

AQUATIC BIODIVERSITY VERIFICATION ASSESSMENT

FOR THE PROPOSED

DEVELOPMENT OF PORTIONS 278 AND 282 OF THE FARM KRAAIBOSCH NO. 195, GEORGE



**PREPARED
FOR:** Andre Calitz
Oilcon Construction

PO Box 824
Hartenbosch
6520

PREPARED BY: Debbie Fordham
Aquatic Ecologist
Sharples Environmental Services cc
Email: debbie@sesc.net

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AQUATIC TEAM

Debbie Fordham, the main author of this report, is in agreement with the ‘Declaration of Independence’.

SPECIALIST	QUALIFICATIONS	DETAILS
DEBBIE FORDHAM AQUATIC ECOLOGIST	M.Sc. Environmental Science BA (Hons) Environmental Science BA - Environmental Science and Geography	Debbie is a qualified aquatic ecologist and environmental scientist. Debbie holds a BA (Environmental Science and Geography), BA (Hons) and M.Sc. in Environmental Science from Rhodes University. She was awarded her Master of Science degree, by thesis, in Wetland Science, entitled: The origin and evolution of the Tierkloof Wetland, a peatland dominated by <i>Prionium serratum</i> in the Western Cape. She has specialised in aquatic habitat assessment and has produced numerous aquatic habitat impact assessment reports. She is well established in her specialist field and has worked in various provinces within South Africa.
DR BRIAN COLLOTY (COLLABORATING SCIENTIST)	(Pr Sci Nat 400268/07) ❖ B.Sc. Degree (Botany & Zoology) - NMMU ❖ B.Sc. Hon (Zoology) - NMMU ❖ M.Sc. (Botany - Rivers) - NMMU ❖ PhD (Botany – Estuaries & Mangroves) – NMMU	Ecologist & Environmental Assessment Practitioner (Pr. Sci. Nat. 400268/07). Member of the South African Wetland Society. 25 years’ experience in environmental sensitivity and conservation assessment of aquatic and terrestrial systems inclusive of Index of Habitat Integrity (IHI), WET Tools, Riparian Vegetation Response Assessment Index (VEGRAI) for Reserve Determinations, estuarine and wetland delineation throughout Africa. Countries include Mozambique, Kenya, Namibia, Central African Republic, Zambia, Eritrea, Mauritius, Madagascar, Angola, Ghana, Guinea-Bissau and Sierra Leone. Professional Natural Scientist (Pr.Sci.Nat) in Ecology – The South African Council for Natural Scientific Professions (SACNASP)

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REPORT CONTENT REQUIREMENTS CHECKLIST

PROTOCOL FOR THE SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON AQUATIC BIODIVERSITY

Site sensitivity verification & report content requirements	Ref to report content:
Prior to commencing with a specialist assessment, the current use of the land and the environmental sensitivity of the site under consideration identified by the screening tool must be confirmed by undertaking a site sensitivity verification.	Section 1.2 – Screening Tool Results

The site sensitivity verification must be undertaken by an environmental assessment practitioner or a specialist.	<i>See 'Aquatic Team' info above and Section 10 - CV of specialist</i>
The site sensitivity verification must be undertaken through the use of:	
(a) a desk top analysis, using satellite imagery;	<i>Section 2.1 – Desktop Assessment Methods, and Section 4 – Desktop Assessment results</i>
(b) a preliminary on-site inspection; and	<i>The site inspections were undertaken on 23 July 2020 and 5 June 2021.</i>
(c) any other available and relevant information.	<i>Such as Section 1.1 – Location and background and 1.3 – Relevant Legislation</i>
The outcome of the site sensitivity verification must be recorded in the form of a report that:	
(a) confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.;	<i>Section 5 – Site Verification, and Section 6 - Compliance Statement</i>
(b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and	<i>Section 5 – Site Verification</i>
(c) is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations.	<i>Confirmed</i>
Aquatic Biodiversity Compliance Statement contains, as a minimum, the following information:	Ref to report content:
a. Contact details and curriculum vitae of the specialist;	<i>Section 10 - CV of specialist</i>
b. A signed statement of independence by the specialist;	<i>Section 9 – Specialist Declaration of Independence</i>
c. Baseline profile description of biodiversity and ecosystems, including the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	<i>Section 4 – Desktop Assessment results Section 2.1 – Desktop Assessment Methods (site inspections on 23 July 2020 and 5 June 2021) Section 3 - Assumptions and Limitations</i>
d. Methodology used to verify the sensitivities of the aquatic biodiversity features on the national web based environmental verification tool;	<i>Section 2 - Approach and methods 2.1 - Desktop assessment methods</i>
e. Methodology used to undertake the Initial Site Sensitivity Verification and preparation of the Compliance Statement, including equipment and modelling used, where relevant;	<i>Section 2 - Approach and methods 2.2 - Site assessment methods</i>
f. Where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr;	<i>Section 6 – Compliance Statement</i>
g. A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations; and any conditions to which the statement is subjected.	<i>Section 3 - Assumptions and Limitations Section 7 - Conclusion</i>

1 INTRODUCTION

Sharples Environmental Services cc (SES) has been appointed by A. Calitz on behalf of Oilcon Construction to conduct an Aquatic Biodiversity Assessment for the proposed development of Portions 278 and 282 of the Farm Kraaibosch No. 195, George, Western Cape. The new property description for the proposed consolidated areas is Portion 400 of Farm Kraaibosch 195. The 'Very High' sensitivity status of the site indicated by the online Screening Tool required verification by the aquatic specialist. The site inspections for this report were undertaken on the 23 July 2020 and 5 June 2021.

1.1 Location and background

The site is located east of the urban edge of George, alongside the N2 National Road, by the Sasol fuel station (Figure 1). The proponent proposes to develop the rest of the Remainder of portion 400 of the Farm 195 (consolidation), the filling station is currently located in the north western reaches of the site (Figure 2). For the rest of the property the proponent proposes to develop a Plaza consisting of a nursery and associated facilities, restaurant, wine and beer tasting areas, deli, bakery, farm stall, conference facilities, hall/function room and Chapel for social events/weddings, workshops and offices, stables, staff accommodation and a tourism information centre (Figure 3 shows the proposed site development plan).

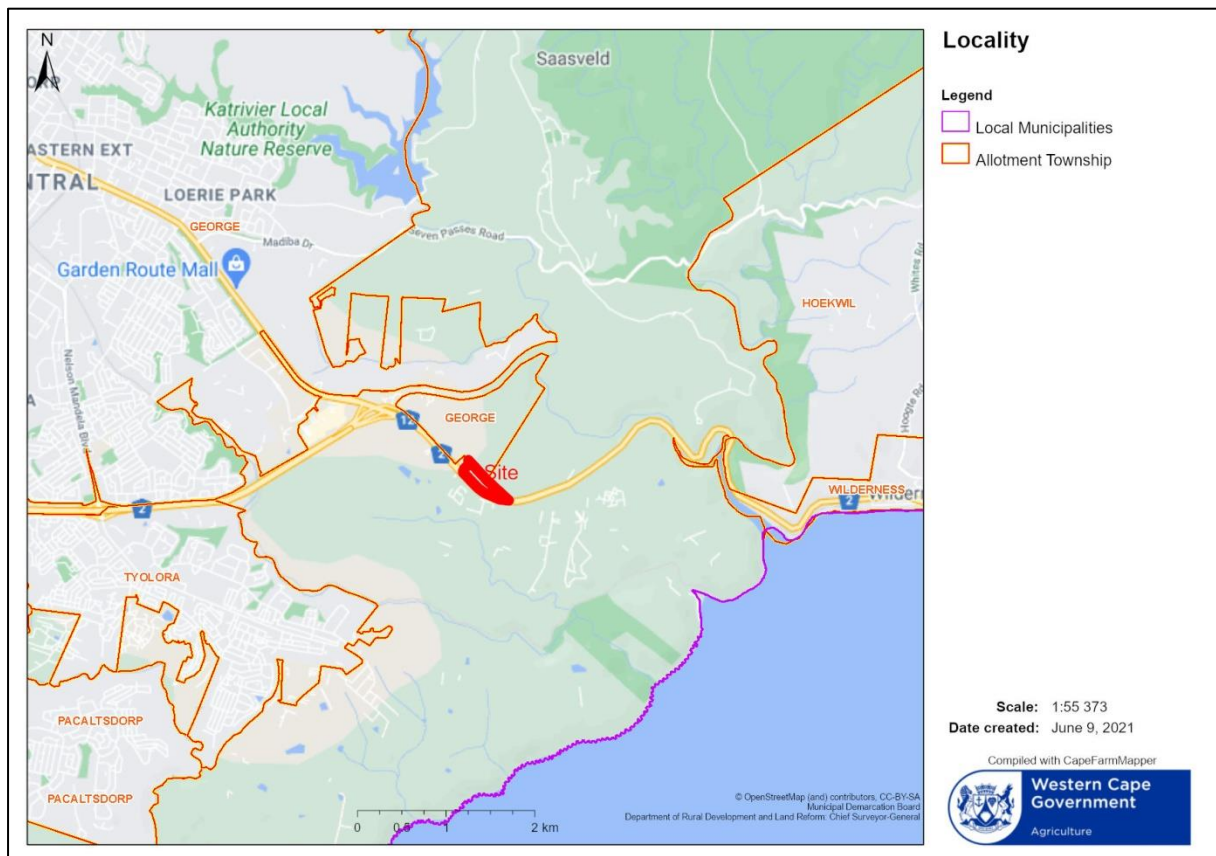


Figure 1: Location of the proposed development site in relation to the urban area of George and Wilderness



Figure 2: Map showing the boundary of Portions 278 and 282 (consolidated as Portion 400) of the Farm Kraai Bosch No. 195, George (CapeFarmMapper)

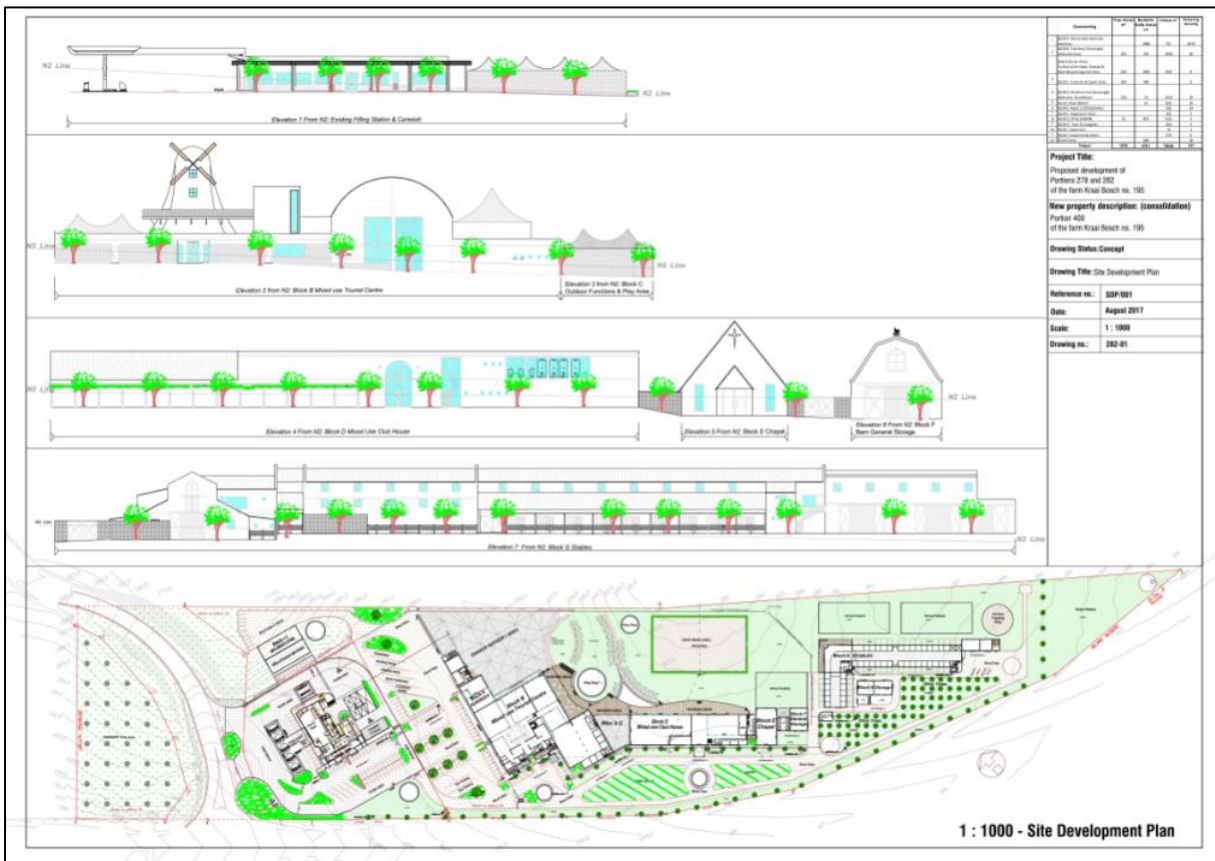


Figure 3: The proposed site development plan

1.2 Screening Tool Results

The National Web based Environmental Screening Tool was utilized for this proposal in terms of the Environmental Impact Assessment (EIA) Regulations 2014, as amended, to screen the proposed site for any environmental sensitivity. Screening Tool identifies related exclusions and/ or specific requirements including specialist studies applicable to the proposed site and/or development, based on the national sector classification and the environmental sensitivity of the site. The Screening Tool allows for the generating of a Screening Report referred to in Regulation 16 (1) (v) of the Environmental Impact Assessment Regulations 2014, as amended whereby a Screening Report is required to accompany any application for Environmental Authorisation. Requirements for the assessment and reporting of impacts of development on aquatic biodiversity are set out in the 'Protocol for the assessment and reporting of environmental impacts on aquatic biodiversity published in Government Notice No. 648, Government Gazette 45421, on the 10 of May 2019.

According to the Screening Report, the proposed development falls within an area of "very high" sensitivity and requires the assessment and reporting of impacts of development on Aquatic Biodiversity (Figure 4). The report indicates that the site falls within a Strategic Water Source Area (SWSA).

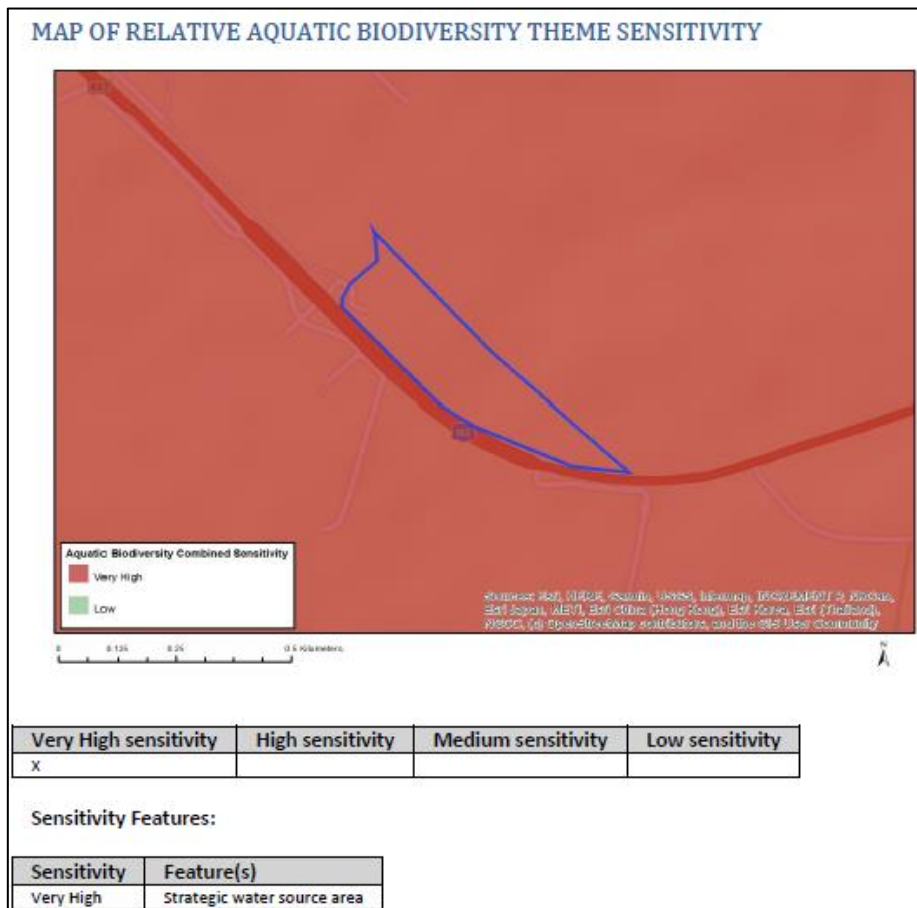


Figure 4: The Screening Report results showing very high sensitivity for the Aquatic Biodiversity theme

This was required to be verified on site by the specialist by undertaking an Initial Site Sensitivity Verification. If a specialist assessment differs from the designation of "Very High" aquatic biodiversity sensitivity from the national web based environmental screening tool, and it is found to be of a "Low" sensitivity, then only an Aquatic Biodiversity Compliance Statement is required.

1.3 Relevant Legislation

The protection of water resources is essential for sustainable development and therefore many policies and plans have been developed, and legislation promulgated, to protect these sensitive ecosystems. The proposed project must abide by the relevant legislative requirements. Table 1 below shows an outline of the environmental legislation relevant to the project.

Table 1: Relevant environmental legislation

Legislation	Relevance
South African Constitution 108 of 1996	The constitution includes the right to have the environment protected
National Environmental Management Act 107 of 1998	Outlines principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state.
Environmental Impact Assessment (EIA) Regulations	The 2014 regulations have been promulgated in terms of Chapter 5 of NEMA and were amended on 7 April 2017 in Government Notice No. R. 326. In addition, listing notices (GN 324-327) lists activities which are subject to an environmental assessment.
The National Water Act 36 of 1998	Chapter 4 of the National Water Act addresses the use of water and stipulates the various types of licensed and unlicensed entitlements to the use of water. Also, according to the Department of Water and Sanitation (DWS), any structures within a 500-metre radius from the boundary of a wetland constitutes a Section 21(c) and (i) water use and as such requires a water use licence.
General Authorisations (GAs)	Any uses of water which do not meet the requirements of Schedule 1 or the GAs, require a license which should be obtained from the Department of Water and Sanitation (DWS). Government Notice R509 of 2016 was issued as a revision of the General Authorisations (No. 1191 of 1999) for section 21 (c) and (i) water uses (impeding or diverting flow or changing the bed, banks or characteristics of a watercourse) as defined under the NWA. Determining if a water use

	licence is required is associated with the risk of impacting on that watercourse. A low risk of impact could be authorised in terms of a General Authorisations (GA).
National Environmental Management: Biodiversity Act No. 10 of 2004	This is to provide for the management and conservation of South Africa's biodiversity through the protection of species and ecosystems; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources; and the establishment of a South African National Biodiversity Institute.
Conservation of Agricultural Resources Act 43 of 1967	To provide for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.

1.4 Scope of Work

1.4.1 Initial Site Sensitivity Verification

The Initial Site Sensitivity Verification was undertaken through the use of:

- (a) a desk top analysis, using historical photographs and satellite imagery; and
- (b) an on-site inspection to identify if there are any discrepancies with the current use of land and environmental status quo versus the environmental sensitivity as identified on the national web based environmental verification tool (Very high), such as new developments, infrastructure, indigenous/pristine vegetation, etc.

The outcome of the Initial Site Sensitivity Verification has been recorded in the form of a report that-

- (a) confirms or disputes the current use of the land and environmental sensitivity as identified by the national web based environmental verification tool;
- (b) contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity.

1.4.2 Aquatic Biodiversity Compliance Statement

The Aquatic Biodiversity Compliance Statement was prepared by a suitably qualified specialist in the field of aquatic sciences in order to verify:

- a. That the site is of low sensitivity for aquatic biodiversity; and
- b. Whether or not the proposed development will have an impact on the aquatic features.

The above is in terms of the latest NEMA Minimum Requirements and Protocol for Specialist Aquatic Biodiversity Impact Assessment as contained in the "*Procedures to be followed for the assessment and minimum criteria for reporting of identified environmental themes of Section 45 (a) and (h) of the National Environmental Management Act, 1998, when applying for Environmental Authorization*" (10 May 2020).

2 APPROACH AND METHODS

2.1 Desktop Assessment Methods

- The contextualization of the study area was undertaken in terms of important biophysical characteristics and the latest available aquatic conservation planning information in a Geographical Information System (GIS). It is imperative to develop an understanding of the regional drainage setting and longitudinal dynamics of the watercourses. The conservation planning information aids in the determination of importance and sensitivity, management objectives, and the significance of potential impacts.
- Following this, desktop delineation and illustration of all potential watercourses within the study area was undertaken utilising available site-specific data such as aerial photography, contour data and water resource data. Digitization and mapping were undertaken using QGIS 2.18 GIS software (Table 3).
- These results, as well as professional experience, allowed for the identification of specific areas that could potentially be impacted by the activities and therefore required groundtruthing and detailed assessment. The following data sources listed within Table 2 assisted with the assessment.

Table 2: Utilised data and associated source relevant to the proposed project

Data	Source
Google Earth Pro™ Imagery	Google Earth Pro™
DWS Eco-regions (GIS data)	DWS (2005)
South African Vegetation Map (GIS Coverage)	Mucina & Rutherford (2006-2018)
National Biodiversity Assessment Threatened Ecosystems (GIS Coverage)	SANBI (2018)
Geology	Council for Geoscience (2019)
Contours (elevation) - 5m intervals	Surveyor General
NFEPA river and wetland inventories (GIS Coverage)	CSIR (2011)
NEFPA river, wetland and estuarine FEPAs (GIS Coverage)	CSIR (2011)
Western Cape Biodiversity Framework 2017: Critical Biodiversity Areas of the Western Cape.	Pence (2017)
National Wetland Map 5	Van Deventer, et al. (2018)

2.2 Site Assessment Methods

- An initial site investigation was undertaken on the 23rd of July 2020 and a detailed Infield site assessment was conducted on the 5th of June 2021 to identify if there are any discrepancies with the current use of land and environmental status quo versus the environmental sensitivity as identified on the national web based environmental verification tool (Very high), such as new developments, infrastructure, indigenous/pristine vegetation, etc.
- Infield assessment was undertaken to identify any aquatic ecosystems on the site, in alignment with standard field-based procedures in terms of the Department of Water and Sanitation (DWA 2008) *Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas*, with a hand-held GPS, and a Dutch soil auger. The assessment is based upon observations of the landscape setting, topography, vegetation and soil characteristics (using a hand-held soil auger for the identification of any wetland soils).
- Following this, recommendations of any monitoring requirements for inclusion in the EMP of the site based on sensitivity analysis were compiled.

3 ASSUMPTIONS AND LIMITATIONS

The following assumptions and limitations are relevant:

- Aquatic ecosystems vary both temporally and spatially. Once-off surveys such as this are therefore likely to miss certain ecological information due to seasonality, thus limiting accuracy and confidence. That said, the entire property was groundtruthed on foot, and the level of confidence in the findings is high.
- Infield soil and vegetation sampling was only undertaken within a specific focal area around the proposed site, while the remaining aquatic features were delineated at a desktop level.
- No detailed assessment of aquatic fauna/biota was undertaken.
- The vegetation information provided is based on observation not formal vegetation plots.
- While disturbance and transformation of habitats can lead to shifts in the type and extent of freshwater ecosystems, it is important to note that the current extent and classification is reported on here.

4 DESKTOP ASSESSMENT

The verification study was informed by the available datasets relevant to water resources, as well as historic and the latest aerial imagery, to develop an understanding of the fluvial processes of the study area. A significant amount of the latest spatial data has been provided through the products of the 2018 National Biodiversity Assessment (NBA). The NBA is the primary tool for monitoring and

reporting on the state of biodiversity in South Africa. It is used to inform policies, strategies and actions in a range of sectors for managing and conserving biodiversity more effectively. The desktop assessment findings were used to identify areas important for site investigation which require a more detailed level of infield verification study.

4.1 Strategic Water Source Areas

The study area falls within quaternary catchment K30C of the Gouritz Water Management Area. It has a temperate climate with a mean annual evaporation rate only slightly higher than the amount of mean annual rainfall (800 mm). The mean annual runoff rate is 215.57 mm per annum. The site falls within the Outeniqua SWSA for surface water (Le Maitre *et al.* 2018) which covers a large area of and surrounding the Outeniqua mountain range (Figure 5).

A Strategic Water Source Area (SWSA) is one where the water that is supplied is considered to be of national importance for water security. Surface water SWSAs are found in areas with high rainfall and produce most of the runoff. Groundwater SWSAs have high groundwater recharge and are located where the groundwater forms a nationally important resource. There are 22 national-level SWSAs for surface water (SWSA-sw) and 37 for groundwater (SWSA-gw). The SWSA-sw in South Africa, Lesotho and Swaziland occupy 10% of the land area and generate 50% of the mean annual runoff. They support at least 60% of the population, 70% of the national economic activity, and provide about 70% of the water used for irrigation. The SWSA-gw cover 9% of the area of South Africa, account for 15% of the recharge, 46% of the groundwater used by agriculture and 47% of the groundwater used by industry.

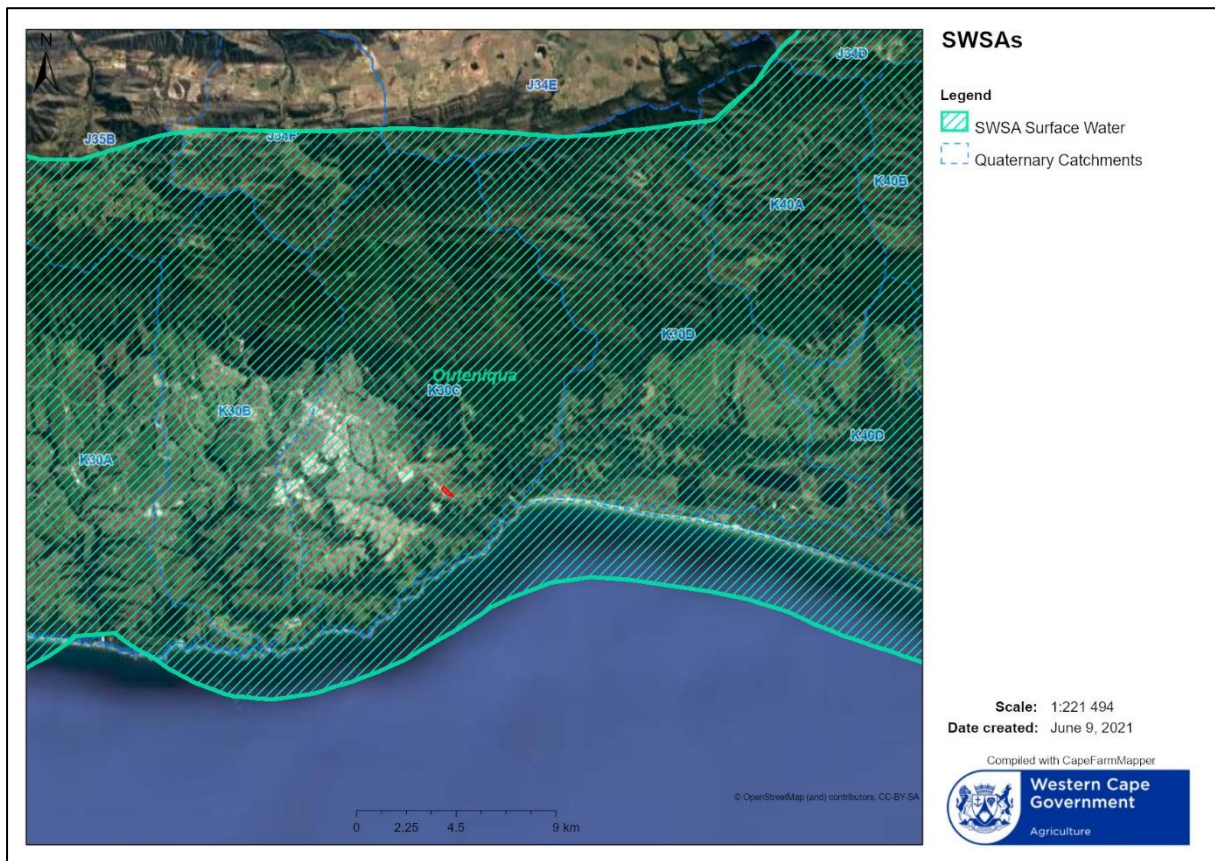


Figure 5: The proposed site in relation to Strategic Water Source Areas for surface water

4.2 South African Inventory of Inland Aquatic Ecosystems

The National Freshwater Ecosystem Priority Areas (NFEPA 2011) data provides strategic spatial priorities for conserving South Africa's aquatic ecosystems and supporting sustainable use of water resources. FEPAs were identified based on a range of criteria dealing with the maintenance of key ecological processes and the conservation of ecosystem types and species associated with rivers, wetlands and estuaries (Driver *et al.* 2011). In 2018 the national wetland and river dataset, including the 2011 NFEPA data, was updated as part of the National Biodiversity Assessment (SANBI 2018). A South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was established and offers a collection of data layers pertaining to ecosystem types and pressures for both rivers and inland wetlands. National Wetland Map 5 includes inland wetlands and estuaries, associated with river line data and many other data sets within the South African Inventory of Inland Aquatic Ecosystems (SAIIAE) 2018. The South African National Wetlands Map (NWM) provides information on the location, spatial extent, and ecosystem types of estuarine and inland aquatic ecosystems (Van Deventer *et al.*, 2018).

According to the data provided by the South African Inventory of Inland Aquatic Ecosystems (SAIIAE 2018) there is no aquatic habitat within the proposed development site. According to the NWM5 data, there are no wetlands within 500m of the boundary of the site. However, a non perennial drainage

line is shown to be located near one site boundary. The drainage line is indicated as having its source downslope of the site and draining towards the Swart River in the north east (Figure 6).

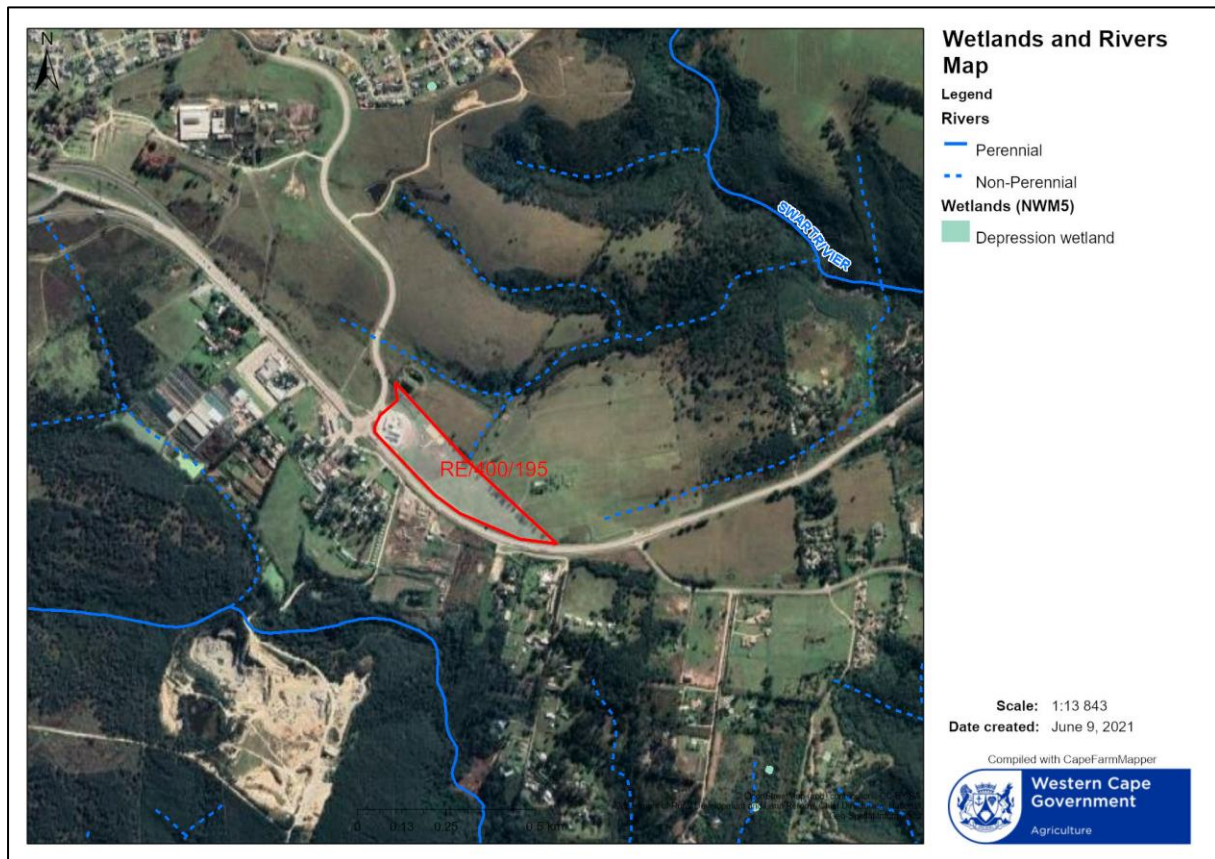


Figure 6: The wetland data of the South African Inventory of Inland Aquatic Ecosystems (CSIR 2018)

4.3 Western Cape Biodiversity Spatial Plan

The Western Cape Biodiversity Spatial Plan (WCBSP) is recognised by both the Department of Environmental Affairs and South African National Biodiversity Institute. The primary purpose of a map of Critical Biodiversity Areas and Ecological Support Areas is to guide decision-making about where best to locate development. Critical Biodiversity Areas (CBA's) are required to meet biodiversity targets. These areas have high biodiversity and ecological value and therefore must be kept in a natural state without further loss of habitat or species. Low-impact, biodiversity sensitive land uses are the only land uses allowed in CBA's. Critically Endangered (CR) ecosystems, critical corridors for maintaining landscape connectivity and areas required to meet biodiversity pattern targets, are included in CBA's. The WCBSP made a distinction between areas likely to be in a natural condition (CBA1) and areas that could be degraded (CBA2). Ecological Support Areas (ESA's) are not essential for meeting biodiversity targets but are important as they support the functioning of CBA's and Protected Areas (PA's). ESA's support landscape connectivity, surrounds ecological infrastructure that provide ecosystem services, and strengthen resilience to climate change. These areas include Endangered vegetation; water source and recharge areas; and riparian habitat around rivers and wetlands. The

WCBSA also made a distinction between ESA's in a functional condition (ESA1) and degraded areas in need of restoration (ESA2).

There are no aquatic features identified by the WCBSA within or near the site, only terrestrial areas (Figure 7).

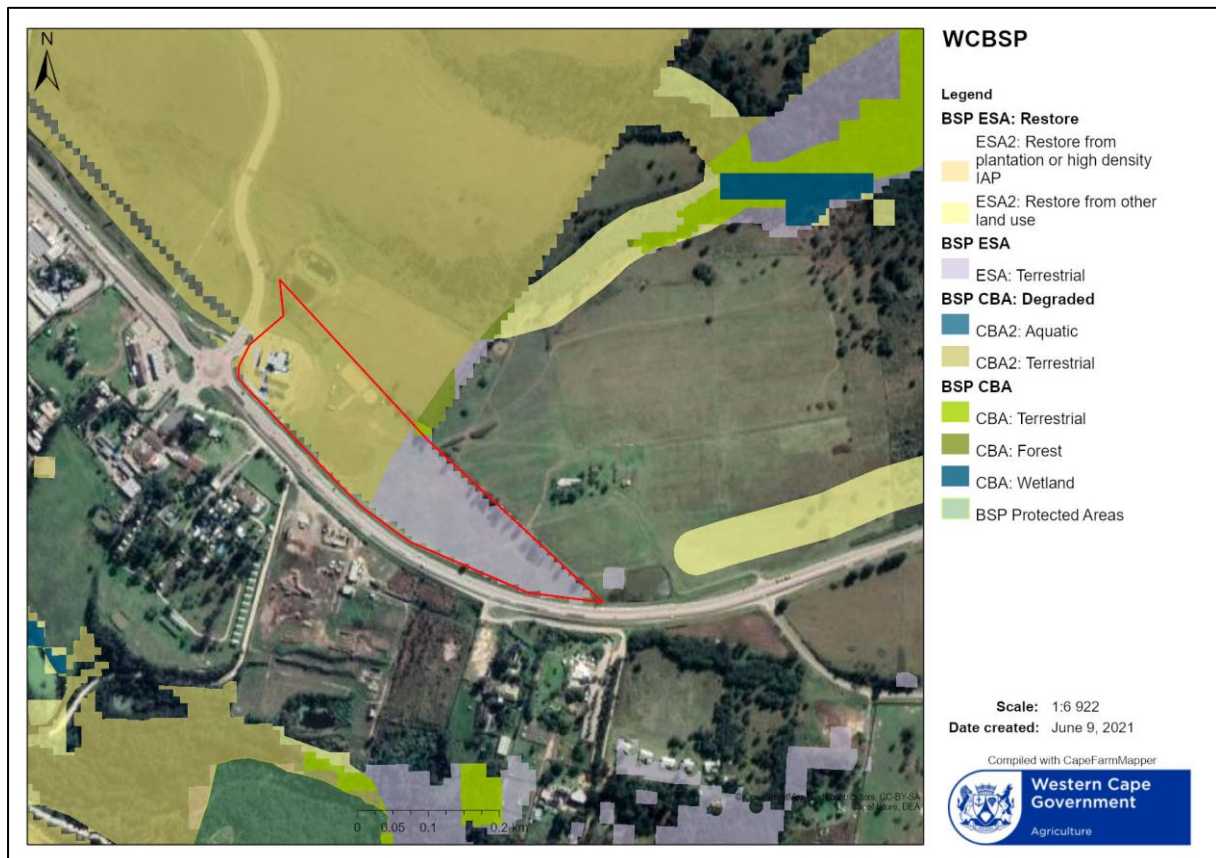


Figure 7: The study site in relation to features identified by the WCBSP (Pence, 2017).

4.4 Historic land use

Historical aerial photography and Google satellite imagery was analysed to identify potential aquatic features within the landscape and develop an understanding of the change in land uses within the study area over time. This is important in any wetland assessment as wetland health is defined as a measure of the deviation of wetland structure and function from the wetland's natural reference condition (Macfarlane *et al.* 2009). Catchment and site-specific impacts are important for determining a baseline of the current status quo.

The current land use is agricultural, and the land is covered by short grasses for animal grazing. There is a narrow line of trees (mostly alien invasive) and shrubs along the northern boundary fence, but they are seemingly in the process of being removed. Urban expansion has led to a rapid conversion of

land in this eastern area, such as for the development of the Garden Route Mall and various residential housing estates.

Prior to 2005 the area was heavily utilized for commercial forestry. The site itself was historically under pine plantation (Figure 8). Commercial forestry results in the loss of indigenous vegetation cover and causes significant soil disturbance. Additionally, wet areas are often drained in plantations when surface runoff is concentrated and directed straight downslope through an excavated channel. It is probable that the previous plantation impacts resulted in the channelisation of the drainage line.

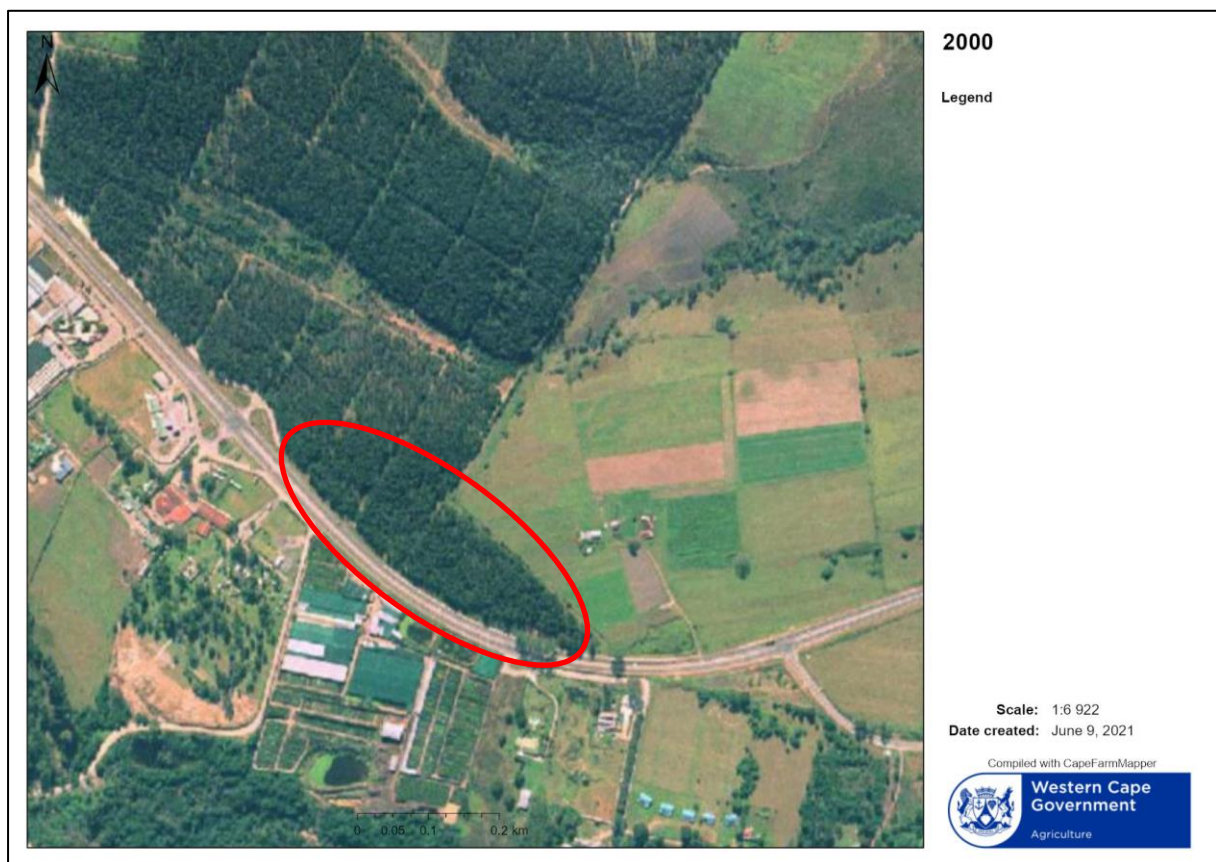


Figure 8: A satellite image from the year 2000 showing the use of the entire site for commercial forestry

5 SITE SENSITIVITY VERIFICATION

The lack of any aquatic habitat on the site was confirmed by a site assessment. Additionally, there is no evidence of the presence or use of any surface water from the Outeniqua SWSA, shown on the national map during desktop assessment.

The proposed site is situated at the head of a drainage basin, next to the road, which is routed on the watershed/drainage divide. The topography is relatively flat and uniform but dips slightly to the north.



Figure 9: Photograph of the site looking west, showing the gentle topography, short grass cover and lack of any aquatic features

Surface runoff from the site moves down slope toward the north eastern boundary, where it accumulates in a shallow channel, that is situated within the drainage line. The channel directs surface runoff from the hillslope into the wetland located approximately 180m to the north of the site. The channelled valley bottom wetland joins the Swart River to the east (Figure 10).

The straight earthen channel, acting like a drain, is likely to be a result of forestry activities modifying the natural form of the drainage line. Historically, the drainage line would have contained a non perennial stream channel, with its source mid-length down the hillslope, supporting a narrow riparian zone. However, the land was cleared, and the channel was straightened. The location of the channel and its straight form is in alignment with the plantation row layout shown in the imagery from 2000 (Figure 11).

There are a number of small livestock drinking dams in the area (Figure 10). The dam to the east of the site is in closest proximity, but it is separated by a drainage divide and will therefore not be impacted directly or indirectly by the development. Surface runoff from the site also does not enter the dams by the fuel station and they will be unimpacted.

The proposed development of the site will result in changes to the status quo of the property. There will be an increased in hardened surfaces within the catchment and reduced infiltration on site. The infrastructure will change runoff flow patterns on site and increase the velocity of surface runoff. However, the receiving environment is significantly modified, and the surrounding aquatic systems are not in close proximity to the infrastructure, so their ecological state will not deteriorate further. Any possibility of pollutants entering the surrounding environment must be avoided through stormwater management measures. The implementation of the storm water management plan (including the use of SUDS) will prevent any potential impact upon aquatic habitat from the activities. All risk to aquatic biodiversity can be averted.



Figure 10: Map showing the site (red line) in relation to the identified aquatic features of the surrounding area



Figure 11: The dry channel shown in relation to the old plantation rows

6 COMPLIANCE STATEMENT

The desktop and site assessment determined that there is a discrepancy between the environmental status quo versus the environmental sensitivity as identified on the national web based environmental screening tool (which was 'Very high'). No aquatic habitat was identified within the site and the development is not going to impact upon the desktop mapped Strategic Water Source Area. The aquatic biodiversity sensitivity rating for the area should be 'Low' and a Compliance Statement is sufficient for this project.

A risk screening was undertaken. There are a number of factors which influence the level of risk, such as type of system, position of the system in relation to the project, and position the system is located in the landscape. Factors considered for determining if a system were at risk included if a system's flow patterns, water quality, form, biota or habitat would be negatively altered by the project. Table 3 is a summary of the risk assessment, showing that the risk and sensitivity of the surrounding systems is Low.

Table 3: Risk assessment for the identified systems within a 500m radius of the proposed site

System	Characteristic Potentially Impacted (Yes/No =Y/N)				Risk Rating	Need for further Assessment	Justification
	Geomorphology	Veg & Biota	Water Quality	Flow Regime			
Channel – the drainage line downslope and north of the site, which has been cleared and straightened by past human activities.	N	N	N	N	Low	No	Not within the site so no direct impacts possible. No indirect impacts are anticipated following the development of a stormwater management plan.
Channelled valley bottom wetland (approx. 180m north)	N	N	N	N	Low	No	Not in close proximity to the site and no impacts are anticipated following the development of a stormwater management plan.
Dams	N	N	N	N	Very Low	No	Not within the site and are located within a separate drainage basin.

A stormwater management plan will ensure that the quantity and quality of water leaving the property is sufficiently regulated to protect any down slope water resources. There are planned open areas to increase infiltration and green infrastructure will be used to reduce the extent of hardened surfaces. Currently the soils are compacted and exposed due to overgrazing and trampling by horses, resulting in low infiltration rates and relatively high surface runoff volumes. The land was previously used for commercial forestry which reduces the amount of water within the catchment. The development will not cause any reduction in stream flow. The development will not reduce the amount of benefits gained by society from the water source area.

The development will comply with all regulations of the National Water Act (Act 36 of 1998), including the protection of downstream users, and minimise any potential ecological impacts upon water resources. There is currently no legislation directly related to SWSAs but by adhering to the NWA legislation the SWSA will not be compromised. The surface water runoff directed down slope (beyond

the development footprint) is not a significant source of water supply for society. However, any potential impacts will be mitigated against with the stormwater management plan and inclusion of soft infrastructure. Therefore, it is motivated that the risk to SWSAs is Low.

7 CONCLUSION

Sharples Environmental Services cc were appointed to conduct an independent specialist aquatic verification assessment. All watercourses within the area of the area of the site were identified, delineated, investigated infield, and screened in accordance to their risk of being impacted upon. No aquatic habitat was identified within the boundaries of the proposed site.

There are no watercourses on the site and if storm water infrastructure is appropriately designed, to prevent concentrated runoff from the development, then there will be no impacts upon aquatic biodiversity. Based on the motivation and evidence presented, this study disputes the environmental sensitivity as identified by the national web based environmental screening tool. The assessment has determined that the development of the property will not impact upon any aquatic habitat on site or the SWSA. The site was determined to have a Low sensitivity and the project (following the adoption of the EMPr) is deemed as acceptable.

8 REFERENCES

- BROMILOW, C. 2001. Problem Plants of South Africa: a Guide to the Identification and Control of more than 300 invasive plants and other weeds. Briza Publications, Pretoria.
- CSIR (Council for Scientific and Industrial Research). 2010. National Aquatic Ecosystem Priority Areas (NFEPA). Council for Scientific and Industrial Research, Pretoria, South Africa.
- DEPARTMENT OF WATER AFFAIRS AND FORESTRY, 1999a. Resource Directed Measures for Protection of Water Resources. Volume 4. Wetland Ecosystems Version 1.0, Pretoria.
- DEPARTMENT OF WATER AFFAIRS AND FORESTRY, 2005. A Practical Field Procedure for Identification and Delineation of Wetland and Riparian areas. Edition 1, September 2005. DWAF, Pretoria.
- DRIVER, A., NEL, J.L., SNADDON, K., MURRAY, K., ROUX, D.J., HILL, L., SWARTZ, E.R., MANUEL, J. AND FUNKE, N. 2011. *Implementation Manual for Aquatic Ecosystem Priority Areas. Report to the Water Research Commission.* Pretoria
- DWAF. 2008. Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas, prepared by M. Rountree, A. L. Batchelor, J. MacKenzie and D. Hoare. Stream Flow Reduction Activities, Department of Water Affairs and Forestry, Pretoria, South Africa
- LE MAITRE, D.C., SEYLER, H., HOLLAND, M., SMITH-ADAO, L.B., NEL, J.L., MAHERRY, A. and WITTHÜSER, K 2018. Strategic Water Source Areas for surface water (Vector data). One of the outputs of the Identification, Delineation and Importance of the Strategic Water Source Areas of South Africa, Lesotho and Swaziland for Surface Water and Groundwater, WRC Report No TT 754/1/18, Water Research Commission, Pretoria, South Africa.
- LE MAITRE, D.C., SEYLER, H., HOLLAND, M., SMITH-ADAO, L., NEL, J.L., MAHERRY, A. AND WITTHÜSER, K. (2018) Identification, Delineation and Importance of the Strategic Water Source Areas of South Africa, Lesotho and Swaziland for Surface Water and Groundwater. Report No. TT 743/1/18, Water Research Commission, Pretoria.
- NAIMAN, R.J., AND H. DECAMPS. 1997. The ecology of interfaces -- riparian zones. *Annual Review of Ecology and Systematics* 28:621-658
- MUCINA, L. AND RUTHERFORD, M. C. (EDS) 2006. The Vegetation of South Africa, Lesotho and Swaziland. *Strelitzia* 19. South African National Biodiversity Institute, Pretoria.
- ROGERS KH. 1995. Riparian Wetlands. In: *Wetlands of South Africa*, Cowan GI (ed). Department of Environmental Affairs and Tourism: Pretoria.
- VAN GINKEL, C.E., GLEN, R.P., GORDAN-GRAY, K.D., CILLIERS, C.J., MUASYA AND VAN DEVENTER, P.P., 2011. Easy identification of some South African Wetland Plants (Grasses, Restios, Sedges, Rushes, Bulrushes, Eriocaulons and Yellow-eyed grasses). WRC Report No. TT 459/10.

9 DECLARATION OF THE SPECIALIST

I**Debbie Fordham**....., as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

- In terms of the general requirement to be independent:
 - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
 - am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application;
- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.

The report has been prepared:

- As per the requirements of Section 32 (3) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) Environmental Impact Assessment Regulations 2017 as per Government Notice No. 326 Government Gazette, 7 April 2017.
- In accordance with the latest NEMA Minimum Requirements and Protocol for Specialist Aquatic Biodiversity Impact Assessment as contained in the "*Procedures to be followed for the assessment and minimum criteria for reporting of identified environmental themes of Section 45 (a) and (h) of the National Environmental Management Act, 1998, when applying for Environmental Authorization*" (10 May 2020).
- In accordance with Section 13: General Requirements for Environmental Assessment Practitioners (EAPs) and Specialists as well as per Appendix 6 of GNR 982 - Environmental Impact Assessment 2014 Regulations and the National Environmental Management Act, 1998.
- With consideration to Cape Nature's standard requirements for biodiversity assessments.
- In accordance with DEA&DP's Guideline on Involving biodiversity specialists in the EIA process.
- Independently of influence or prejudice by any parties.

Signature of the Specialist:

Date: 11/06/2021



Name of company (if applicable). Sharples Environmental Services cc

10 SPECIALIST CV

Debra Jane Fordham

Aquatic Ecologist working in George at Sharples Environmental Services cc as a specialist consultant and managing water use licensing applications (WULAs). Debbie holds a M.Sc. degree in Environmental Science from Rhodes University, by thesis, entitled: The geomorphic origin and evolution of the Tierkloof Wetland, a peatland dominated by *Prionium serratum* in the Western Cape.

Debbie has conducted many aquatic habitat assessments and rehabilitation plans of various spatial and temporal scales, in numerous locations within South Africa. These assessments include wetland, river, and estuary health assessments, rehabilitation plans, water quality analysis, monitoring recommendations, and generally compiling reports that clearly convey the findings and contribute to future management. She has also completed Water Use License Applications, Basic Assessment Reports and Environmental Management Plans. Debbie is highly proficient with GIS mapping software and incorporates spatial analysis in all assessments.

Key skills:

- Desktop mapping and infield assessment for wetland/ riparian habitat delineation
- Assessment of wetland and riparian functional importance (EIS) and Present Ecological State (PES) now including the WET-Health V2 tool, amongst others.
- Evaluating impacts to wetland and riparian systems from proposed developments
- Identifying mitigation measures and developing monitoring and rehabilitation plans
- WULA, EIA and BAR Applications
- ArcGIS V10, QGIS 2.18, CoralDraw X4, Strater V3, Statistica V9, MSOffice

Tertiary Education at Rhodes University, South Africa:

M.Sc. Environmental Science

Master of Science degree, by thesis, entitled:

The geomorphic origin, evolution and collapse of a peatland dominated by *Prionium serratum*: a case study of the Tierkloof Wetland, Western Cape.(Supervised by Prof. Fred Ellery)

BA Honours – Environmental Science

Honours Dissertation: The status and use of *Aloe ferox*. Mill in the Grahamstown commonage, South Africa. (Supervised by Prof. Sheona Shackleton)

Honours Subjects

- Wetland Ecology
- Environmental Water Quality /Toxicology
- Environmental Impact Assessment (EIA)
- Biodiversity, Non-Timber Forest Products (NTFPs) and Rural Livelihoods
- Statistics

BA Degree – Environmental Science and Geography

Current position:

Aquatic Ecologist and WULA Manager

Sharples Environmental Services cc: 2016/08/10 - Present

Debbie fulfils the specific requirements of each project with regards to the relevant aquatic legislation, such as conducting aquatic habitat impact reports and Water Use Licence Applications (WULAs). This mostly requires undertaking ground-truthing, classification, infield identification, delineation, impact assessment and mapping of aquatic ecosystems. SES conduct Present Ecological State (PES), functional importance assessments and Ecological Importance and Sensitivity (EIS) assessments of aquatic ecosystems. She conducts environmental impact and environmental sensitivity (constraints) assessments on aquatic habitats to determine if they are at risk of being impacted upon by proposed development areas during construction and operational phases of development. Including identifying direct, indirect, and cumulative impacts that proposed developments will have on aquatic habitats and the significance of these impacts and recommend actions that should be taken to prevent impacts on aquatic habitats. She also determines and maps No-Go and buffer zones utilising professional knowledge and buffer zone guidelines for rivers, wetlands and estuaries.

Publications and memberships:

Bekker, D. J. & Shackleton, S. 2010. The status and use of *Aloe ferox* Mill. in the Grahamstown commonage. Policy Brief, Rhodes University

- Professional Wetland Scientist applicant with SWS
- Southern Cape Wetland Society (SCWS)

- South African Wetlands Society (SAWS)
 - Freshwater Ecosystem Network (FEN)
 - Southern African Association of Geomorphologists (SAAG)
 - DWAF accredited wetland delineation
-
-

Recent Aquatic Impact Assessment Projects:

- *Installation of A Water Pipeline from An Existing Borehole to The Herbertsdale Reservoir, Mossel Bay Municipality*
- *Unauthorised Clearance of Vegetation and Construction of a Dam on Farm Angeliërsbosch Re/157, Prince Albert*
- *Rehabilitation of The Excavation of a Channel Within the Brandwag River, On the Remainder of Farm Bowerf 161, Brandwacht, Mossel Bay*
- *Rehabilitation Plan for activities On A Portion of Remainder Portion 104 Of the Farm Modder Rivier No 209, George*
- *Aquatic Impact Assessment for The Proposed Extension of Walvis Street, Mossel Bay*
- *Rehabilitation Plan for the transformation of agricultural land to commercial land on Farm Re 109/209, George*
- *Aquatic assessment for the proposed Dana Bay Access Road, near Mossel Bay*
- *Invasive Alien Plant Control Plan for New Horizons Mixed-Use Development on Farm Hillview No. 437, Plettenberg Bay*
- *Cemetery expansion on Erf 566 and 480, Melkhoutfontein*
- *The expansion of Goue Akker Cemetery in Beaufort West*
- *Construction of a bulk sewerage pipeline from Green Valley township, Wittedrift, to the Plettenberg Bay WWTW*
- *Periodic Maintenance of Trunk Road 31- Barrydale To Ladismith (Km 30.89 To Km 76.06), Western Cape Province*
- *Expansion of the Gansbaai Sand en Klip Quarry*
- *Seven Oaks Residential Development, Wittedrift, Plettenberg Bay*
- *Gran Sasso Quarry water abstraction and proposed construction of a road crossing a watercourse, Tygervalley, Cape Town*
- *Maintenance of Trunk Road 33/4 and Trunk Road 34/2, though Meiringspoort, Western Cape Province*
- *Proposed Waste Water Treatment Works, Irrigation Activities & Effluent Discharge by Parmalat SA (Pty) Ltd, Bonnievale*

- *Development of Remainder of Erf 562 Kurland, Plettenberg Bay*
- *Ladismith Cheese Water Use Application*
- *Construction of A 22kv Overhead Powerline, near Humansdorp, Eastern Cape*
- *Development of Herold's Bay Country Estate on A Portion of Portion 7 Of Farm Buffelsfontein No. 204, Herold's Bay*
- *Groot Witpan and Konga Pan salt mining, Northern Cape*
- *Gemsbok Horn salt pan mine prospecting*
- *Hartenbos Estuary Habitat Integrity Assessment with Fish Survey and water quality analysis*
- *The proposed Aalwyndal Precinct Plan Development: Biodiversity Component*
- *Tweekuilen Estuary Habitat Integrity Assessment with Fish Survey*
- *Residential Development on Portion 3 of Kraaibosch 195, George*

End
