BIODIVERSITY OFFSET APPLICABILITY ASSESSMENT

Portion 36 of the Farm 708, Fransche Kraal, Caledon RD

November 2024

Version 1

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Contents

1. INTRODUCTION 3
1.1. Background to the project 3
1.2. Role of this report 4
2. SITE SPECIFICS 4
2.1. Screening Tool Report 1
2.2. National Vegetation Mapping 2
2.3. Western Cape Biodiversity Spatial Planning 3
3. Specialist Investigation 4
3.1. Terrestrial Biodiversity / Botanical Assessment 4
3.2. Faunal Assessment 9
3.3. Aquatic Biodiversity Assessment 11
4. BIODIVERSITY OFFSET POLICIES AND GUIDELINES 15
4.1 National Biodiversity Offset Guidelines 15
4.2. Overview of Western Cape Biodiversity Offset Guidelines 15
5. Biodiversity Offsetting Process 17
5.1. Need for Biodiversity Offset 17
5.2. Mitigation hierarchy 19
6. BIODIVERSITY OFFSET – APPLICABILITY TO THE FRANSKRAAL BEACH ESTATE 20
6.1. Need and Desirability of the Proposed Project 20
6.2. Application of the Mitigation Hierarchy 21
6.3. Residual impacts of the proposed development 22
7. Conclusion 24

1. INTRODUCTION

1.1. Background to the project

Lornay Environmental Consulting was appointed by Tanya Mari De Villiers, "the applicant" to apply for Environmental Authorisation in accordance with the National Environmental Management Act (NEMA, Act 107 of 1998) and the EIA Regulations (2014), as amended, for the proposed eco-estate development proposed for the Remainder Portion 36 of Farm 708, Franskraal, Gansbaai, Caledon RD. The project site covers an area of approximately 6 hectares within the larger 57 ha property. The proposed development will consist of approximately 52 residential erven, internal roads, a clubhouse, utilities, a farm stall, a boardwalk, a jetty, and designated open spaces. The proposed boardwalk and jetty partially fall on the adjacent Department of Public Works Land, being Farm 707, Caledon RD.

The design aims to integrate the development into the natural environment, prioritizing the preservation of indigenous vegetation and promoting a sustainable living environment that blends with the surrounding coastal landscape.

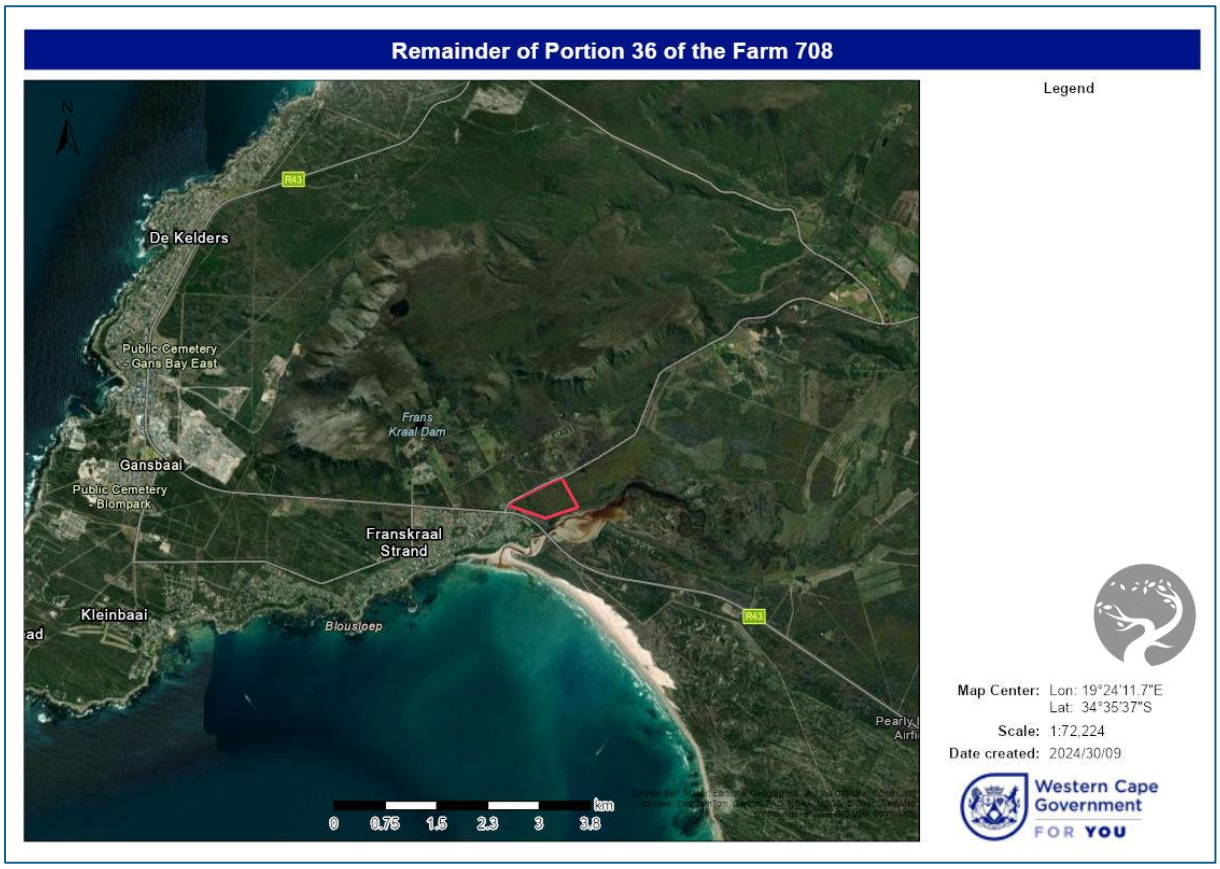

Figure 1: Location of the study area

The eco-estate's preliminary planning and design has placed significant emphasis on minimising the ecological footprint and impact of the development by carefully integrating wide open areas for the maintenance of ecological connectivity and implementation of functional ecological corridors Open spaces will be maintained into the long term, to promote biodiversity and protect the natural character of the site. The inclusion of boardwalks and a jetty in the coastal portion of Farm 707, is intended to provide access to these natural sensitive areas without disturbing habitats, and thereby further reinforcing the project's commitment to environmental protection.

The property is characterized by Agulhas Sand Fynbos (CR) and lies within the broader Overberg Region. The proposed development, with the proposed footprint of approximately 6 ha, aims to create an eco-type development which balances sustainable residential living with environmental conservation.

The site is classified as a greenfield area, with some portions previously disturbed by historical agricultural activities. However, the majority of the land is densely infested with alien vegetation, prompting the need for comprehensive biodiversity management measures, to mitigate potential impacts on critical ecological systems and maximising the rehabilitation of low-quality habitats on site.

In response to the findings of the Environmental Impact Assessment process, the Applicability of the National Biodiversity Offset Regulations and the implementation and mechanism thereof, requires investigation.

This Biodiversity Offset Report has been compiled in accordance with the National Biodiversity Offset Regulations and provides a detailed information regarding the Regulations and implementation thereof.

1.2. Role of this report

The aim of this report is to provide information regarding the Applicability of the National Biodiversity Offset Regulations and the need for the implementation of a Biodiversity Offset in response to the proposed development of the subject property

2. SITE SPECIFICS

The property in question, being Portion 36 of the Farm 708, Fransche Kraal, is located within the demarcated urban edge of Franskraal, however is located outside the built-up urban edge as per NEMA definition. The property is currently zoned as Agricultural Zone 1: Agriculture. Farm 707, which is not owned by the applicant, but forms part of the application, is currently zoned as Resort Zone: Holiday Resorts. This portion, belonging to the Department of Public Works, is included in the application, under a Lease Agreement with DPW, in order to provide demarcated, low impact boardwalk access to the water's edge of the Uilenkraals Estuary.

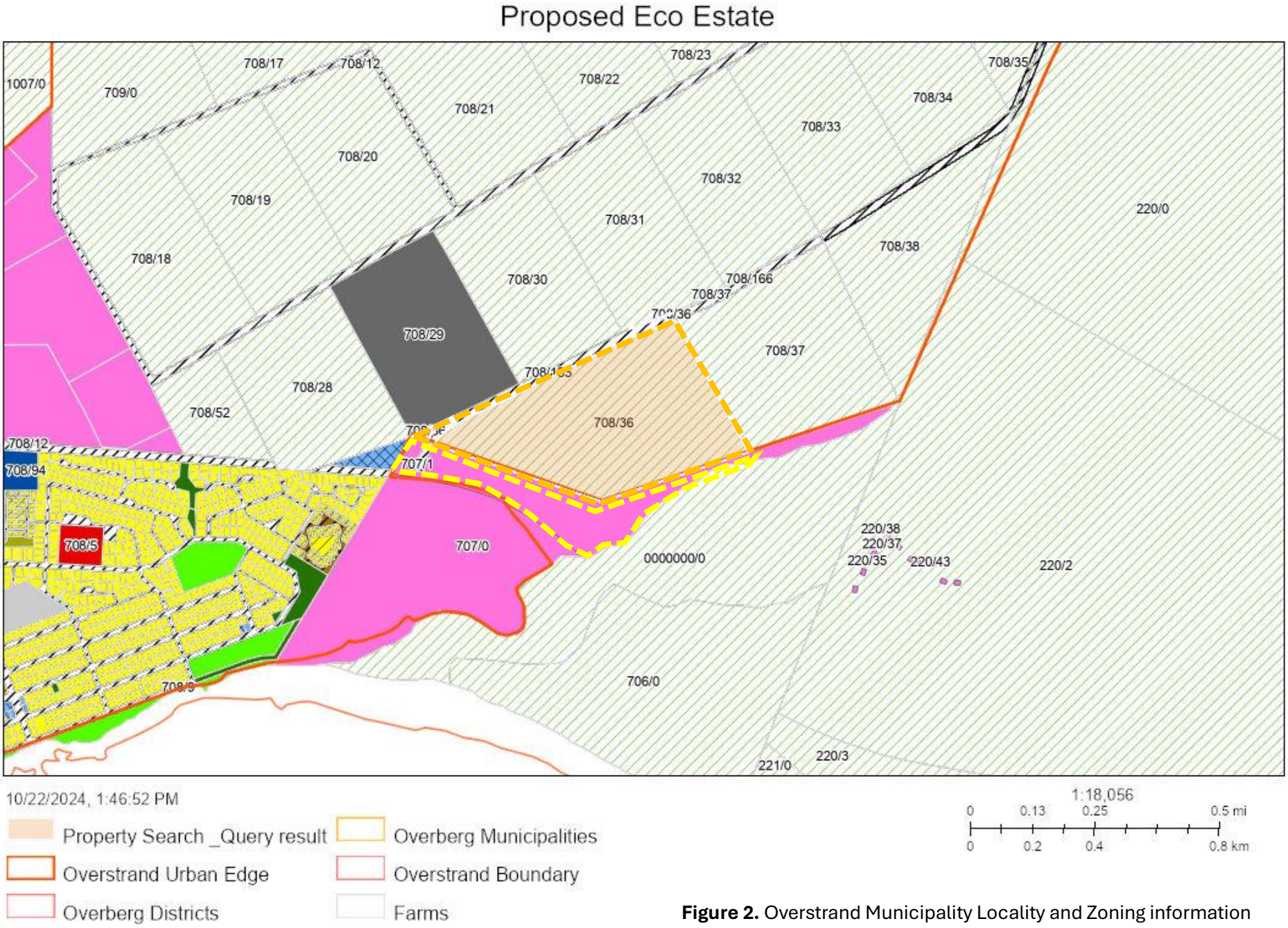

Figure 2. Overstrand Municipality Locality and Zoning information

2.1. Screening Tool Report

The Screening Tool Report has been generated in compliance with the Environmental Impact Assessment Regulations of 2014 (as amended) to assess the environmental sensitivity of the subject property and proposed development. The environmental sensitivities identified for the site are summarised in **Table 1** below.

Table 1: Summary of environmental sensitivities

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
Paleontology Theme	X			
Plant Species Theme			X	
Terrestrial Biodiversity Theme	X			

In response to the above, the following specialists have been appointed to assess the impacts associated with the proposed development:

- → Agricultural Compliance Statement – Johann Lantz
- → Faunal Impact Assessment – Jan Venter
- → Aquatic Biodiversity – Kim van Zyl (Delta Ecology)
- → Heritage Impact Assessment (AIA, PIA) – Jonathan Kaplan
- → Visual Impact Assessment – Megan Anderson
- → Terrestrial / Plant species Impact Assessment – Sean Privett

Based on the findings from specialist assessments, the biodiversity of the site is currently significantly threatened by the presence of invasive alien species, particularly *Acacia saligna* (Port Jackson), which dominates much of the vegetation on-site. Other invasive species have also been recorded, contributing to the overall degradation of the habitat (Privett, 2024). According to Venter (2024), the heavy infestation of alien plants has a detrimental effect on animal species occurrence, diversity, and population density. The degraded state of the site reduces its ability to support native fauna and flora effectively. The Aquatic Biodiversity Assessment confirmed the presence of a seep wetland on-site, which plays a critical role in local hydrology, although it is currently in a degraded condition. The wetland has high ecological value due to its potential role in supporting biodiversity and maintaining hydrological processes, despite its current poor state.

The specialist team have concluded that while the site is compromised by invasive species and currently in a highly degraded state, it still holds high ecological value. The rehabilitation of Agulhas Sand Fynbos vegetation and the seep wetland, offers an opportunity to enhance the biodiversity of the area through strategic management interventions. These actions need monetary input in the form of development, in order to take place. The risk of leaving the site in the current state, will result in further degradation, habitat loss and species disruption due to ongoing alien vegetation infestation. The continued degradation of the seep wetland and associated wetland loss will also occur in the No Go scenario. There is a risk of future inappropriate, high-density development on site, because the site is included in the municipal urban edge. Illegal and unregulated occupation also presents a threat to the site and ecological potential in its future and under its current zoning, intensive Agriculture could also take place. The status quo of the No Go option provides no incentive for restoration of the site to a more natural state and presents high risk for continued habitat and species loss.

Three Alternatives have been assessed in the Basic Assessment process, being Alternative 1, Alternative 2 (preferred) and Alternative 3 – No Go, where the status quo remains.

Alternative 1

Whilst still aiming to be labelled an eco-type of development, this alternative layout proposes a higher development density with a larger footprint, leading to significant habitat loss. The layout is such that it does not facilitate the creation of functional ecological corridors and the mountain to sea connection. The layout intrudes into the largely natural seep wetland on the western boundary of the site. This poses a high risk to the site's biodiversity and overall ecological functionality. The primary concern raised by the botanical specialist is the fragmentation of the site, which would result in the loss of natural habitats and species due to vegetation clearing and associated biota disturbance. The cumulative impacts include the loss of on-site connectivity which will reduce the ability of species to move and interact across the broader coastal and mountainous landscape of the area. The impact on Terrestrial Biodiversity for Alternative 1 is rated as medium negative, while the impact on Plant Species is assessed as medium to high negative.

In terms of the Animal Species theme, no species of Conservation Concern have been noted by the specialist however habitat fragmentation is highlighted as a impact associated with this layout.

Alternative 2 (Preferred)

This is identified as the preferred option by specialists, as it incorporates larger open spaces dedicated to ecological corridors. This layout better supports biodiversity and reduces the fragmentation of habitats. While there is still disturbance to the Agulhas Fynbos vegetation, the cumulative impacts are less severe compared to Alternative 1. This alternative offers a more balanced approach by preserving critical ecological corridors and minimising the overall impact on the site's biodiversity. The alternative is offering the opportunity for rehabilitation and restoration to create a quality site post construction.

In terms of the Animal Species theme, Alternative 2 is found to be a viable development proposal as it integrates larger, more functional ecological corridors and spaces and allows for improved connectivity and movement between Uilkraalsmond Nature Reserve, Uillenkraals Estuary, the Boesmansrivier and Dynefontein Mountains. Rehabilitation efforts, restoration and long-term system maintenance, as proposed with this development option will allow for improved animal occurrence, diversity and density. The provision of corridors in the preferred alternative is desirable even though there are minor infringements on ESA and CBA areas on site.

In terms of the Aquatic Biodiversity theme as well as the Terrestrial Biodiversity, Alternative two has evolved in response to comments received from the specialist team. In terms of the Aquatic Biodiversity, Alternative two is supported as it ensures that flow is maintained to the downstream Uilenkraals Estuary along the proposed western rehabilitated zone and the central area of the site. A relatively natural portion of the identified seep wetland is avoided in the preferred alternative and maintained together with a larger site area, which will be rehabilitated during the onsite Wetland Offset process. Alternative 2 allows for a buffer to the estuary of more than 75 m during both construction and operational phases of development.

2.2. National Vegetation Mapping

According to Terrestrial Biodiversity Assessment conducted by Sean Privett (2024), the proposed development site is situated within the Agulhas Sand Fynbos vegetation type, which is classified as a critically endangered ecosystem according to the South African National Biodiversity Institute (SANBI) vegetation map (2019). This vegetation unit has a fragmented distribution across the Agulhas Sand Fynbos, extending from the lower Uilkraalsrivier near Gansbaai (the study site) to areas such as Hagelkraal, Soetanysberg, Elim, Struisbaai,

Arniston, and Bredasdorp. Smaller, unmapped patches also exist westward toward Hermanus and eastward toward De Hoop Vlei (Privett, 2024). The older sands that support sand fynbos are neutral to acidic, more weathered, finer-grained, and more water-retentive, but less fertile compared to the sands of Strandveld. This reduced fertility is attributed to the leaching of nutrients from the older sediments. On Rem 36 of Farm 708, the sand fynbos vegetation is predominantly composed of *Leucadendron coniferum* (dune conebush), *Leucadendron linifolium*, *Erica plukenetii subsp. lineata* (cat's tail erica), *Thamnochortus erectus* (wyfieriet), and *Phylica dodii* (edelweiss hardleaf).

The vegetation remains relatively uniform throughout the site, influenced minimally by variations in drainage and soil moisture conditions. The only exception to this uniformity is observed on the vegetation along the estuarine fringe. Broadly, the entire site can be categorized as Agulhas Sand Fynbos. Key diagnostic species that characterize this vegetation type, particularly in relation to moisture gradients, include *Leucadendron coniferum* and *Erica imbricata* in the better-drained areas, and *Leucadendron linifolium* and *Berzelia abrotanoides* in the regions with higher moisture levels (Privett, 2024).

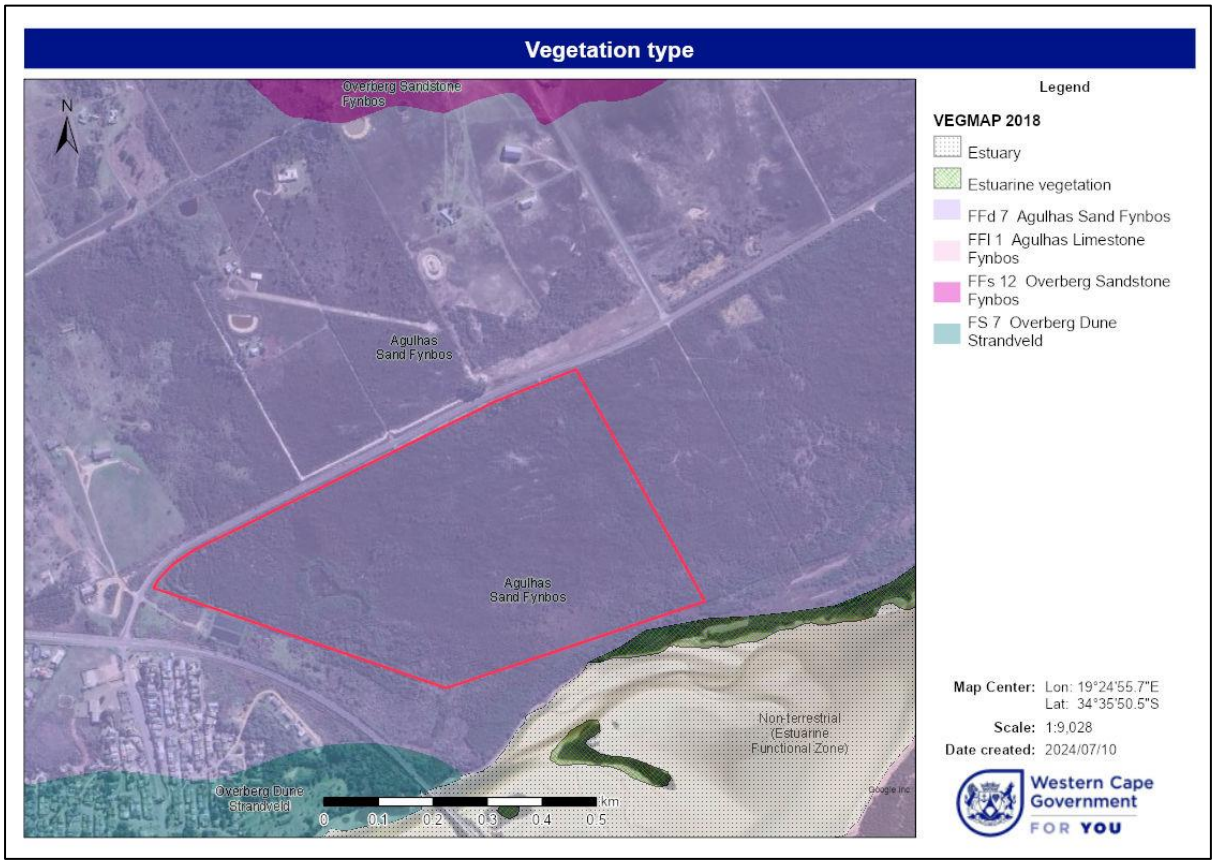

Figure 3: The vegetation composition and distribution on the property.

This assessment further confirms that the vegetation on the property is significantly threatened by substantial infestations of invasive alien species. Notable invasive species include *Acacia saligna* (Port Jackson), *Acacia cyclops* (rooikrans), *Myoporum insulare* (manatoka), and *Cenchrus clandestinus* (Kikuyu grass), each exhibiting varying densities across the site. These invasive species pose a considerable risk to the integrity of the indigenous flora and the overall biodiversity of the site and area at large, necessitating immediate management and remediation strategies.

2.3. Western Cape Biodiversity Spatial Planning

The Western Cape Biodiversity Spatial Plan (WCBSP), 2017 is based on a systematic biodiversity assessment and has boundaries aligned with administrative boundaries (e.g. Municipal, Provincial). A Biodiversity Spatial Plan

achieves this by providing a map of terrestrial and freshwater areas that are important for conserving biodiversity patterns and ecological processes – these areas are called Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs).

2.3.1. National Threatened Ecosystems

The Remainder of Portion 36 of the Farm Fransche kraal No. 708 falls within Agulhas Sand Fynbos vegetation type with critically endangered ecosystem (SANBI Vegetation Map, 2018). According to Privett, (2024) there three Red data species recorded on the property, such as *Leucadendron coniferum, Leucadendron linifolium and Leucospermum prostratum* all regarded as vulnerable. The conservation target of this vegetation unit is 32%' with a significantly smaller amount of this unit about 7% conserved in the Agulhas National Park, with only 1% found on the private conservation areas (Privett, 2024). Based on the specialist perspective, about 27% of this vegetation is currently transformed and lost to cultivation and further transformed by invasive alien plants (*Acacia cyclops, A. saligna and Leptospermum laevigatum*).

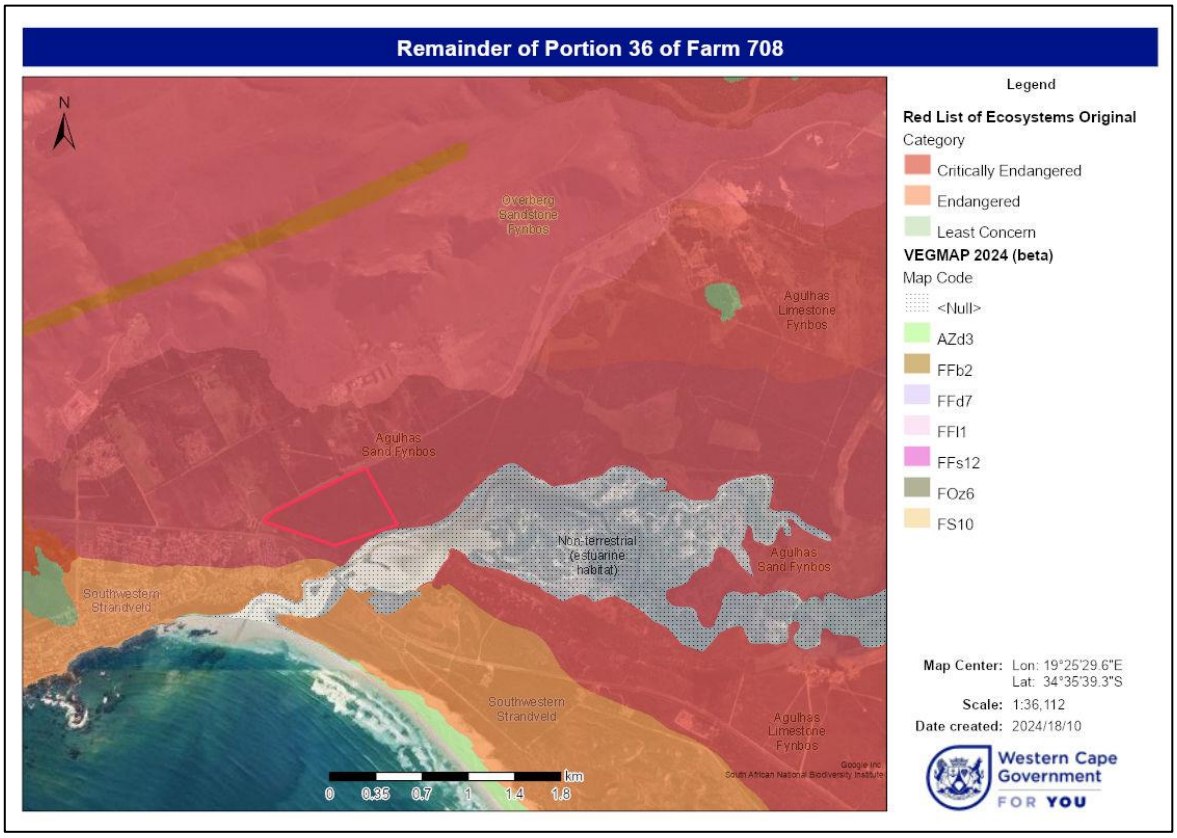

Figure 4: Agulhas Sand Fynbos (CR)

3. Specialist Investigation

3.1. Terrestrial Biodiversity / Botanical Assessment

The Terrestrial Biodiversity of the proposed development site has been thoroughly assessed to understand the ecological value and potential impacts of the project. This assessment was undertaken by Sean Privett. According to Privett (2024), the majority of the site is covered by Agulhas Sand Fynbos vegetation, as illustrated in **Figure 4** below. This was confirmed through an on-site survey, which showed that, apart from a fringe of vegetation along the estuary (on Farm 707), the site's vegetation composition varies due to differences in drainage and soil moisture conditions. Despite this variation, the vegetation is consistently classified as Agulhas Sand Fynbos.

The key species observed through the site survey include *Leucadendron coniferum* (Dune conebush), *Leucadendron linifolium, Erica plukenetii subsp. lineata* (Cat's Tail Erica), *Thamnochortus erectus* (Wyfieriet), *and Phylica dodii* (Edelweiss Hardleaf). The conservation value of this vegetation is considered high, both locally (Gansbaai area) and regionally (Agulhas Plain), making the area an important ecological resource.

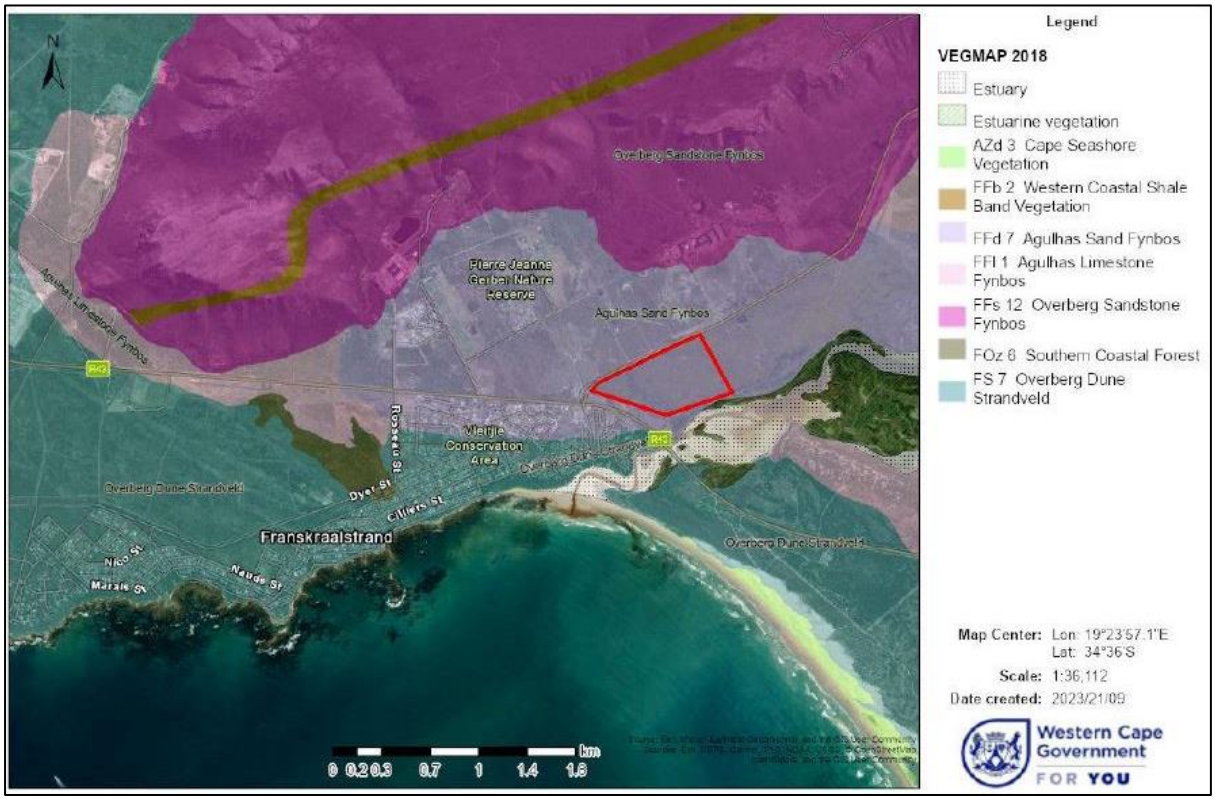

Figure 5: The vegetation on is the subject property, characterised by Agulhas sand fynbos. (source: Cape Farm Mapper).

Photo 1: Agulhas Sand Fynbos on the subject property (RE36/708) showing open, low shrubland interspersed with scattered *Acacia saligna* (taller trees in background) (source: Privett, 2024).

As per assessment findings, the biodiversity of the site is significantly threatened by invasive alien plants species. The most prominent invasive vegetation is *Acacia saligna*, which varies in density across the property, ranging from less than 5% in some areas to over 80% in other areas. Other invasive species recorded include *Acacia cyclops* (rooikrans), *Myoporum insulare* (manatoka), and *Cenchrus clandestine* (Kikuyu grass). Additionally, the site is impacted by other disturbances such as jeep tracks and small areas of rubble near the tar road (Privett, 2024).

Despite the alien vegetation infestation, Privett, (2024) highlighted that there is still good ecological connectivity across the property, particularly from the lagoon to the mountains to the north. Ecological connectivity and spatial components are vital aspects of effective conservation planning (De Villiers et al., 2005). The specialist further indicates that fragmentation of natural vegetation should be avoided wherever possible. While specific data on minimum patch sizes and required connectivity for fynbos is limited, it is generally accepted that small fragments (less than 100 ha) are at risk of species loss due to disrupted ecological processes, such as the loss of pollinators, increased edge effects, and further alien plant invasions (Privett, 2024).

One of the key concerns of the proposed development from a botanical and ecological standpoint is the potential for fragmentation. The assessment highlights that the development could isolate patches of natural vegetation from surrounding landscapes, which may negatively affect the long-term biodiversity of the area. Another significant concern raised is the exclusion of fire which is a crucial ecological process for maintaining the health of fynbos ecosystems. Based on botanical perspective without periodic burns, the structural integrity of the vegetation may degrade, leading to long-term ecological instability.

During the site survey, a range of indigenous species were identified, including notable shrubs and herbs such as *Leucadendron coniferum*, *Leucadendron linifolium*, *Leucadendron salignum*, and *Leucospermum prostratum* (Privett, 2024). Several graminoids and geophytes were also recorded, including *Briza maxima*, *Cynodon dactylon*, *Elegia tectorum*, and *Ficinia ramossisima*, as well as Aristea glauca, *Bobartia indica*, and *Brunsvigia orientalis*. Importantly, three Species of Conservation Concern were identified on the site: *Leucadendron coniferum*, *Leucadendron linifolium*, and *Leucospermum prostratum*, all of which are classified as vulnerable.

According to Privett (2024), the proposed development site faces challenges due to its proximity to properties across the tar road that have already undergone significant transformation and are heavily invaded by alien species, such as *Acacia saligna.* These properties, with their high levels of disturbance, have already begun to form barriers to ecological connectivity, affecting the ability of species to move freely between natural areas. A potential development on Portion 29 of Farm 708, located to the northwest, would, if approved, exacerbate this fragmentation, further limiting ecological connectivity. The biodiversity study for this adjacent property recommended the creation of an ecological corridor to mitigate these effects and maintain the connectivity necessary for ecosystem health. While the status of that particular development remains uncertain, it highlights the cumulative impacts that development across the region has on the local ecosystem.

Despite these challenges, the landscape-scale ecological processes remain largely functional. This means that, with appropriate planning, future developments can still incorporate natural corridors that promote species movement and preserve ecological balance. The participation of surrounding landowners is crucial to ensure that these natural corridors are maintained across property boundaries, fostering regional ecological connectivity and preventing further fragmentation (Privett, 2024). The proposed development site itself is characterized by the presence of critically endangered Agulhas Sand Fynbos, a vegetation type recognized for its high biodiversity value. Although much of the area is currently in poor condition due to the invasion of *Acacia saligna* (port Jackson), the site still retains considerable conservation value. According to Privett (2024), the removal of these alien species would restore the site's ecological integrity, creating opportunities for significant biodiversity gains through rehabilitation efforts. Restoration of this fynbos habitat would contribute to regional conservation targets and enhance the ecological function of the site.

As identified in the Western Cape Biodiversity Spatial Plan (WCBSP, 2017), the site falls within a Critical Biodiversity Area (CBA), which is an area of high conservation importance. The CBA guidelines recommend that such areas should be maintained in a near-natural state to meet biodiversity conservation targets (WCBSP, 2017). Moreover, degraded areas, like portions of the proposed development site, should be rehabilitated to restore their ecological function. In line with these guidelines, only low-impact, biodiversity-sensitive land uses are deemed appropriate for such areas.

The proposed low-density eco-residential development is designed with these conservation principles in mind. By limiting the footprint of the development and incorporating environmentally sensitive designs, the project minimises disturbance to the landscape. Features such as a gazebo and a path to the water’s edge have been carefully planned to avoid significant impacts on sensitive areas, including the estuarine-edge flora like *Typha capensis* (bulrush) **Photo 2**, which is important for maintaining the health of the local estuarine ecosystem. In addition to being ecologically sensitive, the proposed development aligns with regional planning objectives by promoting sustainable land use that will incorporate larger ecological spaces. The restoration of the degraded

fynbos and the removal of invasive species will contribute positively to biodiversity conservation, helping to offset some of the cumulative impacts from previous developments in the area. Furthermore, the low-density nature of the project ensures that human activity will be carefully managed to maintain the ecological value.

Photo 2: *Typha capensis* (bulrush) dominates on the edge of the estuary. (source; Privett, 2024)

Photo 3&4. Areas heavily infested (>80% cover) with *Acacia saligna* (Port jackson). (source: Privett, 2024).

Two development alternatives have been considered for the site. The first alternative would have a significant negative impact on the site's ecological corridors, causing severe fragmentation and disrupting ecological connectivity. The second alternative (the preferred option) has been revised to consider ecological corridors based on specialist' findings. This option includes a southern corridor with a minimum width of 50 meters, aligning with the proposed ecological corridor on Portion 29 of Farm 708, and a northern corridor with a minimum width of 40 meters. Additional north-south corridors have been incorporated into the site design, linking to the boundary corridors, thereby minimising the potential for habitat fragmentation. The preferred development alternative has been designed to maintain ecological corridors, ensuring minimal disruption to connectivity and preserving important landscape-scale ecological processes. The site offers significant restoration potential, as the removal of invasive species would allow for the recovery of natural fynbos vegetation.

3.2. Faunal Assessment

Based on the findings from the Site Sensitivity Verification Report, the site was initially categorized as highly sensitive in the Animal Species theme. **Table 2** below outlines the possible species associated with theme.

Table 2: Possible sensitivity features of animal species provided in the screening tool report

Sensitivity	Feature(s)
High	Aves-Circus maurus
High	Aves-Circus ranivorus
High	Aves-Hydroprogne caspia
High	Aves-Pelecanus onocrotalus
Medium	Aves-Afrotis afra
Medium	Aves-Sarothrura affinis
Medium	Aves-Neotis denhami
Medium	Aves-Turnix hottentottus
Medium	Reptilia-Bitis armata
Medium	Invertebrate-Brinckiella aptera
Medium	Invertebrate-Aneuryphymus montanus

The Faunal Assessment was conducted in accordance with the specific requirements for investigating the potential presence of animal species on-site, particularly those of conservation concern. A site survey was conducted using a combination of meandering visual and acoustic surveys, along with point surveys. These surveys were performed across the proposed development areas, at the edge of the estuary, and along its banks to assess the presence of animal species in the surrounding areas (**Figure 6**). Additionally, territorial call playbacks were utilized to detect the presence of the striped flufftail. A point bird survey was also conducted from the bridge overlooking the Uilenkraals Estuary, which lies adjacent to the property.

For data analysis, the study employed tools such as iNaturalist and the Global Natural Biodiversity Information Framework, along with desktop studies, field guides, and relevant literature. The primary objectives of the site visit were to confirm the following:

- Whether any Species of Conservation Concern (SCC) were present in the proposed development area;
- Whether the site would serve as a corridor for any SCC identified in the screening tool;
- Whether the vegetation (both indigenous and planted) could potentially support undetected populations of SCC;
- If there were any SCC present that had not been flagged in the initial screening tool report.

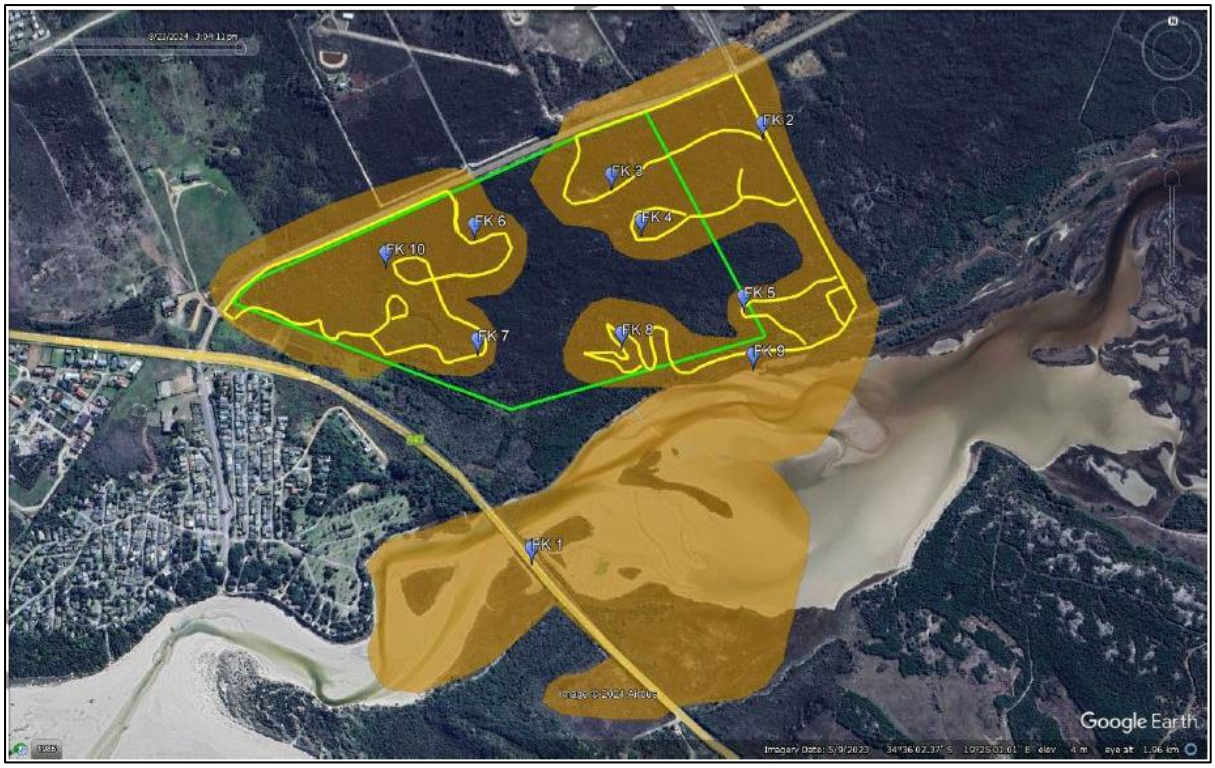

Figure 6: Illustrates the surveyed areas, with yellow lines marking the routes walked and an orange polygon showing areas visible or exposed to call-ups (source; Venter, 2024).

According to Venter (2024), the property is adjacent to the Uilenkraals Estuary, located along its southern boundary. The estuary faces significant cumulative pressure and is classified as highly important in terms of biodiversity, with a high priority level on both provincial and national scales. Its importance as a fish nursery is rated medium. As per faunal assessment finding, the key habitats for fauna identified during site survey include sand and mudbanks, salt marshes, islands, and open water areas, while the northern banks provide foraging habitats for mammal species. Despite the site's potential sensitivity, the faunal assessment recorded only minimal bird and mammal activity (**Table 3**), indicating limited faunal presence within the proposed development footprint.

Table 3: Animal species observed at sites FK2;3;4;5;6;7 and 10 (**source**: Venter, 2024)

Group	Species	Notes	Status
Birds:	Southern Boubou	Site FK2	Least Concern
	Cape bulbul	Site FK2, 3, 6	Least Concern
	Forked tailed drongo	Site FK7	Least Concern
	Greater Double-collared Sunbird *Cinnyris afer*	FK2, 4	Least Concern
	Hadeda ibis, *Bostrychia hagedash*	Flying, FK5	Least Concern

	Cape turtle dove, *Streptopelia capicola*	FK4 (vocalized)	Least Concern
	Karoo Prinia *Prinia maculosa*	FK 7 and 10	Least Concern
	Streaky-headed Seedeater *Crithagra gularis*	FK 7 and 10	Least Concern
	Southern Double-collared Sunbird *Cinnyris chalybeus*	FK 2,4, 7	Least Concern
	Malachite Sunbird *Nectarinia famosa*	FK10	Least Concern
	Bokmakierie *Telophorus zeylonus*	FK7	Least Concern
Amphibians	Southern caco, *Cacosternum australis*	Calling on site FK2,7	Least Concern
	Clicking stream frog, *Strongylopus grayii*	Calling on site	Least Concern
	Cape river frog, *Amietia fuscigula*	Observed (tadpoles)	Least concern
Mammals	Cape porcupine, *Hystrix africaeastrali*	Scat observed	Least Concern
	Cape dune mole-rat, *Bathyergus suillus*	Fossorial activity	Least Concern

The property is currently in a transformed state due to the extensive infestation of *Acacia saligna*. As confirmed in the Terrestrial Biodiversity Assessment, this invasive species has severely impacted the site's natural Fynbos vegetation, reduced the structural integrity of the ecosystem and led to the degradation of habitat for faunal species. The dense infestation of alien vegetation also limited access to certain areas during the faunal survey, further complicating the detection of SCC, such as the Western leopard toad *Sclerophrys pantherine*. The absence of SCC during the site survey is likely influenced by significant in alien plant infestations, specifically *Acacia saligna* (Port Jackson), which has severely altered the natural Fynbos ecosystem and hindered faunal diversity and movement.

Alternative Two, the preferred layout, has been identified as a viable development option. This layout preserves connectivity within the site by maintaining abundant open spaces between building footprints, thereby facilitating the movement of animal species. The design ensures that the ecological corridors necessary for faunal species are maintained. Furthermore, appropriate mitigation measures will be implemented to enhance habitat functionality and support faunal movement.

3.3. Aquatic Biodiversity Assessment

The development area has been identified as significantly disturbed due to the prevalence of invasive alien species, as noted by van Zyl & Morton (2023). While a seep wetland has been delineated on-site, its condition is considered poor, exhibiting extensive transformation due to dense stands of invasive vegetation and other

anthropogenic factors, including land clearing, stormwater inundation, and infilling activities. Despite the high degree of disturbance and transformation of the wetland, it is categorized as having "Very High" aquatic sensitivity. This classification underscores the importance of the hydrological connectivity between the wetland and the adjacent Uilkraals Estuary.

The evaluation site is situated within the Breede-Gouritz Water Management Area, specifically in quaternary catchment G40M, which is classified as a Phase 2 Freshwater Ecosystem Priority Area (FEPA) (CSIR, 2011). In terms of regional context, the site is within the Southern Coastal Belt as identified by the Level 1 Department of Water and Sanitation Ecoregions.

Analysis of the National Wetland Map (NWM5) and the National Freshwater Ecosystem Priority Areas (NFEPA) indicates that most of the site falls within the estuarine functional zone of the Uilkraals Estuary (SANBI, 2018; CSIR, 2011). Furthermore, the NWM5 documentation indicates the presence of a floodplain wetland on-site. The perennial Boesmans River is located approximately 30 meters to the south and southeast, according to the Department of Rural Development and Land Reform (DRDLR) National Geographic Information (NGI) river line vector data. Within a 500-meter radius of the site, there are additional watercourses, including two Channelled Valley Bottom (CVB) wetlands identified by NWM5 and NFEPA to the north, as well as three non-perennial streams identified by the NGI.

The Western Cape Biodiversity Spatial Plan (WCBSP) dataset reveals significant biodiversity areas throughout the Western Cape, including Protected Areas (PAs), Critical Biodiversity Areas (CBA1 and CBA2), Ecological Support Areas (ESA1 and ESA2), and Other Natural Areas (ONAs). The WCBSP indicates the presence of an aquatic CBA1 (estuary) within the study area, with additional aquatic CBA1 (river and estuary) areas located south of the site, along with a Protected Area (Uilkraalsmond Nature Reserve) within the regulated 500-meter proximity. This information emphasizes the site's considerable biological value for biodiversity conservation and ecosystem function maintenance. It is important to note that the wetland does not contain peat; however, the soils exhibit high carbon content. Although the wetland is degraded, it is unlikely to make a significant contribution to climate-change resilience. Consequently, construction activities within the wetland are not expected to lead to significant carbon emissions, negating the need for further assessment of potential climate impacts.

The majority of the site is characterized as highly degraded, predominantly featuring dense stands of alien invasive *Acacia saligna* (Port Jackson), which outcompetes and replaces indigenous vegetation. Other invasive species such as *Myoporum insulare* (Common Boobialla) and Cenchrus clandestinum (Kikuyu grass) were also identified on-site. In the western section of the site, a slight depressional area contains indigenous wetland obligate and facultative plant species, including *Hellmuthia membranaceae* (Helmet Sedge), *Elegia tectorum* (Cape Thatching Reed), *Typha capensis* (Cape Bulrush), and *Schoenus nigrica* (Black Bog-Rush).

Hydrological features were evident across the site, with observable instances of open water, small channels, shallow streams, and pools, likely resulting from stormwater runoff from adjacent roads and associated stormwater infrastructure. Indicators of hydromorphic soil were employed to delineate the wetland extent, including mottling, gleying, saturation, leaching, and organic streaking, all within the upper 50 cm, alongside the presence of hydrophytic vegetation communities.

The site was predominantly classified as a seep wetland, except for a small terrestrial section in the northern area. The Uilkraals Estuary and its associated estuarine functional zone border the site to the south-southeast.

The Present Ecological State (PES) of the seep wetland was evaluated using the WET-Health Version 2.0 assessment method outlined by Macfarlane et al. (2020), which encompasses four assessment units: hydrology, geomorphology, water quality, and vegetation. This assessment yielded an overall PES score of category E, indicating that the wetland is in a seriously modified state. Key findings from the assessment are summarized below.

Hydrology

- → The wetland is primarily sustained by rainfall and interflow. However, an upslope road intercepts flow, while associated stormwater infrastructure alters the natural hydrological regime, concentrating water flow. Several dirt tracks within the wetland area also affect flow dynamics, although to a lesser degree than the road and stormwater systems. During storm events, peak flows lead to inundation of the western portion of the wetland.
- → The dense stands of invasive species, particularly Port Jackson, further alter flow regimes within the wetland.

Vegetation

- → Although a few indigenous hydrophytic species were noted, the predominant vegetation within the seep wetland consists of dense stands of Port Jackson and other alien species. No conservation-worthy species were identified.

Geomorphology

- → The geomorphology of the delineated wetland appears largely intact, with a slight depressional area located in the western section that may have resulted from human activity.

Water Quality

- → Runoff entering the wetland via the R43 stormwater infrastructure is likely contaminated due to pollutants from surrounding land uses, such as oils, fuels, and rubber from vehicle tires.

The wetland's contribution to ecosystem services was assessed using the WET-Health Version 2 methodology, which examines sixteen potential services that provide both direct and indirect benefits to humans. The importance scores for the wetland fell within the 'Very Low' to 'Moderately Low' range, indicating negligible to moderate contributions to ecosystem services, with toxicant assimilation and biodiversity maintenance receiving moderate importance scores.

Key findings regarding ecosystem service contributions are summarized below:

- → The seep wetland experiences moderate stormwater flow; however, its location on a hillslope and the dominance of Port Jackson limits its flood attenuation capabilities.
- → While seep wetlands can regulate streamflow, the disruption from road construction and dense invasive vegetation precludes significant streamflow regulation services.
- → The wetland exhibits limited sediment trapping capacity, which is hindered by sparse vegetation.
- → Erosion control provided by the wetland is moderately low due to its steep location and the nature of upslope runoff, with the surrounding area being only slightly disturbed.
- → The wetland's capacity for nutrient assimilation is minimal, owing to a lack of dense hydrophytic vegetation.
- → High demand exists for toxicant assimilation due to stormwater inputs, yet invasive species limit the prevalence of indigenous wetland flora that could fulfill this role.
- → The wetland scores low for carbon storage potential due to minimal organic sediment content, indicating a reduced ability to provide this service.
- → The wetland received a moderate score for biodiversity maintenance due to its link to the NFEPA estuary and its historical status as an endangered wetland type, but current conditions limit this service's provision.
- → No direct human use of wetland water was observed during the assessment, and the seasonal nature of the wetland alongside poor water quality suggests a lack of direct dependence.

Although the wetland has the potential to provide significant firewood due to Port Jackson, demand for this service is limited due to private ownership. Limited palatable restios and grasses exist for livestock, and while cultivation is feasible, its location diminishes the importance of this ecosystem service. Culturally, the wetland offers no significant ecosystem services, as it is severely degraded and situated in a security-sensitive area prone to abalone poaching. Consequently, both the demand for and supply of cultural services are negligible.

The Present Ecological State (PES) of the Uilkraals Estuary has been classified based on the most recent comprehensive evaluation from the National Biodiversity Assessment 2019 (Van Niekerk et al., 2019), designating the estuary with a PES score of D, indicating a largely modified system. The Uilkraals Estuary has experienced alterations in its tidal regime, salinity gradient, mixing processes, and connectivity, primarily due to land use changes within the surrounding catchment. Historically open, the estuary has become closed owing to excessive flow modifications, including abstraction and dam presence upstream.

The National Biodiversity Assessment highlights the need for restoration of baseflows in the Uilkraals Estuary to maintain a permanently open mouth. Accumulated sediment in the system may require removal to restore tidal flows to pre-2010 conditions and ensure a continuous connection to the ocean. The potential aquatic impacts identified in Section 7 of the aquatic biodiversity assessment were assessed both prior to and following the application of mitigation measures. Four of the five post-mitigation impact scores were classified as "Very Low," with wetland loss receiving the highest significance score, categorized as 'Medium.' The 'no-go' scenario also yielded a "Very Low" impact significance, as it would perpetuate existing impacts on both the seep wetland and Uilkraals Estuary, with no indirect impacts noted.

Utilizing the Risk Assessment Matrix prescribed by GN 509 of 2016 on the preliminary layout resulted in the following findings:

Risks associated with Impacts 2-5 were classified as Low Risk, primarily due to:

- → The impacts affecting a historically severely impacted remnant seep wetland.
- → A buffer of 75 meters surrounding the Uilkraals Estuary that mitigates significant risks, especially with recommended guidelines for wetland management and conservation, along with preservation of indigenous vegetation.
- → The absence of species of conservation concern indicates low ecological risk.
- → The potential for mitigation measures to reduce risks associated with current disturbances highlights a proactive approach to safeguarding both aquatic ecosystems

In conclusion, the Aquatic Assessment found that a Moderate risk rating will be applied to the proposal and that that a Water Use Licence will be required for this project. It is furthermore highlighted that a suitable Wetland Offset will be required for the project in terms of the DHSWS ‘no net loss’ policy (Macfarlane et al, 2014). A detailed wetland offset, rehabilitation, and management plan is likely to be required to investigate the viability of rehabilitating a portion of the remaining seep wetland onsite to offset the wetland loss due to the proposed development.

4. BIODIVERSITY OFFSET POLICIES AND GUIDELINES

4.1 National Biodiversity Offset Guidelines

The National Biodiversity Offset Guideline has been published in terms of section 24J of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and must therefore be read together with the provisions of NEMA, including the national environmental management principles in section 2 of NEMA, as well as the Environmental Impact Assessment Regulations, 2014 (EIA Regulations).

The National Biodiversity Offset Guidelines must be used to determine the need for and the design of Biodiversity Offsets, as required. In this regard, a Biodiversity Offset is required if the residual impact after following the mitigation hierarchy is of medium significance or higher. The significance ratings should be determined in the specialist assessments.

The concept of Biodiversity Offsets has emerged as a critical tool in South Africa's approach to environmental management, especially in the context of sustainable development and conservation. Introduced over the past decade, Biodiversity Offsets aim to balance the impacts of development on natural ecosystems by providing a mechanism to compensate for biodiversity loss. The urgency for this approach arises from the increasing recognition of the need to protect natural environments that are increasingly threatened by contemporary development patterns.

According to SANBI (2019), South Africa is renowned for its exceptional biodiversity, characterized by high levels of endemism. The country is home to a remarkable array of plant and animal species found nowhere else on Earth, with nearly two-thirds of its plant species being endemic, largely linked to the unique Cape Floristic Region. This region, along with the country’s three recognized biodiversity hotspots, underscores South Africa's significance in global biodiversity conservation efforts (SANBI, 2019). Given this context, the implementation of biodiversity offsets becomes essential to mitigate the impacts of land-use changes and other anthropogenic activities that threaten these unique ecosystems.

According to the National Biodiversity Offset Guideline (2018), biodiversity is foundational not only to the health and well-being of people but also to economic activity and socio-economic upliftment. Biodiversity supports essential ecosystem services, such as clean water, air quality, food production, and climate regulation, which are crucial for human survival and development. The guidelines emphasize that maintaining biodiversity and ecological integrity is vital for sustainable economic growth and social equity.

Furthermore, the guideline highlights that biodiversity and ecological infrastructure elements play a significant role in fulfilling national development priorities. By integrating biodiversity considerations into development planning, South Africa can ensure that economic growth does not come at the expense of its unique natural heritage. The framework encourages developers to adopt a proactive approach to biodiversity management, involving rigorous assessments of potential impacts and the implementation of effective offset strategies when impacts are unavoidable.

Biodiversity Offsets serve as a mechanism to achieve “no net loss” of biodiversity by compensating for habitat destruction and species loss through the restoration, enhancement, or protection of biodiversity elsewhere. This can involve activities such as habitat restoration, the establishment of conservation areas, or the funding of biodiversity conservation initiatives that benefit the affected ecosystems.

4.2. Overview of Western Cape Biodiversity Offset Guidelines

The Western Cape Province has taken a leading role in biodiversity conservation by developing its own biodiversity offset schemes and guidelines, one of only two provinces in South Africa to do so, with the initiative

launched in 2005 (Jenner & Balmforth, 2015). This progressive approach underscores the province's dedication to preserving its exceptional biodiversity, particularly its rich and unique flora, much of which exists outside formally protected areas. The region is renowned for its exceptional plant diversity, being part of the Cape Floristic Region, a global biodiversity hotspot that contains numerous endemic species. These species are not only unique to the Western Cape but also face threats from habitat loss, making the province a critical area for biodiversity conservation. However, the biodiversity in the province faces considerable threats due to extensive land-use practices. Agriculture, urban expansion, and mining activities have led to significant habitat loss and ecosystem degradation. According to the Western Cape Biodiversity Spatial Plan (2017), land conversion for these purposes has severely impacted many of the province's ecosystems, reducing their resilience and threatening the survival of numerous species, particularly those within ecosystems that are not formally protected. The Western Cape Biodiversity Spatial Plan (2017) highlights that many of these species and ecosystems are now confined to small, fragmented patches of natural habitat, which exacerbates their vulnerability.

To address these challenges, the Western Cape Biodiversity Offset Guidelines were established. These guidelines provide a structured framework for compensating biodiversity losses resulting from development activities, particularly when such losses are unavoidable despite efforts to prevent or mitigate environmental impacts. The objective of the biodiversity offsetting scheme is to ensure that development can occur in a sustainable manner while protecting critical biodiversity areas (CBAs) and ecological support areas (ESAs), which are essential for maintaining ecological processes and species movement across the landscape. The guidelines are rooted in the principle of no net loss of biodiversity, meaning that any residual impacts on biodiversity that cannot be avoided, minimised, or rehabilitated must be offset by conservation measures elsewhere. According to the Western Cape Biodiversity Offset Guidelines, offsets are only considered when all feasible measures to avoid and minimise impacts have been exhausted, and they should be implemented in areas of comparable biodiversity value, focusing on securing or restoring habitat that is of equal or greater conservation importance. The goal is to offset impacts in a way that not only compensates for the loss of biodiversity but contributes to the overall conservation objectives for the province.

WCBSP (2017) also emphasizes the importance of offsetting in areas that support critically endangered ecosystems, such as those found within the Western Cape, including lowland fynbos, renosterveld, and coastal dune systems. These ecosystems have experienced significant degradation and require urgent conservation action. The biodiversity offset guidelines require developers to account for the irreplaceability of these ecosystems and aim to ensure that offsetting contributes to the long-term protection and restoration of these vital areas.

Moreover, the guidelines encourage offsets to support broader ecological connectivity by linking existing protected areas or creating corridors that facilitate species migration and adaptation in response to environmental changes, such as climate change. This is particularly important for species in fragmented habitats that rely on connectivity for their survival.

The Western Cape's proactive use of biodiversity offsetting as part of its conservation strategy is crucial in balancing the pressures of development with the need to preserve the region's unique ecological heritage. The guidelines emphasize that offsets should not be seen as a license to destroy biodiversity but rather as a last resort measure to ensure that biodiversity conservation is not sacrificed for economic development. By integrating biodiversity offsets into planning processes, the province has set a standard for sustainable development that considers both human needs and environmental integrity.

The Western Cape Biodiversity Offset Guidelines represent a vital tool in the effort to ensure the conservation of the province's biodiversity while allowing for responsible and sustainable development. These guidelines contribute significantly to the protection of threatened ecosystems, the restoration of degraded areas, and the maintenance of ecological processes critical for the long-term survival of the region's flora and fauna. The adoption of these guidelines is a testament to the Western Cape's commitment to safeguarding its natural resources for future generations while fostering sustainable economic growth.

5. Biodiversity Offsetting Process

Typically, the Biodiversity Offsetting Process is only required if a Biodiversity Offset is applicable to the proposed development. The following steps are involved in the Biodivserity Offsetting Process:

- → Identifying the need for Biodiversity Offset
- → Determining the requirements of a Biodiversity Offset and Compilation of a Biodivserity Offset Report
- → Preparing
- → Preparing biodiversity offset conditions for an EA.
- → Selecting the biodiversity offset site.
- → Securing the biodiversity offset site.
- → Preparing a Biodiversity Offset Management Plan.
- → Concluding a Biodiversity Offset Implementation Agreement.

5.1. Need for Biodiversity Offset

Determining the need for a Biodivserity Offset most often falls within the Environmental Authorisation process conducted in terms of the National Environmental Management Act (Act 107 of 1998).

The requirement for a Biodiversity Offset is determined after specialist and EAP input, when the proposed activities and associated impacts thereof, are found to have **Residual Negative impact on biodiversity of medium or high** significance after mitigation.

What is a residual impact?

> A residual biodiversity impact is the impact of an activity, or activities, on biodiversity, that remains after all efforts have been made to avoid and minimise the impacts of the activity, or activities, and to rehabilitate the affected area to the fullest extent possible

When is a Biodivserity Offset required?

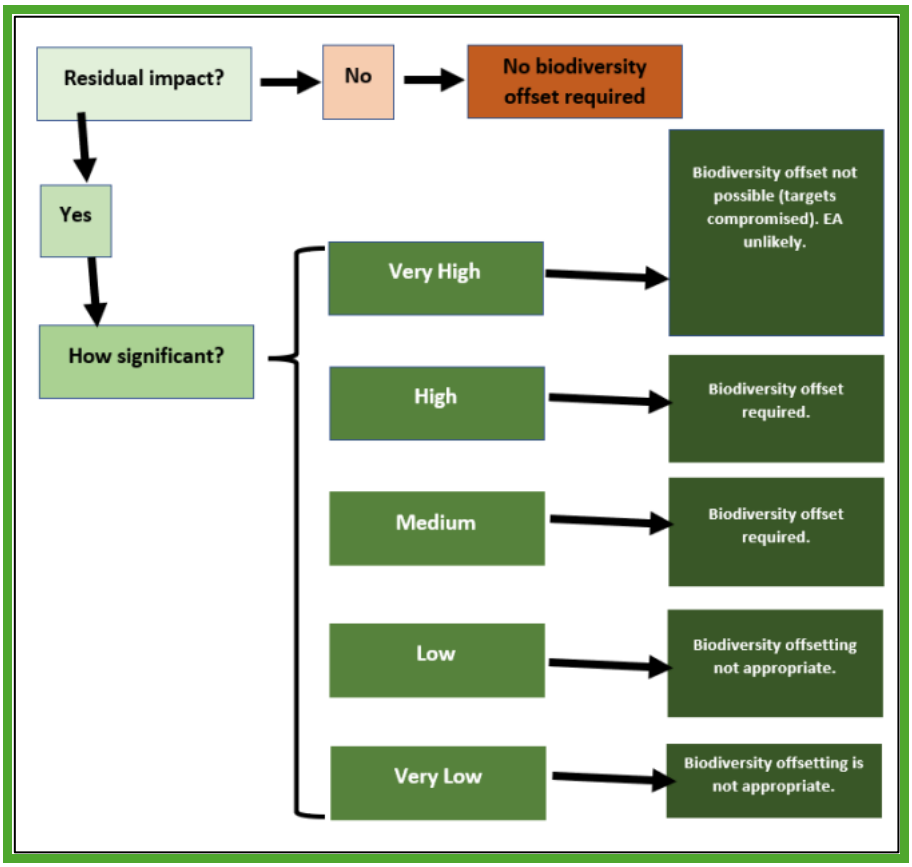

Figure 7. Flow diagram: When is a Biodiversity Offset required? Source: (National Environmental Management: National Biodiversity Offset Guidelines 2023)

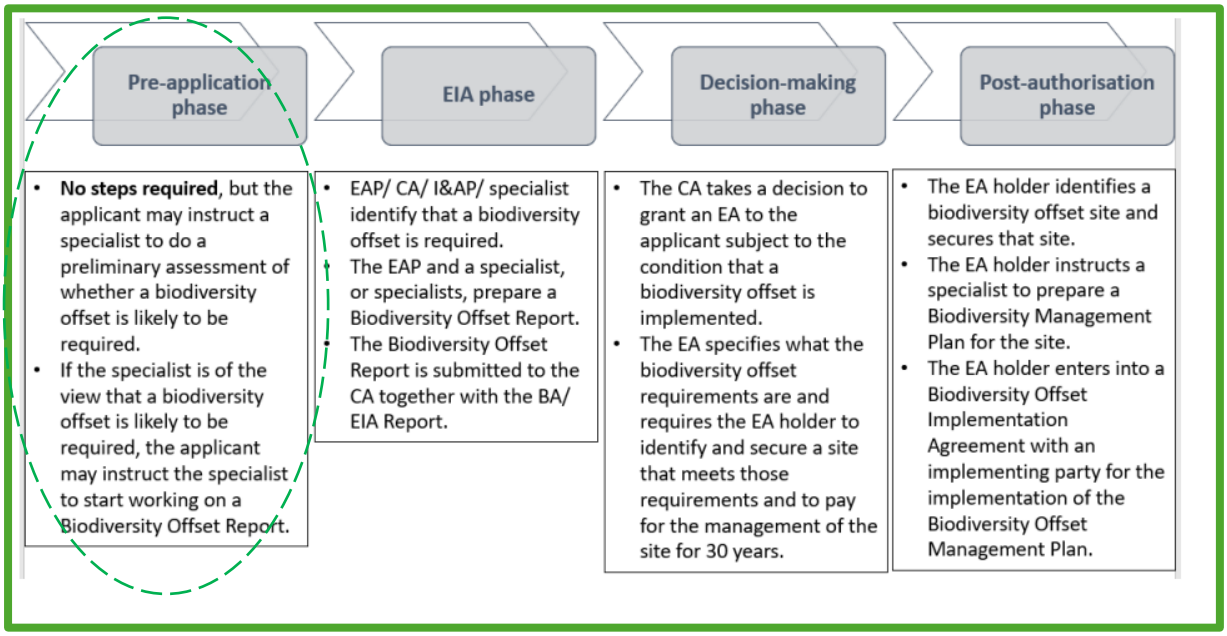

Figure 8. Overview of steps involved in the Biodiversity Offsetting process (Source: National Environmental Management: National Biodiversity Offset Guidelines 2023)

5.2. Mitigation hierarchy

According to EIAMS, (2014) mitigation hierarchy is a structured approach used in Environmental Impact Assessments (EIAs) to systematically manage and minimise the negative effects of development projects on natural ecosystems. It is recognised as a best practice, particularly for promoting biodiversity and ecosystem, it serves as a decision-making framework that helps mitigate impacts on ecosystems while promoting sustainable development. The application of the mitigation hierarchy is essential for reducing the cumulative impacts of development on biodiversity, ensuring that unavoidable impacts are compensated for, when necessary, often through the use of Biodiversity Offsets.

On a National level, the application of the mitigation hierarchy is mandated by the National Environmental Management Act (NEMA) and supported by the National Biodiversity Offset Regulations. The hierarchy aligns with the principles of sustainable development by emphasizing the avoidance of impacts, reducing the severity of those impacts that cannot be avoided, rehabilitating ecosystems where possible, and finally offsetting residual impacts to ensure no net loss of biodiversity. This is critical in managing developments that could otherwise lead to irreversible biodiversity loss, particularly in areas of high conservation value such as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), as outlined by the SANBI Western Cape Biodiversity Spatial Plan (WCBSP, 2017).

The mitigation hierarchy consists of four sequential steps, each designed to progressively reduce the ecological footprint of development on biodiversity:

Avoidance

The first and most important step in the mitigation hierarchy is to avoid impacts altogether by selecting development sites or designing projects in a way that avoids harm to important biodiversity areas. For example, siting a project outside a sensitive habitat or designing infrastructure that bypasses key ecological corridors can prevent negative impacts from occurring. This step is particularly relevant to areas that are classified as CBAs or contain endangered vegetation types, such as the Agulhas Sand Fynbos found in the Western Cape. Avoidance is emphasized as the most cost-effective and environmentally sustainable form of mitigation, as it prevents the need for more intensive interventions later in the process.

Minimisation

If complete avoidance is not feasible, the next step is to minimise the severity of the impact through careful project design and implementation strategies. This could involve reducing the project footprint, modifying construction methods, or scheduling activities to minimise disturbance to wildlife. For example, in areas where development may disturb sensitive species or ecosystems, measures such as restricting construction during breeding seasons or creating buffer zones around sensitive habitats can significantly reduce the ecological impact. According to SANBI's "Guidelines for Biodiversity Management in Environmental Assessment" (2016), minimising disturbances also extends to the careful planning of infrastructure like roads and stormwater management systems, ensuring they do not disrupt natural hydrological processes or degrade habitat connectivity.

Rehabilitation/Restoration

Where impacts cannot be fully avoided or minimised, the next priority is to rehabilitate or restore ecosystems that have been degraded or disturbed by the development. This may include the removal of invasive species, re-

vegetation with indigenous flora, or the restoration of natural hydrological systems. In the case of the proposed development in Gansbaai, the removal of *Acacia saligna* and the restoration of native fynbos would be an essential part of mitigating impacts on the critically endangered Agulhas Sand Fynbos. Rehabilitation is particularly important in areas that fall within degraded CBAs, where restoring ecological integrity can help meet regional biodiversity targets (WCBSP, 2017).

Offset

The final step, to be used only as a last resort, is the use of biodiversity offsets to compensate for any residual impacts that cannot be avoided, minimised, or rehabilitated. Offsets involve protecting or enhancing biodiversity in another location to ensure no net loss of biodiversity. The Western Cape Guidelines on Biodiversity Offsets (2015) highlight that offsets should target areas of equivalent conservation value and must contribute to national and provincial biodiversity priorities. They should also be implemented in perpetuity to ensure long-term conservation gains. For instance, if a development project results in the unavoidable loss of endangered vegetation, a biodiversity offset could involve securing and rehabilitating an area of the same vegetation type elsewhere. However, offsets should not be seen as a substitute for early mitigation measures and must only be considered after all efforts to avoid and minimise impacts have been exhausted.

6. BIODIVERSITY OFFSET – APPLICABILITY TO THE FRANSKRAAL BEACH ESTATE

6.1. Need and Desirability of the Proposed Project

The need and desirability of the proposed development to create the Franskraal Beach Estate, are central to evaluating its relevance and appropriateness within the local context. This assessment seeks to establish the fundamental factors that justify the development, demonstrating its alignment with community needs, environmental sustainability, and broader regional planning frameworks. By examining the demand for additional residential accommodations, alongside the commitment to sustainable practices, the project's potential benefits to both the community and the surrounding environment become evident. In recent years, the Overstrand Municipality has experienced growing demand for residential development, particularly for eco-friendly housing solutions. This demand has been driven by several factors, including the municipality's increasing appeal as a lifestyle destination that balances natural beauty with well-established tourism and infrastructure. The area's unique natural environment, including its biodiversity hotspots and coastal ecosystems, has made it a prime location for those seeking a sustainable, nature-centric lifestyle.

The proposed eco-residential development directly addresses this growing demand by providing additional housing in a manner that aligns with principles of sustainable living. The Overstrand Municipality's Spatial Development Framework (SDF) identifies the area as a priority area for tourism and sustainable residential development, emphasizing the importance of balancing growth with environmental conservation.

This project supports the municipality's vision by providing housing that meets the needs of a growing population while incorporating eco-sensitive design, promoting biodiversity conservation, and supporting sustainable practices. The development will not only meet housing demand but also contribute to the local economy. Eco-friendly developments attract both permanent residents and eco-tourists, boosting local businesses and creating opportunities for employment, particularly in sectors such as construction, hospitality, and environmental management. By fostering a development that respects environmental limits and prioritizes ecological integrity, the project will support the long-term sustainability of Gansbaai as both a residential and tourist destination.

6.2. Application of the Mitigation Hierarchy

Specific measures have been integrated into the project planning and design to reduce the significance of the identified biodiversity impacts. These measures are designed to avoid impacts, minimise harm and restore habitats, before pursuing any potential Biodiversity Offsets. The following sections outline these actions, incorporating best practices to ensure sustainable development while maintaining ecological integrity.

6.2.1 Avoidance of impacts

While the proposed development emphasises sustainable practices, complete avoidance of the Agulhas Sand Fynbos is not possible due to the project's specific location and design requirements. The site is situated within a Critical Biodiversity Area (CBA1 and CBA2). The specialist team have however acknowledged the prevalence of invasive alien vegetation on the site, which has had and continues to have significant detrimental effects on local biodiversity, wetlands and ecosystem functioning on site and within the broader landscape. Additionally, the site has been identified as contributing a vital role to ecological connectivity, serving as a corridor linking the mountains to the Uilenkraals Estuary. Although the site features a transformed seep wetland, Aquatic Biodiversity assessments have confirmed its significance in maintaining hydrological connectivity with the adjacent estuary.

Given the need for eco-residential housing and infrastructure, complete avoidance of sensitive vegetation types is not possible. The initial site development plan (Alternative 1), which included 55 residential erven, posed a significant risk of fragmenting ecological corridors. However, after specialist input, the layout was revised (Alternative 2) to 52 residential erven, incorporating larger ecological corridors to reduce vegetation clearance and enhance habitat connectivity. This preferred layout avoids development on the identified seep wetland on-site and minimises ecological impacts while fulfilling housing needs.

6.2.2. Minimisation of impacts

While complete avoidance of all identified sensitive areas is not possible, the preferred layout (Alternative two) represents a responsible approach to minimising environmental impacts, maximising ecological benefits whilst still meeting the project's objectives. Following the recommendations of specialist assessments conducted on-site, the development proposal has undergone significant revisions to minimise ecological impacts. The number of residential erven was reduced, resulting in a corresponding decrease in the development footprint from 7.5 ha to the current 6 ha. This reduction not only lessens the overall impact on the Agulhas Sand Fynbos but also allocates larger areas for open spaces and functional ecological corridors. As noted by the Faunal specialist, the preferred layout provides abundant ecological spaces allowing for the inclusion of ecological corridors which in this case are desirable from the faunal standpoint. These corridors are essential for maintaining biodiversity and facilitating the movement of species between the mountain and coast, thereby reducing habitat fragmentation. In addition to this, the site was also identified to provide foraging habitat for other species of birds and mammal, however, none of the species of concern were identified during the site visit (Venter, 2024).

The proposed development will minimal excavation impacts on the ground through the use ofmicro pile foundations. The types of foundations also minimise the disruption of hydrological patterns and allow continual flow of subsurface water to the estuary.

6.2.3. Rehabilitations measures

To further enhance ecological integrity, the project incorporates comprehensive rehabilitation and resoration actions as informed by specialist and EAP Team. The most critical mitigation measure focuses on restoring degraded areas of Agulhas Sand Fynbos through the removal of invasive alien vegetation. By eliminating these invasive species, the project will enhance the overall ecological value of the site and vastly improve the habitat for fauna. As noted by Venter (2024), if the development is executed responsibly by incorporating post-

development restoration and ongoing system maintenance, there is potential for positive outcomes, including improvements in animal occurrence, diversity, and density.

The wetlands on site have been delineated by the Aquatic Specialist, the condition of these Aquatic features is poor and highly transformed due to predominance of alien vegetation and storm water inundation and infilling. Rehabilitation efforts not only contribute to improved Aquatic features and wetland habitats on site but also the conservation of the Agulhas Sand Fynbos creating resilient ecosystems, functional ecological corridors and, support a balanced coexistence between development and biodiversity.

6.3. Residual impacts of the proposed development

Biodiversity Offsets are considered the last option in the mitigation hierarchy and are only pursued after all feasible measures to avoid, minimise, and rehabilitate impacts have been implemented. Offsets are evaluated based on the residual impact rating, which ranges from medium to very high negative, particularly in terms of biodiversity and ecology. This assessment takes into account the direct, indirect, and cumulative impacts that persist despite mitigation efforts. The evaluation primarily focuses on the impacts to critically endangered Agulhas Sand Fynbos vegetation, its associated biodiversity, and the seep wetland located on-site. These ecosystems are of high conservation significance, and their loss or degradation would have severe implications for regional biodiversity. Therefore, it is essential that any residual impacts be adequately offset to meet the conservation targets outlined in relevant biodiversity planning frameworks, such as the Western Cape Biodiversity Spatial Plan.

Based on the specialist investigations conducted on-site, it is clear that the proposed development, while resulting in some unavoidable impacts, will also contribute to positive outcomes for several aspects of the site. These include the protection and restoration of the seep wetland, the rehabilitation of indigenous vegetation in areas that will not be developed, and the potential for enhanced habitat for fauna and implementation of coastal to crest ecological corridors and buffers.

In addressing the residual impacts associated with the loss of vegetation due to the construction of housing, roads, and associated infrastructure, the development footprint has been minimised to reduce the overall impact. The restoration of indigenous vegetation on undeveloped portions of the site, coupled with the rehabilitation of the overall property, will help ensure that the conservation targets for the critically endangered Agulhas Sand Fynbos are met.

6.3.1. Overview of Impacts of Alternative Layouts

Based on the findings from specialist assessments, the biodiversity of the site is significantly threatened by the presence of invasive alien species, particularly *Acacia saligna* (Port Jackson), which dominates much of the vegetation on-site. Other invasive species have also been recorded, contributing to the overall degradation of the habitat (Privett, 2024). According to Venter (2024), the heavy infestation of alien plants has a detrimental effect on animal species occurrence, diversity, and population density. The degraded state of the site reduces its ability to support native fauna and flora effectively. The Aquatic Biodiversity Assessment confirmed the presence of a seep wetland on-site, which plays a critical role in local hydrology, although it is currently in a degraded condition. The wetland has high ecological value due to its potential role in supporting biodiversity and maintaining hydrological processes, despite its current poor state. Specialists have concluded that while the site is compromised by invasive species, it still holds considerably high ecological value. The rehabilitation of Agulhas Sand Fynbos vegetation and a seep wetland, offers an opportunity to enhance the biodiversity of the area through strategic management interventions.

Alternative 1

This alternative layout proposes a higher development density and a larger footprint, leading to significant habitat loss and the fragmentation of ecological corridors. This poses a high risk to the site's biodiversity and

overall ecological functionality. The primary concern raised by the botanical specialist is the fragmentation of the site, which would result in the loss of natural habitats and species due to vegetation clearing and associated biota disturbance. The cumulative impacts include the severing of on-site ecological corridors, reducing the ability of species to move and interact across the landscape.

Alternative 2 (Preferred)

This is identified as the preferred option by specialists and EAP and has evolved in line with specialist findings and recommendations. The most significant change in this alternative is that,it has seen the reduction in the development footprint by incorporating larger open spaces and the creation of functional ecological corridors and buffers. This layout better supports biodiversity and reduces the fragmentation of habitats. While there is still disturbance to the Agulhas Fynbos vegetation, the cumulative impacts are less severe compared to Alternative 1.

Below is a summary of the impact ratings before and after mitigation for Alternative 2. As indicated in this table there are some impacts, namely "Impact on Plant Species" and possible impact of Western Leopard Toad (although not recorded on site).

Table 4. Impact ratings on Alternative 2.

Specialist Assessment	Impacts on site	Significant rating prior mitigation	Significant rating after mitigation
Terrestrial Biodiversity Assessment	Impact on Plant Species	High (-)	Medium (-)
	Impact on Terrestrial Biodiversity	Medium (-) / High (-)	Low (-) / Low (-)
Aquatic Biodiversity Assessment	Wetland Loss	Medium (-)	N/A
	Altered flow regime	Low (-)	Very Low (-)
	Water Quality impairment	Low (-)	Very Low (-)
Terrestrial Animal Site Sensitivity Verification and Species Specialist Assessment	Black harrier Circus maurus	Low (-)	Low (-)
	African marsh harrier Circus ranivorus	Low (-)	Low (-)
	Caspian tern Hydroprogne caspia	Low (-)	Low (-)
	Great white pelican Pelecanus onocrotalus	Very- Low (-)	Very- Low (-)
	Southern black korhaan *Afrotis afra*	Very Low (-)	Very Low (-)
	Denham's bustard Neotis denhami	Very Low (-)	Very Low (-)
	Hottentot Buttonquail Turnix hottentottus	Very Low (-)	Very Low (-)

	Stiped flufftail *Sarothrura affinis*	Very Low (-)	Very Low (-)
	Southern Adder *Bitis armata*	Low (-)	Low (-)
	Cape dwarf chameleon, *Bradypodion pumilum*	Low (-)	Low (-)
	Western leopard toad *Sclerophrys pantherine*	Medium (-)	Medium (-)
	Yellow-winged Agile Grasshopper *Aneuryphymus montanus*	Very Low (-)	Very Low (-)
	Mute Winter Katydid *Brinckiella aptera*	Low (-)	Low (-)

7. Conclusion

Given the findings of the specialist team and the Environmental Impact Assessment process, and the very clear risk associated with the status quo, as well as the positive impacts associated with the proposal, we hereby motivate that the Biodiversity Offset is ***not*** applicable to this site.

Although Biodiversity Offsets are typically considered for developments which impact critical ecosystems where residual impacts remain at medium or high levels, we conclude that it should not be applied to this proposal. The specialist assessments, including those by Venter (2024) and Van Zyl & Morton (2024), conclude that the minimisation of impacts and rehabilitation measures related to the proposal sufficiently address the ecological sensitivities on-site. The reduction in the number of erven, implementation of adequate ecological corridors, and the comprehensive rehabilitation strategy all contribute to significantly mitigating potential biodiversity loss and provide positive impacts as a result of the proposal which would not have been achieved without development.

The site, though classified as supporting critically endangered Agulhas Sand Fynbos, is largely degraded due to the presence of invasive species and previous disturbances, particularly in the wetland area. These findings suggest that the site's overall conservation value is diminishing, but the proposed rehabilitation, restoration and long-term management measures will enhance the sites ecological functionality over time. Through implementation of post-construction management plans and continuous ecosystem maintenance, the project is positioned to deliver positive outcomes for the overall biodiversity on site, reducing the necessity for an offset. Proactive restoration of both the fynbos and wetland areas will facilitate ecological recovery, with the potential for increased faunal diversity and habitat availability.

By executing the proposed post-construction management plans and ongoing ecosystem maintenance, the project aims to restore the site's biodiversity, enhancing both plant and animal diversity and promoting habitat recovery. This restoration will not only benefit the development site but will extend to adjacent land, including Farm 707, where a boardwalk and jetty are planned. The degraded areas in these adjacent lands will also be included in the restoration efforts, further amplifying the positive environmental impacts. Additionally, a 75-meter buffer zone around the estuary will be established to prevent any potential impacts from the development from affecting this sensitive area. All the bulk infrastructure will be placed above the 5-meter contour of the Estuary Functional Zone, significantly reducing environmental disturbance and protecting sensitive habitats.

Considering the long-term ecological benefits of this proposal, a typical biodiversity offset ratio of 1:30 is neither practical nor necessary for this site. Based on the standard Biodiversity Offset policy, the area of land of about 6 ha impacted by the development would require an offset of 180 ha. However, the specific context of this project clearly shows that the most effective and sustainable solution lies in on site rehabilitation and the clearing of invasive alien species. With a development footprint of approximately 6 ha, the total area designated for conservation and ecological purposes is significantly larger at approximately 25.52 ha, offering a more meaningful and manageable solution to preserve and enhance biodiversity in the area.

7.1. Recommended site rehabilitation and management

The following actions will take place on site:

1. Long term alien vegetation clearing and management
2. Fire Management during construction and post construction phase to allow the natural fire regime to persist. This will require the implementation of a Fire Management Plan to be drafted as a condition of Environmental Authorisation and taken up into the Homeowners Association.
3. Wetland Offset including rehabilitation of onsite wetlands and watercourses
4. HOA Conservation levy
5. No traps or killing on fauna, no cats.
6. Only natural, indigenous gardens permitted. No kikuyu lawns
7. Implementation of functional coast to crest ecological corridors
8. Search and rescue prior to construction.
9. Habitat restoration