Aquatic Biodiversity Compliance Statement

Regional Cemetery on Ptn 33/437 Farm Hill View, Plettenberg Bay, Western Cape.

Prepared for EcoRoute (Pty) Ltd

by

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DECLARATION OF CONSULTANTS INDEPENDANCE

I consider myself bound to the rules and ethics of the South African Council for Natural Scientific Professions (SACNASP);

• At the time of conducting the study and compiling this report I did not have any interest, hidden or otherwise, in the proposed development that this study has reference to, except for financial compensation for work done in a professional capacity;

• Work performed for this study was done in an objective manner. Even if this study results in views and findings that are not favourable to the client/applicant, I will not be affected in any manner by the outcome of any environmental process of which this report may form a part, other than being members of the general public;

• I declare that there are no circumstances that may compromise my objectivity in performing this specialist investigation. I do not necessarily object to or endorse any proposed developments, but aim to present facts, findings and recommendations based on relevant professional experience and scientific data;

• I do not have any influence over decisions made by the governing authorities;

• I undertake to disclose all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by a competent authority to such a relevant authority and the applicant;

• I have the necessary qualifications and guidance from professional experts in conducting specialist reports relevant to this application, including knowledge of the relevant Act, regulations and any guidelines that have relevance to the proposed activity;

• This document and all information contained herein is and will remain the intellectual property of Confluent Environmental. This document, in its entirety or any portion thereof, may not be altered in any manner or form, for any purpose without the specific and written consent of the specialist investigators.

• All the particulars furnished by me in this document are true and correct.

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Qualifications: BSc, BSc Honours (Entomology), MSc & PhD (Veterinary Science)

Expertise: > 13 years' experience working on aquatic ecosystems across South Africa, with a focus on the Southern Cape in the last 6 years. Includes research and consulting expertise, having published > 10 water-related research articles and compiled > 150 aquatic specialist reports. Research and consulting have been in a range of sectors including agriculture, urban developments, linear structures, renewable energy, conservation, and mining.

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1. INTRODUCTION

Confluent Environmental Pty (Ltd) were appointed by EcoRoute to provide aquatic specialist inputs to the proposed development of a regional cemetery on Ptn 33 of Farm Hill View No. 437, Plettenberg Bay. The property is located north of the township of Kwanokuthula, west of New Horizons, and north of the N2 (Figure 1).

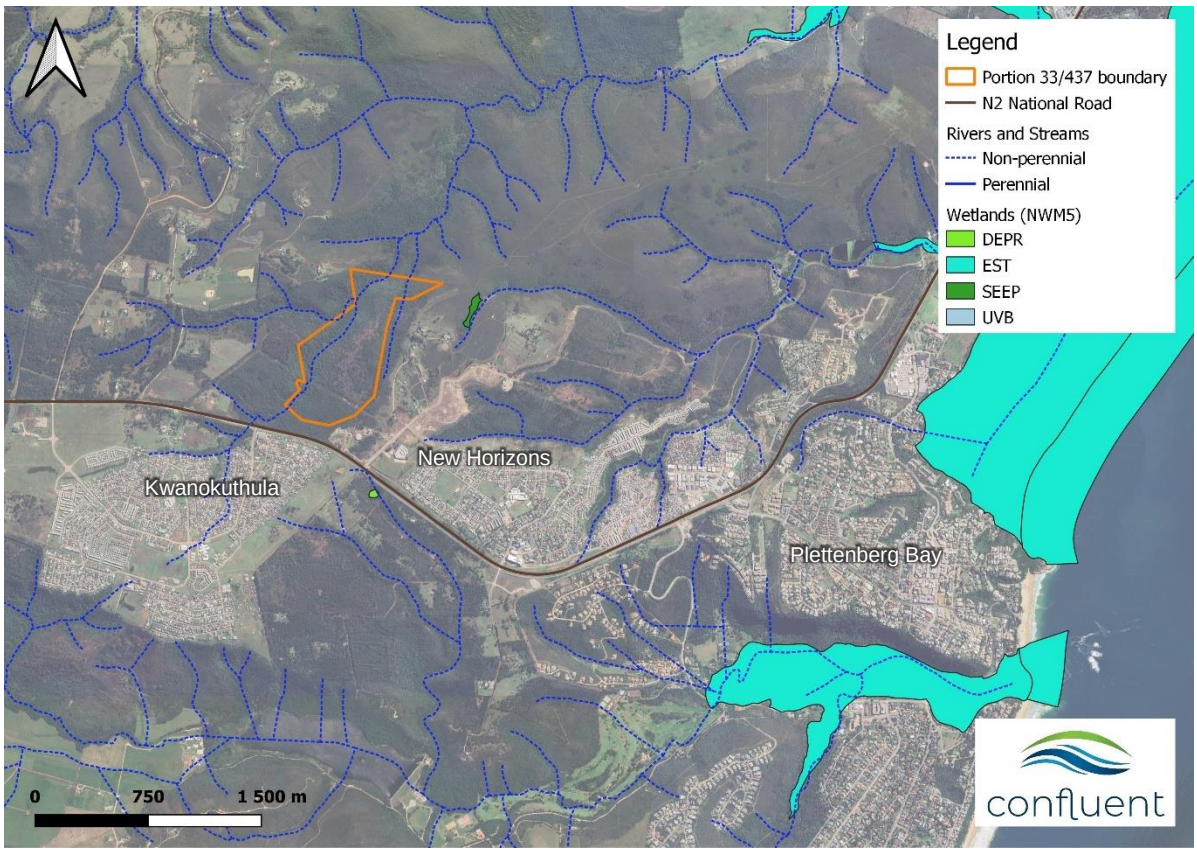

Figure 1. Location of 33/437 Farm Hill View in relation to the town of Plettenberg Bay and other local features.

The Site Development Plan (SDP) is presented in Figure 2. The layout includes a memorial garden, chapel (250 m^2), a parking area and ablution block (30 m^2) which drains to a conservancy tank. An additional area indicated to the north of the cemetery contains a crematorium, chapel and parking area, but this would form part of a separate assessment and is not included in this report. The bridge access road from the east crossing the site and shown exiting the cemetery to the west is also not part of this assessment, as it forms part of the proposed N2 bypass by SANRAL. Access to the site is currently from the N2 to the south. The cemetery would be divided into northern and southern sections by an intersecting access road. The northern section measures approximately 3.68 ha and could accommodate 4 238 graves, while the southern section measures 6.09 ha in extent and could accommodate 6 142 graves.

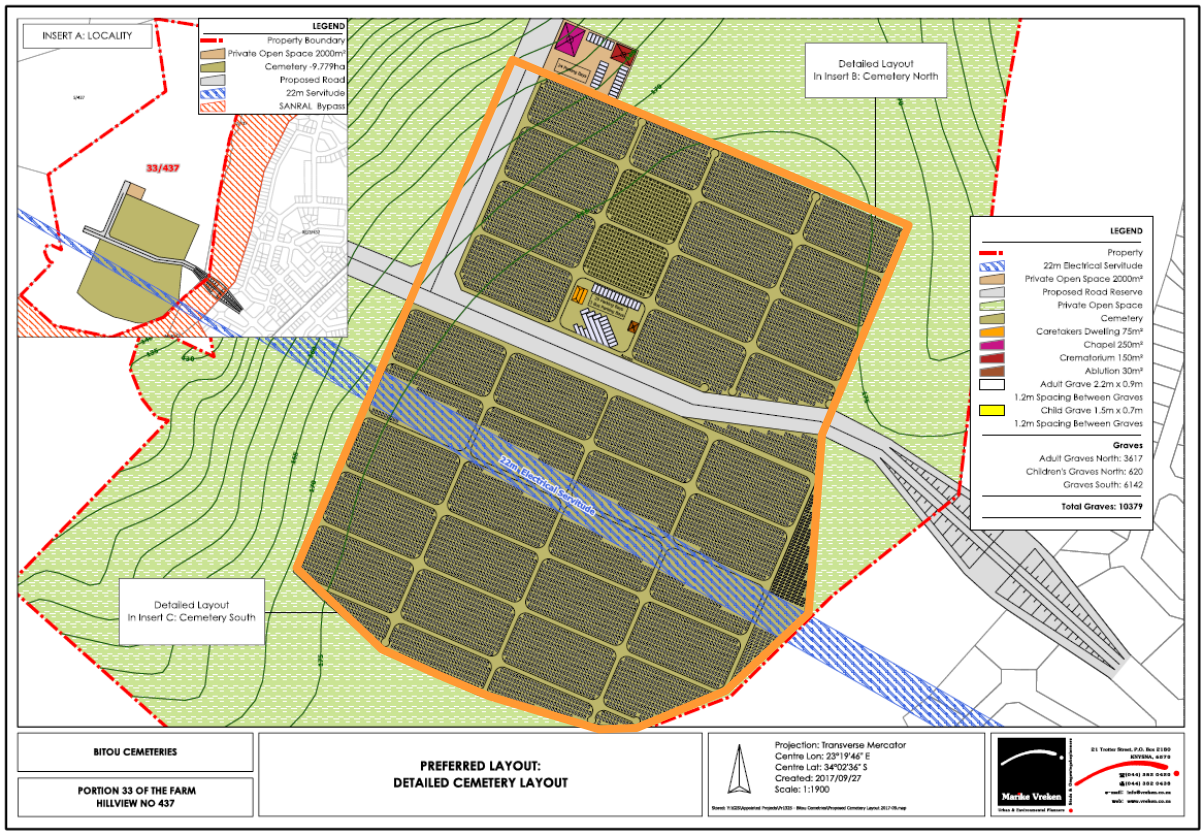

Figure 2. Proposed cemetery development on 33/437 Farm Hill View with associated connecting roads. The area outlined in orange is covered in this assessment.

1.1 DFFE Screening Tool Results

According to the Department of Environment, Forestry and Fisheries (DFFE) screening tool, aquatic biodiversity at the site has a **Very High Sensitivity**. The mapped sensitivity feature is a Freshwater Ecosystem Priority Area Quinary Catchment area. The scope of work for this report is guided by the legislative requirements of the National Environmental Management Act (NEMA) and the National Water Act (NWA; Act No 36 of 1998).

1.2 Scope of Work

According to the protocols specified in GN 320 (Protocol for the specialist assessment and minimum report content requirements for environmental impacts on aquatic biodiversity) of the National Environmental Management Act (NEMA; Act No. 107 of 1998), assessment and reporting requirements for aquatic biodiversity are associated with a level of environmental sensitivity identified by the national web-based environmental screening tool (screening tool). An applicant intending to undertake an activity identified in the scope of this protocol on a site identified by the screening tool as being of:

- **Very High** sensitivity for aquatic biodiversity, must submit an Aquatic Biodiversity Specialist Assessment; or
- **Low** sensitivity for aquatic biodiversity, must submit an Aquatic Biodiversity Compliance Statement.

The objectives of this assessment included the following:

- To undertake a desktop analysis and site inspection to verify the sensitivity of aquatic biodiversity as **Very High** or **Low**; and
- Compile an Aquatic Biodiversity Compliance Statement or Aquatic Biodiversity Specialist Assessment based on the site verification of the sensitivity of the site. This includes assessment of the following:

  Interrogation of available desktop resources including:

  - DWS spatial layers (1:50 000 rivers)
  - National Freshwater Ecosystem Priority Areas (NFEPA) spatial layers (Nel *et al.,* 2011)
  - National Wetland Map 5 and Confidence Map (CSIR, 2018)
  - Western Cape Biodiversity Spatial Plan (WCBSP, 2017).

  Conduct a site visit to determine the site sensitivity:

  - Identification and classification of watercourses within and adjacent to the site according to methods detailed by Ollis *et al*. (2013);
  - Determine the watercourse Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) using an appropriate method (if watercourses are present).
- Compile a Risk Matrix to assess the level of risk posed by the proposed activities to watercourses in the regulated area of the development in their mitigated state. If the risk is deemed Low, then the activities may be Generally Authorised. If the risk determined is High, then the activities will require an application for a Water Use License (WUL).

1.3 Limitations

One site visit was undertaken on 21 May 2023 which is considered early Winter. It is possible that sensitive features such as rare or unique biota (e.g. amphibians), plants or habitat were not observed during the site visit, but are influenced by season, time of day, flow level or vegetation cover.

Security at the site is a concern as it is isolated, used as an illegal dumping site, and frequented by vagrants. Excessive rainfall in the area has meant that vehicle access was impossible, and the site needed to be accessed on foot, increasing the risk. The site assessment is therefore restricted to the area indicated by the GPS track walked, with extensive desktop assessment to compensate for this limitation.

2. CATCHMENT CONTEXT

2.1 Catchment features

The proposed cemetery is in quaternary catchment K60F in the headwaters of the catchment between the source of the Diep River to the southwest and an unnamed tributary of the Diep River to the east (Figure 3). The Diep River is a tributary of the Bietou River, and the confluence in the Bietou floodplain is approximately 5.5 km northeast of the cemetery site.

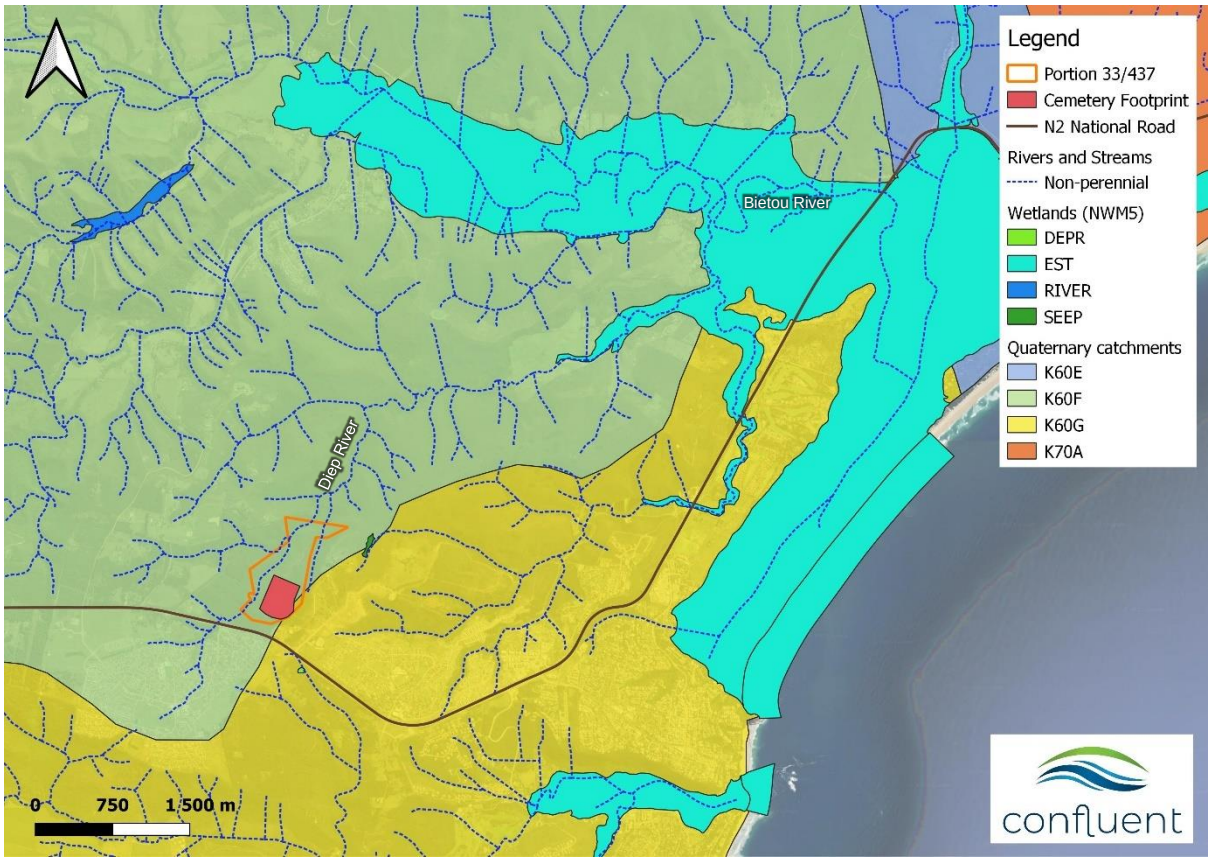

Figure 3. Location of Portion 33/437 and the cemetery footprint in relation to mapped watercourses in quaternary catchment K60F.

Rainfall in the catchment is relatively high with a Mean Annual Precipitation of 807 mm which can fall with a High intensity (Table 1). Rainfall is generally aseasonal with minor peaks observable in spring and autumn (Figure 4). The inherent erosion potential of soils is classified as High and the mapped soil type has a strong textural contrast (duplex soil) with a marked clay accumulation in the B horizon. This is partly what increases the erodibility of soil, as it has low permeability. The project area is located within the southeastern coastal belt (Ecoregion Level 2:20.02). The terrain is described as closed hills of moderate and high relief and moderately undulating plains. Altitude ranges between 0 – 1 300 m.a.m.s.l.

Table 1. Summary of relevant catchment features for the proposed cemetery.

Feature	Description
Quaternary catchment	K60F
Mean Annual Runoff	98 mm
Mean Annual Precipitation	807 mm
Inherent erosion potential of soils (K-factor)	High (0.58)
Soil type	Strong textural contrast with a marked clay accumulation, duplex soils
Rainfall intensity	High (60.1)
Ecoregion Level II	20.02 South eastern coastal belt
Geomorphological Zone	Upper Foothills
Mapped Vegetation Type	South Outeniqua Sandstone Fynbos (FFs19) Vulnerable
Conservation	Cemetery = Other Natural Area (WCBSP, 2017) and watercourses are Ecological Support Area 1(ESA1)
NFEPA area	Freshwater Ecosystem Priority Area (9078)

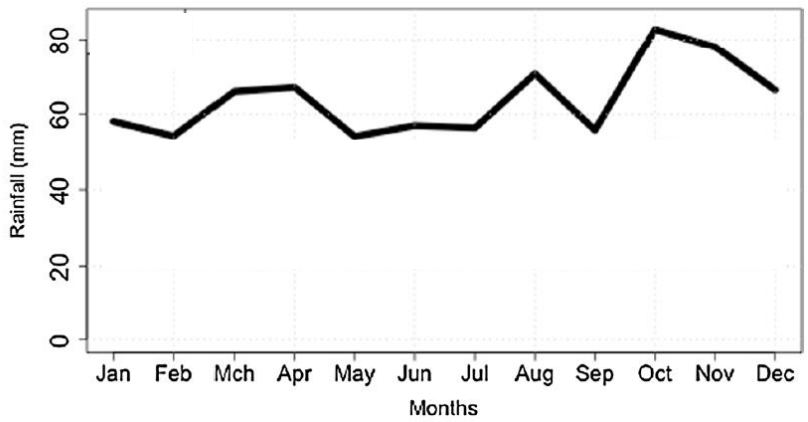

Figure 4. Area-averaged monthly rainfall for the coastal Southern Cape indicating peaks in Mar-Apr, Aug, and Oct. Data averaged between 1979 and 2011 (Engelbrecht *et al*., 2015).

2.2 Vegetation

The mapped vegetation type at the site is South Outeniqua Sandstone Fynbos (FFs19; Vulnerable; NVM, 2018). A fairly large area of this vegetation type is conserved in SANParks conservation areas (47%).

2.3 Conservation and catchment management

The Western Cape Biodiversity Spatial Plan (WCBSP; 2016) indicates the cemetery site as **Other Natural Area**, and the watercourses to the east and west as **Ecological Support Area 1** (Figure 5). Definitions and management objectives for these categories are provided in Table 2.

Table 2. Definitions and objectives for conservation categories identified in the Western Cape Biodiversity Spatial Plan (WCBSP, 2017; Table 2).

WCBSP Category	Definition	Management Objective
Other Natural Area	Areas not currently identified as a priority, but retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. Although not prioritised, they are still an important part of the natural ecosystem.	Minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning. Offers flexibility in permissible land-uses, but some authorisation may still be required for high-impact land-uses.
Ecological Support Area: Aquatic	Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of PAs or CBAs, and are often vital for delivering ecosystem services.	Maintain in a functional, near-natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised.

Necessary actions from the land-owners perspective in relation to the WCBSP are to ensure that development on the site does not result in negative impacts to ecological structure and function of watercourses adjacent to the site.

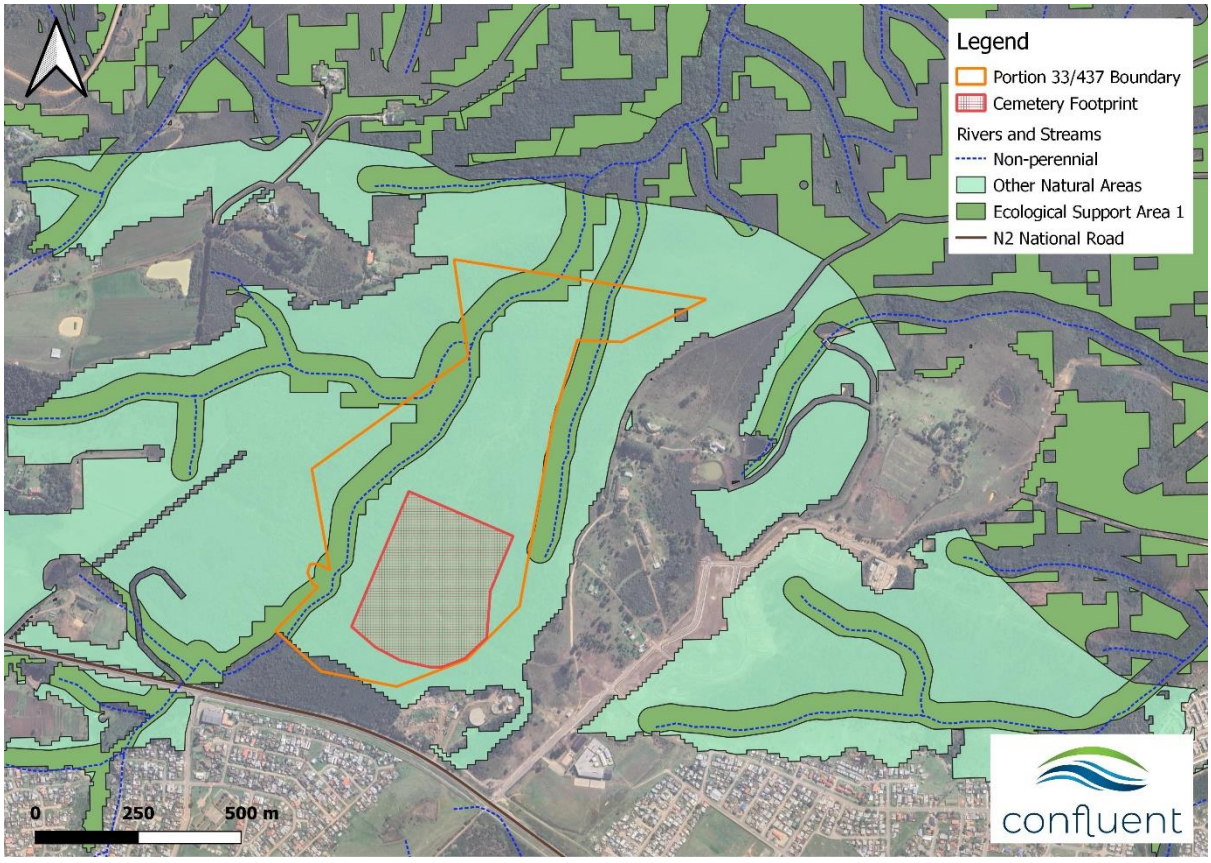

Figure 5. Mapped conservation areas according to the Western Cape Biodiversity Spatial Plan (2017).

According to the National Freshwater Ecosystem Priority Atlas (NFEPA; Nel *et al*., 2011) the sub-quaternary reach (SQR 9092) is classified as a **Fish FEPA (Freshwater Ecosystem Priority Area)**. This is defined as:

"Fish sanctuaries are sub-quaternary (quinary) catchments that are required to meet biodiversity targets for threatened and near threatened fish species indigenous to South Africa. Fish sanctuaries in sub-quaternary catchments associated with a river reach in good condition (A or B ecological category) were selected as FEPAs; the remaining fish sanctuaries became fish support areas. Fish support areas also include sub-quaternary catchments that are important for migration of threatened and near threatened fish species. River reaches in fish support areas need to be maintained in a condition that supports the associated populations of threatened fish species which need not necessarily be an A or B ecological category."

Fish species of conservation significance that are meant to occur in the catchment are indicated in Table 3**Error! Reference source not found.**. For the fish indicated to survive and reproduce successfully good water quality which includes high clarity and low nutrients is important.

Table 3. Summary of fish species meant to occur in the Bitou River system (BGCMA, RQOs). Conservation status according to the IUCN Red List.

Common Name	Species Name	Conservation Status	Photo
Cape Kurper	*Sandelia capensis**	Decreasing	
African Longfin Eel	*Anguilla mossambica**	Unknown	
Forest Redfin	*Pseudobarbus afer*	Endangered	

* Photos courtesy Jeremy Shelton

2.4 Historical assessment

Historical aerial images from the CD:NGI were obtained and show that the property has not been modifed to a great extent apart from the Eskom powerline servitude which is indicated across the proposed cemetery site in a SE-NW direction (). More recent satellite images indicate degree of disturbance with pathways and / or roads through the cemetery area, which were observed during the site visit to be routes to illegal dumping sites.The 2022 image compared to the 2004 image also seems to indicate bushier vegetation in the cemetery site which is likely alien trees which were observed during the site visit. Historical images do not indicate any likely wet areas indicative of wetlands within the footprint of the cemetery. Elsewhere in the area, wetland flats on similar terrain are quite distinctive.

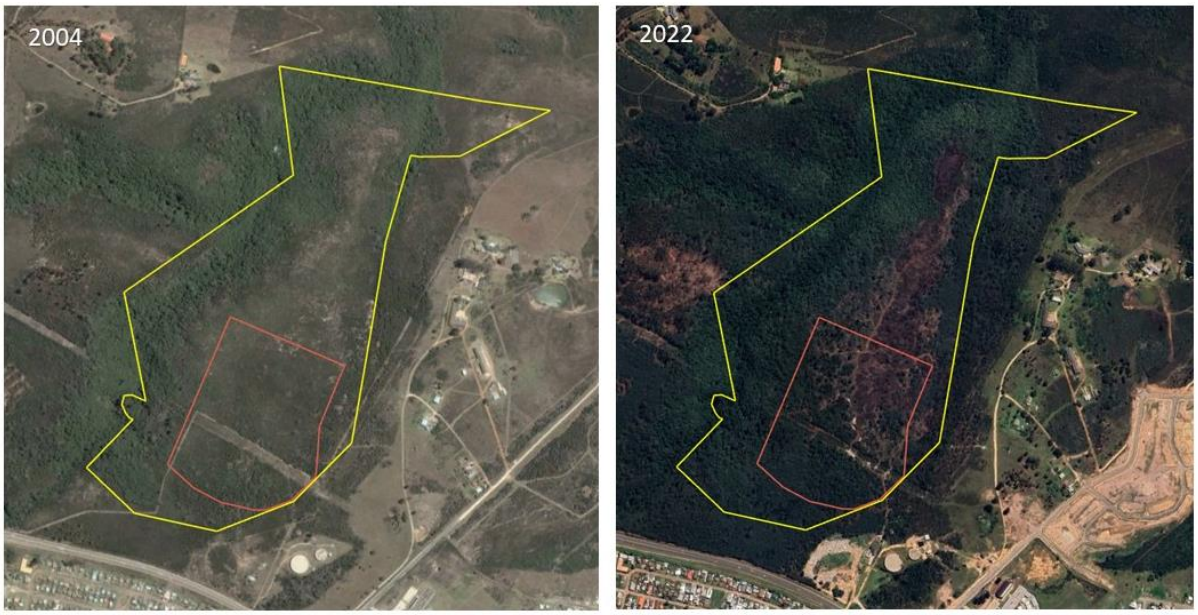

Figure 6. Historical photos showing the property (yellow) and proposed cemetery (red) in 2004 and 2022

3. SITE ASSESSMENT

3.1 Site visit

The site was visited on 21 May 2023 which is early winter conditions on the day overcast with periodic rainfall. The preceding few weeks had been unseasonably wet with high rainfall received across the Garden Route. A large section of the site was walked, although security was a concern as mentioned in the limitations of the assessment (Figure 7).

Figure 7. Google satellite image showing the proposed cemetery site with GPS track walked during the site visit (blue).

Areas covered by the site assessment indicate that indigenous fynbos vegetation has been transformed to varying degrees by alien vegetation (Black wattle, pine and bugweed), informal roads and pathways, and illegal dumping of a range of materials including garden waste and construction rubble (Figure 8). Topography of the area covered in the assessment was mostly flat.

No flow paths within the footprint of the cemetery would be predicted by the site contours, and none were observed during the site visit. No wetland areas indicated by standing water or wetland vegetation were observed during the site visit. Standing water would be expected in wetland areas given the high rainfall recently experience in the area.

Figure 8. Photos of various aspects of the site indicating invasion of natural vegetation with alien plants, informal roads and paths, and areas of illegal dumping.

3.1.1 Watercourse Delineation and Buffers

No watercourses were observed during the site visit. Based on topography of the site, observations during the site visit, and inspection of aerial / satellite images, watercourses to the west and east of the cemetery site were delineated according to Ollis *et al*., (2013). Both watercourses were delineated as drainage lines grading to streams as the gradient increases. The extent of the riparian zone was delineated using satellite and historical imagery which indicates a distinct zone of vegetation associated with the watercourse (Figure 9).

Riparian means where the land meets a watercourse, and refers to the zone where these two habitats interface. Buffer areas are linear zones adjacent to watercourses managed with the intention of protecting water resources from diffuse pollution associated with adjacent land uses. In addition, they provide habitat for wildlife within, and act as corridors throughout fragmented landscapes. The width of buffer zones for watercourses was determined using the site-based model developed by Macfarlane & Bredin (2017) which is the more comprehensive of the two available models.

Buffers recommended for both watercourses were determined to be **37 m** width measured from the edge of the delineated riparian zone (Figure 9). For buffer zones to effectively preserve the integrity of watercourses they need to remain in a natural condition with at least 90% vegetation cover and control of alien vegetation.

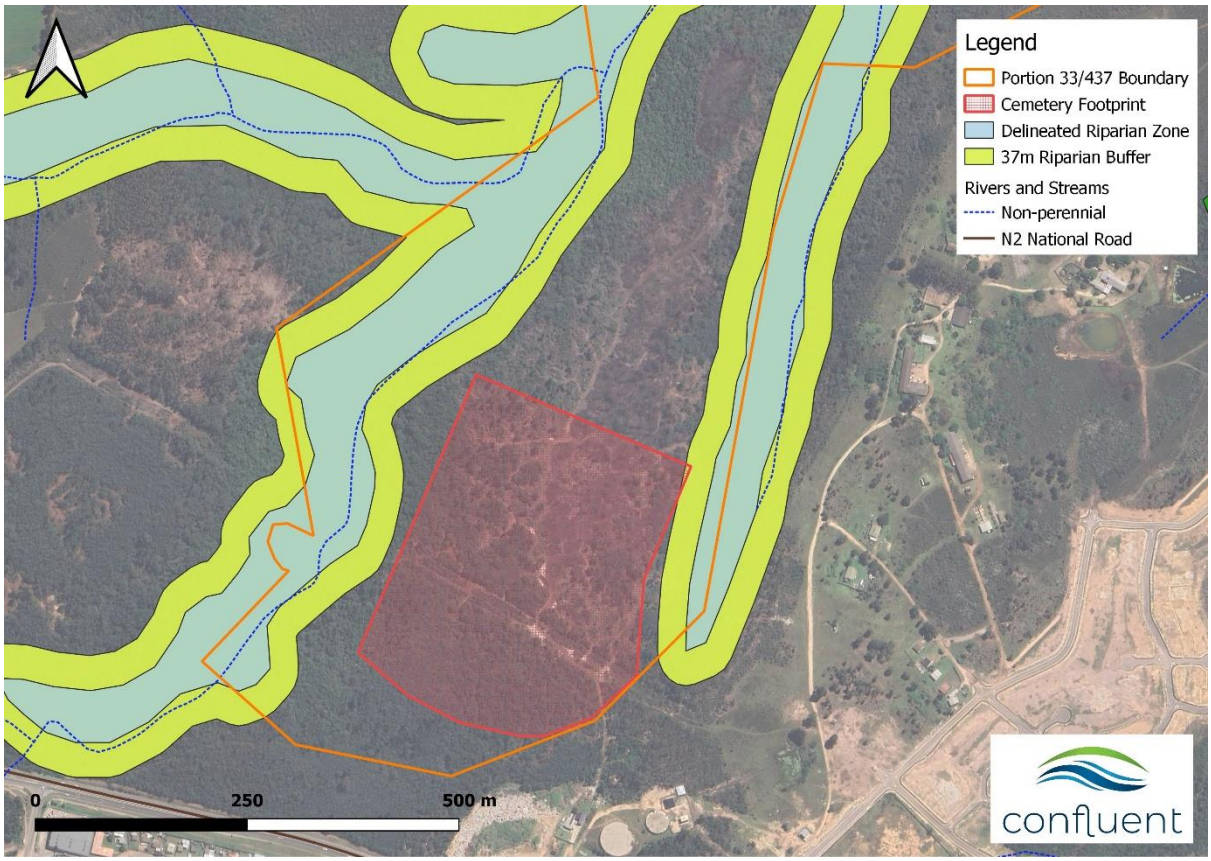

Figure 9. Delineated riparian zone and 37 m riparian buffer.

4. AQUATIC BIODIVERSITY COMPLIANCE STATEMENT

The Site Sensitivity in terms of Aquatic Biodiversity is **confirmed as Low** in contrast to the Very High sensitivity identified by the DFFE Screening Tool. Based on the information presented in this report during the desktop and field assessment, the following reasons support this finding:

- No definable watercourses were observed or are expected to occur within the footprint of the proposed cemetery.
- The Very High site sensitivity finding by the Screening Tool was due to the site being mapped as a Fish FEPA. The cemetery is located entirely outside of the delineated riparian zone of watercourses to the east and west, and almost entirely outside of the 37 m buffer zone. It is therefore very unlikely that it will negatively impact the ecological structure and function of watercourses in the catchment.
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4.1 Water use authorisations

The proposed development footprint is located outside of the regulated area of both watercourses to the east and west as defined in GN509 (2016) of the National Water Act (Act No. 36 of 1998) and therefore no water use authorisation is required (General Authorisation or Water Use License). However, this conclusion would change if any sewage connections, built infrastructure, or construction activities were to be planned within the delineated riparian zone, as this is considered to be within the regulated area. This includes stormwater infrastructure. Future developments related to additional road access are therefore excluded from this assessment.

5. REFERENCES

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