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FINAL

**AQUATIC ECOLOGY COMPLIANCE STATEMENT FOR
THE PROPOSED HOUTBAY CEMETERY EXPANSION**

ZUTARI (PTY) LTD

Houtbay Cemetery,
Cape Town, Western Cape Province



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DECLARATION OF INDEPENDENCE

I, Hanjo Fourie, declare that I act as an independent specialist for the Aquatic Ecological Assessment of this application. I conduct assessments in an objective manner, even when the views and findings might not be favourable to the Applicant. I have the expertise to conduct the assessment and will comply with the Act, regulations and other applicable legislation. I do not have conflicting interests in the undertaking of the activity. I undertake to disclose all material information in my possession that has or may have the potential of influencing any decision to be taken in respect to the application.

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INDEMNITY STATEMENT

Although Biosphere Enviro Solutions (Pty) Ltd exercises due care and diligence in rendering services and preparing documents, the client takes full responsibility for this report and its implementation in terms of the National Environmental Management Act of 1998, and National Water Act (Act 36 of 1998).

This statement exempts Biosphere Enviro Solutions and its associates and their sub-contractors from any legal responsibility based on the timing of the assessment, the result and the duration thereof, which has an influence on the credibility and accuracy of this report.

Biosphere Enviro Solutions accepts no liability, and the client, by receiving this document, indemnifies Biosphere Enviro Solutions and its directors, managers, agents and employees against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by Biosphere Enviro Solutions and by the use of the information contained in this report.

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LIST OF ABBREVIATIONS

ASPT	Average Score per Taxon
BSC	Biodiversity Sub-catchment Category
BA	Basic Assessment
BPA	Biodiversity Priority Areas
CBA	Critical Biodiversity Area
CMA	Catchment Management Area
DEC	Default Ecological Class
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EcoStatus	Ecological Status
EIS/C	Ecological Importance and Sensitivity / Category
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Priority Area
FRAI	Fish Response Assessment Index
GA	General Authorisation
GN	Government Notice
IHI	Index of Habitat Integrity
Km	Kilometers
NBA	National Biodiversity Areas
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NFEPA	National Freshwater Ecosystem Priority Area
NWA	National Water Act (Act 36 of 1998)
PA	Protected Area
PES/C	Present Ecological State / Category
PV	Photovoltaic
QDG	Quarter Degree Grid
REC	Recommended Ecological Category
RHP	River Health Programme
RQO	Resource Quality Objectives
SANBI	South African National Biodiversity Institute
SASS5	South African Scoring System Version 5
SEF	Solar Energy Facility
Sub-WMA	Sub Water Management Area
WMA	Water Management Area
WUL	Water Use License

GN 320 OF 20 MARCH 2020: PROTOCOLS FOR THE COMPLIANCE STATEMENT AND MINIMUM REPORT CONTENT
REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON AQUATIC BIODIVERSITY

3 Aquatic Biodiversity Compliance Statement			
3.1	The compliance statement must be prepared by a suitably qualified specialist registered with the SACNASP, with expertise in the field of aquatic sciences.		The author, Hanjo Fourie, is an accredited SASS5 practitioner with more than 13 years' experience in the aquatic field. SACNASP: 125420 WISA: 40759 SASAqS: 0028
3.2	<i>The compliance statement must:</i>		
	3.2.1	be applicable to the preferred site and the proposed development footprint	Location Section
	3.2.2	confirm that the site is of "Low" sensitivity for aquatic biodiversity; and	SSV Section
	3.2.3	Indicate whether or not the proposed development will have an impact on the aquatic features.	Impacts Section
3.3	<i>The compliance statement must contain, as a minimum, the following information:</i>		
	3.3.1	contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Page vii, Addendum 3
	3.3.2	a signed statement of independence by the specialist;	Page vii
	3.3.3	a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Findings Section
	3.3.4	a baseline profile description of biodiversity and ecosystems of the site;	Biodiversity Section
	3.3.5	the methodology used to verify the sensitivities of the aquatic biodiversity features on the site including the equipment and modelling used where relevant;	Assessment Method Section
	3.3.6	in the case of a linear activity, confirmation from the aquatic biodiversity specialist that, in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase;	N/A
	3.3.7	where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMP; and	Impact Section
	3.3.8	a description of the assumptions made as well as any uncertainties or gaps in knowledge or data; and	Assumptions & Limitations
	3.3.9	Any conditions to which this statement is subjected.	Discussion & Conclusion
3.4	<i>A signed copy of the compliance statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.</i>		

INTRODUCTION

Biosphere Enviro Solutions (Pty) Ltd is appointed as independent specialists by Zutari (Pty) Ltd to undertake an Aquatic Ecological Assessment in support of the proposed upgrade and transformation works to be undertaken at the Houtbay Cemetery, Cape Town, Western Cape Province.

Zutari has been appointed as independent Environmental Assessment Practitioners (EAPs) to undertake the BA for the required EA application. As part of the processes, specialist studies need to be undertaken and this report details the methods, analysis, and findings of the Aquatic Ecological Compliance Statement.

LOCATION

The Houtbay Cemetery is in the upper valley area of Houtbay, situated approximately midway between the coastline and the mountain slopes. It is bordered by Whittlers Way to the north, residential properties along Riverside Terrace to the west, and Mandela Road to the south. The M63 (Hout Bay Main Road) runs along the western boundary of the broader area. The proposed expansion area is approximately 0.7ha in extent.

The site falls within a semi-rural residential zone characterized by larger plot sizes and mixed land use. The property shows evidence of both cleared and naturally vegetated areas, with the eastern portion retaining more natural vegetation coverage. The surrounding landscape is characterised by a mosaic of residential properties, small-scale agricultural activities, and natural vegetation patches assumed to be typical of Peninsula Granite Fynbos. The Hout Bay River system runs north of the site, with associated riparian vegetation visible in the broader landscape.

Table 1: Structure to be developed

Development Description	Type	Corner Coordinates	Central Coordinate	Activity
Houtbay Cemetery	Expansion and/ Transformation/ upgrade works	34° 1'25.05"S 18°21'53.06"E 34° 1'26.35"S 18°21'52.73"E 34° 1'29.36"S 18°21'49.24"E 34° 1'28.11"S 18°21'47.90"E	34° 1'27.43"S 18°21'50.56"E	Expansion and transformation/ upgrade of the existing Houtbay Cemetery.

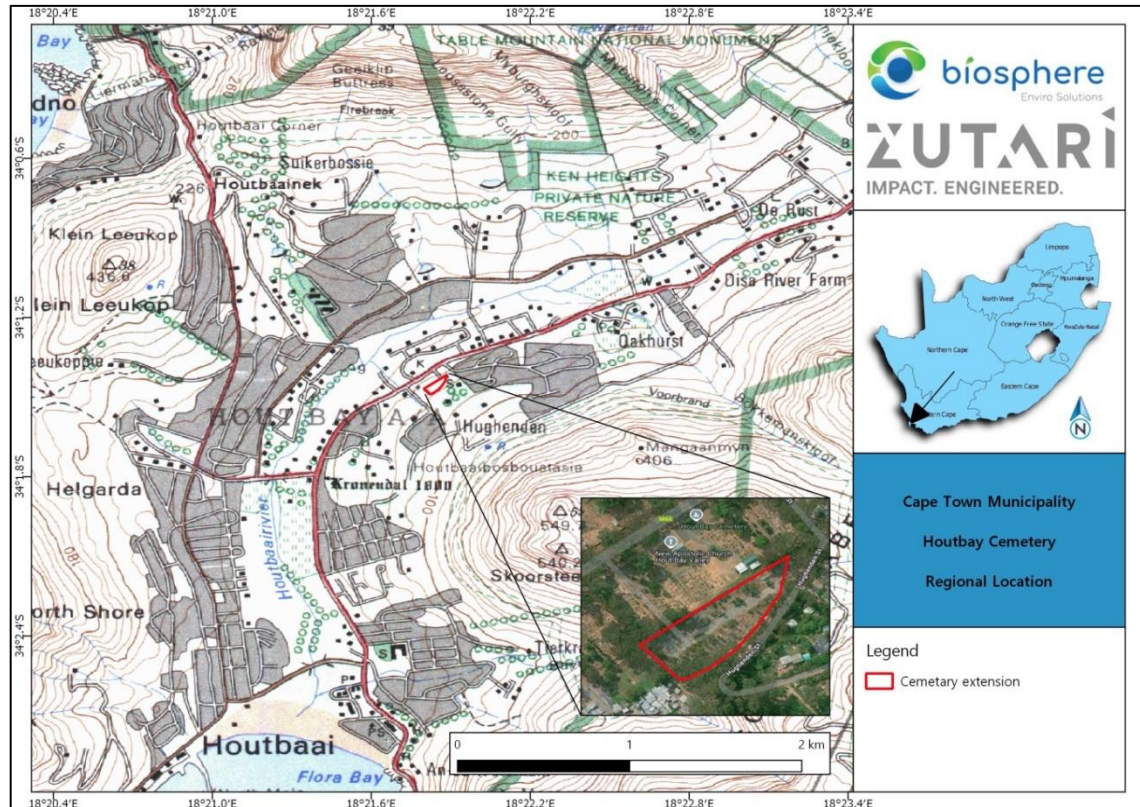


Figure 1: Regional setting of project

CLIMATE

The site falls within a winter-rainfall regime, with rainfall peaking from May to August, and varying from 650 mm – 1220 mm per annum across the vegetation type, with higher rainfall occurring at higher elevations of the Hout Bay area. Peninsula Granite Fynbos experiences significantly higher rainfall than Cape Flats Sand Fynbos, influenced by the orographic effect of the Table Mountain chain. The mean daily maximum temperature is 25.8°C in February, and the mean daily minimum is 8.5°C in July. Frost occurrence is rare, mainly limited to higher elevations, while heavy mists are frequent in winter months, particularly on the mountain slopes. The area experiences strong southeastern winds in summer, which influences both temperature and moisture patterns (Mucina & Rutherford 2006).

TERMS OF REFERENCE

Government Notice (GN) 320 of March 2020 provides protocols and criteria for the assessment and reporting of impacts on aquatic biodiversity for any activity requiring EA as per the NEMA. The assessment and minimum reporting requirements of this protocol are associated with detected levels of environmental sensitivity identified by the national web based environmental screening tool (screening tool). The requirements for aquatic biodiversity are dictated by sites which support various levels of aquatic biodiversity, inclusive of the presence of potential species of concern.

Prior to commencing with the specialist assessment, the current use of the land and the potential environmental sensitivity of the site under consideration as identified by the screening tool were confirmed by undertaking site sensitivity verification (SSV) on the 5th of February 2025. As part of the SSV, a desktop analysis was done on the site in question and followed by a preliminary on-site inspection. The Screening Reports and SSV can be viewed under *Addendum 1 and 2*.

An applicant intending to undertake an activity identified in the scope of GN 320, on a site identified on the screening tool as being of “very high sensitivity” for aquatic biodiversity, must submit an Aquatic Ecological Specialist Assessment. However, where the information gathered from the site sensitivity verification differs from the screening tool designation of “very high” or “high”, and it is found to be of a “low” sensitivity, then an Aquatic Ecological Compliance Statement must be submitted. Based on the Site Sensitivity Verification report (Addendum 2), the site in question has a Low to Very Low site sensitivity, and as such requires the compilation of a Compliance Statement (this report).

The key activities that require environmental authorisation relate to the expansion of the existing Houtbay Cemetery. The structures in question and the project as a whole triggered themes and sensitivities (Table 2) and Site Sensitivity Verification, followed by the relevant level of environmental assessment.

Table 2: Screening Tool outcomes

Theme/specialist assessment	Sensitivity	Rationale
Aquatic Biodiversity	Very High	SWSA (SW)_Table Mountain

LEGAL FRAMEWORK

- The National Environmental Management Act (107 of 1998).
- National Environmental Management: Biodiversity Act (10 of 2004).
- Environmental Impact Assessment (EIA) regulations.
- Aquatic Biodiversity protocols, gazetted 30 October 2020 (Government Notice number 1150).
- Western Cape Nature Conservation Ordinance (Ordinance 19 of 1974, as amended).
- Western Cape Nature Conservation Laws Amendment Act (Act No. 3 of 2000).
- Western Cape Biodiversity Act, 2021 (Act 6 of 2021).

The National Environmental Management Act (NEMA, Act 107 of 1998) and the National Environmental Management Biodiversity Act (NEMBA, Act 10 Of 2004) ensure the protection of ecological processes, natural systems and the preservation of biotic diversity within the natural environment. They also ensure the protection of the environment against disturbance, deterioration, defacement or destruction as a result of man-made structures, installations, processes, products or activities.

GN 4167 of December 2023 stipulates that the application of Section 21 (c and i) water use activities may be done without being subject to a Risk Assessment Matrix if no direct impact on a watercourse will occur. Th Houtbay Cemetery Expansion project will have no direct impacts on the Houtbay River or any

NBA (NWM5) Wetlands in the vicinity. As evidence Risk Matrix Assessment has been conducted only for this site (Refer to **Addendum 3**).

ASSUMPTIONS AND LIMITATIONS

The report is subject to the following limitations and assumptions:

Due to the scarcity of biotopes and water resources, the implementation of aquatic methodologies proved to be impractical. Consequently, it is assumed that the selected sample sites for the aquatic assessment effectively represent the broader aquatic conditions in the project area. It is further assumed that the environmental conditions during the study period are typical of the broader conditions in the semi-arid environment.

The absence of site-specific data posed challenges in determining the Present Ecological Status (PES) directly for the project site. Therefore, the PES of the broader catchment was considered as a proxy. During the cemetery expansion, it is recommended that appropriate measures be implemented to prevent any potential spillages that could runoff into the receiving stormwater drains and eventually drains into the Houtbay River. However, the likelihood of such an impact occurring is considered low.

The identified freshwater features within the study area are considered to have low ecological sensitivity and limited natural functionality. The Channeled Valley Bottom wetland located to the east of the cemetery is primarily sustained by artificial stormwater drainage inputs and lacks significant aquatic ecological diversity. This wetland does not exhibit the hydrological or biological characteristics of a natural wetland system, and its ecological functionality is considered minimal.

The Hout Bay River (Dias River) is the only recognised NFEPA and truly natural freshwater feature within the broader project area. However, the potential impact of the proposed project on this river is anticipated to be very low. This assessment is based on the fact that the river is already subject to substantial anthropogenic pressures, including influences from the nearby equestrian farm, runoff and disturbances associated with the M63 road infrastructure, and impacts from the adjacent Imizamo-Yethu Village.

The existing degraded state of these freshwater systems, particularly those influenced by human activities, supports the assumption that the project's influence on aquatic ecological conditions will be negligible. Nevertheless, mitigation measures should still be considered to ensure that no additional negative impacts are introduced during project implementation.

The desktop component of this assessment utilized the most recent and relevant data sources available. However, it is important to note that these datasets typically cover a broader spatial scale, focusing on the entire catchment area rather than the specific project site. Based on the available information, no significant impacts on the aquatic ecosystems are anticipated, and the cemetery expansion is expected to proceed without causing substantial long-term harm to the receiving environment.

ASSESSMENT METHODOLOGY

A site sensitivity verification (refer **Addendum 2**) was conducted to dispute the Screening Tool findings, concluding that an Aquatic Ecology Compliance Statement is required to fulfil the specific theme covered by this report.

A desktop survey was conducted where available data from the site was obtained for the aquatic communities that have been recorded from this area as well as the conservation importance of the site. In line with NEMA and NWA data was obtained from the following resources:

- FBIS: Freshwater Biodiversity Information System (FBIS). 2022. Downloaded from <https://freshwaterbiodiversity.org> on 3rd of February 2025.
- SANBI Biodiversity GIS.
- RWQO version 4.1.
- CapeFarmMapper3 Web-based Mapping Application.
- Relevant maps through GIS mapping, and information on the natural environment of the area concerned.

In addition to the desktop survey, the site in question was investigated on foot by means of a site walk-over by a field specialist. The site visit took place during the 5th of February 2025. This study does not warrant intensive long term field sampling and as such, the conditions on site were evaluated during a rapid field assessment. The infield findings are a true representation of the current conditions and is unlikely that the conditions will improve in the near future.

Aquatic scientific methodologies were employed during the site visit to ensure a thorough ecological assessment. However, formal aquatic sampling protocols could not be fully implemented due to the absence of natural aquatic and surface water features within the project site. The site conditions, combined with the surrounding urban land use and the considerable distance to the nearest natural surface water resources, rendered on-site sampling impractical.

SENSITIVITY ANALYSIS AND CONSERVATION ANALYSIS TOOLS

There are several assessments for South Africa as a whole, as well as on provincial levels that allow for detailed conservation planning as well as meeting biodiversity targets for the country's variety of ecosystems. These guides are essential to consult for development projects and will form an important part of the sensitivity analysis. Areas earmarked for conservation in the future, or that are essential to meet biodiversity and conservation targets should not be developed and have a high sensitivity as they are necessary for overall functioning. In addition, sensitivity analysis in the field based on much finer scale data can be used to ground truth the larger scale assessments and put it into a more localised context.

Of particular relevance for this project is the Biodiversity Network for the City of Cape Town which used a systematic biodiversity planning approach to prioritise remnant indigenous vegetation (discussed below).

CRITICAL BIODIVERSITY AREAS AND ECOLOGICAL SUPPORT AREAS

Critical Biodiversity Areas (CBA) are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. Ecological Support Areas (ESA) are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas and/or in delivering ecosystem services. Critical Biodiversity Areas and Ecological Support Areas may be terrestrial or aquatic.

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. It should inform land-use planning, environmental assessment and authorisations, and natural resource management, by a range of sectors whose policies and decisions impact on biodiversity. It is the biodiversity sector's input into multi-sectoral planning and decision-making processes (SANBI Biodiversity Advisor, 2017).

The fine-scale systematic biodiversity plan for Cape Town, known as the Biodiversity Network or BioNet was recently updated and now comprises maps for the Terrestrial BioNet 2023, Aquatic BioNet 2023, and combined BioNet 2023 with extended planning domain (10 km buffer around the City and all of Cape Town's major water supply dams and their associated sub-catchments). According to the BioNet (2023), the site in question does not fall within any sensitive areas (CBA or ESA). The nearest CBA and ESA are respectively located approximately 1km south and 800m east of the site and are associated with the Table Mountain National Park.

The site is separated from nearby biodiversity areas by urban road and housing infrastructure which limits the connectivity of the site to any aquatic ecosystem.

Table 3: Overall sensitivities

Structure	Screening Tool and Biodiversity Network	Observations
Houtbay Cemetery Expansion	No CBAs or ESAs overlapping with site CBA 1a – 1.1km south and 1.1km north CBA 1c – 1.3 km south-west CBA 2 – 1.7km south-east and 2.3km east ESA 1 – 0.7km east	No CBAs or ESAs overlapping with site
	Strategic Waters Source Area – Table Mountain	Noted – area already disturbed and impacted in terms of run-off
	Critically Endangered Peninsula Granite Fynbos	Site not representative of regional vegetation type - altered, degraded and invaded. Project area vegetation was completely cleared during

		September 2017. Continued recolonisation of entire area not possible due to land-use practice.
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PROTECTED AREAS (PA) AND NATIONAL PROTECTED AREA EXPANSION STRATEGY (NPAES)

Officially protected areas, either provincially or nationally that occur close to a project site could have consequences as far as impacts on these areas are concerned. The National Protected Area Expansion Strategy (NPAES) sets targets for protected area expansion, provides maps of the most important areas for protected area expansion, and makes recommendations on mechanisms for protected area expansion.

The project area is not located in a protected area or in a NPAES focus area. The nearest protected area (Table Mountain National Park) is located approximately 260m south-east of the proposed project site. The proposed project poses no direct threat to the existence of the protected area.

National Freshwater Ecosystem Priority Areas (NFEPA) and National Wetland Map 5: South Africa's freshwater ecosystems are diverse, ranging from sub-tropical in the north-eastern part of the country, to semi-arid and arid in the interior, to the cool and temperate rivers of the fynbos. "Freshwater ecosystems" refer to all inland water bodies whether fresh or saline, including rivers, lakes, wetlands, sub-surface waters and estuaries. Consistent with global trends, high levels of threat have been reported for freshwater ecosystems. According to the National Biodiversity Assessment 2018 nearly 80% of inland wetland ecosystem types in South Africa are threatened and approximately 75% of inland wetland ecosystem types are both threatened and under-protected (SANBI, 2019). South Africa's freshwater fauna also displays high levels of threat: at least one third of freshwater fish indigenous to South Africa are reported as threatened, and a recent southern African study on the conservation status of major freshwater-dependent taxonomic groups (fishes, molluscs, dragonflies, crabs and vascular plants) reported far higher levels of threat in South Africa than in the rest of the region.

Urgent attention is needed to ensure that we conserve some representative natural examples of the different ecosystems that make up the natural heritage of this country for current and future generations. NFEPA responds to this need, providing strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources (Driver *et al.*, 2011). However, the NFEPA database is largely outdated.

The National Wetland Map version 5 (NWM5), an output from the NBA 2018 assessment, shows the distribution of inland wetland ecosystem types across South Africa and includes estuaries and the extent of some rivers (CSIR, 2018). These delineated wetlands are generally more accurate than the older NFEPA database. Even more representative of the wetlands in the project vicinity are the wetlands delineated in the City of Cape Town Wetlands (2017) data, which forms part of the updated Aquatic BioNet data (2023).

The NWM5 and Aquatic BioNet data largely overlap, however more wetlands in areas surrounding the site are delineated by the Aquatic BioNet data. These data (Figure 2) indicate that channelled valley-bottom wetlands area located approximately 410m north-east (between Meadow Lane and Hout Bay Main Road) and 360m north (associated with the Houtbay stream north of Riverside Terrace) of the site.

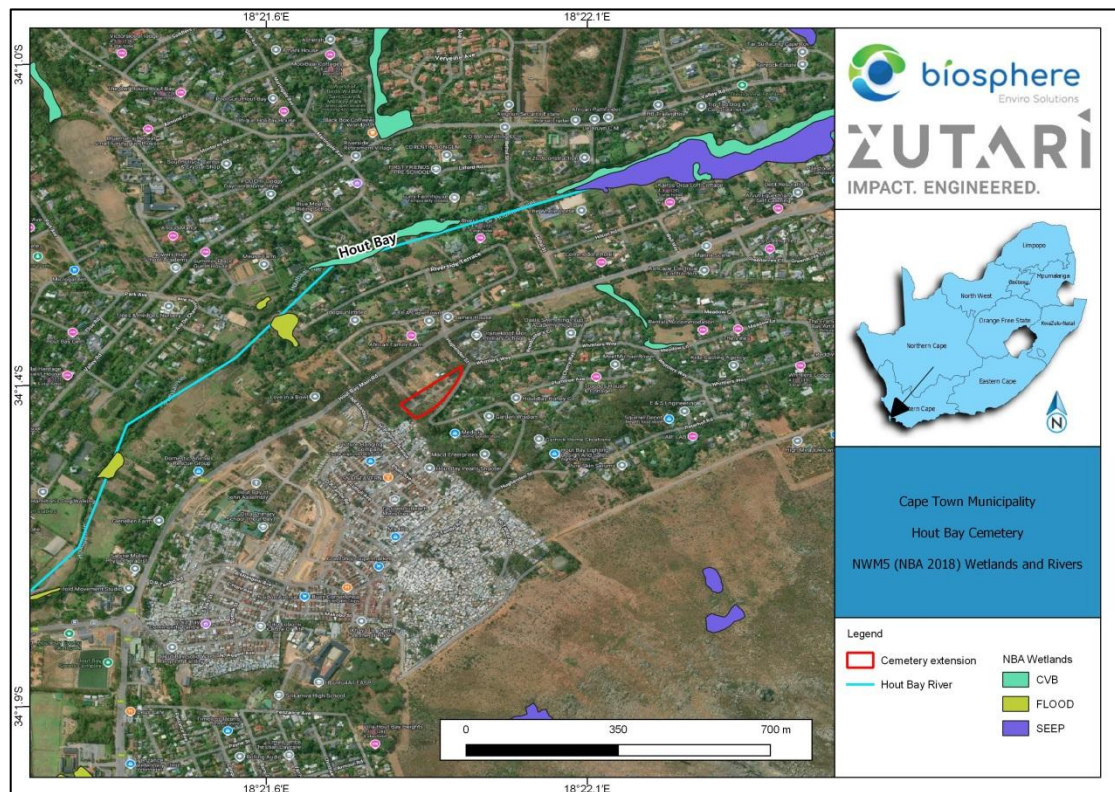


Figure 2: NWM5 Sensitive Features

AQUATIC CONSIDERATIONS: IMPACT FINDINGS & RESULTS

AQUATIC BIODIVERSITY

The Houtbay Cemetery falls within the G22B Quaternary Catchment as indicated below in Figure 3. Table 4 provides an overview of the G22B and provides a regional EcoClassification and EcoStatus of the quaternary catchment. The project is situated approximately 400m from the Houtbay River an NFPEA River and the Default Ecological Management Class (DEMC) for the G22B as well as the Houtbay River were taken into consideration. The DEMC is set at a Class A indicating that a Low Risk is allowed within this catchment due to the Very High sensitivity. However, due to already disturbed and anthropogenic impacts occurring within the catchment the DEMC is unlikely to be achieved in the near future. The Ecological Importance and Sensitivity Category (EISC) and South African National Biodiversity Institute (SANBI) National Freshwater Ecosystem Priority Area (NFEPA) Status indicate that the area falls within a Very High Sensitivity indicating that a Low Risk is allowable.

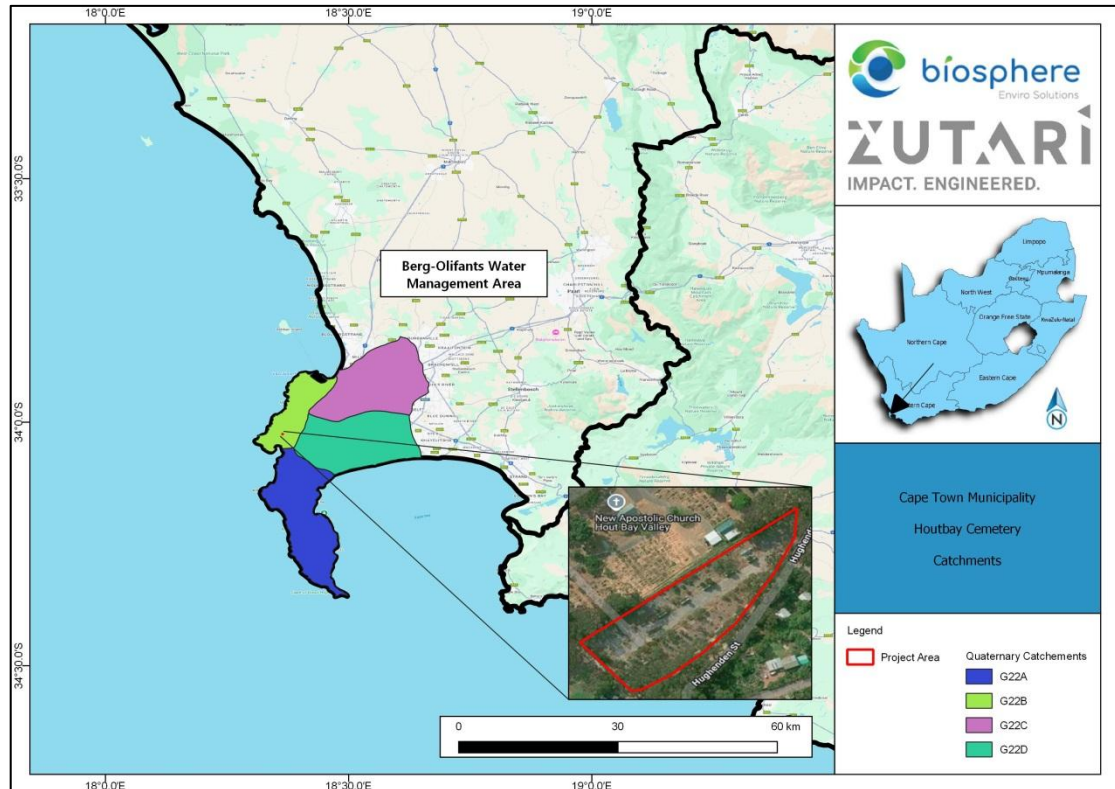


Figure 3: Catchments

Table 4: Regional Characteristics of the Project Area

Attribute	Project Details
Project	Hout Bay Cemetery
Water Management Area	Berg-Olifants
Sub-water Management Area	Berg
Primary Catchment Region	Region G
Quaternary Drainage Region	G22F
Level 1 Eco-region	Southern Folded Mountains
Level 2 Eco-region	19.03
Main River in Catchment and Site Specific	Hout Bay River
Main River PES	Class C: Moderately Modified
River EIS	High Sensitivity
DWS RQO Catchment PES	Class C: Moderately Modified
Best Attainable Management Class	Class C: Moderately Modified
Default Ecological Management Class	Class A: Low Risk Allowed
Catchment EISC	High Importance and Sensitivity
SANBI NFEPA Status	High Importance

SITE INVESTIGATION & FINDINGS

The Houtbay River (Dias River) (River Order 1) is the main river within this catchment however this system drains approximately 400 m to the north of the project boundary and is not relevant to the project site as it falls outside of the 100m regulated area. There are no non-perennial tributaries associated with the site and only stormwater drainage channels in close proximity to the site.

Aquatic sampling within the stormwater channel was not feasible due to a combination of physical and biological constraints observed on-site. The channel was dry and ecorede away with limited habitat available for aquatic sampling. The stormwater drain channel depicted in **Figure 4** functions as a man-made conduit for surface runoff, ultimately discharging into the Hout Bay River. The channel is primarily constructed to manage stormwater flow from the surrounding urban landscape, and it exhibits several characteristics indicative of a highly modified and artificial aquatic system.

The channel is impacted by significant erosion and sediment instability. The steep, unvegetated slopes and exposed soil layers suggest a high rate of stormwater flow during rainfall events, contributing to bank undercutting and soil loss. The presence of litter and debris within this eroded section indicates poor stormwater management and contributes to potential water quality issues downstream in the Hout Bay River.

Overall, this stormwater channel does not support natural aquatic ecosystem functions. It primarily serves as a stormwater management feature with limited capacity for ecological services such as habitat provision, nutrient cycling, or water quality enhancement. Its role in the catchment is functional and hydrological rather than ecological, and any assessment of its impact on the Hout Bay River should focus on sediment transport, potential pollutant loads, and hydrological modifications rather than biological or ecological contributions.

The cemetery expansion project area indicates a highly disturbed and predominantly terrestrial environment with no evident natural or artificial aquatic features. The site is characterised by compacted gravel and bare ground, with sparse and opportunistic vegetation establishing in patches. The presence of concrete structures, likely intended for future development or stormwater management, further emphasises the anthropogenic alteration of this landscape.

There are no visible signs of wetland characteristics, such as hydrophytic vegetation, hydric soils, or persistent surface water, which are essential indicators of aquatic habitats. The absence of natural drainage lines, seepages, or depressions capable of holding water confirms that this area does not contribute to natural aquatic ecosystems or hydrological processes. The gravelled and compacted surfaces would likely result in increased surface runoff during rainfall events, potentially leading to localised erosion or sediment transport towards the nearby stormwater drain channel that ultimately connects to the Hout Bay River. However, the site itself does not appear to hold any intrinsic aquatic ecological value and does not provide habitat for aquatic biota.

Given the current site conditions, the primary aquatic consideration for this project would be the

management of surface runoff and the prevention of sediment or pollutant transport to downstream aquatic systems, particularly the Hout Bay River. Implementing appropriate stormwater management measures during construction and operational phases will be essential to mitigate any indirect impacts on regional aquatic ecosystems.

The Hout Bay River, represents a natural freshwater system characterised by a predominantly rocky streambed with well-established pools and riffles. The river exhibits clear flow patterns, with visible water movement over cobble and boulder substrates, which are partially covered by periphyton and algae. These conditions are indicative of a moderately healthy lotic system with potential habitat for aquatic macroinvertebrates and fish species adapted to flowing water environments. The riparian zone along the Hout Bay River supports a mix of indigenous and exotic vegetation. Large trees provide canopy cover, contributing to bank stability and offering organic input to the river. However, there is evidence of invasive plant species, which may impact the natural riparian biodiversity and ecological processes over time.

The water quality appears generally fair, though the presence of debris and litter, as well as algal growth on rocks, suggests potential nutrient enrichment or localised pollution inputs. The spatial context of the cemetery relative to the river, shows a considerable distance and the presence of a road barrier between the two sites. This distance acts as a buffer, reducing the immediate risk of direct impacts on the river from the cemetery activities. However, stormwater management and erosion control measures remain critical to preventing indirect impacts, such as sedimentation or the transport of contaminants via the stormwater drainage network that feeds into the Hout Bay River. Overall, while the Hout Bay River maintains aquatic ecological integrity, ongoing urban pressures necessitate proactive management strategies to safeguard its aquatic biodiversity and water quality.

Aquatic bio-monitoring was conducted at the Hout Bay River, specifically at Reference Site G2HOUT-BETHA. The assessment recorded 18 occurrences of macroinvertebrate species within the river system, demonstrating its potential to support a diverse aquatic community. The presence of both sensitive and more tolerant species indicates a range of ecological niches and suggests moderate ecological functionality within the river. The recorded macroinvertebrate assemblage included taxa indicative of good water quality, such as Ephemeroptera (mayflies) and Trichoptera (caddisflies), as well as more pollution-tolerant species from groups such as Diptera (true flies). The mix of species highlights the river's ability to sustain aquatic biodiversity, albeit under some degree of anthropogenic pressure.

The PES of the Hout Bay River is classified as a Class C, representing a Moderately Modified system. This classification suggests that while the river retains some of its natural ecological functions, it also shows clear signs of disturbance, likely attributable to urban runoff, habitat modification, and surrounding land-use impacts. The ASPT of 4.8 further supports this assessment. An ASPT value within this range typically indicates moderate water quality and habitat conditions, where moderately tolerant species dominate, but sensitive taxa are still present. Overall, while the Hout Bay River exhibits a reasonably resilient aquatic ecosystem, maintaining and enhancing water quality and habitat conditions will be critical to preserving its ecological status and preventing further degradation.

Table 5: Aquatic Macro Invertebrate Species Sampled at the Houtbay River

Taxon	Common Name	Occurrences	SASS Score
Aeshnidae	Hawkers & Emperors	2	8
Athericidae	Snipe flies	1	10
Baetidae	Mayflies	2	6
Caenidae	Cainflies	1	6
Chironomidae	Midges	2	2
Corixidae	Water Boatmen	2	3
Gerridae	Pond Skaters	1	5
Gomphidae	Clubtails	2	6
Gyrinidae	Whirling Beetles	1	5
Hydrachnidae	Mites	2	8
Hydropsychidae	Caddisflies	1	4
Leptoceridae	Cased Caddisflies	1	6
Libellulidae	Darters	1	4
Notonectidae	Backswimmers	1	3
Oligochaeta	Aquatic Earthworms	2	1
Potamonautidae	Crabs	2	3
Simuliidae	Blackflies	2	5
Turbellaria	Flatworms	1	3

In conclusion to the infield findings, it is confirmed that the aquatic ecological footprint of the expansion project of the cemetery will have a low impact without mitigation measures and a very low impact with mitigation measures and that the proposed expansion will not infringe on the surrounding sensitive areas nor the water bodies associated with the greater project area. Please refer to **Figure 4** for the location and description of where the site photographs were taken.



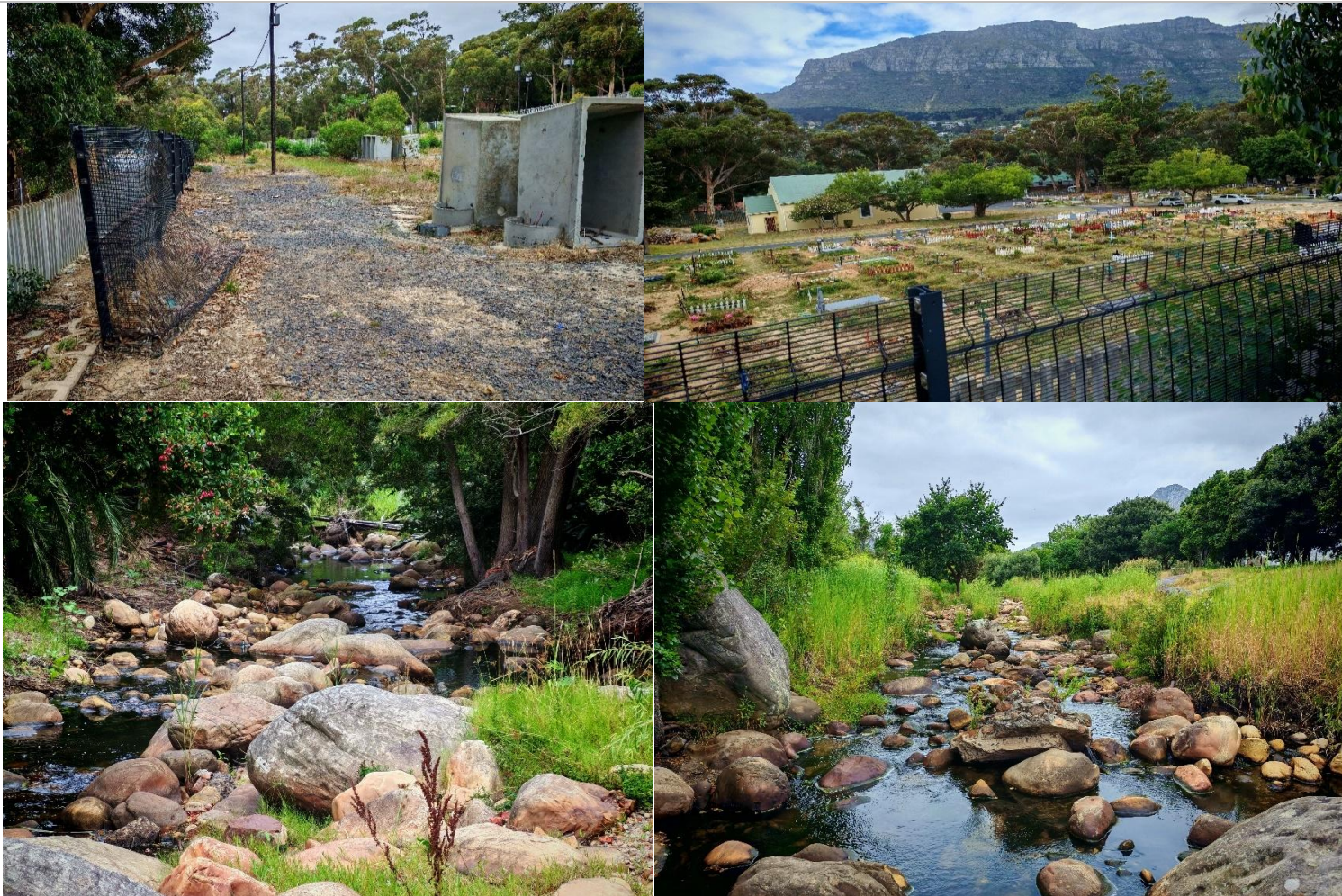


Figure 4: Site Characteristics of the Houtbay Cemetery Expansion

SITE SENSITIVITY VERIFICATION

BUFFERS REQUIRED

In terms of GN 4167 of 2023 in terms of the NWA, 500 m from a wetland is defined as a regulated area and thus development within the regulated area of a wetland triggers a water use in terms of Section 21 (c) and (i) irrespective of the condition of such a freshwater feature. Although the Houtbay Cemetery expansion project falls within the regulated area it is confirmed that there are no aquatic sensitivities to be considered that fall within the site. There are no regulated buffers zones required nor calculated for the drainage channels or Houtbay River and the proposed development could be executed without any impacts on the aquatic ecosystem.

The 500 m regulated area of the wetland does encroach the site, however regardless of the status quo of the wetlands this activity may still trigger a water use and may require a WUL or a GA. GN 4167 stipulates that any activity with a Low-Risk Rating will qualify for a GA, which is the case for these aquatic features. Figure 5 provides an overview of the aquatic sensitivities for the Site.

Should the development of the site progress, the (DWS) should be contacted for the relevant application processes for either a GA or a WUL. It is recommended that the low importance and sensitivity of the wetlands, and drainage channels are taken into account by DWS to make an informed decision on whether a GA or WUL is required. **This report should and could be used as motivation to exclude an authorisation process for the applicant by submitting an exemption letter to the department.**

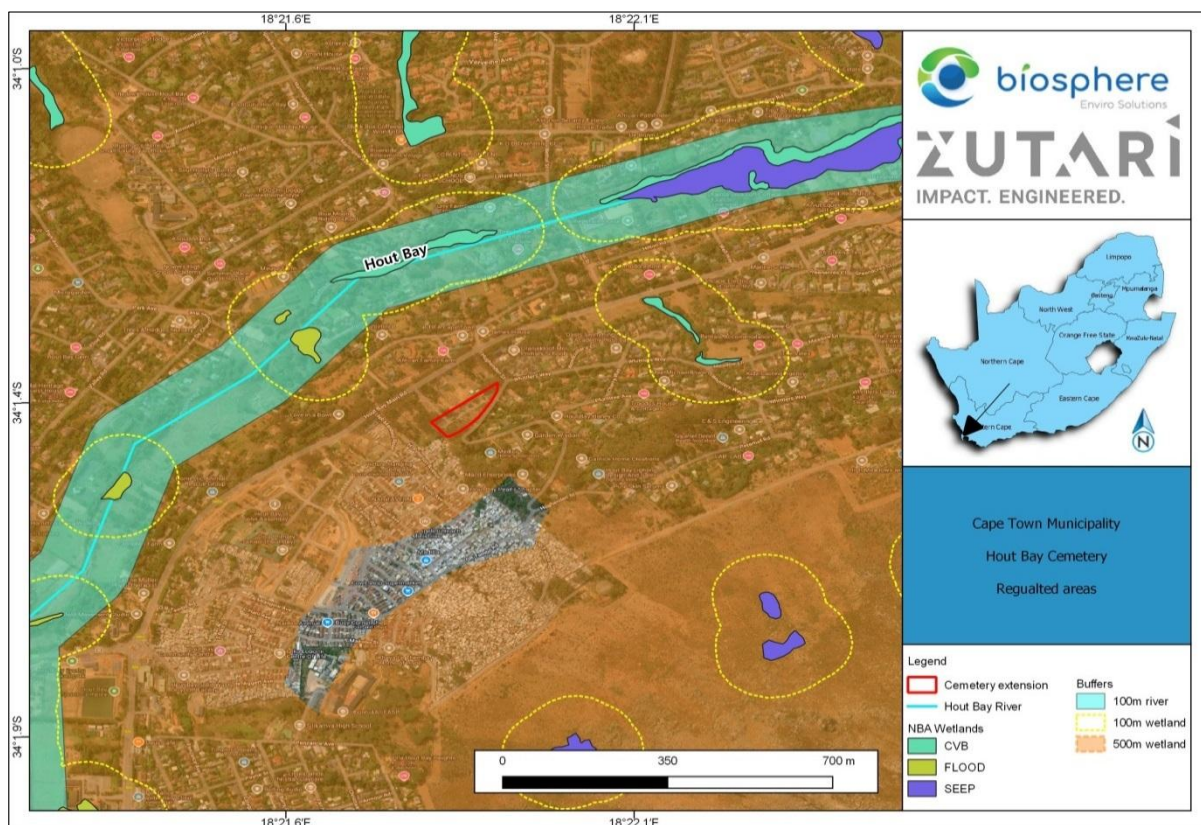


Figure 5: NWA Regulated areas

POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

DIRECT IMPACTS TO WATERCOURSES OR WETLANDS

Finding: No direct impacts to watercourses or wetlands under NEMA or NWA.

Rationale:

- No watercourses or wetlands are present on the site;
- The development footprint is outside the 100m buffer zone of the Hout Bay River;
- The site appears to be in proximity to, but not directly within, the 500m regulated buffer zone of wetlands
- The project will not require water abstraction from natural water resources;
- While the site's proximity to the 500m wetland buffer zone (a regulated area under NWA) requires consideration, the nature of the development and site conditions indicate minimal potential for impact; and
- Given the proximity to regulated areas, consultation with the Department of Water and Sanitation is recommended as a precautionary measure.

POTENTIAL INDIRECT IMPACTS

Stormwater Management and Runoff

Finding: Potential low significance impact that can be mitigated.

Rationale:

- The site falls within the Strategic Water Source Area (Table Mountain);
- Increased impervious surfaces may slightly alter the local hydrology;
- The site is separated from the nearest watercourse (Hout Bay River) by developed areas and roads; and
- The existing modified condition of the site (with compacted surfaces) means changes to infiltration will be minimal.

Groundwater Contamination

Finding: Potential low significance impact that can be mitigated.

Rationale:

- Cemetery developments can potentially impact groundwater quality through decomposition products;
- The site is not located within a high groundwater vulnerability zone;
- The modified nature of the shallow soil profile limits infiltration pathways; and
- The distance to surface water features provides buffer capacity.

DISCUSSION & CONCLUSION

Based on the site assessment and available information, the proposed expansion of Hout Bay Cemetery is not anticipated to have significant impacts on aquatic ecological resources as defined under NEMA and the National Water Act. While the site appears to be within the 500m regulated wetland buffer zone, the development's characteristics and site conditions suggest minimal potential for impact on water resources.

As a precautionary measure, consultation with the Department of Water and Sanitation is recommended to confirm whether a General Authorisation might be required due to the site's proximity to the 500m regulated wetland buffer. However, given that no direct encroachment on wetlands or the 100m buffer zone occurs, and considering the disturbed nature of the site, significant aquatic impacts are not possible.

The absence of functional hydrological connection between the site and nearby wetland features effectively eliminates direct impact pathways. The wetlands visible on the map are primarily maintained by municipal stormwater channels rather than natural drainage from the development area. This artificial hydrological regime further reduces the ecological relationship between the site and the wetland systems.

RECOMMENDED MITIGATION MEASURES

Though impacts are assessed as low significance, the following measures should be implemented:

- Construction Phase:
 - Implementation of erosion control measures;
 - Appropriate storage and handling of potential contaminants; and
 - Stormwater management during construction.
- Operational Phase:
 - Properly designed cemetery layout considering groundwater flow direction;
 - Implementation of a stormwater management plan; and
 - Monitoring of downstream water quality if required by authorities.

COMPLIANCE WITH LEGISLATION

The proposed development, with appropriate mitigation measures, complies with:

- National Environmental Management Act (No. 107 of 1998)
- National Water Act (No. 36 of 1998)
 - Due to proximity to the 500m wetland buffer zone (a regulated area), consultation with DWS is recommended to confirm whether a General Authorisation might be required
 - The site avoids direct encroachment on the 100m river buffer zone
- City of Cape Town's Stormwater Management By-laws

REFERENCES

- Allan, J.D. 1995. Stream Ecology Structure and function of running waters. s.l.: Chapman & Hall.
- Cape Farm Mapper 3 Online Mapping Application. Western Cape Government. Department of agriculture
- Chutter, F.M. 1998. Research on the rapid biological assessment of water quality impacts in streams and rivers. Water Research Commission Report No 442/1/98. Pretoria: Water Research Commission, South Africa.
- City of Cape Town. 2017. Cape Town Biodiversity Network. Environmental Resource Management Department (ERMD), City of Cape Town. Shape file (<http://bgis.sanbi.org>).
- 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 28 July 2022
- Council for Scientific and Industrial Research. 2011. NFEPA rivers [vector geospatial dataset] 2011. Available from the Biodiversity GIS website, downloaded on 19 April 2021
- Dallas, H.F. 2007a. River Health Programme: South African Scoring System (SASS) Data Interpretation Guidelines. The Freshwater Consulting Group/ Freshwater Research Unit. s.l.: University of Cape Town, South Africa.
- Department of Water Affairs and Forestry, 2008. National Aquatic Ecosystem Health Monitoring Programme (NAEHMP): River Health Programme (RHP) Implementation Manual. Version 2.. Pretoria: Department of Water Affairs and Forestry, South Africa.
- Department of Water and Sanitation. 2016a. General Authorisation in terms of Section 39 of the National Water Act, 1998 (act no. 36 of 1998) for water uses as defined in Section 21(c) or Section 21(l). Notice 509 of 2016.
- Department of Water and Sanitation. 2016b. GN 1056 of 16 September 2016, New Nine Water Management Areas of South Africa. Pretoria.
- Dickens, C.W. and Graham, P. M. 2002. The South African Scoring System (SASS) Version 5 Rapid Bioassessment Method for Rivers. s.l.: African Journal of Aquatic Science, 27: 1-10.
- Driver, A., Nel, J.L., Snaddon, K., Murray, K., Roux, D.J., Hill, L., Swartz, E.R., Manuel, J. & Funke, N. 2011. Implementation Manual for Freshwater Ecosystem Priority Areas. South African National Biodiversity Institute, CSIR, The Freshwater Consulting Group, Water Research Commission, South African National Parks & South African Institute for Aquatic Biodiversity.
- ENPAT. 2000. Environmental Potential Atlas. Department of Environmental Affairs and Tourism, Pretoria.
- Government of South Africa. 2010. National protected area expansion strategy for South Africa 2008. Priorities for expanding the protected area network for ecological sustainability and climate change adaptation. Pretoria, South Africa: the Government of South Africa.
- Helen Dallas, Jeremy Shelton, Tim Sutton, Dimas Tri Cuptura, Mohammed Kajee & Nancy Job (2022) The Freshwater Biodiversity Information System (FBIS) – mobilising data for evaluating long-term change in South African rivers, African Journal of Aquatic Science, 47:3, 291-306, DOI: 10.2989/16085914.2021.1982672
- Jooste, S., MacKay, H. M., Scherman, P. A. and Muller, W. J. 2000. Feasibility of using a risk - based approach to set integrated environmental objectives for the protection of water resources. Water Research Commission Report No. 914/1/100. Pretoria, South Africa: Water Research Commission.
- Kemper, N. 1999. Intermediate Habitat Integrity Assessment for use in the Rapid and Intermediate Assessments. RDM Manual version 1.0. Pretoria: Department of Water Affairs and Forestry.

- Kleynhans, C. J. & Louw, M. D., 2007. Module A: EcoClassification and EcoStatus determination in River EcoClassification: Manual for EcoStatus Determination (version 2). Joint Water Research Commission and Department of Water Affairs and Forestry report. WRC Report No. TT 329/08, Pretoria: Water for Africa.
- Mucina, L. & Rutherford, M.C. (eds). 2006. The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. Pretoria: South African National Biodiversity Institute.
- Nel, J. L. et al., 2011. Atlas of Freshwater Ecosystem Priority Areas in South Africa: Maps to support sustainable development of water resources. s.l.:Water Resource Commision.
- Nel, J.L., Colvin, C., Le Maitre, D.C., Smith, J. & Haines, I. 2013. South Africa's Strategic Water Source Areas. CSIR Report CSIR/NRE/ECOS/ER/2013/0031/A, CSIR, Stellenbosch, South Africa.
- Nel, J.L., Driver, A., Strydom, W.F., Maherry, A., Petersen, C., Hill, L., Roux, D.J., Nienaber, S., Van Deventer, H., Swartz, E. & 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.
- Roux, D. J., 1997. National Aquatic Ecosystem Biomonitoring Programme: Overview of the design process and guidelines for implementation. NAEBP report Series No 6. Institute for Water Quality Studies, Department of Water Affairs and Forestry, Pretoria, South Africa. 112p.. s.l.:(Web) <http://www.csir.co.za/rhp/reports.html>.
- SANBI Biodiversity Advisor. 2017. Critical Biodiversity Areas and Ecological Support Areas. <http://biodiversityadvisor.sanbi.org/industry-and-conservation/biodiversity-in-the-urban-economy/understand/definitions-related-to-urban-land-use-planning/critical-biodiversity-areas-and-ecological-support-areas/> Date of access: 17 July 2022.
- South Africa. 1983. Conservation of Agricultural Resources Act 43 of 1983.
- South Africa. 1998. National Environmental Management Act 107 of 1998.
- South Africa. 1998. National Water Act 36 of 1998.
- South Africa. 2009. National Environmental Management: Biodiversity Act no 10 of 2004.
- South Africa. 2016. National Environmental Management: Biodiversity Act no 10 of 2004. Alien and invasive species lists, 2020.
- South African National Biodiversity Institute (SANBI). 2019. National Biodiversity Assessment 2018: The status of South Africa's ecosystems and biodiversity. Synthesis Report. South African National Biodiversity Institute, an entity of the Department of Environment, Forestry and Fisheries, Pretoria
- South African National Biodiversity Institute (SANBI). 2023. The Vegetation Map of South Africa, Lesotho and Swaziland, Mucina, L., Rutherford, M.C. and Powrie, L.W. (Editors), Online, <http://bgis.sanbi.org/Projects/Detail/186>, Version 2023.
- South African National Biodiversity Institute. 2018. National Biodiversity Assessment: Terrestrial ecosystem threat status and protection level layer [Vector] 2018. Available from the Biodiversity GIS website, downloaded on 13 January 2023.
- Thirion, C. A., 2008. River Ecoclassification. Manual for Ecstatus determination (Version2). Module E: Macro Invertebrate Response Index (MIRAI). April 2008 ed. s.l.:WRC Report no TT332/08..
- Van Deventer, H.; Smith-Adao, L.; Mbona, N.; Petersen, C.; Skowno, A.; Collins, N.B.; Grenfell, M.; Job, N.; Lötter, M.; Ollis, D.; Scherman, P.; Sieben, E.; Snaddon, K. 2018. South African Inventory of Inland Aquatic Ecosystems. South African National Biodiversity Institute, Pretoria. Report Number: CSIR report number CSIR/NRE/ECOS/IR/2018/0001/A; SANBI report number <http://hdl.handle.net/20.500.12143/5847>.

- Water Research Commission. 2017. Surface and Groundwater Strategic Water Source Areas (SWSA) [Vector] 2017. Available from the Biodiversity GIS website, downloaded on 13 June 2022.

ADDENDUM 1: SCREENING TOOL REPORT

ADDENDUM 2: SITE SENSITIVITY VERIFICATION REPORT

ADDENDUM 3: RISK ASSESSMENT MATRIX

ADDENDUM 1: SCREENING TOOL REPORT

**SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION AS
REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE
ENVIRONMENTAL SENSITIVITY**

EIA Reference number: n/a

Project name: Houtbay Cemetery

Project title: Cemetery Extension/Expansion

Date screening report generated: 27/01/2025 09:07:55

Applicant: COCT

Compiler: Biosphere Enviro-Solutions

Compiler signature:

.....

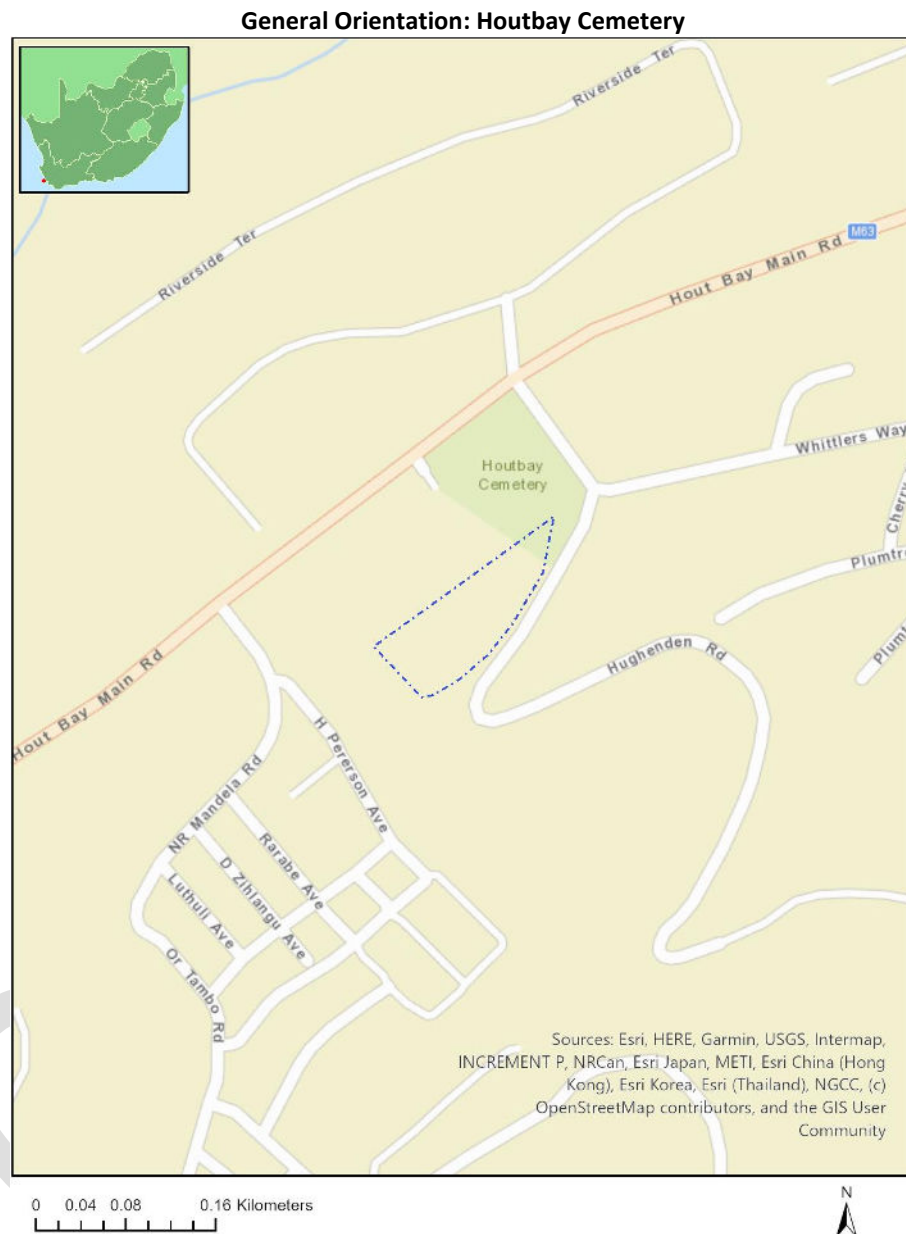
Application Category: Services|Burial and cemeteries|Cemeteries

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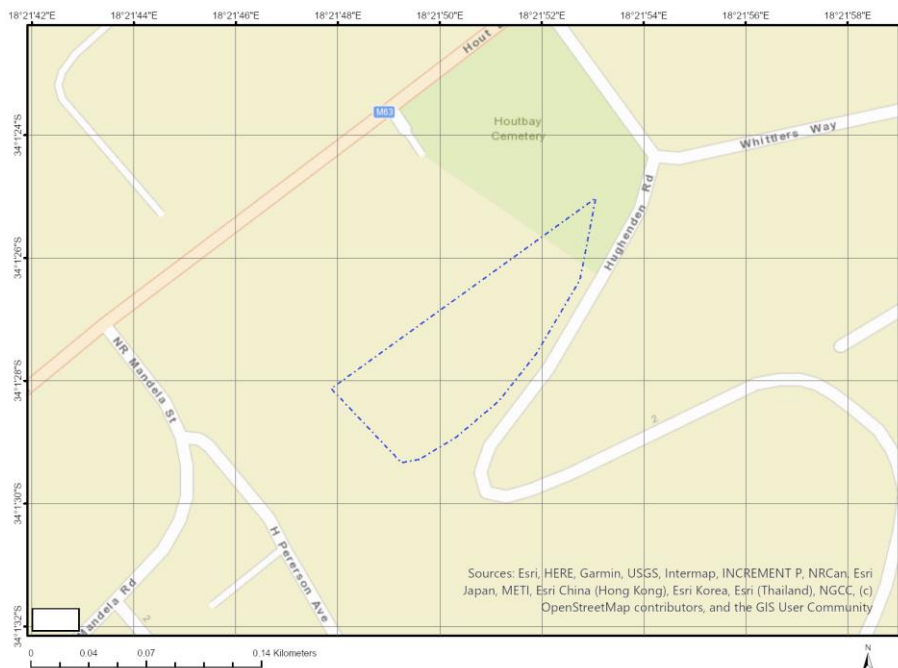
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Proposed Project Location

Orientation map 1: General location



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1	HOUT BAY	6355	0	34°1'37.48S	18°21'52.46E	Erven
2	HOUT BAY	2596	0	34°1'27.27S	18°21'50.85E	Public Place

Development footprint¹ vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

¹ “development footprint”, means the area within the site on which the development will take place and includes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental screening results and assessment outcomes

The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is:

Services | Burial and cemeteries | Cemeteries.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	Implication
Strategic Transmission Corridor-Central corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/Combined_EGI.pdf

Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme			X	
Aquatic Biodiversity Theme	X			
Archaeological and Cultural Heritage Theme	X			
Civil Aviation Theme			X	
Defence Theme			X	
Plant Species Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the known impacts associated with the proposed development, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

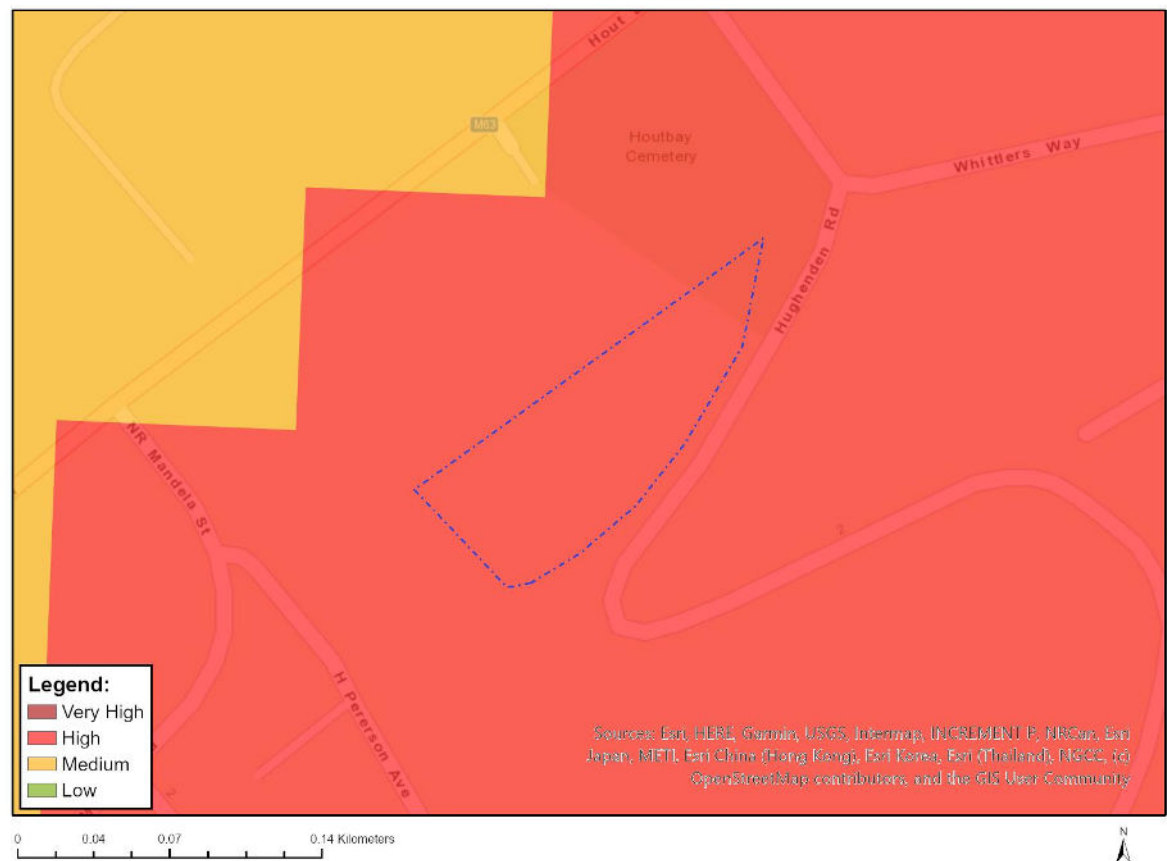
No	Specialist assessment	Assessment Protocol
1	Agricultural Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Agriculture_Assessment_Protocols.pdf

2	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Aquatic_Biodiversity_Assessment_Protocols.pdf
6	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
7	Traffic Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
8	Geotechnical Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
9	Socio-Economic Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_General_Requirement_Assessment_Protocols.pdf
10	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Plant_Species_Assessment_Protocols.pdf
11	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/Gazetted_Animal_Species_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

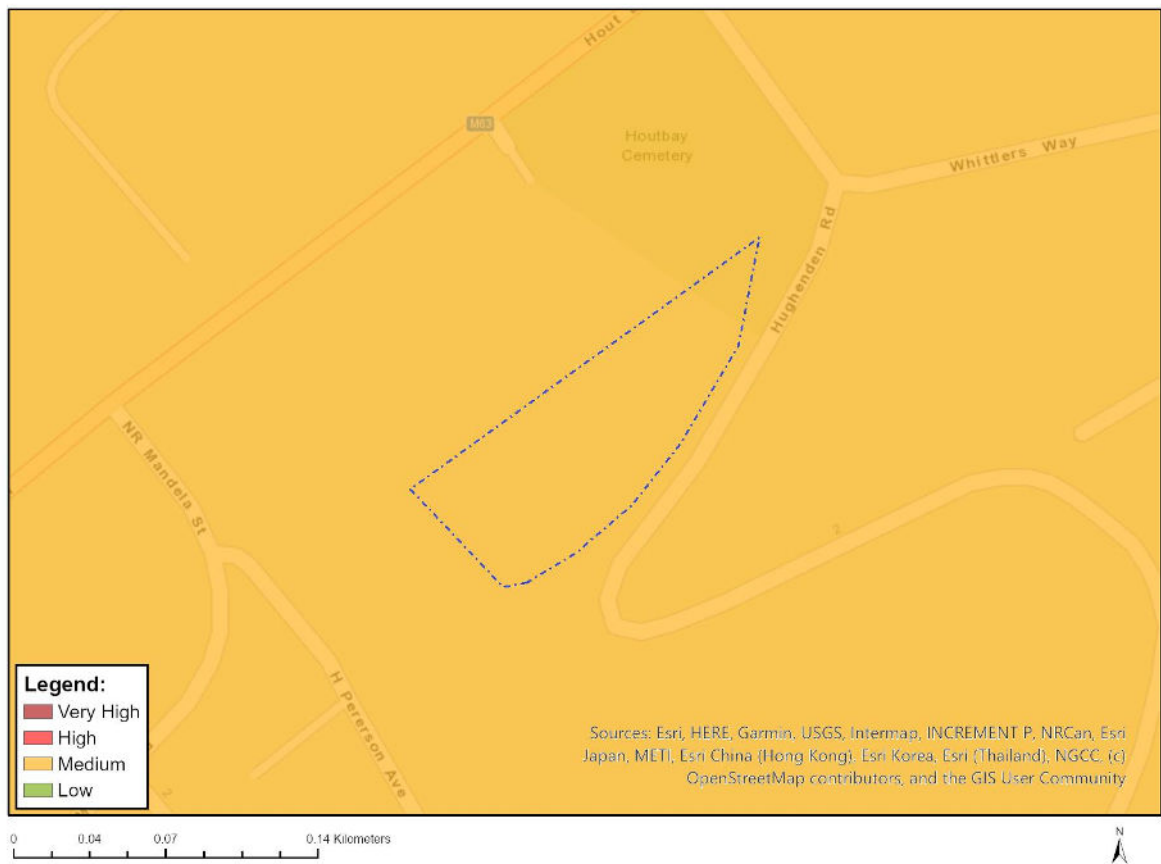


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



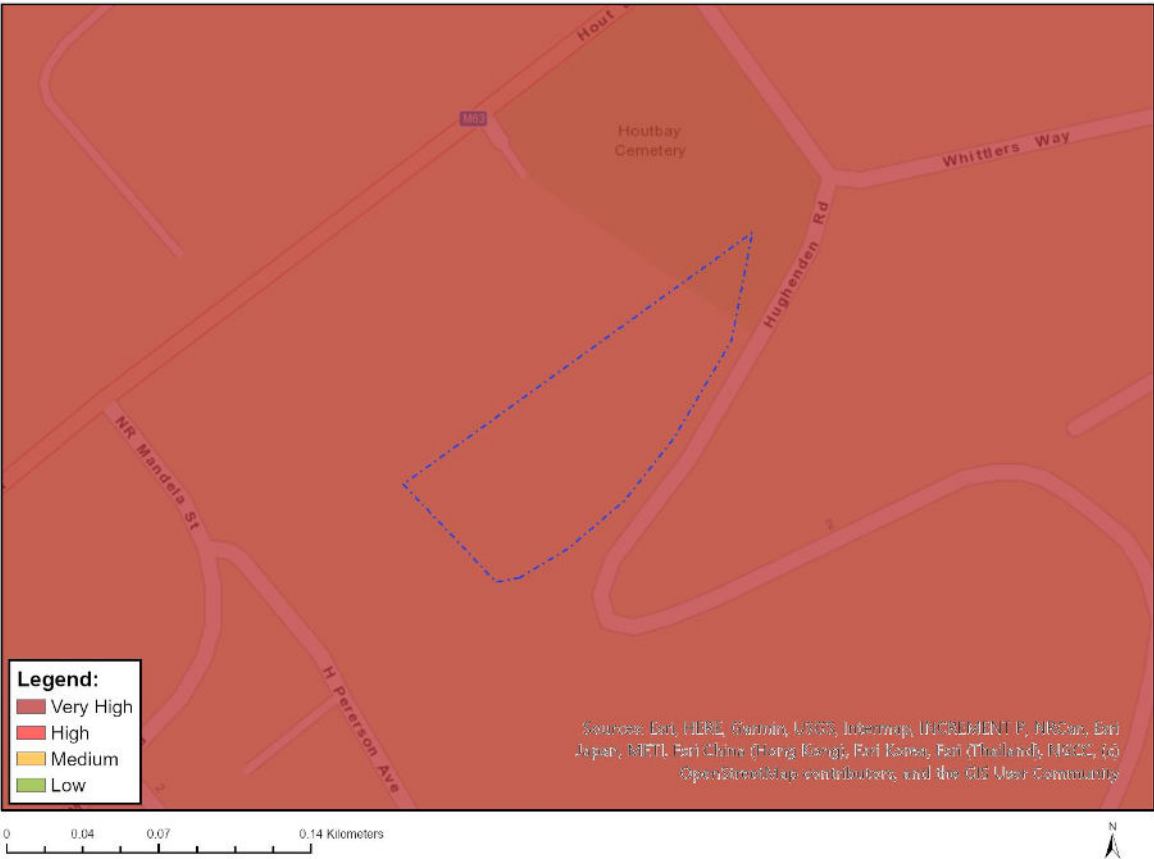
Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Amphibia-Sclerophrys pantherina
Medium	Invertebrate-Conocephalus peringueyi
Medium	Arachnida-Psammoduon arenicola

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

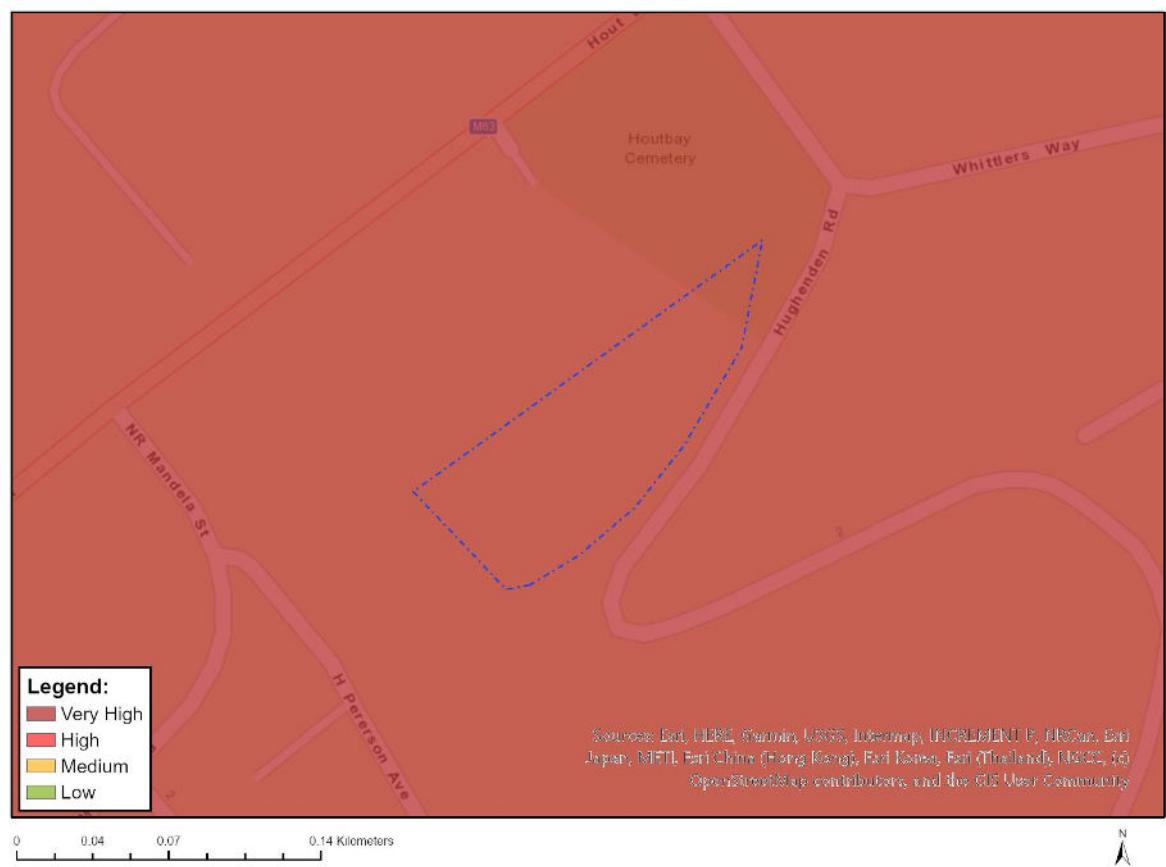


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	SWSA (SW) _Table Mountain

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

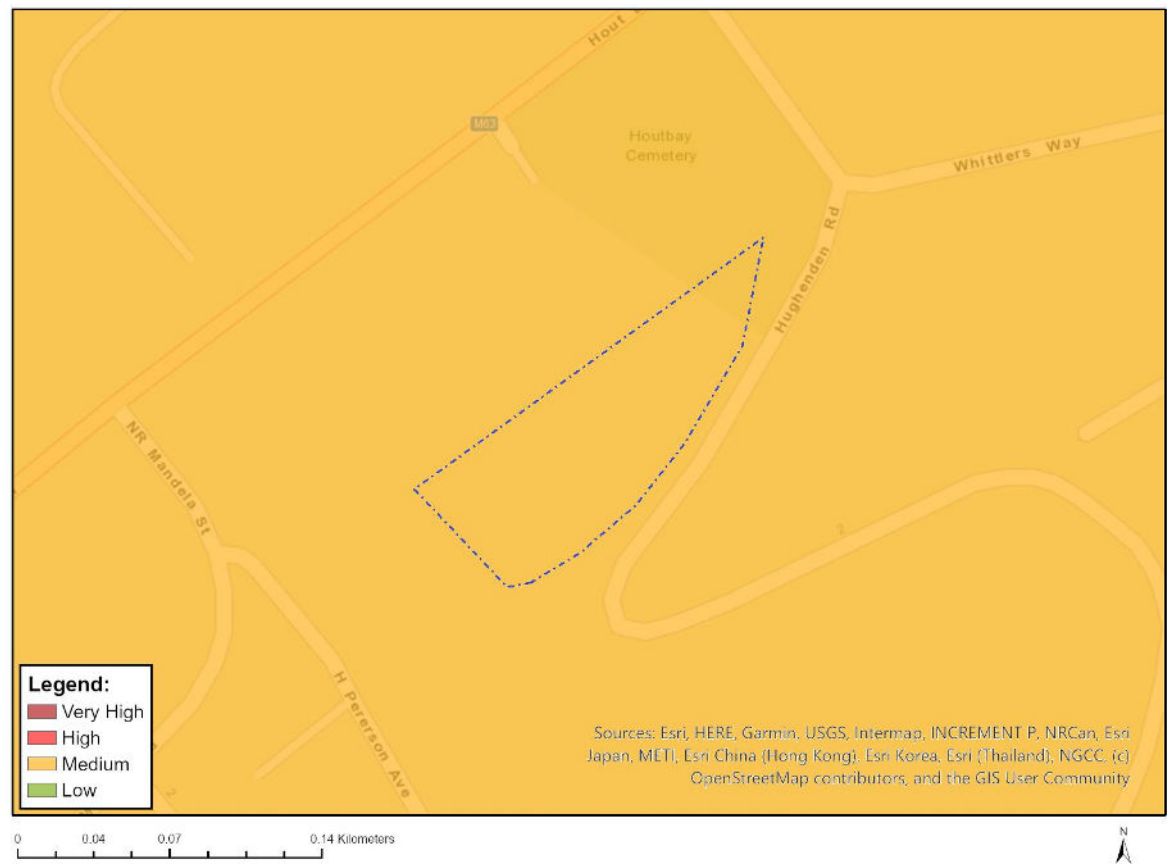


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Within 2km of a Grade II Heritage site

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

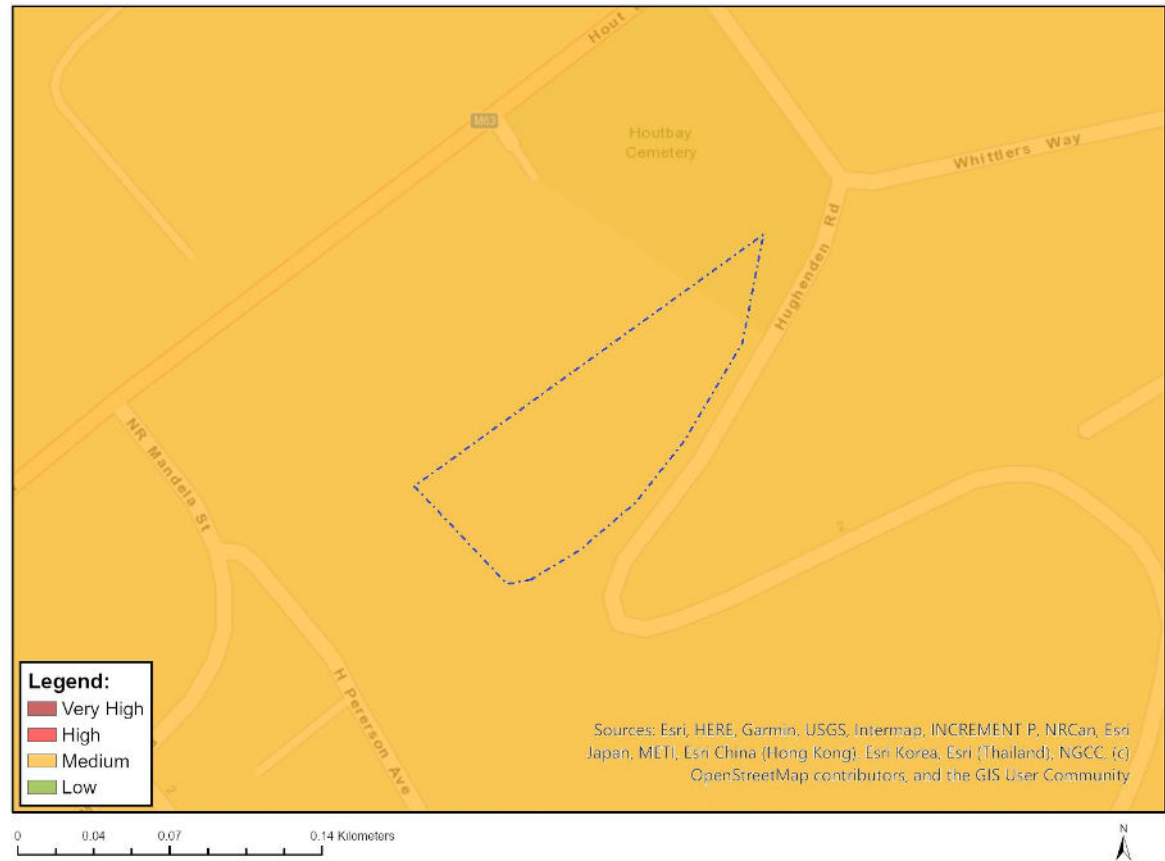


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Within 5 km of an air traffic control or navigation site
Medium	Between 15 and 35 km from a civil aviation radar
Medium	Between 15 and 35 km from a major civil aviation aerodrome

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

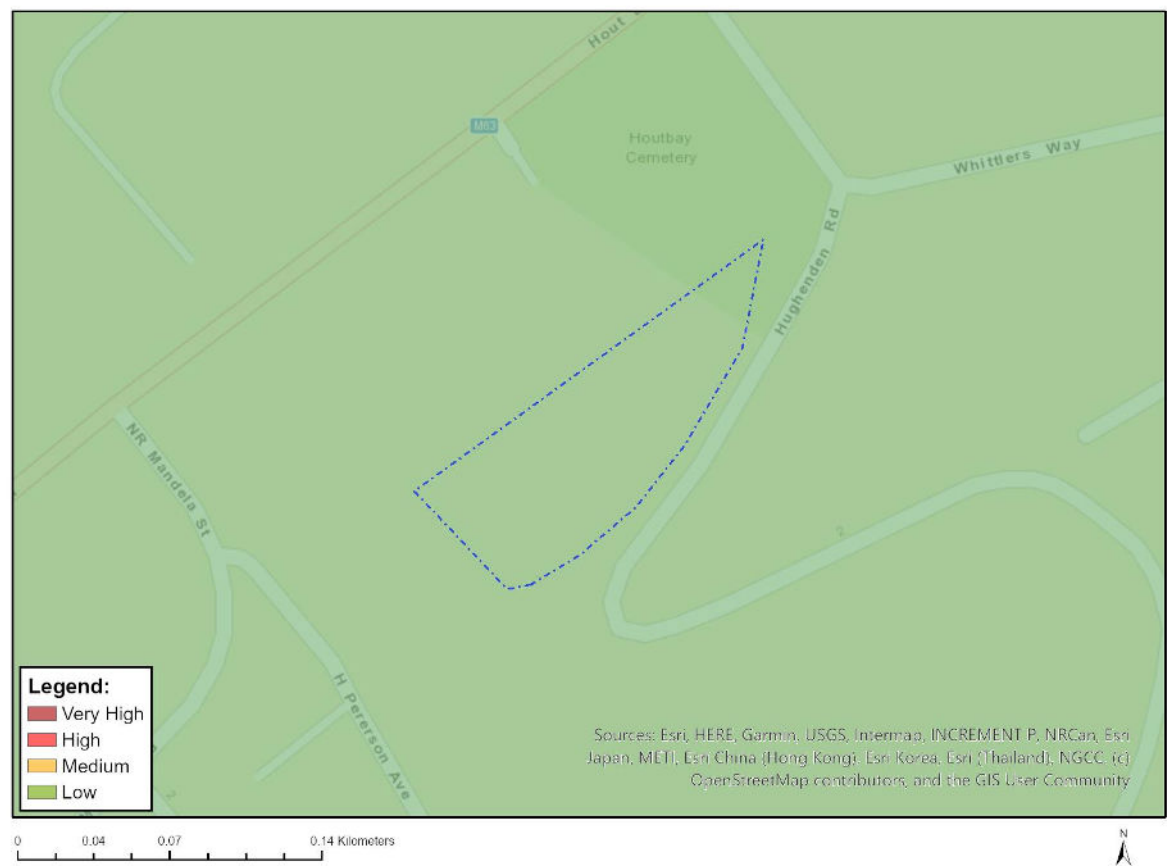


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Military and Defence Site

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



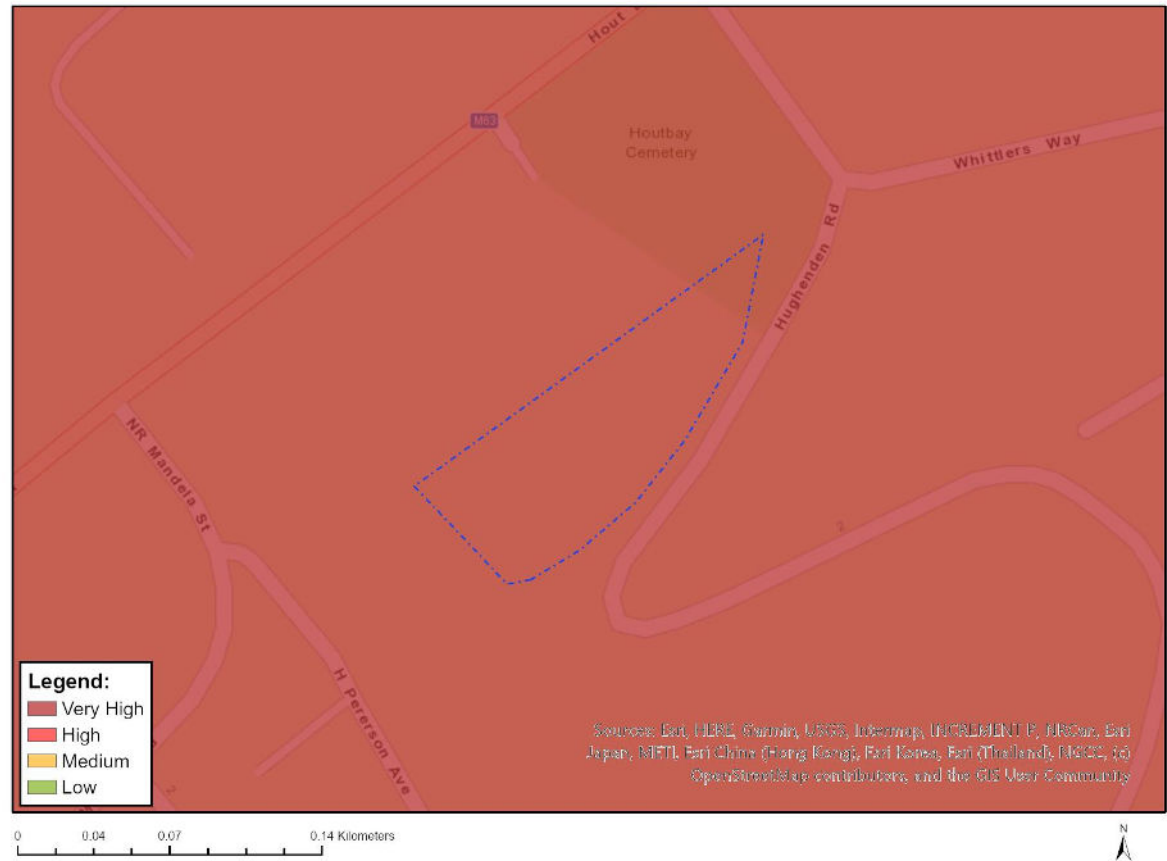
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Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	SWSA (SW) _Table Mountain
Very High	CR_Peninsula Granite Fynbos

ADDENDUM 2: SITE SENSITIVITY VERIFICATION REPORT



biosphere
Enviro Solutions

ZUTARI
IMPACT. ENGINEERED.

FINAL

**SITE SENSITIVITY VERIFICATION REPORT FOR THE PROPOSED
HOUTBAY CEMETERY EXPANSION**

ZUTARI (PTY) LTD

**Houtbay Cemetery,
Cape Town, Western Cape Province**



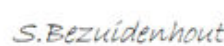
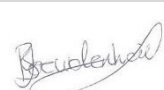
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DOCUMENT CONTROL

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Internal Review & Quality Assurance	Suné Bezuidenhout Accredited SASS5 Practitioner	02/2025		V0.2
	Justin Bezuidenhout Registered EAP (2019/748.) Accredited SASS5 Practitioner	02/2025		V0.2
FINAL SUBMISSION	Zutari (Pty) Ltd – Angela Botha	03/2025	*	V1.0

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DECLARATION OF INDEPENDENCE

I, Reuhl Lombard, declare that I act as an independent specialist for the Terrestrial Biodiversity, Animal and Plant theme of this application. I conduct assessments in an objective manner, even when the views and findings might not be favourable to the Applicant. I have the expertise to conduct the assessment and will comply with the Act, regulations and other applicable legislation. I do not have conflicting interests in the undertaking of the activity. I undertake to disclose all material information in my possession that has or may have the potential of influencing any decision to be taken in respect to the application.

SIGNATURE OF SPECIALIST	
REGISTRATIONS	SACNASP Reg No: 128735
DATE	02/2025

I, Hanjo Fourie, declare that I act as an independent specialist for the Aquatic Biodiversity theme of this application. I conduct assessments in an objective manner, even when the views and findings might not be favourable to the Applicant. I have the expertise to conduct the assessment and will comply with the Act, regulations and other applicable legislation. I do not have conflicting interests in the undertaking of the activity. I undertake to disclose all material information in my possession that has or may have the potential of influencing any decision to be taken in respect to the application.

SIGNATURE OF SPECIALIST	
REGISTRATIONS	SACNASP Reg No: 128735
DATE	02/2025

INDEMNITY STATEMENT

Although Biosphere Enviro Solutions (Pty) Ltd exercises due care and diligence in rendering services and preparing documents, the client takes full responsibility for this report and its implementation in terms of the National Environmental Management Act of 1998, and National Water Act (Act 36 of 1998).

This statement exempts Biosphere Enviro Solutions and its associates and their sub-contractors from any legal responsibility based on the timing of the assessment, the result and the duration thereof, which has an influence on the credibility and accuracy of this report.

Biosphere Enviro Solutions accepts no liability, and the client, by receiving this document, indemnifies Biosphere Enviro Solutions and its directors, managers, agents and employees against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by Biosphere Enviro Solutions and by the use of the information contained in this report.

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LIST OF ABBREVIATIONS

CARA	Conservation of Agricultural Resources Act
CBA	Critical Biodiversity Areas
CR	Critically Endangered
CSIR	Council for Scientific and Industrial Research
DFFE	Department of Forestry, Fisheries and the Environment
DWAF	Department of Water Affairs and Forestry
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EN	Endangered
ENPAT	Environmental Potential Atlas, South Africa
ESA	Ecological Support Areas
ESO	Environmental Site Officer
IBA	Important Bird Areas
LC	Least Concern
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NFEPA	National Freshwater Ecosystem Protected Areas
NPAES	National Protected Area Expansion Strategy
NT	Near Threatened
NWM5	National Wetland Map 5
PA	Protected Areas
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SWSA	Strategic Water Source Areas
VU	Vulnerable

INTRODUCTION

Biosphere Enviro Solutions (Pty) Ltd is appointed by Zutari (Pty) Ltd to fulfil the Terrestrial Biodiversity Theme in support of the proposed Expansion of the Houtbay Cemetery, Cape Town, Western Cape Province.

In line with GN 1150, an applicant intending to undertake an identified activity on a site identified on the screening tool as being of "very high sensitivity" for terrestrial biodiversity, must submit a Terrestrial Biodiversity Specialist Assessment. Similarly, if the site is classed as having "very high sensitivity" according to GN 320 for aquatic ecology, the applicant must submit an Aquatic Ecological Specialist Assessment. The protocols also state that if any part of the proposed development footprint falls within an area of "very high" sensitivity, the assessment and reporting requirements prescribed for the "very high" sensitivity apply to the entire footprint. In the event that the site is classified by the screening tool as being of "low" or "very low sensitivity" for either theme, the applicant must submit Compliance Statements in accordance to the abovementioned regulations. This report presents desktop and ground-truthing findings in order to determine the sensitivity of the site as per above.

BACKGROUND

The project will entail the expansion of an existing cemetery within the following location:

Table 1: Structure to be developed

Development Description	Type	QDG1	Corner Coordinates	Central Coordinate	Activity
Houtbay Cemetery	Expansion	3418AB	34° 1'25.05"S 18°21'53.06"E	34° 1'27.43"S 18°21'50.56"E	Expansion of a formal existing Cemetery
			34° 1'26.35"S 18°21'52.73"E		
			34° 1'29.36"S 18°21'49.24"E		
			34° 1'28.11"S 18°21'47.90"E		

1 Quarter Degree Grid cell wherein the project is located

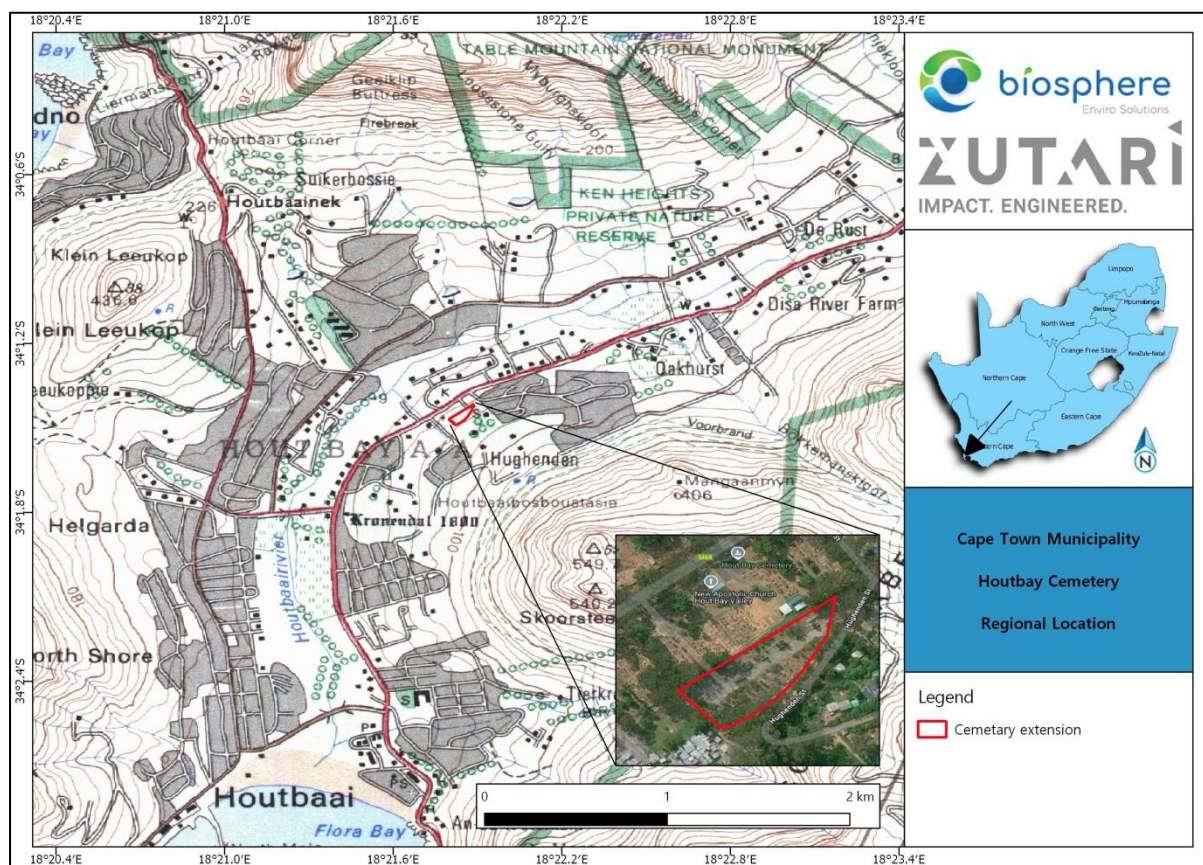


Figure 1: Regional setting of project

The key activities that require environmental authorisation relate to the expansion of the existing Houtbay Cemetery. The structures in question and the project as a whole triggered themes and sensitivities (Table 2) and Site Sensitivity Verification, followed by the relevant level of environmental assessment.

Table 2: Screening Tool outcomes

Theme/specialist assessment	Sensitivity	Rationale
Animal Species	Medium	Sensitive species
Aquatic Biodiversity	Very High	SWSA (SW)_Table Mountain CR_Peninsula Granite Fynbos
Plant Species	Low	Low sensitivity
Terrestrial Biodiversity	Very High	SWSA (SW)_Table Mountain

LOCATION

The site is located in the upper valley area of Hout Bay, situated approximately midway between the coastline and the mountain slopes. It is bordered by Whittlers Way to the north, residential properties along Riverside Terrace to the west, and Mandela Road to the south. The M63 (Hout Bay Main Road) runs along the western boundary of the broader area. The proposed expansion area is approximately 0.7ha in extent.

The site falls within a semi-rural residential zone characterized by larger plot sizes and mixed land use. The property shows evidence of both cleared and naturally vegetated areas, with the eastern portion retaining more natural vegetation coverage. The surrounding landscape is characterised by a mosaic of residential properties, small-scale agricultural activities, and natural vegetation patches assumed to be typical of Peninsula Granite Fynbos. The Hout Bay River system runs north of the site, with associated riparian vegetation visible in the broader landscape.

CLIMATE

The site falls within a winter-rainfall regime, with rainfall peaking from May to August, and varying from 650 mm – 1220 mm per annum across the vegetation type, with higher rainfall occurring at higher elevations of the Hout Bay area. Peninsula Granite Fynbos experiences significantly higher rainfall than Cape Flats Sand Fynbos, influenced by the orographic effect of the Table Mountain chain. The mean daily maximum temperature is 25.8°C in February, and the mean daily minimum is 8.5°C in July. Frost occurrence is rare, mainly limited to higher elevations, while heavy mists are frequent in winter months, particularly on the mountain slopes. The area experiences strong southeastern winds in summer, which influences both temperature and moisture patterns (Mucina & Rutherford 2006).

SENSITIVITY ANALYSIS AND CONSERVATION ANALYSIS TOOLS

There are several assessments for South Africa as a whole, as well as on provincial levels that allow for detailed conservation planning as well as meeting biodiversity targets for the country's variety of ecosystems. These guides are essential to consult for development projects and will form an important part of the sensitivity analysis. Areas earmarked for conservation in the future, or that are essential to meet biodiversity and conservation targets should not be developed and have a high sensitivity as they are necessary for overall functioning. In addition, sensitivity analysis in the field based on much finer scale data can be used to ground truth the larger scale assessments and put it into a more localised context.

Of particular relevance for this project is the Biodiversity Network for the City of Cape Town which used a systematic biodiversity planning approach to prioritise remnant indigenous vegetation (discussed below).

CRITICAL BIODIVERSITY AREAS AND ECOLOGICAL SUPPORT AREAS

Critical Biodiversity Areas (CBA) are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan. Ecological Support Areas (ESA) are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of Critical Biodiversity Areas and/or in delivering ecosystem services. Critical Biodiversity Areas and Ecological Support Areas may be terrestrial or aquatic.

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. It should inform land-use planning, environmental assessment

and authorisations, and natural resource management, by a range of sectors whose policies and decisions impact on biodiversity. It is the biodiversity sector's input into multi-sectoral planning and decision-making processes (SANBI Biodiversity Advisor, 2017).

The fine-scale systematic biodiversity plan for Cape Town, known as the Biodiversity Network or BioNet was recently updated and now comprises maps for the Terrestrial BioNet 2023, Aquatic BioNet 2023, and combined BioNet 2023 with extended planning domain (10 km buffer around the City and all of Cape Town's major water supply dams and their associated sub-catchments). According to the BioNet (2023), the site in question does not fall within any sensitive areas (CBA or ESA). The nearest CBA and ESA are respectively located approximately 1km south and 800m east of the site and are associated with the Table Mountain National Park.

The site is separated from nearby biodiversity areas by urban road and housing infrastructure which limits the connectivity of the site for animal movement.

PROTECTED AREAS (PA) AND NATIONAL PROTECTED AREA EXPANSION STRATEGY (NPAES)

Officially protected areas, either provincially or nationally that occur close to a project site could have consequences as far as impacts on these areas are concerned. The National Protected Area Expansion Strategy (NPAES) sets targets for protected area expansion, provides maps of the most important areas for protected area expansion, and makes recommendations on mechanisms for protected area expansion.

The project area is not located in a protected area or in a NPAES focus area. The nearest protected area (Table Mountain National Park) is located approximately 260m south-east of the proposed project site. The proposed project poses no direct threat to the existence of the protected area.

Important Bird Areas (Key Biodiversity Areas): Important Bird Areas (IBAs) are sites of global significance for bird conservation (Marnewick *et al.*, 2015). The project area is located approximately 12 km from the northern edge of the False Bay Nature Reserve IBA.

Nationally threatened ecosystems: The Biodiversity Act (Act 10 of 2004) provides for listing threatened or protected ecosystems, in one of four categories: critically endangered (CR), endangered (EN), vulnerable (VU) or protected. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to preserve sites of exceptionally high conservation value.

The initial mapping of terrestrial ecosystems was based on the South African vegetation map, national forest types recognized by DWAF, priority areas identified in a provincial systematic biodiversity plan, or high irreplaceability forest patches or clusters systematically identified by DWAF (SANBI, 2011). This has since been updated to include additional identified sensitive ecosystems (National List of Threatened Ecosystems, 2022)

The project area is located broadly in a nationally threatened ecosystems, namely the Peninsula Granite Fynbos which is considered critically endangered (SANBI, 2011; SANBI, 2018, Vegmap 2024 BETA).

National Freshwater Ecosystem Priority Areas (NFEPA) and National Wetland Map 5: South Africa's freshwater ecosystems are diverse, ranging from sub-tropical in the north-eastern part of the country, to semi-arid and arid in the interior, to the cool and temperate rivers of the fynbos. "Freshwater ecosystems" refer to all inland water bodies whether fresh or saline, including rivers, lakes, wetlands, sub-surface waters and estuaries. Consistent with global trends, high levels of threat have been reported for freshwater ecosystems. According to the National Biodiversity Assessment 2018 nearly 80% of inland wetland ecosystem types in South Africa are threatened and approximately 75% of inland wetland ecosystem types are both threatened and under-protected (SANBI, 2019). South Africa's freshwater fauna also displays high levels of threat: at least one third of freshwater fish indigenous to South Africa are reported as threatened, and a recent southern African study on the conservation status of major freshwater-dependent taxonomic groups (fishes, molluscs, dragonflies, crabs and vascular plants) reported far higher levels of threat in South Africa than in the rest of the region.

Urgent attention is needed to ensure that we conserve some representative natural examples of the different ecosystems that make up the natural heritage of this country for current and future generations. NFEPA responds to this need, providing strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources (Driver *et al.*, 2011). However, the NFEPA database is largely outdated.

The National Wetland Map version 5 (NWM5), an output from the NBA 2018 assessment, shows the distribution of inland wetland ecosystem types across South Africa and includes estuaries and the extent of some rivers (CSIR, 2018). These delineated wetlands are generally more accurate than the older NFEPA database. Even more representative of the wetlands in the project vicinity are the wetlands delineated in the City of Cape Town Wetlands (2017) data, which forms part of the updated Aquatic BioNet data (2023).

The NWM5 and Aquatic BioNet data largely overlap, however more wetlands in areas surrounding the site are delineated by the Aquatic BioNet data. These data indicate that channelled valley-bottom wetlands area located approximately 410m north-east (between Meadow Lane and Hout Bay Main Road) and 360m north (associated with the Houtbay stream north of Riverside Terrace) of the site.

JUSTIFICATION OF SENSITIVITY

The Terrestrial Biodiversity Network of the City of Cape Town (2017) provides the most recent data to delineate biodiversity priority areas in the region. These are called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), which, together with protected areas, are important for the persistence of a viable representative sample of all ecosystem types and species as well as the long-term ecological functioning of the landscape as a whole. Table 3 describes the relationship between the project area, Screening Tool Results, the Biodiversity Network of the City of Cape Town and field-observations.

Table 3: Overall sensitivities

Structure	Screening Tool and Biodiversity Network	Observations
Houtbay Cemetery Expansion	No CBAs or ESAs overlapping with site <i>CBA 1a – 1.1km south and 1.1km north</i> <i>CBA 1c – 1.3 km south-west</i> <i>CBA 2 – 1.7km south-east and 2.3km east</i> <i>ESA 1 – 0.7km east</i>	No CBAs or ESAs overlapping with site
	Strategic Waters Source Area – Table Mountain	Noted – area already disturbed and impacted in terms of run-off
	Critically Endangered Peninsula Granite Fynbos	Site not representative of regional vegetation type - altered, degraded and invaded. Project area vegetation was completely cleared during September 2017. Continued recolonisation of entire area not possible due to land-use practice.

In terms of the current project, both sites have been strategically selected and placed to avoid sensitive areas. The proposed site is situated within an already disturbed area with a large informal settlement situated downstream of the proposed site. Wetlands downstream of the site are also restricted to the riparian area of the main Houtbay River consisting of mostly floodplain wetlands with a few channelled Valley bottom wetlands also present.

When considering SANBI's National Freshwater Ecosystem Priority Areas (NFEPA), it is found that the project area falls within an area, draining into the Houtbay River which is situated towards the west of the property area. This slightly non-perennial River is not threatened with a PES as well as an EC of a Health Class D stating that the River system is in a Largely Modified state.

PLANTS

A list of 2448 plant species have been recorded in the quarter degree squares 3418AB encompassing the project area as a whole, of which 188 were listed as SCC. The Screening Tool did not identify any further species to be investigated.

Table 4: Plants SCC known to occur in the vicinity of the project site

Family	Taxon with collector	IUCN
Asteraceae	<i>Arctotis angustifolia</i> L.	CR
Asteraceae	<i>Cotula myriophylloides</i> Harv.	CR
Asteraceae	<i>Senecio foeniculoides</i> Harv.	CR
Campanulaceae	<i>Wahlenbergia pyrophila</i> Lammers	CR
Cytinaceae	<i>Cytinus capensis</i> Marloth	CR
Ericaceae	<i>Erica heleogena</i> T.M.Salter	CR
Ericaceae	<i>Erica margaritacea</i> Aiton	CR
Ericaceae	<i>Erica ribisaria</i> Guthrie & Bolus	CR
Ericaceae	<i>Erica sociorum</i> L.Bolus	CR
Fabaceae	<i>Amphithalea ericifolia</i> subsp. <i>erecta</i> Granby	CR
Fabaceae	<i>Cyclopia latifolia</i> DC.	CR
Fabaceae	<i>Psoralea glaucina</i> Harv.	CR
Iridaceae	<i>Aristea pauciflora</i> Wolley-Dod	CR
Iridaceae	<i>Gladiolus aureus</i> Baker	CR
Iridaceae	<i>Moraea angulata</i> Goldblatt	CR
Iridaceae	<i>Watsonia humilis</i> Mill.	CR
Malvaceae	<i>Hermannia procumbens</i> Cav. subsp. <i>procumbens</i>	CR
Orchidaceae	<i>Disa brachyceras</i> Lindl.	CR
Orchidaceae	<i>Holothrix longicornu</i> G.J.Lewis	CR
Oxalidaceae	<i>Oxalis natans</i> Thunb.	CR
Potamogetonaceae	<i>Pseudalthenia aschersoniana</i> (Graebn.) Hartog	CR
Proteaceae	<i>Leucadendron levisanus</i> (L.) P.J.Bergius	CR
Proteaceae	<i>Leucadendron macowanii</i> E.Phillips	CR
Proteaceae	<i>Serruria aemula</i> Salisb. ex Knight	CR
Proteaceae	<i>Serruria pinnata</i> (Andr.) R.Br.	CR
Aizoaceae	<i>Lampranthus glomeratus</i> (L.) N.E.Br.	EN
Aizoaceae	<i>Lampranthus scaber</i> (L.) N.E.Br.	EN
Aizoaceae	<i>Lampranthus stenus</i> (Haw.) N.E.Br.	EN
Aizoaceae	<i>Lampranthus tenuifolius</i> (L.) N.E.Br.	EN
Amaryllidaceae	<i>Cyrtanthus leucanthus</i> Schltr.	EN
Amaryllidaceae	<i>Gethyllis kaapensis</i> D.Mull.-Doblies	EN
Amaryllidaceae	<i>Hessea cinnamomea</i> (L'Her.) T.Durand & Schinz	EN
Apiaceae	<i>Centella tridentata</i> (L.f.) Drude ex Domin	EN
Apiaceae	<i>Dasispermum perennans</i> Magee & B.-E.van Wyk	EN
Asteraceae	<i>Athanasia capitata</i> (L.) L.	EN
Asteraceae	<i>Senecio verbascifolius</i> Burm.f.	EN
Ericaceae	<i>Erica caterviflora</i> Salisb. var. <i>caterviflora</i>	EN
Ericaceae	<i>Erica ecklonii</i> E.G.H.Oliv.	EN

Fabaceae	<i>Aspalathus globulosa</i> E.Mey.	EN
Fabaceae	<i>Aspalathus macrantha</i> Harv.	EN
Fabaceae	<i>Aspalathus tyloses</i> Eckl. & Zeyh.	EN
Fabaceae	<i>Aspalathus varians</i> Eckl. & Zeyh.	EN
Fabaceae	<i>Indigofera psoraloides</i> (L.) L.	EN
Fabaceae	<i>Lebeckia meyeriana</i> Eckl. & Zeyh.	EN
Fabaceae	<i>Lebeckia plukenetiana</i> E.Mey.	EN
Fabaceae	<i>Liparia angustifolia</i> (Eckl. & Zeyh.) A.L.Schutte	EN
Fabaceae	<i>Podalyria argentea</i> (Salisb.) Salisb.	EN
Fabaceae	<i>Xiphotheca reflexa</i> (Thunb.) A.L.Schutte & B.-E.van Wyk	EN
Geraniaceae	<i>Pelargonium ellaphieae</i> E.M.Maraïs	EN
Hyacinthaceae	<i>Lachenalia reflexa</i> Thunb.	EN
Hypoxidaceae	<i>Spiloxene canaliculata</i> Garside	EN
Iridaceae	<i>Babiana pygmaea</i> (Burm.f.) Baker	EN
Iridaceae	<i>Codonorhiza azurea</i> (Eckl. ex Baker) Goldblatt & J.C.Manning	EN
Iridaceae	<i>Geissorhiza brehmii</i> Eckl. ex Klatt	EN
Iridaceae	<i>Geissorhiza pusilla</i> (Andrews) Klatt	EN
Iridaceae	<i>Gladiolus jonquillodorus</i> Eckl. ex G.J.Lewis	EN
Iridaceae	<i>Hesperantha spicata</i> subsp. <i>graminifolia</i> (Sweet) Goldblatt	EN
Iridaceae	<i>Ixia monadelphica</i> D.Delaroche	EN
Iridaceae	<i>Sparaxis grandiflora</i> (D.Delaroche) Ker Gawl. subsp. <i>grandiflora</i>	EN
Molluginaceae	<i>Adenogramma rigida</i> (Bartl.) Sond.	EN
Orchidaceae	<i>Disa draconis</i> (L.f.) Sw.	EN
Orchidaceae	<i>Disa longicornu</i> L.f.	EN
Orchidaceae	<i>Disa sabulosa</i> Bolus	EN
Orchidaceae	<i>Pterygodium cruciferum</i> Sond.	EN
Orchidaceae	<i>Pterygodium microglossum</i> (Lindl.) Schltr.	EN
Orchidaceae	<i>Satyrium hallackii</i> Bolus subsp. <i>hallackii</i>	EN
Penaeaceae	<i>Stylapterus fruticosus</i> (L.f.) A.Juss.	EN
Poaceae	<i>Pentameris bachmannii</i> (McClean) Galley & H.P.Linder	EN
Polygalaceae	<i>Muraltia mitior</i> (P.J.Bergius) Levyns	EN
Proteaceae	<i>Diastella proteoides</i> (L.) Druce	EN
Proteaceae	<i>Leucadendron floridum</i> R.Br.	EN
Proteaceae	<i>Leucospermum hypophyllocarpodendron</i> subsp. <i>canaliculatum</i> (H.Buek ex Meisn.) Rourke	EN
Proteaceae	<i>Leucospermum hypophyllocarpodendron</i> (L.)	EN

	<i>Druce subsp. hypophyllocarpodendron</i>	
Proteaceae	<i>Serruria collina</i> Salisb. ex Knight	EN
Proteaceae	<i>Serruria decumbens</i> (Thunb.) R.Br.	EN
Proteaceae	<i>Serruria meisneriana</i> Schltr.	EN
Restionaceae	<i>Hypodiscus rugosus</i> Mast.	EN
Restionaceae	<i>Restio harveyi</i> Mast.	EN
Restionaceae	<i>Restio micans</i> Nees	EN
Rosaceae	<i>Cliffortia ericifolia</i> L.f.	EN
Rosaceae	<i>Cliffortia hirta</i> Burm.f.	EN
Rutaceae	<i>Adenandra villosa</i> subsp. <i>biseriata</i> (E.Mey. ex Bartl. & H.L.Wendl.) Strid	EN
Rutaceae	<i>Agathosma glabrata</i> Bartl. & H.L.Wendl.	EN
Rutaceae	<i>Macrostylis villosa</i> (Thunb.) Sond. subsp. <i>villosa</i>	EN
Scrophulariaceae	<i>Microdon capitatus</i> (P.J.Bergius) Levyns	EN
Thymelaeaceae	<i>Gnidia humilis</i> Meisn.	EN
Thymelaeaceae	<i>Passerina paludosa</i> Thoday	EN
Orchidaceae	<i>Satyrium hallackii</i> Bolus subsp. <i>hallackii</i>	EN
Penaeaceae	<i>Stylapterus fruticosus</i> (L.f.) A.Juss.	EN
Poaceae	<i>Pentameris bachmannii</i> (McClean) Galley & H.P.Linder	EN
Polygalaceae	<i>Muraltia mitior</i> (P.J.Bergius) Levyns	EN
Proteaceae	<i>Diastella proteoides</i> (L.) Druce	EN
Proteaceae	<i>Leucadendron floridum</i> R.Br.	EN
Proteaceae	<i>Leucospermum hypophyllocarpodendron</i> subsp. <i>canaliculatum</i> (H.Buek ex Meisn.) Rourke	EN
Proteaceae	<i>Leucospermum hypophyllocarpodendron</i> (L.) Druce subsp. <i>hypophyllocarpodendron</i>	EN
Proteaceae	<i>Serruria collina</i> Salisb. ex Knight	EN
Proteaceae	<i>Serruria decumbens</i> (Thunb.) R.Br.	EN
Proteaceae	<i>Serruria meisneriana</i> Schltr.	EN
Restionaceae	<i>Hypodiscus rugosus</i> Mast.	EN
Restionaceae	<i>Restio harveyi</i> Mast.	EN
Restionaceae	<i>Restio micans</i> Nees	EN
Rosaceae	<i>Cliffortia ericifolia</i> L.f.	EN
Rosaceae	<i>Cliffortia hirta</i> Burm.f.	EN
Rutaceae	<i>Adenandra villosa</i> subsp. <i>biseriata</i> (E.Mey. ex Bartl. & H.L.Wendl.) Strid	EN
Rutaceae	<i>Agathosma glabrata</i> Bartl. & H.L.Wendl.	EN
Rutaceae	<i>Macrostylis villosa</i> (Thunb.) Sond. subsp. <i>villosa</i>	EN
Scrophulariaceae	<i>Microdon capitatus</i> (P.J.Bergius) Levyns	EN
Thymelaeaceae	<i>Gnidia humilis</i> Meisn.	EN

Thymelaeaceae	<i>Passerina paludosa</i> Thoday	EN
Aizoaceae	<i>Cheiridopsis rostrata</i> (L.) N.E.Br.	VU
Aizoaceae	<i>Erepsia patula</i> (Haw.) Schwantes	VU
Aizoaceae	<i>Lampranthus filicaulis</i> (Haw.) N.E.Br.	VU
Aizoaceae	<i>Ruschia geminiflora</i> (Haw.) Schwantes	VU
Aizoaceae	<i>Skiatophytum tripolium</i> (L.) L.Bolus	VU
Apiaceae	<i>Centella caespitosa</i> Adamson	VU
Apocynaceae	<i>Cynanchum zeyheri</i> Schltr.	VU
Asphodelaceae	<i>Aloe commixta</i> A.Berger	VU
Asphodelaceae	<i>Aloiampelos commixta</i> (A.Berger) Klopper & Gideon F.Sm.	VU
Asphodelaceae	<i>Trachyandra chlamydophylla</i> (Baker) Oberm.	VU
Asphodelaceae	<i>Trachyandra filiformis</i> (Aiton) Oberm.	VU
Asteraceae	<i>Amellus asteroides</i> subsp. <i>mollis</i> Rommel	VU
Asteraceae	<i>Cullumia squarrosa</i> (L.) R.Br.	VU
Asteraceae	<i>Metalasia capitata</i> (Lam.) Less.	VU
Asteraceae	<i>Polyarrhena reflexa</i> (L.) Cass. subsp. <i>reflexa</i>	VU
Asteraceae	<i>Steirodiscus tagetes</i> (L.) Schltr.	VU
Brassicaceae	<i>Heliophila cinerea</i> Marais	VU
Brassicaceae	<i>Heliophila promontorii</i> Marais	VU
Brassicaceae	<i>Heliophila tabularis</i> Wolley-Dod	VU
Campanulaceae	<i>Roella goodiana</i> Adamson	VU
Colchicaceae	<i>Wurmbea hiemalis</i> B.Nord.	VU
Colchicaceae	<i>Wurmbea inusta</i> (Baker) B.Nord.	VU
Cyperaceae	<i>Ficinia elatior</i> Levyns	VU
Cyperaceae	<i>Ficinia pinguior</i> C.B.Clarke	VU
Cyperaceae	<i>Isolepis venustula</i> Kunth	VU
Cyperaceae	<i>Tetraria graminifolia</i> Levyns	VU
Ericaceae	<i>Erica amoena</i> J.C.Wendl.	VU
Ericaceae	<i>Erica annectens</i> L.Guthrie & Bolus	VU
Ericaceae	<i>Erica brachialis</i> Salisb.	VU
Ericaceae	<i>Erica capensis</i> T.M.Salter	VU
Ericaceae	<i>Erica cyrilliflora</i> Salisb.	VU
Ericaceae	<i>Erica diosmifolia</i> Salisb.	VU
Ericaceae	<i>Erica eburnea</i> T.M.Salter	VU
Ericaceae	<i>Erica fairii</i> Bolus	VU
Ericaceae	<i>Erica fontana</i> L.Bolus	VU
Ericaceae	<i>Erica hendricksei</i> H.A.Baker var. <i>hendricksei</i>	VU
Ericaceae	<i>Erica limosa</i> L.Bolus	VU
Ericaceae	<i>Erica marifolia</i> Aiton	VU
Ericaceae	<i>Erica paludicola</i> L.Bolus	VU

Ericaceae	<i>Erica urna-viridis</i> Bolus	VU
Fabaceae	<i>Argyrobium velutinum</i> Eckl. & Zeyh.	VU
Fabaceae	<i>Aspalathus angustifolia</i> subsp. <i>robusta</i> (E.Phillips) R.Dahlgren	VU
Fabaceae	<i>Aspalathus araneosa</i> L.	VU
Fabaceae	<i>Aspalathus barbata</i> (Lam.) R.Dahlgren	VU
Fabaceae	<i>Aspalathus capitata</i> L.	VU
Fabaceae	<i>Aspalathus lotoides</i> Thunb. subsp. <i>lotoides</i>	VU
Fabaceae	<i>Liparia laevigata</i> (L.) Thunb.	VU
Fabaceae	<i>Liparia parva</i> Vogel ex Walp.	VU
Fabaceae	<i>Liparia splendens</i> (Burm.f.) Bos & de Wit subsp. <i>splendens</i>	VU
Fabaceae	<i>Podalyria sericea</i> (Andrews) R.Br.	VU
Fabaceae	<i>Psoralea alata</i> (Thunb.) T.M.Salter	VU
Fabaceae	<i>Psoralea fascicularis</i> DC.	VU
Grubbiaceae	<i>Grubbia rosmarinifolia</i> subsp. <i>gracilis</i> (T.M.Salter) Carlquist	VU
Haemodoraceae	<i>Wachendorfia brachyandra</i> W.F.Barker	VU
Hyacinthaceae	<i>Lachenalia capensis</i> W.F.Barker	VU
Hyacinthaceae	<i>Lachenalia fistulosa</i> Baker	VU
Hypoxidaceae	<i>Pauridia alba</i> (Thunb.) Snijman & Kocyan	VU
Iridaceae	<i>Babiana stricta</i> (Aiton) Ker Gawl.	VU
Iridaceae	<i>Geissorhiza humilis</i> (Thunb.) Ker Gawl.	VU
Iridaceae	<i>Moraea versicolor</i> (Salisb. ex Klatt) Goldblatt	VU
Juncaginaceae	<i>Triglochin bulbosa</i> subsp. <i>tenuifolia</i> (Adamson) Horn	VU
Menyanthaceae	<i>Villarsia goldblattiana</i> Ornduff	VU
Orchidaceae	<i>Acrolophia bolusii</i> Rolfe	VU
Orchidaceae	<i>Acrolophia ustulata</i> (Bolus) Schltr. & Bolus	VU
Orchidaceae	<i>Disa venusta</i> Bolus	VU
Orchidaceae	<i>Satyrium striatum</i> Thunb.	VU
Poaceae	<i>Ehrharta setacea</i> subsp. <i>uniflora</i> (Burch. ex Stapf) Gibbs Russ.	VU
Polygalaceae	<i>Muraltia brachypetala</i> Wolley-Dod	VU
Polygalaceae	<i>Muraltia brevicornu</i> DC.	VU
Polygalaceae	<i>Muraltia comptonii</i> Levyns	VU
Polygalaceae	<i>Muraltia orbicularis</i> Hutch.	VU
Proteaceae	<i>Leucadendron argenteum</i> (L.) R.Br.	VU
Proteaceae	<i>Leucadendron discolor</i> E.Phillips & Hutch.	VU
Proteaceae	<i>Leucospermum vestitum</i> (Lam.) Rourke	VU
Proteaceae	<i>Mimetes capitulatus</i> R.Br.	VU

Proteaceae	<i>Mimetes hirtus (L.) Salisb. ex Knight</i>	VU
Proteaceae	<i>Protea aspera E.Phillips</i>	VU
Proteaceae	<i>Protea scolymocephala (L.) Reichard</i>	VU
Proteaceae	<i>Serruria cyanoides (L.) R.Br.</i>	VU
Proteaceae	<i>Serruria flagellifolia Salisb. ex Knight</i>	VU
Proteaceae	<i>Serruria hirsuta R.Br.</i>	VU
Restionaceae	<i>Elegia prominens Pillans</i>	VU
Restionaceae	<i>Restio communis Pillans</i>	VU
Restionaceae	<i>Restio dodii Pillans var. dodii</i>	VU
Restionaceae	<i>Restio paludosus Pillans</i>	VU
Restionaceae	<i>Restio papillosus (Esterh.) H.P.Linder & C.R.Hardy</i>	VU
Restionaceae	<i>Willdenowia rugosa Esterh.</i>	VU
Rhamnaceae	<i>Phylica dioica L.</i>	VU
Rhamnaceae	<i>Phylica harveyi (Arn.) Pillans</i>	VU
Rhamnaceae	<i>Phylica plumosa var. horizontalis (Vent.) Sond.</i>	VU
Rosaceae	<i>Cliffortia longifolia (Eckl. & Zeyh.) Weim.</i>	VU
Rutaceae	<i>Agathosma hookeri Sond.</i>	VU
Rutaceae	<i>Agathosma lanceolata (L.) Engl.</i>	VU
Thymelaeaceae	<i>Gnidia spicata (L.f.) Gilg</i>	VU
Thymelaeaceae	<i>Lachnaea capitata (L.) Crantz</i>	VU
Thymelaeaceae	<i>Lachnaea grandiflora (L.f.) Baill.</i>	VU
Thymelaeaceae	<i>Lachnaea uniflora (L.) Crantz</i>	VU

MAMMALS

Very few mammal species have been recorded previously in the quarter degree cell in which the sites fall. To be thorough, neighbouring areas were included to get fair representation of the complete mammal assemblage in the area. A total of 102 mammal (including marine mammal) species have been recorded in the quarter degree grid cells in the vicinity of the project site (3418AB, 3318CD), of which only three species are listed as a SCC. The Screening Tool did not identify any further mammal species to be investigated but did mention two Arthropoda species that are mentioned under a separate section.

Table 6: Mammal SCC known to occur in the vicinity of the project site

Scientific name	Common name	Status
<i>Damaliscus pygargus pygargus</i>	Bontebok	VU
<i>Equus zebra zebra</i>	Mountain Zebra	VU
<i>Hippotragus niger niger</i>	Sable Antelope	VU

REPTILES AND AMPHIBIANS

A list of 55 reptile and 24 amphibian species have been recorded in the quarter degree square encompassing the project area (3418AB, 3318CD). Four amphibian Species of Conservation Concern were identified from the data in conjunction with the Screen Tool.

Table 7: Amphibians SCC known to occur in the vicinity of the project site

Scientific name	Common name	Status
<i>Capensibufo rosei</i>	Rose's Toadlet	CR
<i>Sclerophrys pantherina</i>	Panther Toad	EN
<i>Xenopus gilli</i>	Cape Platanna	EN
<i>Microbatrachella capensis</i>	Micro Frog	CR

OTHER

The Screening Tool identified one Insecta and one Arachnida SCC that need to be considered and investigated.

Table 8: Insecta and Arachnida SCC known to occur in the vicinity of the project site

Scientific name	Common name	Status
Invertebrate - <i>Conocephalus peringueyi</i>	Peringuey's Meadow Katydid	Medium
Arachnida - <i>Psammoduon arenicola</i>	Sand-dwelling trapdoor spider	Medium

AQUATIC BIODIVERSITY

The site in question was identified as having "low sensitivities" following the site sensitivity verification as far as aquatic biodiversity is concerned with no sensitive features transecting the site. As far as sensitive features identified downstream of the site a few small OESA wetlands (Other Ecological Support Areas) were observed. Larger CESA wetlands (Critical Ecological Support Areas) were identified near and within the estuarine area of the Hout Bay River which is situated at least a further 1.4km downstream of the site.

In terms of aquatic ecology, the project area falls within the "G" (G2) Drainage Region within the Berg-Olifants Management Area. The applicable quaternary catchment area, G22B, falls within a Class D Largely Modified category, while the Best Attainable Ecological Class is set at a Class C (Moderately Modified). The Hout Bay River (River Order 1) is located approximately 400 m west of the proposed development site. This River system is classified as having a strong seasonal flow variation, with peak flows occurring during the winter months of June through August, coinciding with the Western Cape's rainy season. During these periods, the river experiences significant flow increases due to frontal rainfall systems. Conversely, summer months from December to February are characterized by markedly reduced flows, often reaching critically low levels that can impact ecological functioning.

Flow modifications have occurred due to various anthropogenic influences. Urban development has increased impervious surfaces, leading to more rapid runoff and heightened peak flows during rain events. Stormwater system inputs have altered the natural flow regime, while historical wetland drainage has reduced the system's natural flow attenuation capacity. These modifications have created a flashier hydrological response to rainfall events. The river's physical structure varies considerably along its course. The upper reaches feature a steep gradient as the river descends from the Table Mountain range, characterized by boulder-dominated channels and rapid flow. The middle reaches transition to a moderate gradient with cobble-gravel substrates, while the lower valley sections exhibit a gentler gradient with predominantly sandy-silty substrates. This natural progression significantly influences flow patterns and velocity throughout the system.

Urban development represents one of the most substantial impacts on the river system. The expansion of residential areas and informal settlements has led to increased stormwater runoff, which carries pollutants and sediments into the river. This urbanization has also resulted in the modification of natural drainage patterns and the loss of riparian vegetation that historically helped filter pollutants and stabilise riverbanks. The river receives significant pollution from informal settlements (such as the community just downstream of the study area) lacking adequate sanitation infrastructure, leading to elevated E.coli levels and nutrient enrichment. Historical land use changes have permanently altered the river's character. Agricultural activities in the middle reaches have contributed to increased sediment loads and chemical inputs from fertilisers and pesticides. The drainage of historical wetlands has also reduced the system's natural ability to attenuate floods and filter pollutants.

The Ecological Sensitivity of the Hout Bay River is considered to be High, while the Ecological Integrity is rated as being Moderate. The River is only considered to have a total length of 12 km and also confluences with the Atlantic Ocean. A high (ES) is expected as an important corridor for biodiversity, connecting the mountains to the ocean and facilitating species movement and genetic exchange. The riparian which provide essential habitat for both aquatic and terrestrial species has been significantly impacted and removed over the last few years, which is particularly evident when taking historic imagery into account.

The middle and lower reaches exhibit different ecological characteristics, largely influenced by human activities. These sections generally support more tolerant aquatic species adapted to modified conditions. The macroinvertebrate communities in these areas often include species that can withstand varying water quality conditions, though diversity tends to be reduced compared to the upper reaches.

DISCUSSION & CONCLUSION

Based on the information gathered from online databases, as well as a ground truthing site visit conducted on the 4th and 5th of February 2025, it is the opinion of this specialist that the habitat found on the sites will unlikely house sensitive plant and animal species. The site has been severely degraded through past clearance for purposes of informal settlement establishment. In addition, large section of the property has no topsoil remaining but is rather covered by compacted aggregate, while uncompacted areas are close to fully vegetated by alien invasive plant species. In terms of aquatic biodiversity, the site has no interconnection with surface water resources in the area.

Therefore, the protocols stated in GN 320 of March 2020 should be followed and a Terrestrial Biodiversity Compliance Statement and an Aquatic Biodiversity Compliance Statement should be compiled.

RISK ASSESSMENT MATRIX (RAM)

PROJECT: Risk Assessment for the Houtbay Cemetery Expansion

RISK ASSESSMENT MATRIX for Section 21 (c) and (j) Water Use activities - Version 2.1.1

Name of Assessor: JP Fourie
SACNASP Registration Number: 125420
Date of assessment: Feb-25

Signature: 

Risk to be scored for all relevant phases of the project (factoring in specified control measures). MUST BE COMPLETED BY SACNASP PROFESSIONAL MEMBER REGISTERED IN AN APPROPRIATE FIELD OF EXPERTISE.

Phase	Activity	Impact	Mitigation Measures	Potentially affected watercourses			Intensity of Impact on Resource Quality					Overall Intensity (max = 10)	Spatial scale (max = 5)	Duration (max = 5)	Severity (max = 20)	Importance rating (max = 5)	Consequence (max = 100)	Likelihood (Probability) of impact	Significance (max = 100)	Risk Rating	Confidence level	
				Name/s	PES	Overall Watercourse Importance	Abiotic Habitat (Drivers)			Biota (Responses)												
							Hydrology	Water Quality	Geomorph	Vegetation	Fauna											
CONSTRUCTION	<1> Site clearing and preparation. Earthworks and Vehicle Movement.	Disturbance of soil leading to potential erosion and sediment runoff.	Implement silt fences and erosion control measures. Minimize exposed soil areas and stabilize disturbed zones. Schedule activities outside of heavy rainfall periods.	Houtbay River	C	High	1	0	0	2	2	4	1	1	6	4	24	20%	4,8	L	High	
		Potential for sediment transport into nearby stormwater channels leading to Hout Bay River.	Construct temporary retention areas for runoff. Implement stormwater management to prevent direct flow into sensitive areas. Regular inspections and maintenance of sediment control structures.	Houtbay River	C	High	1	1	0	1	1	2	1	1	4	4	16	20%	3,2	L	High	
	<2> Increased Surface Runoff & Stormwater Flow Alterations	Possible increase in stormwater volume affecting downstream water quality.	Implement temporary stormwater controls (e.g., swales or detention basins). Avoid direct discharge into the Hout Bay River or adjacent drainage channels. Vegetative stabilization of exposed areas post-construction.	Houtbay River	C	High	1	2	0	1	1	4	1	1	6	4	24	20%	4,8	L	High	
OPERATIONAL	<1> Stormwater Management & Runoff	Potential for increased surface runoff carrying sediments and pollutants into nearby drainage systems.	Maintain stormwater drainage systems (regular clearing of silt and debris). Implement permeable surfaces where possible to encourage infiltration. Establish vegetative buffers along drainage channels.	Houtbay River	C	High	2	1	1	1	1	4	2	2	8	4	32	20%	6,4	L	High	
		Potential for leachate generation affecting groundwater quality.	Ensure burial depths comply with environmental and groundwater regulations. Locate burials away from high-water table areas. Monitor groundwater quality periodically if required by authorities.	Houtbay River	C	Moderate	2	2	1	1	1	4	1	3	8	3	24	40%	9,6	L	High	
	<2> Erosion & Soil Stability Issues	Loss of topsoil from pathways and burial sites leading to sedimentation of nearby drainage channels.	Maintain vegetation cover and stabilize high-risk areas. Regular maintenance of cemetery pathways to prevent soil displacement. Use natural drainage design to slow down water flow.	Houtbay River	C	Moderate	1	2	1	1	1	4	1	2	7	3	21	40%	8,4	L	High	
	<3> Alien Vegetation Encroachment	Invasive species colonizing disturbed areas, potentially altering local hydrology.	Ongoing vegetation management and removal of invasive species. Encourage planting of indigenous, low-water-use plants. Regular monitoring of landscape for early detection.	Houtbay River	C	Moderate	1	1	0	2	1	4	1	1	6	3	18	40%	7,2	L	High	