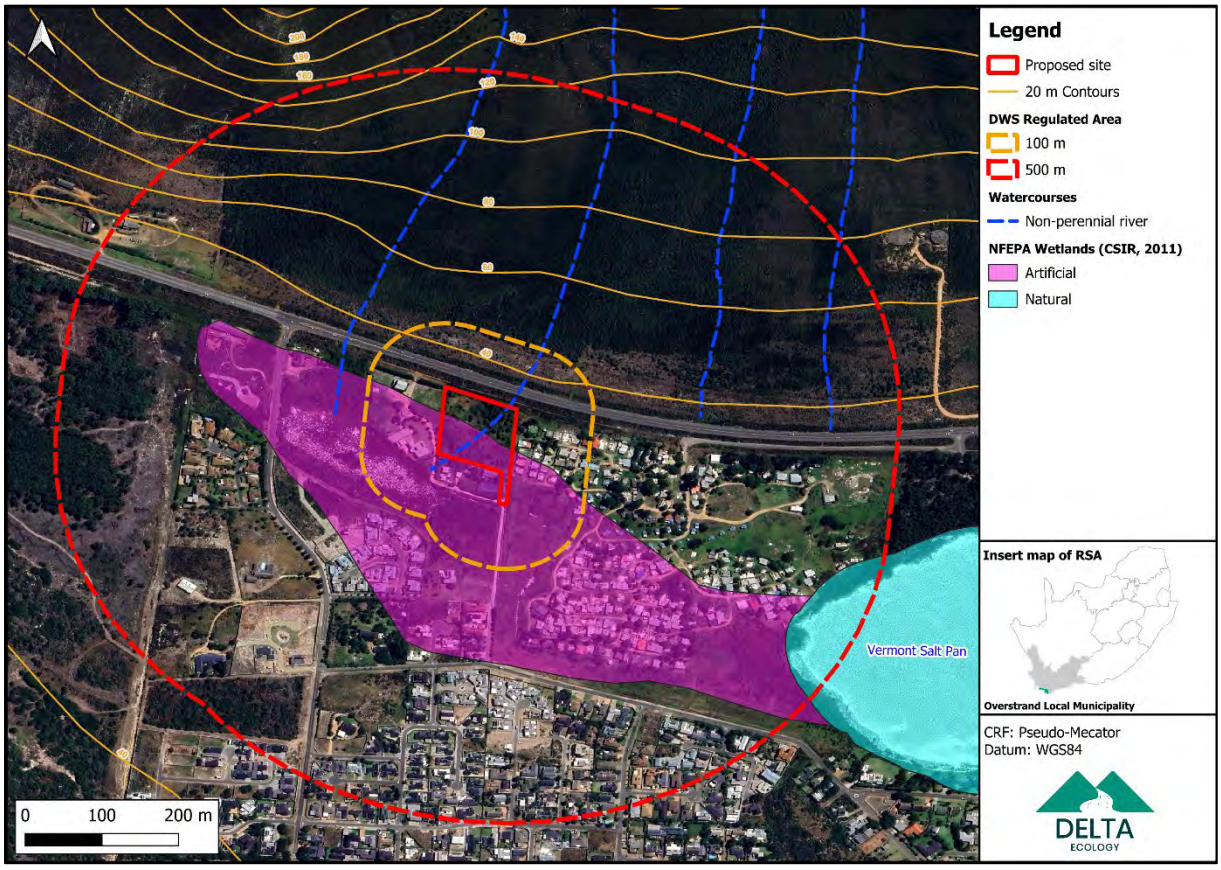

Figure 4-3: Watercourses within the proposed site (NGI, 2017 and NFEPA, 2011)

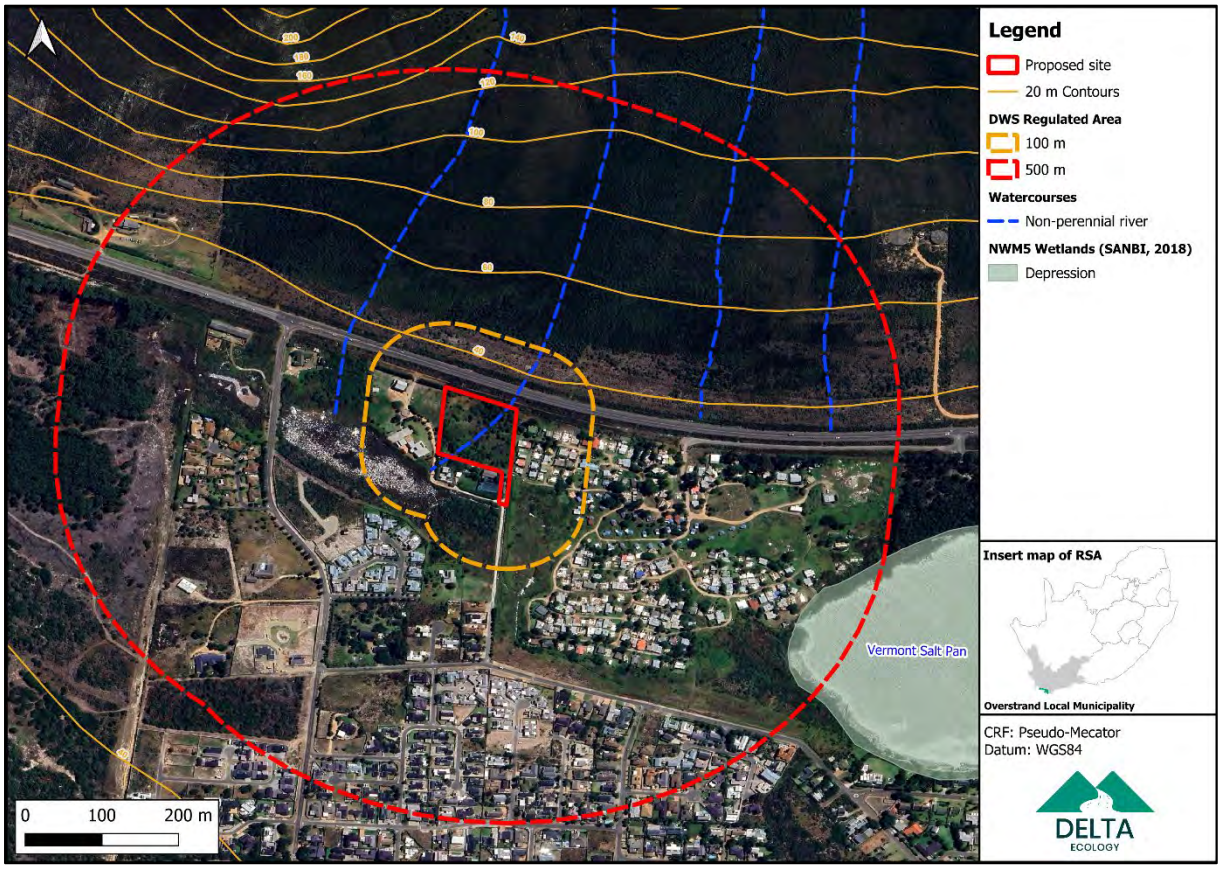

Figure 4-4: Watercourses within the proposed site (NGI, 2017 and SANBI, 2018).

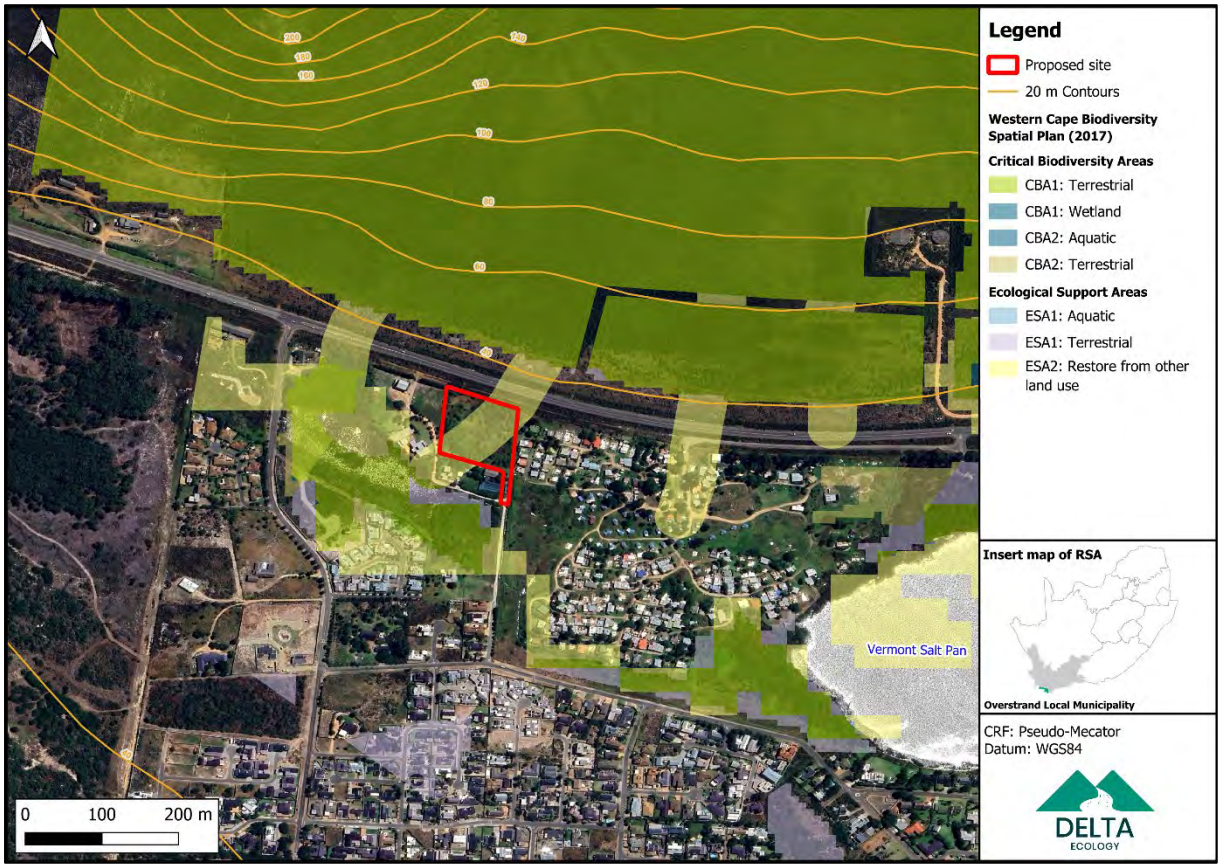

Figure 4-5: CBAs and ESAs (WCBSP, 2017).

5. Site Description

A site assessment was conducted on the 10th of December 2024. The site is bordered to the north by the R43 road reserve, to the west and south by low density residential housing, and to the east by Paradise Park holiday resort. The site has no formal infrastructure within it, however a short dirt access road lined with crushed sea shells is present from the southern boundary (**Figure 5-2**).

Most of the site was considered to be terrestrial, with no indication of the mapped NGI non perennial drainage line present. Vegetation within the site was extensively disturbed, with a mixture of terrestrial indigenous species such as *Carpobrotus edulis* (Sour Fig), and *Pelargonium graveolens* (Rose-scented Pelargonium), along with alien invasives such as *Acacia mearnsii* (Black Wattle), *Pennisetum clandestinum* (Kikuyu), and *Acacia saligna* (Port Jackson) (**Figure 5-3**-**Figure 5-6**). Terrestrial soils were greyish brown, sandy, and appear to be well drained (**Figure 5-10**).

An Unchanneled Valley-Bottom Wetland (UVBW), which drains into the Vermont Salt Pan approximately 420 m south east, was delineated along the southern boundary of the site (**Figure 5-1**). The wetland area within, and directly adjacent to the site, is considered to be relic or historical. Although there was sparse wetland vegetation present (such as *Cyperus textilis*), it is the specialist's opinion that this area has lost all wetland functionality and there is no rehabilitation potential due to the level of disturbance. There is an artificial channel, roads, residential dwellings, excavation, and culverts within this relic wetland area, which has altered natural flow regime, vegetation, water quality and geomorphology (**Figure 5-7** and **Figure 5-8**).

The vegetation within the functional UVBW downslope / adjacent to the access road, consists of wetland obligate species *Juncus krausii*, *Cyperus textilis,* with wetland facultative *Senecio halimifolius* and *Zantedeschia Aethiopica* along the outer boundary of the functional wetland area.

Soils that were sampled in the UVBW did not differ markedly from terrestrial soils, aside from appearing darker and with a higher organic content than the terrestrial baseline (**Figure 5-11**).

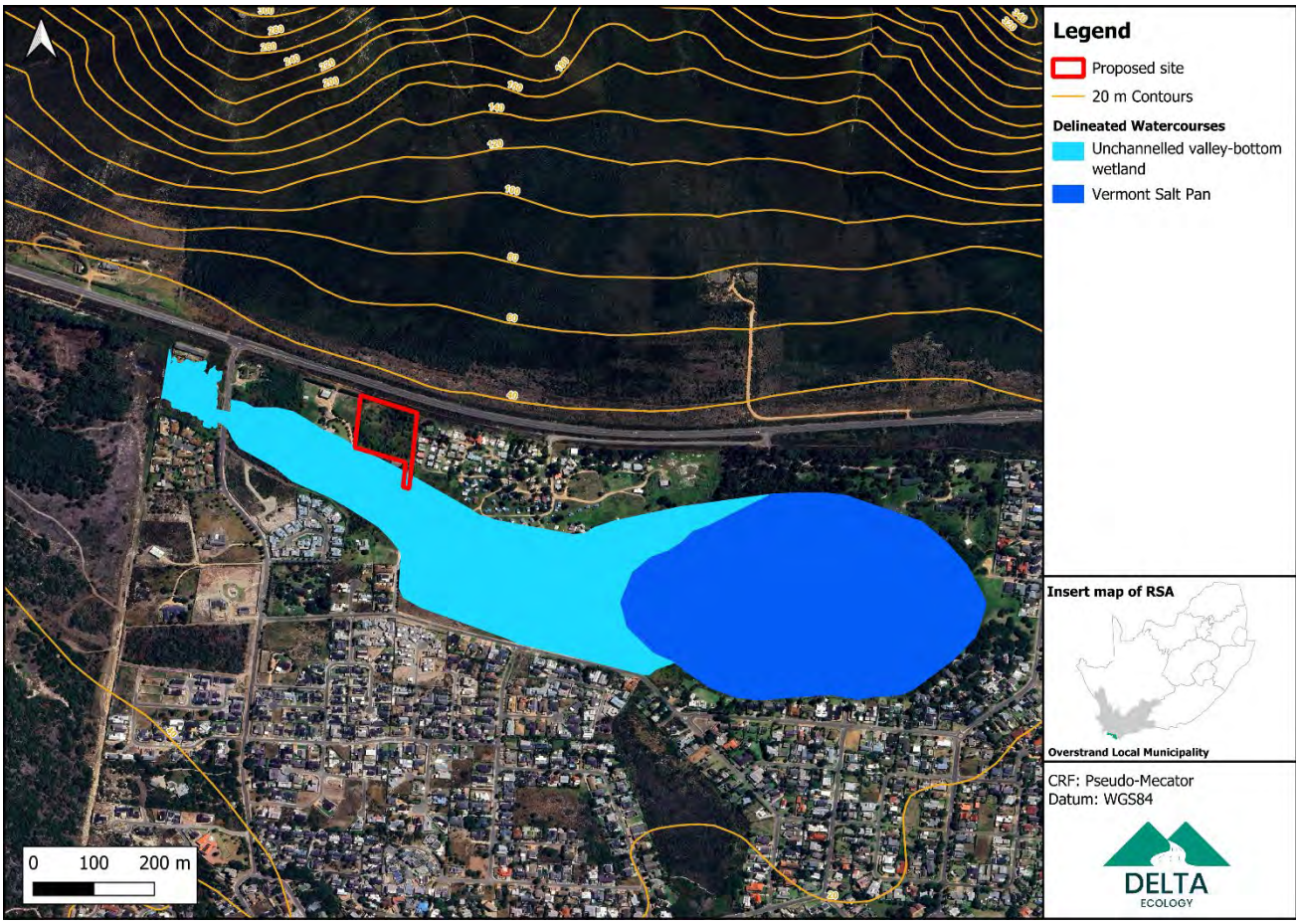

Figure 5-1: Delineation Map.

Figure 5-2: Existing access road within Erf RE/1489.

Figure 5-3: Overview of the site, facing east.

Figure 5-4: Numerous mole hills present within the site.

Figure 5-5: Mixture of common indigenous terrestrial vegetation and alien invasive vegetation.

Figure 5-6: Alien invasives within the site.

Figure 5-7: Channel within the UVBW, adjacent to the entrance / access road.

Figure 5-8: Channel along the access road, within the UVBW.

Figure 5-9: *Zantedeschia Aethiopica* in the UVBW along the access road.

Figure 5-10: Majority of the soils sampled within the site consisted of greyish brown, deep, sandy terrestrial soils.

Figure 5-11: Soil sample from the wetland.

6. Potential Aquatic Impacts

The proposed project entails the proposed subdivision of RE/1489, Vermont, to create several erven for single residential development (**Figure 1-2**). The proposed development would consist of 18 single residential units with a footprint of approximately 0.74 ha, 0,13 ha of open space and 0,38 ha of private road (**Figure 1-3**).

The UVBW to the south – south east of the site is deemed to be "At-Risk" of the proposed development. Given the distance and implementation of mitigation measures recommended during the Impact Assessment phase, the Vermont Salt Pan is not deemed to be "At-Risk" of the proposed development. Refer to **Figure 6-1** below for the UVBW that is "At-Risk" of the proposed development.

The potential impacts to the UVBW as a result of the proposed development are listed below:

Construction Phase

1. Areas of the onsite UVBW may potentially be disturbed or lost (i.e. complete loss in flow regime, water quality, vegetation, and geomorphic structure) as a result of the private access road upgrade and construction of adjacent residential dwellings.
2. Alteration of the flow regime of the UVBW during construction of the residential housing.
3. Water quality impairment due to increased sediment input, potential spillage, or release of potentially contaminated runoff into the UVBW during construction of the residential housing.

Operational Phase

4. Alteration of the flow regime of the UVBW once the housing development is complete, due to potential flow diversion / increase in storm flows.
5. Water quality impairment due to the release of potentially contaminated stormwater (hydrocarbons) into the UVBW.

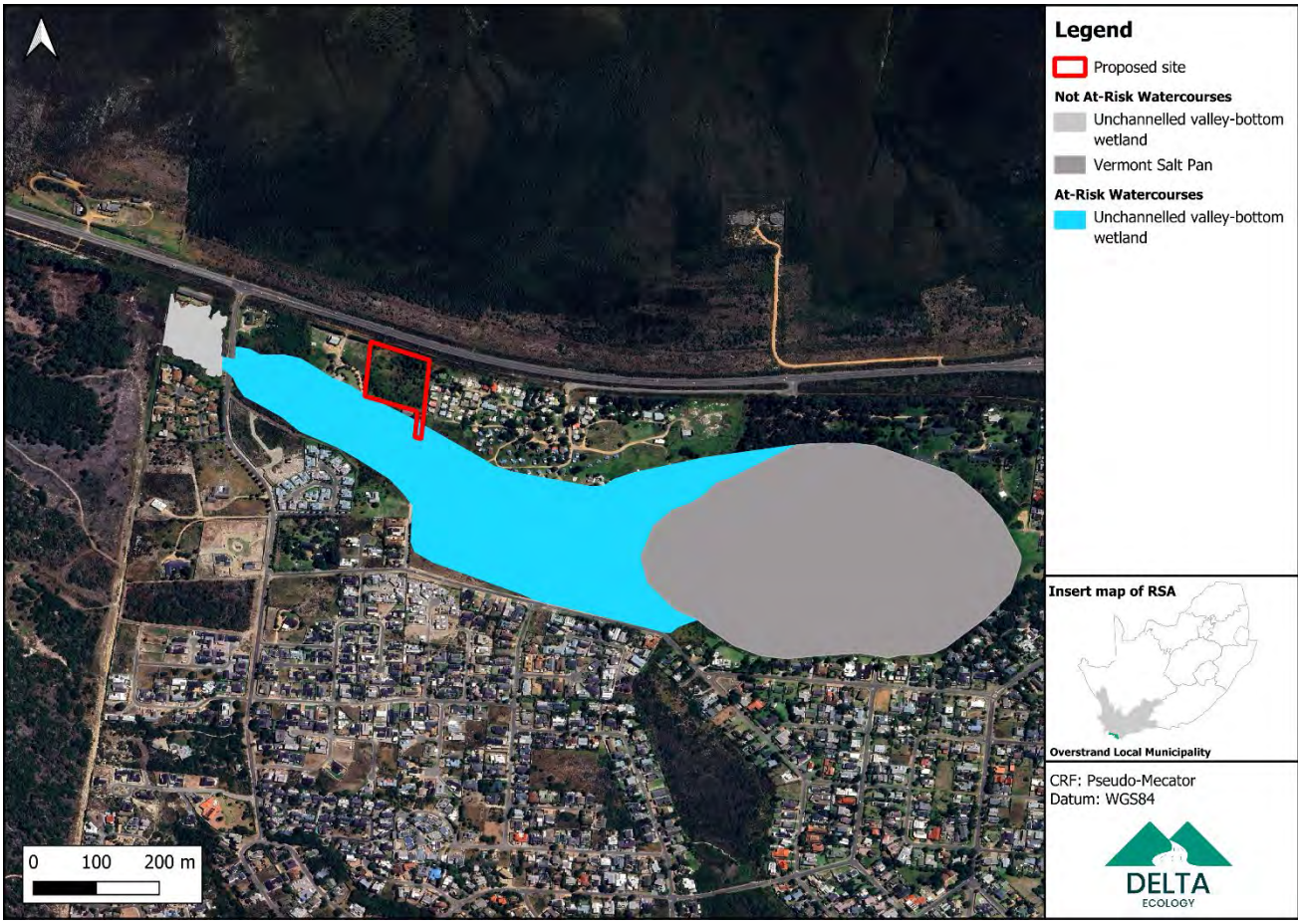

Figure 6-1: The watercourse deemed to be "At Risk" of the proposed development.

7. Opportunities and Constraints Mapping

The majority of the site is considered to be terrestrial, and therefore has no Aquatic Sensitivity (**Figure 7-1**). A natural UVBW was delineated along the southern boundary of the site. The wetland area directly adjacent to the site, is considered to be relic or historical. Although there was sparse wetland vegetation present (such as *Cyperus textilis*), it is the specialist's opinion that this area has lost all wetland functionality and there is no rehabilitation potential due to the level of disturbance. Given the above, this area was determined to be of "Low Aquatic Sensitivity" (**Figure 7-1**).

The vegetation within the functional UVBW downslope / along the access road, consists of wetland obligate species *Juncus krausii*, *Cyperus textilis,* with wetland facultative *Senecio halimifolius* and *Zantedeschia Aethiopica* along the outer boundary of the functional wetland area. This area was deemed to be of "High" Aquatic Sensitivity (**Figure 7-1**).

Given that the proposed development may potentially impact on areas of High Aquatic Sensitivity (functional UVBW located adjacent to the access road), a full Aquatic Biodiversity Impact Assessment report is recommended.

In terms of the National Environmental Management Act (NEMA), Act No. 107 of 1998, a Basic Assessment (BA) will be required if there is construction of 100 m^2 or more of infrastructure within a watercourse (i.e. wetland, river, or drainage line) or within 32 m thereof or removal, deposition, or movement of 10 m^3 or more of sediment or any other substance within a watercourse (i.e. wetland,

river, or drainage line). It is considered likely that these two Listed Activities are triggered by the proposed development.

Furthermore, a water use authorisation, either in the form of a General Authorisation (GA) in terms of GN 4167 of 2023 promulgated in terms of the National Water Act ([NWA] 36 of 1998) or in the form of a Water Use Licence will also be required for any development within 500 m of a wetland deemed to be "At Risk", and within 100 m of an "At Risk" river. The majority of the site falls within the DWS regulated area for wetlands and will thus require a Water Use Authorisation. Which form of authorisation depends on the outcome of an aquatic risk assessment, to be completed as part of the Aquatic Biodiversity Impact Assessment Report.

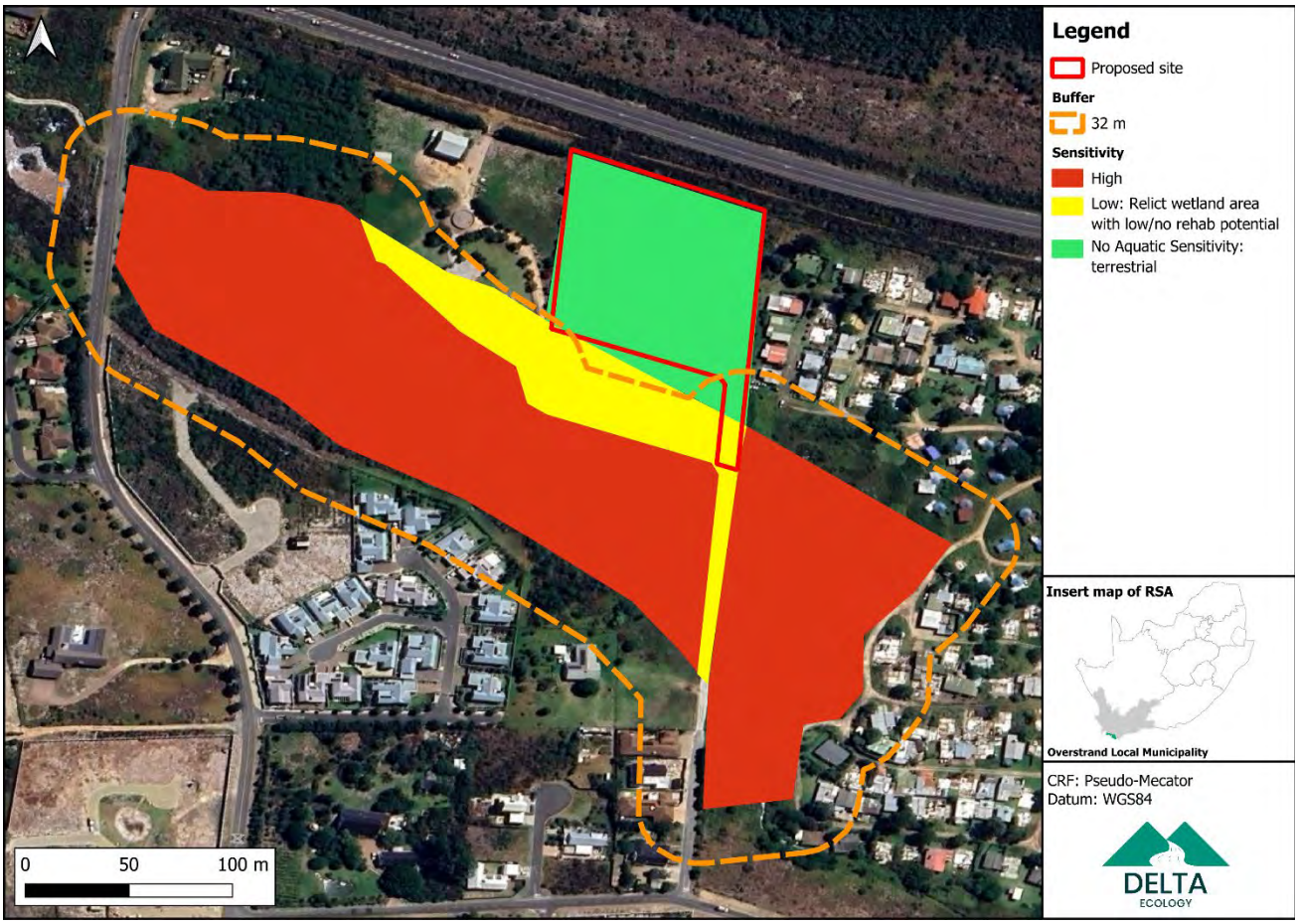

Figure 7-1: Aquatic Sensitivity Map.

8. Conclusions and Recommendations

This report sets out the results from a desktop analysis, as well as a field assessment conducted on the 10th of December 2024, to clarify aquatic biodiversity constraints associated with the proposed residential development on the RE of Erf 1489, Vermont.

Most of the site was considered to be terrestrial, with no indication of the mapped NGI non perennial drainage line present. A natural UVBW, which drains into the Vermont Salt Pan approximately 420 m downstream, was delineated along the southern boundary of the site. The wetland area within, and directly adjacent to, the site, is considered to be relic or historical. Although there was sparse wetland vegetation present (such as *Cyperus textilis*), it is the specialist's opinion that this area has lost all wetland functionality and there is no rehabilitation potential due to the level of disturbance.

The vegetation within the functional UVBW downslope / adjacent to the access road, consists of wetland obligate species *Juncus krausii*, *Cyperus textilis,* with wetland facultative *Senecio halimifolius* and *Zantedeschia Aethiopica* along the outer boundary. This functional wetland area was determined to be of "Very High" Aquatic sensitivity and may be impacted by the proposed development. Therefore, a full Aquatic Biodiversity Impact Assessment must be submitted as set out by the National Environmental Management Act (NEMA) (Act No. 107 of 1998) Regulations of 2020 (as amended) (GN R. 320 of 2020).

In terms of the NEMA, Act No. 107 of 1998, a Basic Assessment (BA) will be required in terms of freshwater constraints if there is construction of 100 m^2 or more of infrastructure within a watercourse (i.e. wetland, river, drainage line, etc.) or within 32 m thereof or removal, deposition, or movement of 10 m^3 or more of sediment or any other substance within a watercourse (i.e. wetland, river, drainage line, etc.). It is considered likely that these two Listed Activities are triggered by the proposed development.

Furthermore, a water use authorisation, either in the form of a General Authorisation (GA) in terms of GN 4167 of 2023 promulgated in terms of the National Water Act ([NWA] 36 of 1998) or in the form of a Water Use Licence will also be required for any development within 500 m of a wetland deemed to be "At Risk", and within 100 m of an "At Risk" river. The majority of the site falls within the DWS regulated area for wetlands and will thus require a Water Use Authorisation. Which form of authorisation depends on the outcome of an aquatic risk assessment, to be completed as part of the Aquatic Biodiversity Impact Assessment Report.

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