
FRESHWATER COMPLIANCE STATEMENT

Portion 91 of Farm 304, Matjesfontein, Plettenberg Bay.



Drone photos courtesy of Mr. C. Delpont

Prepared for EcoRoute

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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1. INTRODUCTION

Confluent Environmental was appointed by EcoRoute to undertake a site sensitivity verification for the proposed residential development being planned for Portion 91/304 Matjesfontein Farm, on Keurboomstrand, Plettenberg Bay, in the Western Cape (Figure 1). As the development is in the early phases of planning, no layout was available at the time of this assessment. One of the aims of this assessment is to inform any future development and layout based on any sensitive aquatic features present at the site.

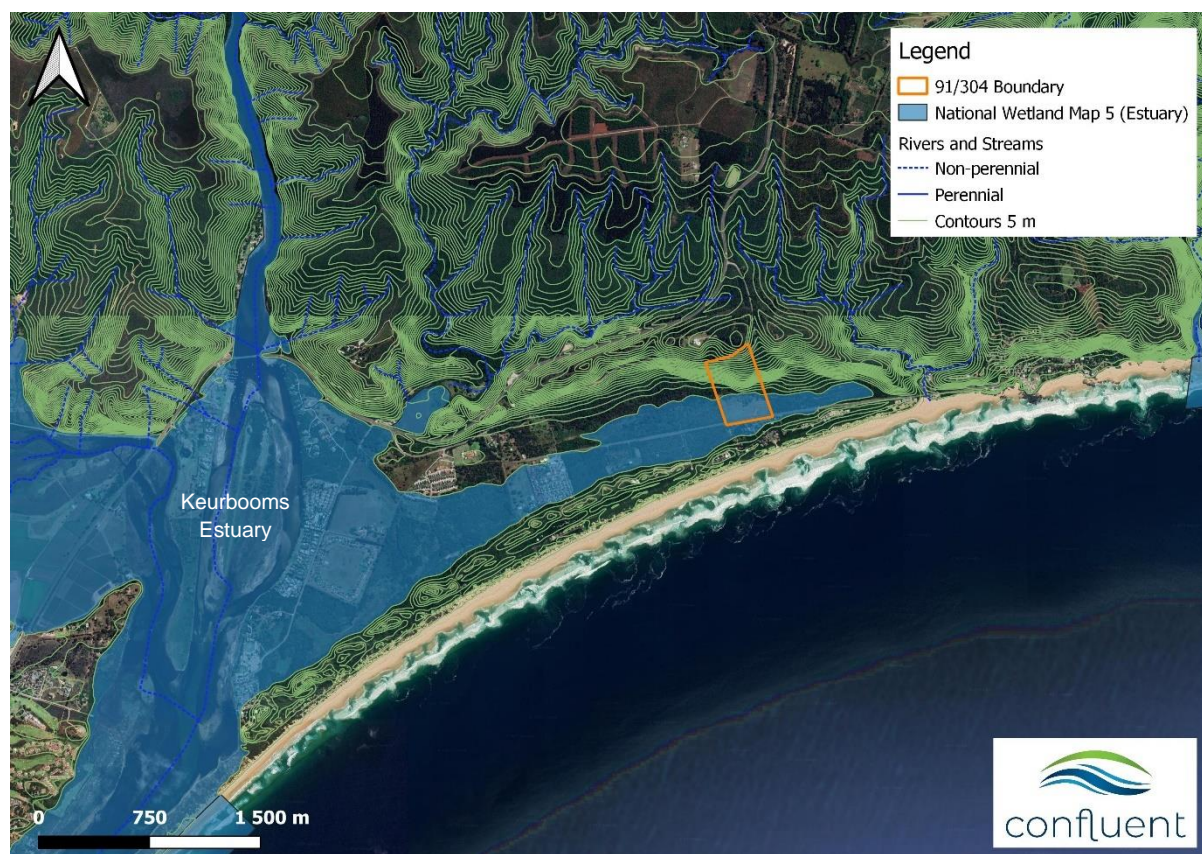


Figure 1. Location of 91/304 Matjesfontein in relation to the mapped Keurbooms Estuarine Functional Zone, contours and other watercourses.

The site has been classified as having **'Very High'** aquatic biodiversity by the Department of Environment, Forestry and Fisheries (DFFE) screening tool. This classification is based on the site being located within the mapped Estuarine Functional Zone (EFZ) for Keurbooms Estuary (Figure 1) and areas indicated by the Western Cape Biodiversity Spatial Plan (WCBS) as Aquatic Critical Biodiversity Areas (CBA1; Figure 2).

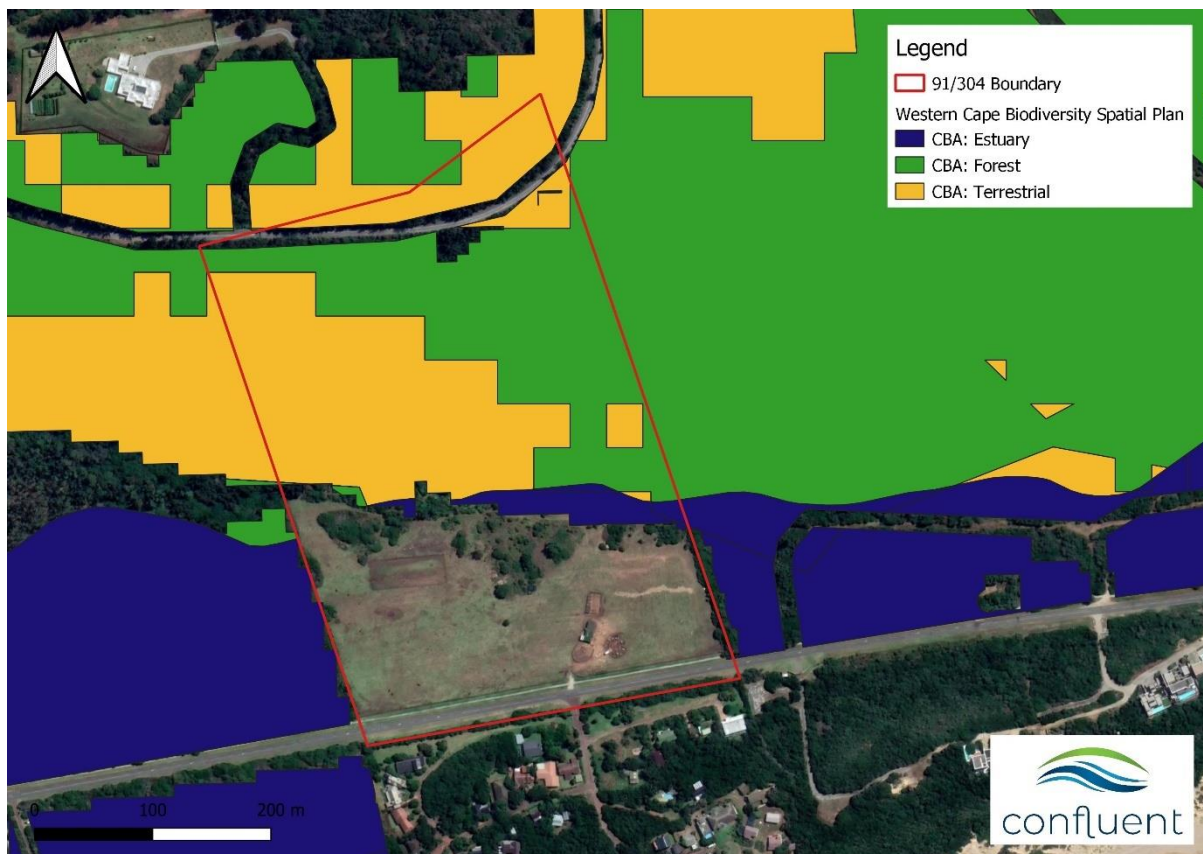


Figure 2. Critical Biodiversity Areas indicated in the Western Cape Biodiversity Spatial Plan (2017).

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).

1.1 Proposed Development

The detailed Site Development Plan was not available at the time the original report was compiled. Subsequently, two alternative layouts have been proposed for development of the site. The preferred layout is group housing with 73 erven (Figure 3), while the alternative layout is low density with 19 erven (Figure 4).

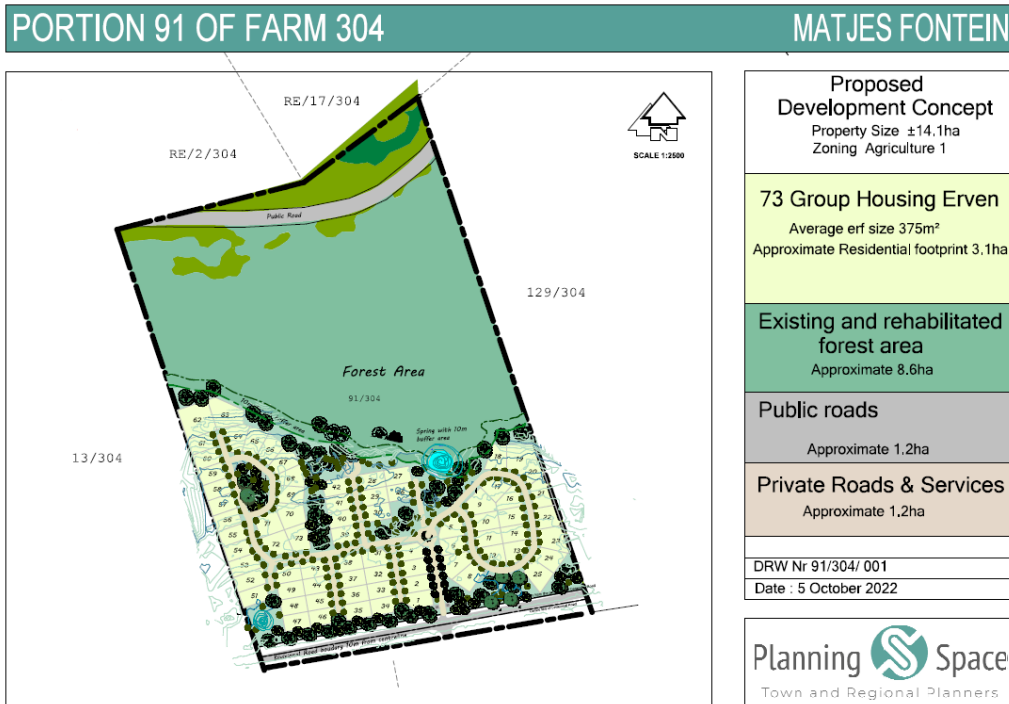


Figure 3. Preferred higher density development.

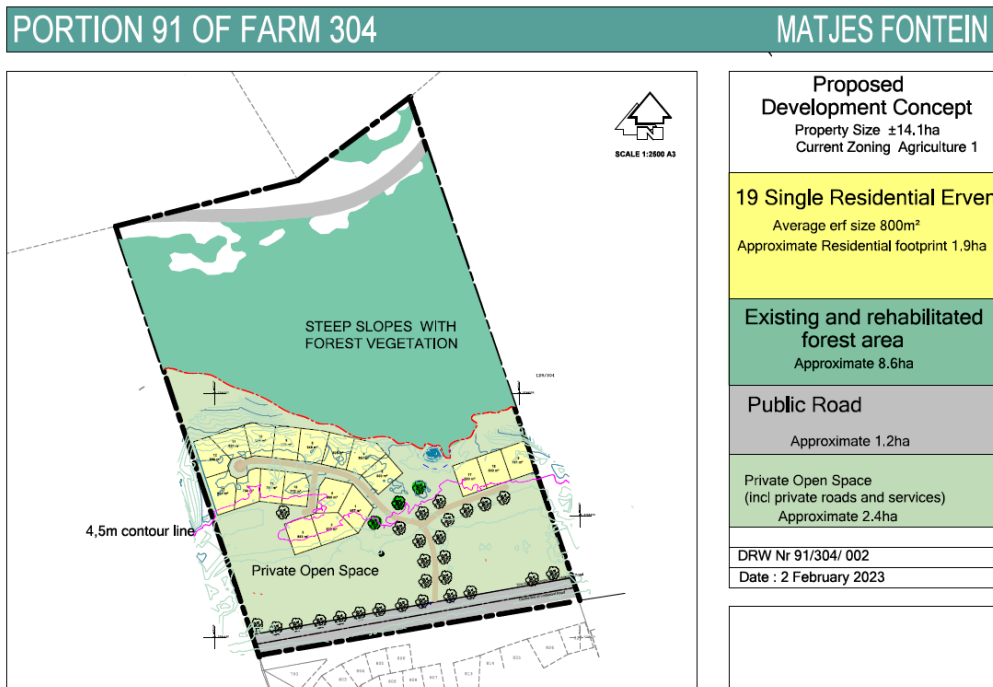


Figure 4. Alternative lower density development.

1.2 National Environmental Management Act

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 screening tool classified the site as being of **Very High** aquatic biodiversity due to the mapped Aquatic CBA and Estuary.

According to the protocol, prior to commencing with a specialist assessment a site sensitivity verification must be undertaken to confirm the sensitivity of the site as indicated by the screening tool:

- Where the information gathered from the site sensitivity verification differs from the screening tool designation of **Very High** aquatic biodiversity sensitivity, and it is found to be of a **Low** sensitivity, an Aquatic Biodiversity Compliance Statement must be submitted.
- Similarly, where the information gathered from the site sensitivity verification differs from the screening tool designation of **Low** aquatic biodiversity sensitivity, and it is found to be of a **Very High** sensitivity, an Aquatic Biodiversity Specialist Assessment must be submitted.

1.3 Scope of Work

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.

1.4 Assumptions and exclusions

- The southern portion of the site has been historically used for grazing, most recently for horses, resulting in extensive modification of vegetation from the original condition.
- The nature of site assessments is they are undertaken on a once-off basis which means there is the possibility that sensitive biota, vegetation or habitats which may be seasonal or cryptic by nature could be missed. The proposed development site was fully inspected to reduce the possibility of missing these features.

2. APPROACH

The determination of the site sensitivity relied upon the following approaches:

- Interrogation of available desktop resources including:
 - DWS spatial layers;
 - National Freshwater Ecosystem Priority Areas (NFEPA) spatial layers (Nel *et al.*, 2011);

- National Wetland Map 5 and Confidence Map (CSIR, 2018)
- Western Cape Biodiversity and Spatial Plan (WCBSP) for Bitou (CapeNature, 2017).
- A site visit was undertaken on 28 June 2022, during which time the following activities were undertaken:
 - Identification and classification of aquatic ecosystems within, and surrounding the footprint of development area using methods detailed in Ollis *et al.* (2013);
 - Soil augering to confirm the presence of soil indicators (DWAF, 2005) that may indicate the presence of wetland or estuarine conditions (if applicable); and
 - Identification of hydrophilic plant species that may indicate the presence of wetland or estuarine plant species (if applicable).

3. DESKTOP SURVEY

The site falls within quaternary catchment K60E. No freshwater features such as drainage lines, rivers or wetlands are indicated to occur within the footprint of the property or within close proximity to the property (Figure 5). The only mapped aquatic feature is the Estuarine Functional Zone (EFZ) which is identified as any area below 5 m.a.m.s.l. (metres above mean sea level). The northern portion of the property is fairly steep and forested, while the southern portion is very flat with pasture grazed by horses (Figure 5). The development will be focussed on the southern, flatter portion of the property.

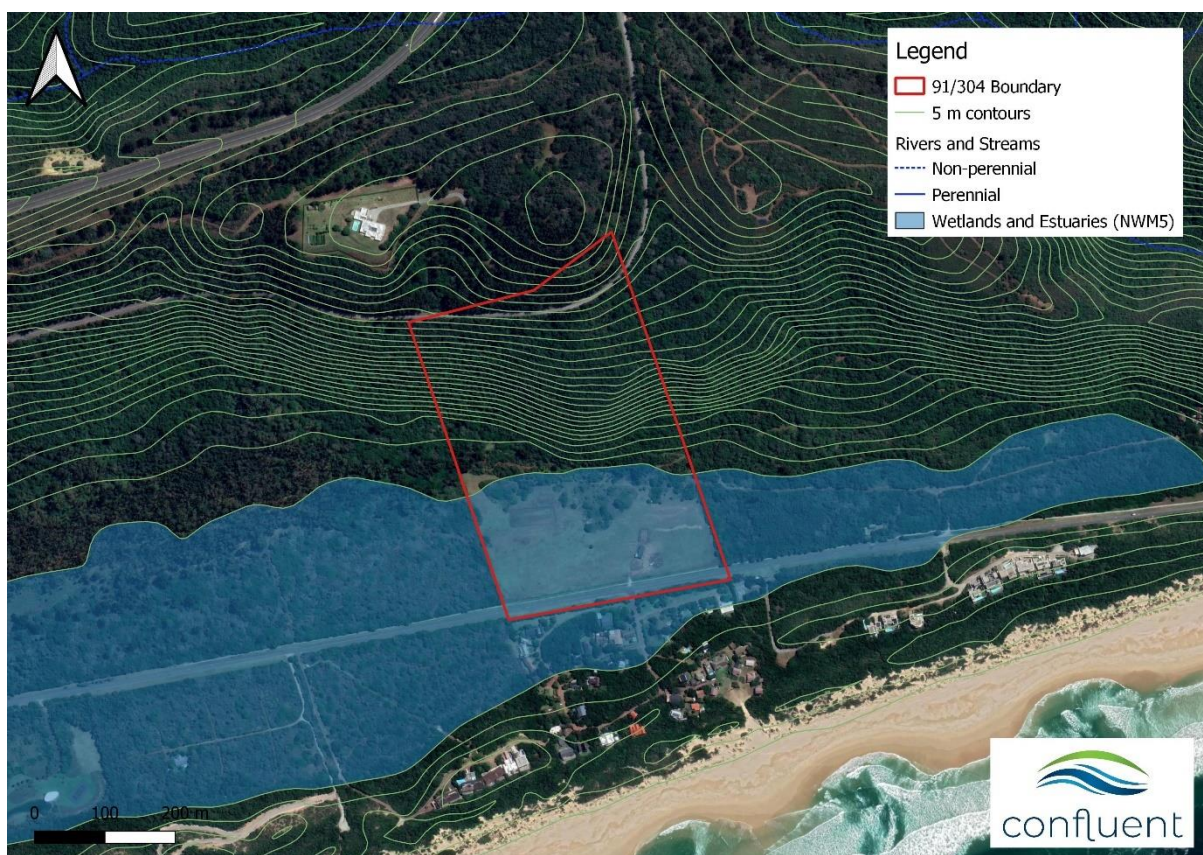


Figure 5: Location of the property in relation to mapped freshwater features.

3.1 Historical Assessment

The historical assessment used aerial imagery provided by the CD:NGI (National Geo-spatial Information) and satellite imagery available from Google Earth. Early images of the site in 1960 and 1974 show that while vegetation clearing had been undertaken on the southern portion of the site, it was to a lesser extent than the present. The vegetation that was present consisted of dense thicket / forest, and the cleared area appears to be pasture. The 1960 image indicates that clearing was widespread across the original Matjesfontein Farm, and the present vegetation cover has recovered substantially in the area.

Vegetation cover has remained consistent at the site for approximately the last two decades as the 2004 image indicates a similar pattern of cover as the present.

No typical wetness/wetland indicators are evident on the southern portion of the site in any of the aerial photos. As the dominant vegetation cover was historically forest / thicket this also suggests that there was no estuarine habitat on the site either, as this typically presents as open vegetation.

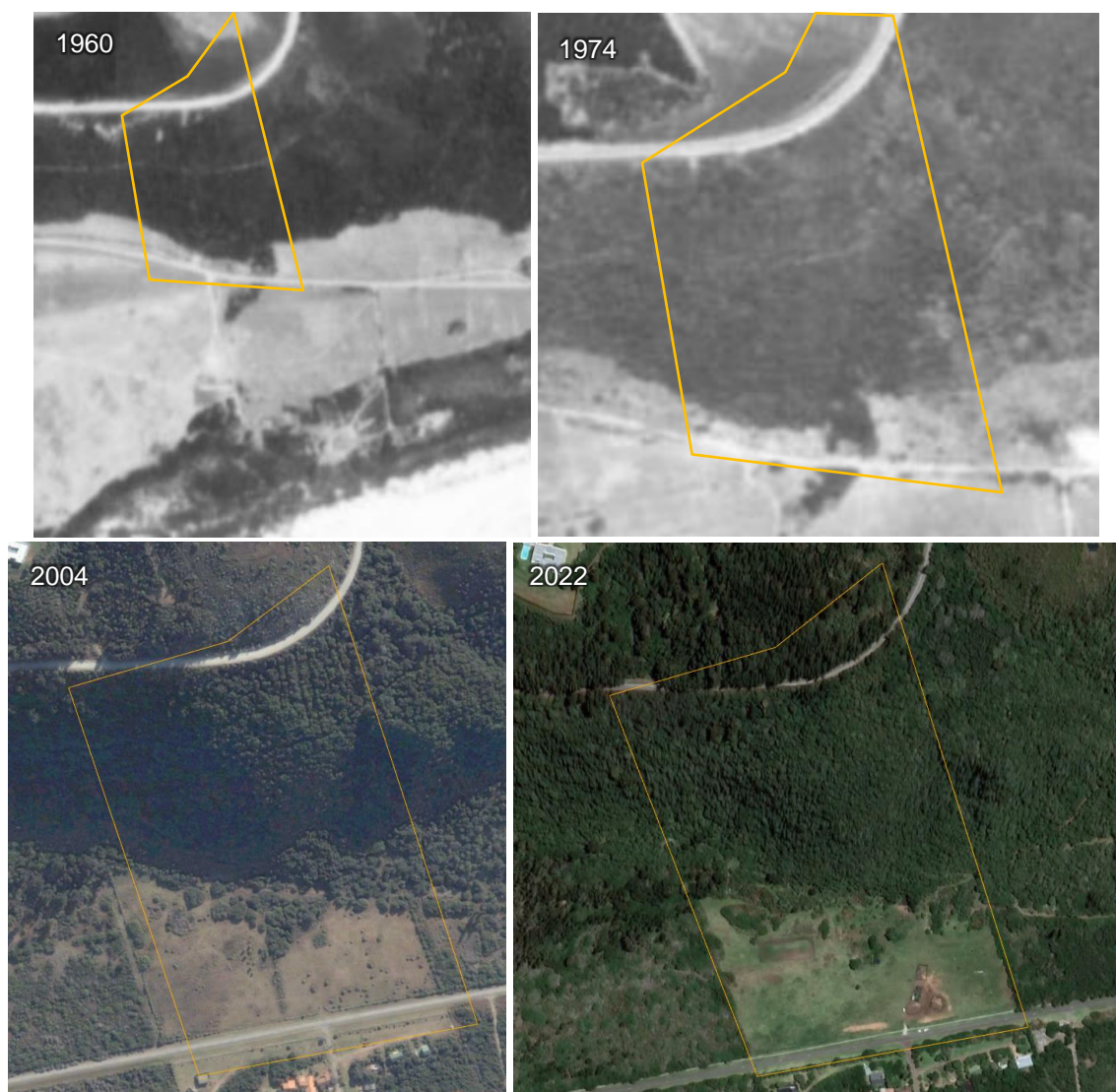
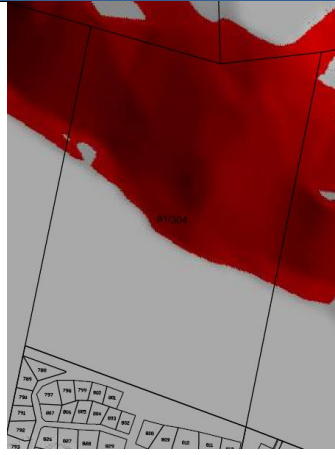




Figure 6. Historical aerial imagery of the property

3.2 Keurbooms and Environs Local Area Spatial Plan (KELASP)

The KELASP (2013) was reviewed from the perspective of the proposed development area. This report includes a thorough assessment of the Tshokwane Wetlands including various classifications of different wetland units, delineation of wetland areas, and development recommendations (Freshwater Consulting Group, 2013). Findings in the report relevant to proposed development at the site are summarised as follows:

KELASP recommendations and guidelines	Graphic
<p>Development on steep slopes with a gradient > 1:4 is not supported. The area highlighted in red represents the steeply sloping land on 91/304.</p>	
<p>Development is not supported in areas below the 1:50 and 1:100 year floodline. Lines indicated are: dark blue = 1:100 year floodline, and light blue area is an 'island' below the 1:50 year floodline. The purple line is the 100m urban coastal setback line.</p> <p>The proposed development area is located outside of all these features, and is therefore not flagged from a heightened flood risk perspective.</p>	
<p>Development is supported in transformed areas. The related graphic maps the southern portion of the site (proposed for development) as a 'Transformed Area' less sensitive to disturbance with opportunities for development and no natural habitat remaining. The relevant area is mapped in light green.</p>	

3.3 Geotechnical Report

The lower portion of the property where development is proposed was also assessed in a geotechnical report (Outeniqua Labs, 2023). The report provides more detailed information on the soil drainage features and level of groundwater at the site. Test pit locations are indicated in Figure 7. Soil at the site was described as dominated by estuarine sandy soils with moderate permeability and drainage characteristics. Surface water is expected to accumulate temporarily following heavy rainfall events. Groundwater was detected in 2 of the test pits at an average of 2 m (Outeniqua Geotechnical Report, 2023). This represents a perched water table over a portion of the site. While the associated water levels can rise and fall, there would need to be a very large volume of water (extremely high rainfall) for the water table to rise from 2 m to within 50 cm of the soil surface where wetland features (wetland plants and changes to soil morphology) typically occur. Furthermore, the rise and fall of the water table is transient in nature and would not persist long enough for wetland conditions to occur (*pers. comm.* I. Paton, Outeniqua Labs).

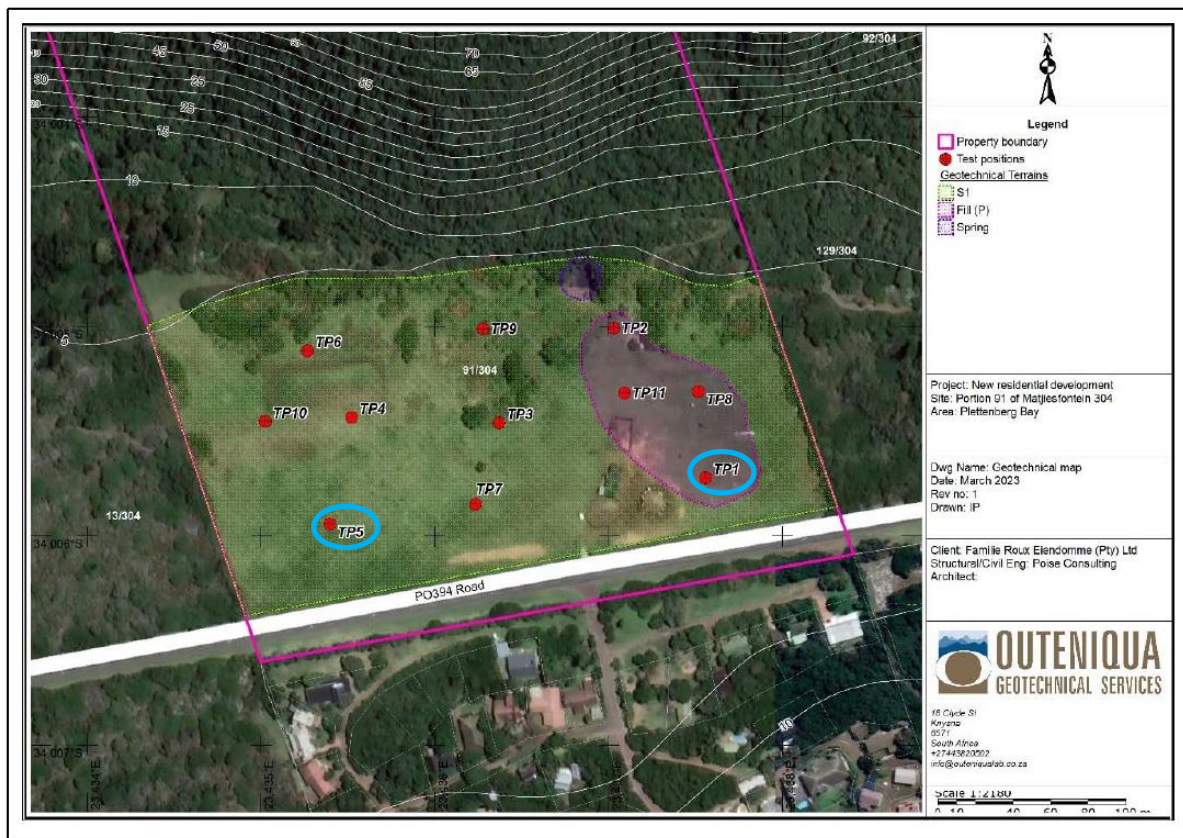


Figure 7. Location of test pits (TP1 - 11) from the Geotechnical study (Outeniqua Labs, 2023). Test pits where groundwater was detected between 2.0m and 2.3m are circled in blue.

4. SITE VISIT

The site was visited on 28 June 2022 which is considered mid-winter. The area has experienced good rainfall, and therefore any surface aquatic features at the site would be expected to be apparent. The entire site was inspected for evidence of a wetland, drainage line, or any other watercourse.

4.1 Spring

A small natural spring is present on the site and was identified by the landowner. Water flowing from the spring is stored to a minor extent in a small, excavated dam (Figure 8).

Soil is very sandy on the site and should therefore be relatively well drained. The dam is roughly circular, and measures approximately 90 m² in extent.

The dam and associated spring are identified as a watercourse as defined in the National Water Act. According to GN509 of the NWA, the regulated area of a spring or dam is classified as the outer edge of 1:100 year floodline or and/or delineated riparian habitat (whichever is greater) from the middle of the spring or dam. As the floodline is not relevant in this situation, and riparian vegetation was indistinguishable from the surrounding vegetation, a buffer of 10 m for this feature is recommended. Development should be planned to exclude this buffer area during the construction and operational phase.



Figure 8. Photographs indicating the location of the spring and associated dam.

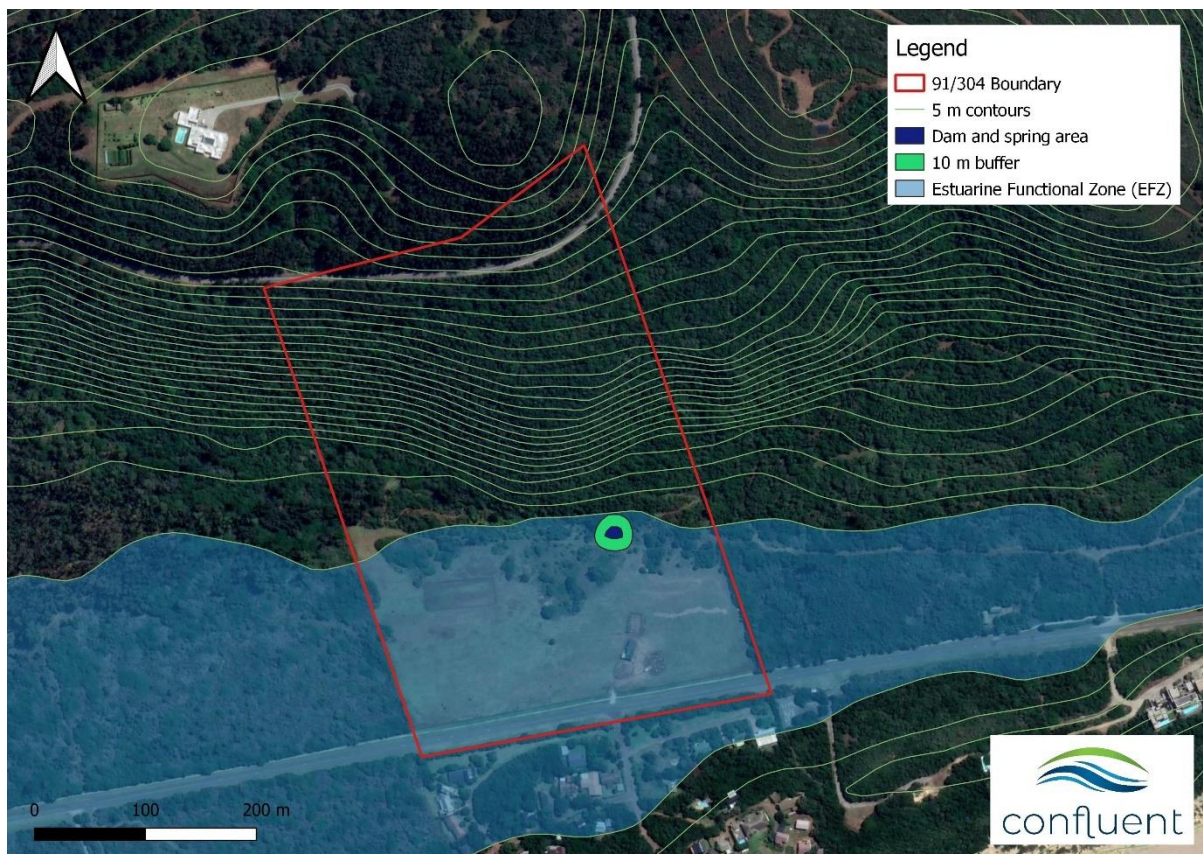


Figure 9. Location of the small, excavated dam and spring along with the mapped 10 m buffer.

4.2 Estuarine Functional Zone (EFZ)

Remnant patches of vegetation were present on 91/304 and these contained a couple of large specimens of Milkwood trees (*Sideroxylon inermeis*) intermingled with *Searsia* sp. Shrubs which make up thicket areas. In the grazed open area which corresponds with the mapped EFZ, the dominant plant species are numerous bloodlilies (*Haemanthus sanguineus*), *Stenotaphrum secundatum* (Buffalo Grass), *Mesembryanthemum* spp. (ice plants), *Romulea* spp. (Froetangs), *Carprobrotus* sp., *Searsia crenata* (Dunekraibessie), *Salvia aurea* (brown sage), and *Massonia longipes* (coastal hedgehog lily).



Figure 10. Typical vegetation in the grazed open area.

While these species are typically associated with coastal, sandy habitats, they are not strictly associated with estuarine systems including the upper extent of the tidal zone. Furthermore, no estuarine species from any of the tidal habitats including saltmarsh or supra-tidal vegetation were identified at the site. These species would typically include rushes and sedges such as *Juncus kraussii*, *Cyperus laevigatus*, or *Phragmites australis*.

Soil augering at the site indicated deep, sandy, fairly well drained soil with no textural change at 50 cm which could promote the development of wetland habitat (Figure 11). This is consistent with the mapped soil type in the area which is described as soils with limited pedological development (young soils with minimal organic matter), and a low clay content (< 15%).



Figure 11. Sandy soils present at the site with no indicators of permanent or seasonal saturation.

Findings that the site is largely terrestrial are consistent with the spatial assessment provided in the Keurbooms-Bitou Estuary Management Plan (K-BEMP; Figure 12). This figure excludes the floodplain area from the 1000 m buffer around the Keurbooms-Bitou estuary. The EFZ as defined by the 2014 EIA Regulations (GNR985) under the NEMA as “*the area in and around an estuary which includes the open water area, estuarine habitat (such as sand and mudflats, rock and plant communities) and the surrounding floodplain area...*”.

One of the development risks within the EFZ relates to flooding which can be exacerbated by climate change and associated sea level rise. The K-BEMP (2018) includes mapped 1:50 and 1:100 year floodlines which are shown in Figure 13. The property is located on the edge of the 1:100 year floodline, which is not mapped to extend beyond the boundary of the property. In reality, the frequency of 100-year flood events is increasing due to climate change, and when coincident with sea-level rise and high tide events, it is not impossible that minor flooding could affect the low-lying area of the property in future. This should be considered in the design and layout of the property, and stormwater management should not further exacerbate the flood risk. To this end, Sustainable Drainage Systems (SuDS) should be fully implemented should the development proceed.

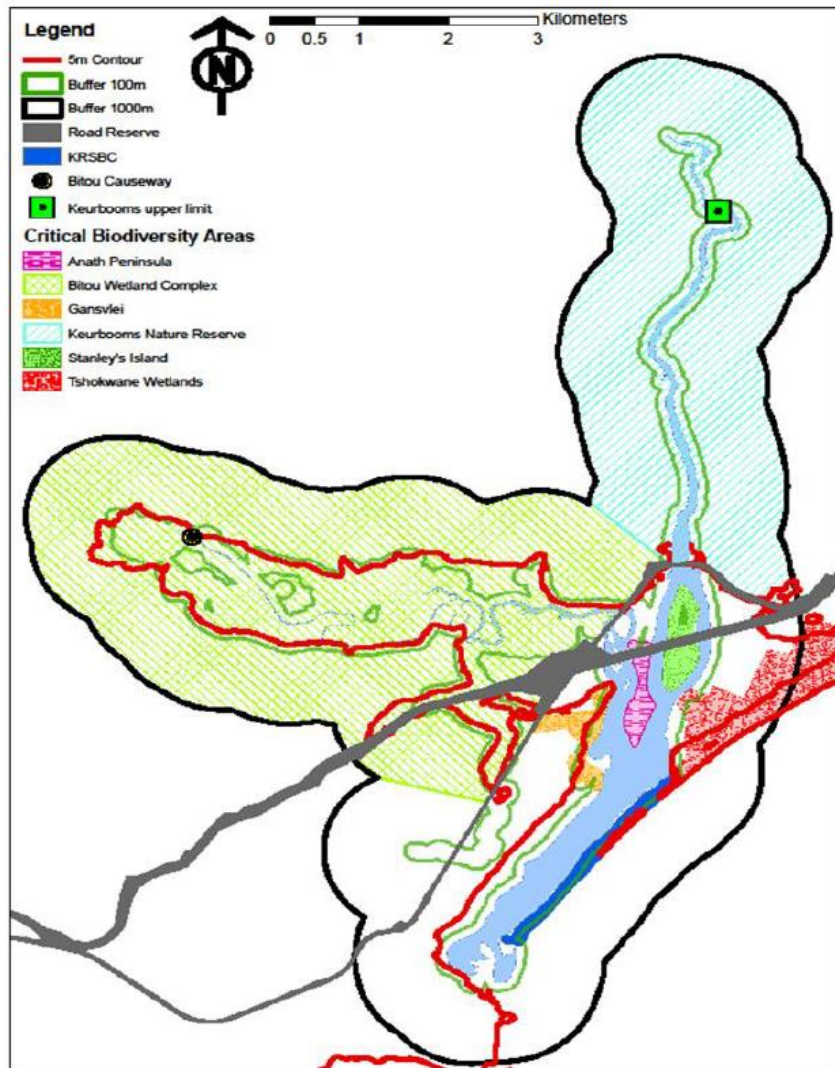


Figure 12. Mapped geographical boundaries, buffer zones, and Critical Biodiversity Areas of the Keurbooms-Bitou system (Estuarine Management Plan, 2018).

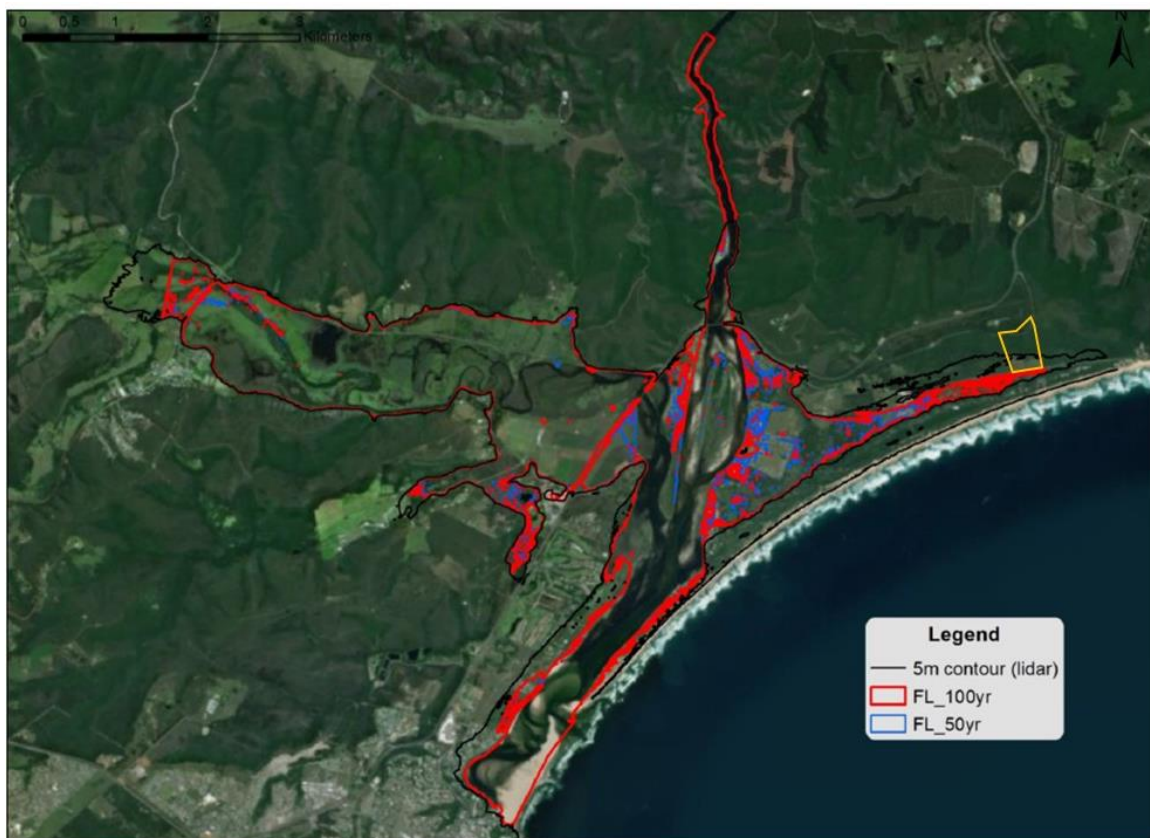


Figure 13. Mapped floodlines according to the Keurbooms-Bitou Estuary Management Plan indicating the proposed development site.

5. AQUATIC BIODIVERSITY COMPLIANCE STATEMENT

Based on the results of the desktop review and the site survey, the sensitivity of aquatic biodiversity on Portion 91/304 can be regarded as **Low**. The main factors influencing the statement include the following:

- The mapped aquatic features at the site are associated with estuarine habitat which is mapped according to the contours (5 m.a.m.s.l.) and not the actual habitat present. Ground-truthing of the site by the aquatic specialist confirmed no estuarine habitat present in remnant vegetation at the site, and no hydromorphic indicators in the soil that would indicate wetland conditions;
- While a natural spring and dam are present on the site, they are very small in extent and can be adequately protected from the development by implementing the 10m buffer during the construction and operational phases as indicated in this report. The presence of this feature is not sufficient to increase the sensitivity of the site to Very High, and it has been excluded from the development area in both SDP options. No stormwater should be put into this dam as the water is of high quality.
- According to the Keurbooms-Bitou Estuarine Management Plan the property and proposed development area are located above the 100-year floodline and outside of any ecologically sensitive areas associated with the estuary or Tshokwane wetlands.
- Following feedback received from DEA&DP querying the level of groundwater at the site, a geotechnical study was compiled. Groundwater was only present in 2 of the test pits at an average depth of 2 m. For wetland or estuarine conditions to form, the soil

profile must be periodically saturated in the plant root zone (upper 50 cm). This would need to happen for at least several months of the year to influence vegetation composition. As the groundwater level was substantially deeper than this, and no wetland / estuarine vegetation was observed at the soil surface, it is concluded that no estuarine or wetland habitat could form at the site.

The mapped spring and dam have been protected by a 10 m buffer as recommended, which constitutes the regulated area as per GN509 as this incorporates riparian vegetation in the immediate vicinity of the features. Provided no development takes place within this area, the development will not require any level of Water Use Authorisation in terms of the National Water Act.

6. REFERENCES

Council for Scientific and Industrial Research (CSIR; 2018). National Wetland Map 5 and Confidence Map [Vector] 2018. Available from the Biodiversity GIS website, downloaded on 30 September 2020.

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Nel, J.L., Driver, A., Strydom, W.F., Maherry, A., Peterson, C., Hill, L., Roux, D.J., Nienaber, S., van Deventer, H., Swartz, E. and Smith-Adao, L.B. (2011) Atlas of freshwater ecosystem priority areas in South Africa: Maps to support sustainable development of water resources. Water Research Commission Report No. TT 500/11.

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