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**WETLAND AND AQUATIC ASSESSMENT
ASSOCIATED PROPOSED ARLINGTON
MULTIPLE-USE DEVELOPMENT
ON ERVEN 3988, 4195 AND 6991, GQEBERHA,
NELSON MANDELA BAY MUNICIPALITY,
EASTERN CAPE**

Version – final

March 2024

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Declaration

I, Magnus van Rooyen, in my capacity as a specialist consultant, hereby declare that I:

- Act as an independent consultant;
- Do not have any financial interest in the undertaking of the activity, other than remuneration for the work performed in terms of the National Environmental Management Act (Act No. 107 of 1998);
- Have and will not have vested interest in the proposed activity proceeding;
- Have no, and will not engage in, conflicting interests in the undertaking of the activity;
- Undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the National Environmental Management Act (Act No. 107 of 1998);
- As a registered member of the South African Council for Natural Scientific Professions, will undertake my profession in accordance with the Code of Conduct of the Council, as well as any other societies to which I am a member;
- Based on information provided to me by the project proponent and in addition to information obtained during the course of this study, have presented the results and conclusion within the associated document to the best of my professional ability; and
- Reserve the right to modify aspects pertaining to the present investigation should additional information become available through ongoing research and/or further work in this field.



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SACNASP reg. no. [REDACTED]

March 2024
Date

WETLAND AND AQUATIC ASSESSMENT ASSOCIATED PROPOSED ARLINGTON MULTIPLE-USE DEVELOPMENT ON ERVEN 3988, 4195 AND 6991, GQEBERHA, NELSON MANDELA BAY MUNICIPALITY, EASTERN CAPE

1 INTRODUCTION

Ecolink South Africa has been appointed by JG Afrika (Pty) Ltd to conduct a Wetland and Aquatic Assessment associated with the proposed Arlington Multipurpose Development on Erven 3988, 4195 and 6991, Gqeberha, Nelson Mandela Bay Municipality, in the Eastern Cape Province.

2 PROJECT BACKGROUND

2.1 Location

The proposed development site is located approximately 6.5km to the southwest of the Gqeberha CBD. The site is accessed via an access road off Victoria Drive. The location and extent of the erven is provided in Figure 2-1 and Figure 2-2.

2.2 Project description

The proposed project makes provision for the establish of a multiple-use development, comprising of 25 clusters as well as an internal road network, on erven 3988, 4195 and 6991, along Glendore Road in Walmer. The consolidated development footprint will be 614 409m² (61,4ha) in extent.

Approximately 3 000 residential units are proposed which will be divided amongst nine (9) clusters designated for General Residential Zone 2 and General Residential Zone 4. In addition, 13 clusters designated for both Business Zone 1 and Business Zone 2 are planned, as well as one (1) cluster for Community Purposes and two (2) clusters for Special Purposes Infrastructure (solar power and wastewater treatment).

The development in its entirety will include the following components:

- a) Retail/Business Infrastructure.
- b) Office/Storage Facilities.
- c) Medical Use/Office Facilities.
- d) Special Use High Tech Industrial facility/infrastructure.

- e) Warehouse Facilities.
- f) Community Zone (i.e., child aftercare facilities).
- g) Mixed-residential Housing Units including Social Housing – approximately 3000 units are proposed.
- h) Club House and Sport Facilities.
- i) A Business Incubator / Substation Area.
- j) Parking/Solar Charging Stations.
- k) Special Purposes Infrastructure – solar photovoltaic power park & wastewater treatment plant.
- l) Open spaces.
- m) Installation of internal infrastructure services, such as water, sanitation, irrigation, stormwater, roads, and electricity, to service the proposed infrastructure. See further details below; and
- n) Installation of external infrastructure services, such as stormwater and sanitation connection lines as well as a pedestrian walkway along Racecourse Road and two traffic circles along Glendore Road. An additional road will be constructed between the south-western corner of the site and the northern circle.

The proposed development layout is provided in Figure 2-3.



Figure 2-1: Location of the proposed Arlington Multipurpose Development in relation to the Gqeberha CBD



Figure 2-2: Extent of the development site

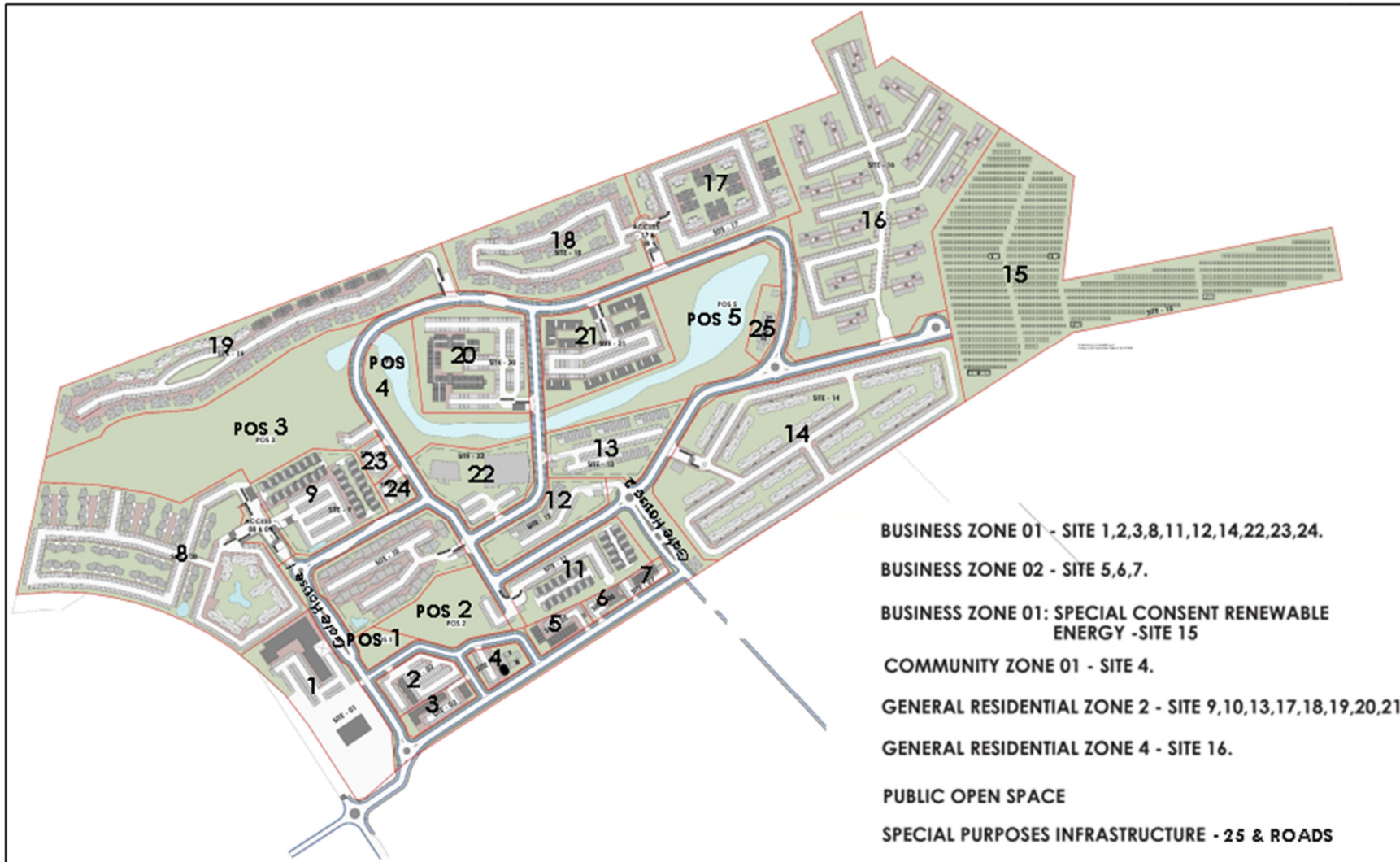


Figure 2-3: Proposed Arlington Multipurpose Development layout and zoning plan (source, JG Afrika (Pty) Ltd)

3 TERMS OF REFERENCE

It is understood that this assessment will be submitted in support of an Application for an Environmental Authorisation in accordance with the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended as well as the Water Use Licence Application in accordance with the National Water Act (Act No. 36 of 1998).

As such, the assessment will be completed in accordance with the requirements of both these Acts and will focus on the potential impacts that the project may have on the identified aquatic features within the study site. The assessment will make provision for the following:

- Location of the activity within the “regulated area of a watercourse” as defined by the Acts;
- An identification of all the aquatic features within the determined “regulated area of a watercourse”;
- A delineation of all these identified aquatic features to determine their extent, the delineation will be conducted in accordance with the Department of Water Affairs and Sanitation’s guideline on the delineation of these features;
- An assessment of the identified aquatic features to determine their hydrogeomorphic classification, their present ecological state (PES), the ecosystem services they provide as well as their ecological importance and sensitivity (EIS);
- Identification of the potential impacts of the proposed activity on the identified aquatic features;
- An impact assessment with the provision of management and mitigation measures; and
- A Risk Assessment Matrix that follows the Department of Water and Sanitation protocols if applicable.

4 ASSUMPTIONS AND KNOWLEDGE GAPS

The following are assumptions made in the completion of the report:

- The assessment of the potential impacts of the proposed development on the aquatic features on the development site is based on the development layout that has been provided. If the development layout is amended, the impact identification and assessment contained in this report may also change.

- The findings of the report are limited to a single day long site visits conducted on 28 February 2022 and 7 February 2024 which is considered to be mid-summer. No provision has been made for seasonal visits to the site and is not considered a shortcoming of the report.
- The identification and delineation of the aquatic features that have been assessed within the study area was conducted in terms of the procedures as specified by the Department of Water and Sanitation.
- The classification of any identified aquatic features has been conducted in accordance with the classification system of inland aquatic ecosystem as prescribed by Ollis *et al.*, 2013.
- The following desktop information was used to augment the finding of the assessment:
 - Electronic biodiversity databases managed by the South African National Biodiversity Institute (SANBI);
 - Available provincial electronic biodiversity databases;
 - Wetland and Riparian Habitat Delineation Document (Department of Water and Sanitation report); and
 - Classification system for wetlands and other aquatic ecosystems in South Africa (Inland Systems) (Ollis *et al.*, 2013 – SANBI Biodiversity Series 22).

5 REPORTING CONDITIONS

The following conditions apply to the report in part or as a whole:

- The findings and conclusion of this report are based on the author's scientific and professional knowledge as well as available information at the time of the assessment. In addition, the recommendations made are considered to be the best, implementable actions that can be taken to alleviate the identified impacts.
- As such, the author accepts no liability for any actions, claims, demands, losses, liabilities, costs, damages, and expenses that may arise from or in connection with the services rendered, and by any use of the information contained in this document.
- No part of this report may be amended without written consent from the author.

6 METHODOLOGY

The methodology that was followed in completing this study is in accordance with the requirements and specifications of the Department of Water and Sanitation as well as the Protocols associated with Specialist Studies as governed by the Department of Forestry, Fisheries and the Environment and includes the following aspects.

6.1 Identification of aquatic features and mapping

The initial identification process for aquatic features was conducted at a desktop level during which available GIS databases were interrogated to determine the presence of any wetland and watercourse areas that have been determined in the past. The key database that was interrogated was the National Freshwater Ecosystem Priority Area (NFEPA) as managed and updated by the South African National Biodiversity Institute (SANBI) as well as the updated version of this dataset, the Wetland MAP5 (2018).

In addition to the database interrogation, the most recent Google Earth Imagery of the site was considered to see if any wetland areas or “anomalies” within the site are visible.

Following the desktop assessment of the site, site visits were conducted on 28 February 2022 and 7 February 2024. During the site visit, the potential aquatic features identified through the desktop assessment were verified and any other aquatic features were identified with their boundaries accurately delineated.

6.2 Aquatic feature delineation

The delineation of these wetlands areas was conducted in accordance with the Department of Water and Sanitation, “*A practical field procedure for identification and delineation of wetlands and riparian areas*” (2005).

This field guide makes use of several specific indicators which show the presence and the boundaries of wetlands. The presence of the following indicators was used during the identification and delineation of the site:

- **Terrain Unit Indicator** – Identification of the part of the landscape where wetlands are more likely to occur;
- **Soil Form Indicator** – Identification of the soil types which are associated with prolonged and frequent saturation;
- **Soil Wetness Indicator** – Identification of the morphological signatures that develop in soil profiles as a result of prolonged and frequent saturation; and

- **Vegetation Indicator** – Identification of the hydrophilic vegetation associated with frequently saturated soil.

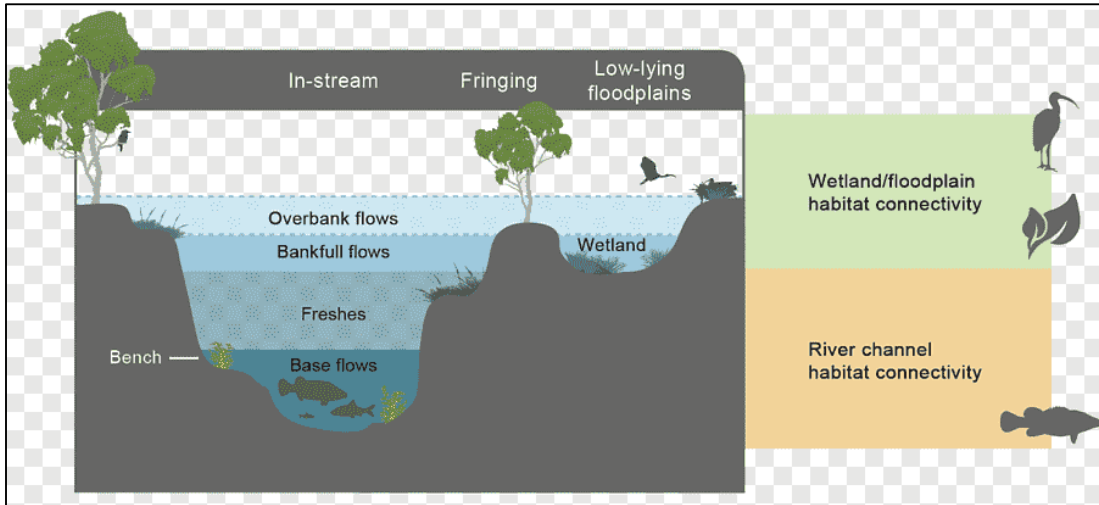
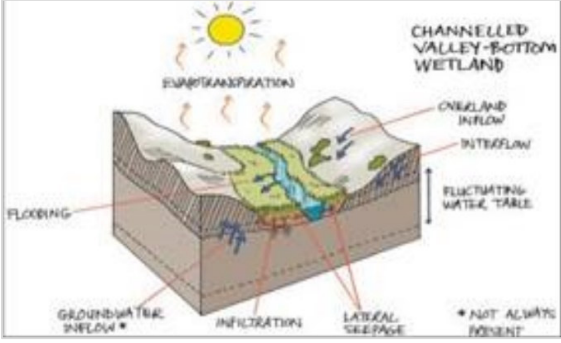
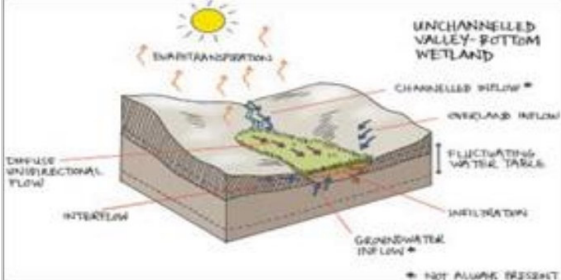
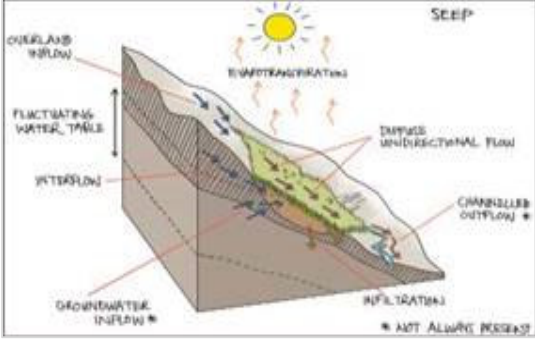
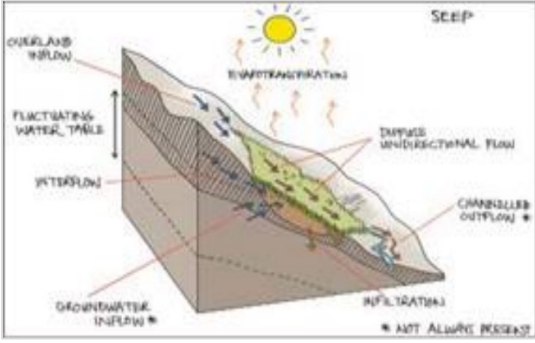


Figure 6-1: Cross section through a typical drainage basin (www.pngegg.com)

Following the identification of the aquatic features on the study site, these are then classified into specific hydrogeomorphic (HGM) units according to the Classification System for Wetlands and other Aquatic Ecosystems in South Africa (inland systems) (Ollis et al., 2013).

Table 6-1: Wetland hydrogeomorphic (HGM) types typically supporting inland wetlands in South Africa (Ollis et al., 2013)

	Hydrogeomorphic types	Description
River		Rivers are linear landforms with clearly discernible banks and a channel, which permanently or periodically, carries a contained and defined flow of water. A river is taken to include both the active channel and the riparian zone.
Floodplain		Valley bottom areas with a well-defined stream channel, gently sloped and characterised by floodplain features such as oxbow depressions and natural levees and the alluvial (by water) transport and deposition of sediment, usually leading to a net accumulation of sediment. Water inputs from main channel (when channel banks overspill) and from adjacent slopes.

	Hydrogeomorphic types	Description
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Valley bottom with channel</p>		<p>Valley bottom areas with a well-defined stream channel but lacking characteristic floodplain features. May be gently sloped and characterised by the net accumulation of alluvial deposits or may have steeper slopes and be characterised by the net loss of sediment. Water inputs from main channel (when channel banks overspill) and from adjacent slopes.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Valley bottom without a channel</p>		<p>Valley bottom areas with no clearly defined stream channel, usually gently sloped and characterised by alluvial sediment deposition generally leading to a net accumulation of sediment. Water inputs mainly from channel entering the wetland and also from adjacent slopes.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Hillslope seepage linked to a stream channel</p>		<p>Slopes on hillsides, which are characterised by the colluvial (transported by gravity) movement of materials. Water inputs are mainly sub-surface flow and outflow is usually via a well-defined stream channel connecting the area directly to a stream channel.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Isolated Hillslope seepage</p>		<p>Similar to other hillslope seeps but with no direct surface water connection to a stream channel. Slopes on hillsides, which are characterised by the colluvial (transported by gravity) movement of materials. Water inputs mainly from sub-surface flow and outflow primarily by diffuse sub-surface and/or limited surface flow.</p>

Hydrogeomorphic types		Description
Depression (includes Pans)		<p>A basin shaped area with a closed elevation contour that allows for the accumulation of surface water (i.e. it is inward draining). It may also receive sub-surface water. An outlet is usually absent, and therefore this type is usually isolated from the stream channel network.</p>
Wetland Flat		<p>A flat wetland with no apparent inlet or outlet points. Water is obtained from surface or near surface flows and is lost either by downward percolation or evapotranspiration. May be only seasonal in terms of its wetness and hydromorphic soils may be only weakly developed or else be absent. Vegetation may be the strongest indicator.</p>

6.3 Riparian Delineation

The delineation of the riparian areas was conducted in accordance with the Department of Water and Sanitation document, “A practical field procedure for identification and delineation of wetlands and riparian areas” (2005).

Like wetlands, riparian areas have their own unique set of indicators. It is possible to delineate riparian areas by checking for the presence of these indicators. The riparian delineation process takes the following physical aspects into consideration:

- **Topography associated with the watercourse** – The topography is a good rough indicator of the outer edge of the riparian area as the riparian edge is the same as the edge of the macro channel bank.
- **Vegetation** – The delineation of riparian areas relies primarily on the vegetative indicators. Using vegetation, the outer boundary of a riparian area must be adjacent to a watercourse and can be defined as the zone where a distinctive change occurs:
 - In species composition relative to the adjacent terrestrial area; and
 - In the physical structure, such as vigour or robustness of growth forms of species similar to that of adjacent terrestrial areas. Growth form refers to the health, compactness, crowding, size, structure and/or numbers of individual plants.

- **Alluvial soils and deposited material** – Alluvial soils can be defined as relatively recent deposits of sand, mud, etc. set down by flowing water, especially in the valleys of large rivers. Riparian areas often, but not always, have alluvial soils.

6.4 Aquatic features functional Assessment

Once the aquatic features have been identified and their boundaries determined, the assessment of the ecosystem services these features provide to the hydraulic system that they contribute to, as well as the immediate natural and social environment, was undertaken. An understanding of this functionality of these features contributes directly to the level of importance that is attributed to the specific feature that is developed. The assessment was conducted by using a modelling tool that forms part of the WET-Management Series (issued by the Water Research Commission), WET-EcoServices (Kotze *et al.* 2008).

The WET-EcoServices tool makes provision for the rapid assessment of the ecosystem services provided by an aquatic feature. The process of applying the tool is based on the characterisation of hydrogeomorphic aquatic feature types based on desktop and field assessment and observations of identified and delineated aquatic features. This model, furthermore, considers the biophysical and social conditions around a feature and converts these considerations into a fixed score for a series of defined ecosystem services that the wetland delivers.

- | | |
|--------------------------------------|------------------------------------|
| • Flood Attenuation | • Streamflow regulation |
| • Sediment trapping | • Phosphate assimilation |
| • Nitrate Assimilation | • Toxicant Assimilation |
| • Erosion control | • Carbon storage (sequestration) |
| • Maintenance of biodiversity | • Provision of water for human use |
| • Provision of harvestable resources | • Provision of cultivated food |
| • Cultural significance | • Tourism and recreation |
| • Education and research | |

The maximum score for any service is a value of 4 and the rating of the probable extent of the service is shown in the table below.

Table 6-2: Ecoservices rating of the probable extent to which a benefit is being supplied

Score	Rating of likely extent to which a benefit is being supplied
< 0.5	Low
0.6 - 1.2	Moderately Low
1.3 - 2.0	Intermediate
2.1 - 3.0	Moderately High
> 3.0	High

6.5 Determining the Present Ecological State of a water resource

The determination of the present ecological state (PES) of a water resource was conducted by using a tool from the WET-Management Series (issued by the Water Research Commission), the WET-Health (Macfarlane et al. 2008).

This tool is designed to assess the health or integrity of an aquatic feature. The health of the aquatic feature is defined as a measure of the deviation of feature in structure and function from the it's natural reference condition. The tool therefore attempts to assess the hydrological, geomorphological and vegetation impacts that has been imparted on the wetland at the time of assessment.

The overall approach is to quantify the impacts of human activity or clearly visible impacts on the health of the aquatic feature, and then to convert the impact scores to a PES score. This takes the form of assessing the spatial extent of impact of individual activities/occurrences and then separately assessing the intensity of impact of each activity in the affected area. The extent and intensity are then combined to determine an overall magnitude of impact. The impact scores and Present State categories are provided in the tables below.

Table 6-3: The magnitude of impacts on wetland functionality (Macfarlane et al, 2008)

Impact Category	Description	Score
None	No Discernible modification or the modification is such that it has no impacts on the wetland integrity	0 to 0.9
Small	Although identifiable, the impact of this modification on the wetland integrity is small.	1.0 to 1.9
Moderate	The impact of this modification on the wetland integrity is clearly identifiable, but limited.	2.0 to 3.9
Large	The modification has a clearly detrimental impact on the wetland integrity. Approximately 50% of wetland integrity has been lost.	4.0 to 5.9
Serious	The modification has a highly detrimental effect on the wetland integrity. More than 50% of the wetland integrity has been lost.	6.0 to 7.9
Critical	The modification is so great that the ecosystem process of the wetland integrity is almost totally destroyed, and 80% or more of the integrity has been lost.	8.0 to 10

The level of impacts on these three parameters is a direct indication of the PES of the aquatic feature as well as its functionality. An aquatic feature that has undergone severe impacts on its hydrology, geomorphology or vegetation or a combination of all three will reflect a low present ecological state while the converse is also true for pristine features. Since hydrology, geomorphology and vegetation are interlinked in the model, their scores are aggregated to obtain the overall PES health score using the formula:

$$\text{Health} = ((\text{Hydrology value} \times 3) + (\text{Geomorphology value} \times 2) + (\text{Vegetation value} \times 2))/7$$

Table 6-4: Definitions of the PES categories (Macfarlane *et al*, 2008)

Impact Category	Description	Impact Score Range	Present State Category
None	Unmodified, natural	0 to 0.9	A
Small	Largely Natural with few modifications. A slight change in ecosystem processes is discernible and a small loss of natural habitats and biota may have taken place.	1.0 to 1.9	B
Moderate	Moderately Modified. A moderate change in ecosystem processes and loss of natural habitats has taken place, but the natural habitat remains predominantly intact.	2.0 to 3.9	C
Large	Largely Modified. A large change in ecosystem processes and loss of natural habitat and biota has occurred.	4.0 to 5.9	D
Serious	Seriously Modified. The change in ecosystem processes and loss of natural habitat and biota is great, but some remaining natural habitat features are still recognizable.	6.0 to 7.9	E
Critical	Critical Modification. The modifications have reached a critical level and the ecosystem processes have been modified completely with an almost complete loss of natural habitat and biota.	8.0 to 10	F

6.6 Determining the Ecological Importance and Sensitivity of aquatic features

The outcomes of the implementation of the WET-EcoServices tool discussed above, is key in the determination of the ecological importance and sensitivity of aquatic features as the results is a direct indication of the contribution that the feature is making to the hydraulic system with which it is linked. This contribution is linked to the sensitivity of this feature to any possible change and how this will impact on the hydraulic system it is linked to.

6.7 Ecological Classification and Description

The ecological classification and description are direct results of the implementation of the methodology and tools described above as the results of these determinations contribute to the understanding of the ecology of the aquatic feature. The description of the aquatic feature will therefore make provision for a description of the physical attributes of the feature (location, size, etc.), the ecosystem services that it provides, the current ecological state of the feature and the importance of the feature and its sensitivity.

7 DESCRIPTION OF THE STUDY SITE

This section details the prevailing general site characteristics of the development area.

7.1 Climate

The Port Elizabeth Airport is the nearest Weather Station to the Arlington Development for which weather data could be freely obtained. Port Elizabeth experiences short, warm summers and long, cool winters. The temperatures typically range from 9°C to 25°C.

The average maximum and minimum temperatures recorded for the months of 2022 are shown in Figure 7-1, as well as the average wind speed, gusts, and dominant wind direction (Figure 7-2).

Wind and Weather Statistics for the Waterkloof Air Force Base (AFB) as obtained from Windfinder: https://www.windfinder.com/windstatistics/port_elizabeth

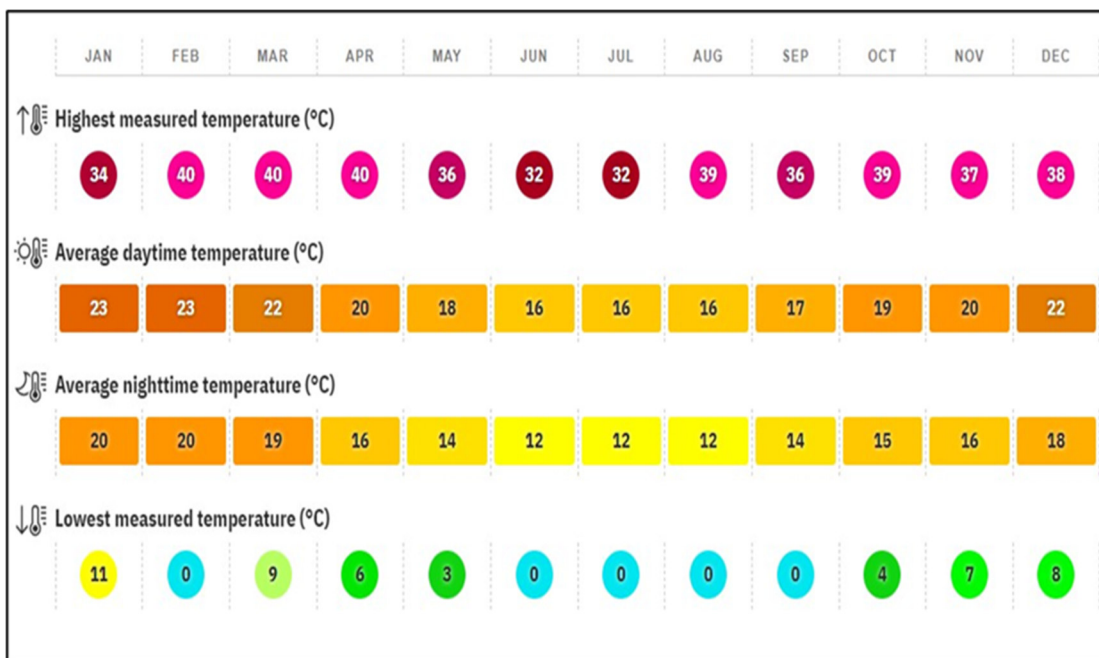


Figure 7-1: Average maximum and minimum temperatures recorded monthly for Port Elizabeth Airport (Windfinder, 2023)

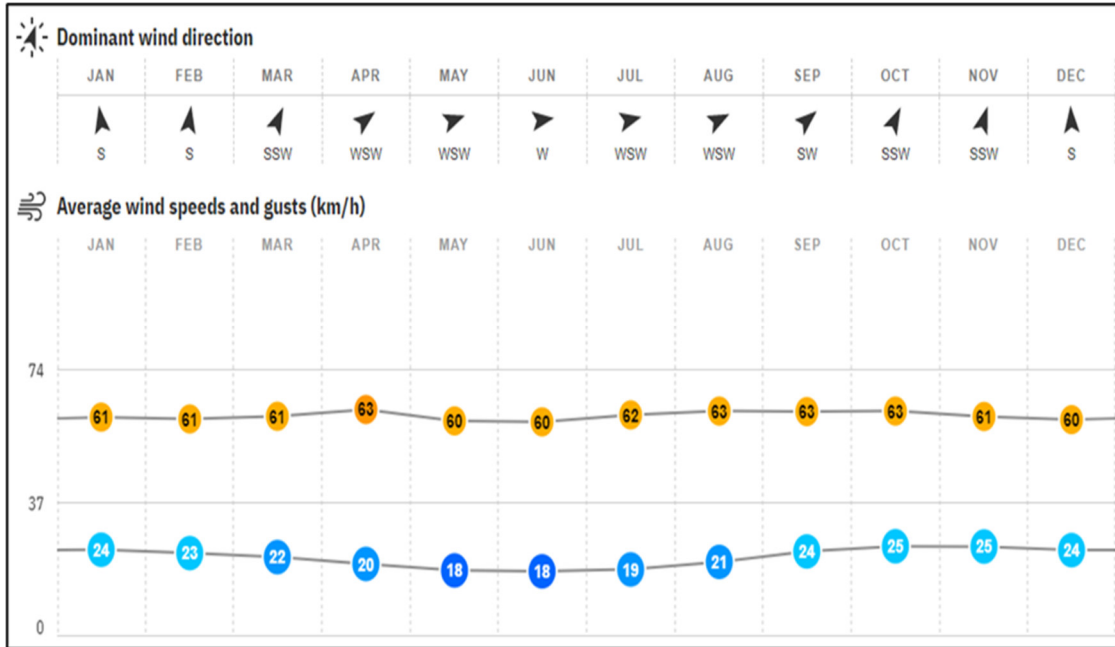


Figure 7-2: Dominant wind direction and average wind speeds and gusts (in km/h) recorded at Port Elizabeth Airport (Windfinder, 2023)

7.2 Vegetation

According to the National Biodiversity Assessment (NBA) (2018), the study area contains two vegetation types: Algoa Sandstone Fynbos, and Sardinia Forest Thicket (Figure 7-3).

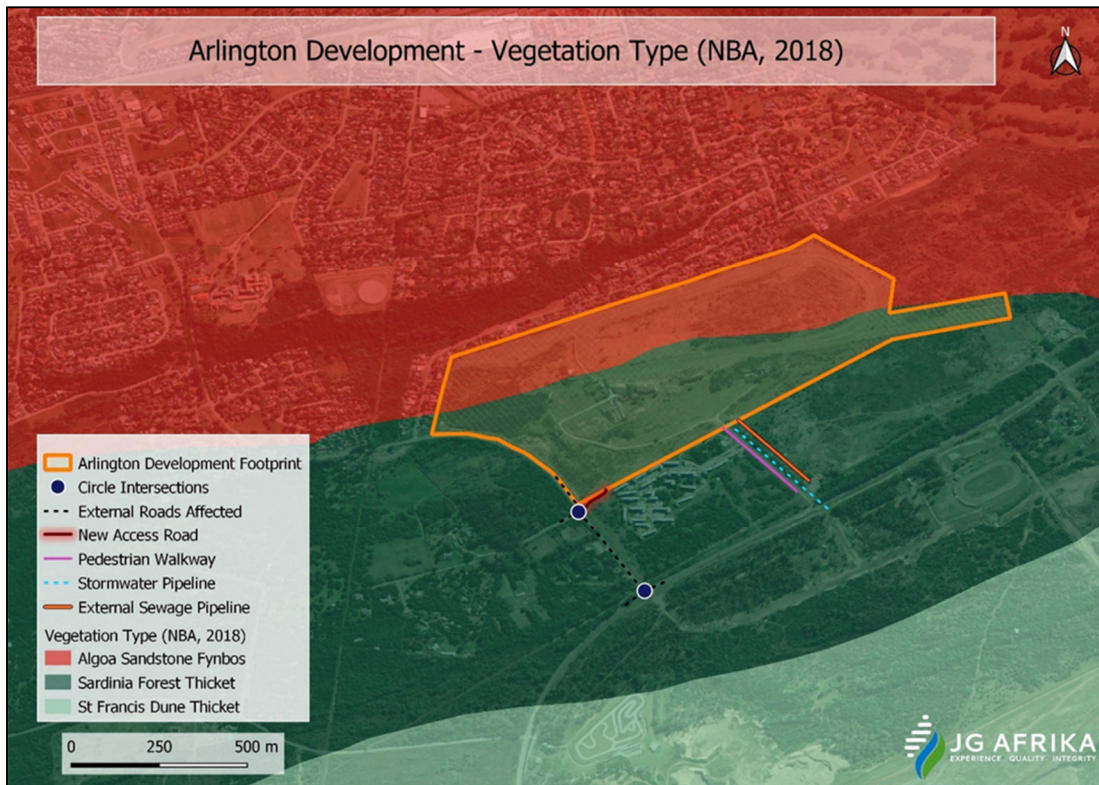


Figure 7-3: Location and extent of the two vegetation types identified in the NBA (2018) (source, JG Afrika (Pty) Ltd)

According to the most recent version of the National Biodiversity Assessment (2022), Algoa Sandstone Fynbos has been designated a status of Critically Endangered, whereas Sardinia Forest Thicket has a status of Least Concern. The status of Algoa Sandstone Fynbos indicates that less than 20% of the original natural habitat remains. As for Sardinia Forest Thicket, its status indicates that more than 80% of the original habitat remains and/or is largely intact.

The site assessments that were conducted confirmed that the vegetation on the development site has been largely transformed as a result of the long-term presence of the Arlington Racecourse and associated activities and infrastructure. This has resulted in the dominant grass species on the site consisting of *Stenotaphrum secundatum* (Buffalo Grass) while the woody component mainly consists of *Vachellia karroo* (Sweet Thorn). The presence of these species confirms the disturbed nature of the vegetation on the site as both these species are typical pioneer species that will establish and flourish on disturbed areas. Prominent alien invasive species that occur on the site included *Acacia saligna* (Port Jackson) and *Ricinus communis* (Castor Oil Bush). Both these species are also species typical to disturbed areas.



Plate 7-1: View of the grass component consisting of *Stenotaphrum secundatum* (Buffalo Grass)



Plate 7-2: View of the woody component present on the development site consisting of indigenous *Vachellia karroo* (Sweet Thorn) and alien invasive *Acacia saligna* (Port Jackson)

7.3 Topography

The Nelson Mandela Bay Region has a generally low elevation profile with some elevation northwest of the study area. When observing the topography and elevation of the study area, it is generally flat to slightly undulating landscape falling in a southerly direction from the northern boundary of the site. The highest elevation on the site is approximately 120m and located along the northern boundary.

The topography of the site has been altered to accommodate the presence of the Arlington Racecourse and associated activities. The old pavilion and associated buildings are built on a low ridgeline that was likely part of a dune field in the area.

7.4 Land cover and land use

The current land use on the development site is one of vacant land. Historically, the property was used as an equestrian racecourse with associated facilities (stables, training areas, etc.) Historical images of the development site indicate the presence of the racecourse from 1950 to 2013.

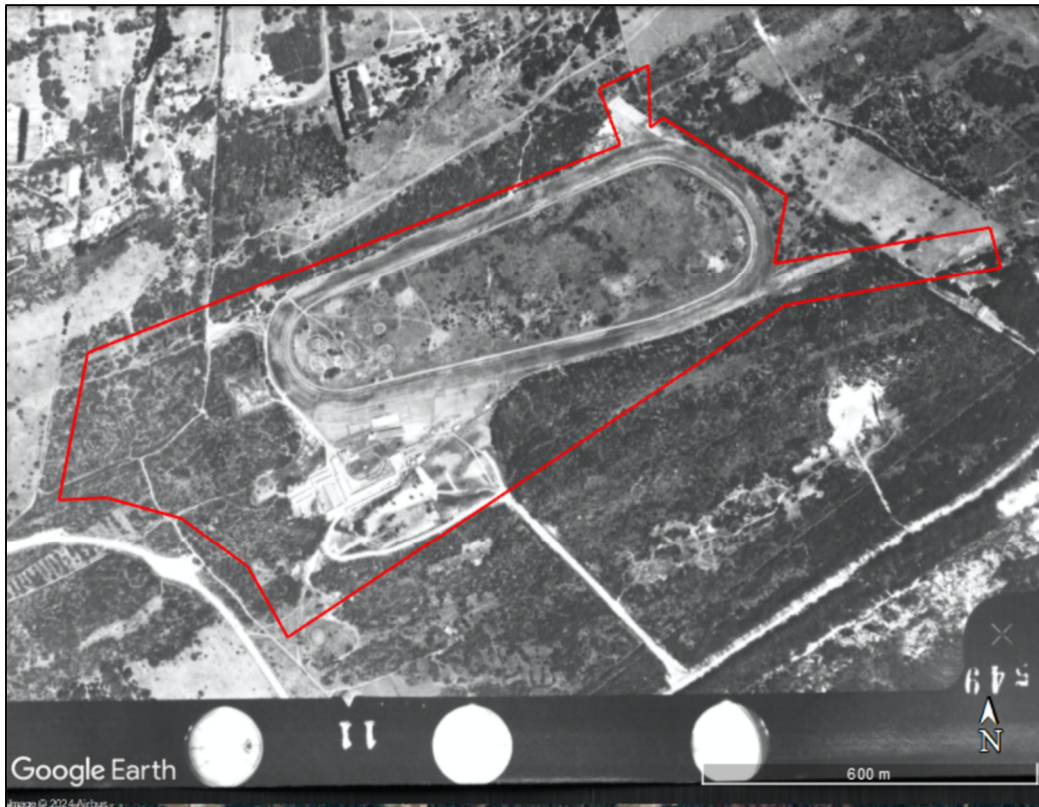


Figure 7-4: Historic land use (1965) showing the presence of the Arlington Racecourse

Prior to the development site being used for the establishment of the Arlington Racecourse, large parts of the development site were used for agricultural activities. These were likely the planting of crops or grazing for livestock. These disturbances are shown in the 1935 aerial image of the site in Figure 7-5.



Figure 7-5: Historic aerial image of the development site dated 1935

8 DESKTOP ASSESSMENT RESULTS

The findings presented in this section is based on the desktop assessment of the proposed project site.

8.1 Department of Forestry, Fisheries and Environment (DFFE) Online Screening Tool

The results generated by the DFFE Online Screening Tool has classified the Aquatic Theme sensitivity for the development site to be "VERY HIGH". This classification is based on the inclusion of the development site in the Tsitsikamma Strategic Water Source Area (SWSA).

A SWSA is defined as an area of land that either: (a) supply a disproportionate quantity of mean annual surface water runoff in relation to their size; or (b) have a high groundwater recharge and where the groundwater forms a nationally important resource; or (c) areas that meet both criteria mentioned above.

8.2 Hydrological setting

The results of the desktop assessment of the hydrological characteristics of the study site is provided in the table below.

Table 8-1: Desktop hydrological characteristics of the study site

Hydrological characteristic	Result	Comment
Water management area	Mzimvubu – Tsitsikamma	
Primary catchment	Primary region M	Approximately 2 600km ² in size
Tertiary catchment	M20	<p>Three NFEPA Rivers are located in the M20 Tertiary catchment, these are:</p> <ul style="list-style-type: none"> • Bakens River (PES Class C – Moderately Modified; • Maitland River (PES Class D – Largely Modified); and • Van Stadens River (PES Class D – Largely Modified). <p>The Bakens River is the closest to the development site, approximately 3.7km to the north of the site.</p>

No NFEPA Rivers were identified in to be within the development sites.

8.3 National Freshwater Ecosystem Priority Areas (NFEPA)(2014):

The National Freshwater Ecosystem Priority Areas (NFEPA) project provides strategic spatial priorities for conserving South Africa’s freshwater ecosystems and supports sustainable use of water resources. There priority areas are called Freshwater Ecosystem Priority Areas, or “FEPAs”. The FEPAs were identified based on:

- Representation of ecosystem types and flagship free-flowing rivers;
- Maintenance of water supply areas in areas with high water yield;
- Identification of connected ecosystems;
- Representation of threatened and near-threatened fish species associated with migration corridors;
- Preferential identification of FEPAs that overlapped with:
 - Any free-flowing river;
 - Priority estuaries identified in the National Biodiversity Assessment (2011); and
 - Existing protected area and focus area for protected area expansion identified in the National Protected Area Expansion Strategy.

Based on the above criteria, the database has identified no wetlands within the a radius of 500m of the development sites.

8.4 South African Inventory of Inland Aquatic Ecosystems (SAIIAE) (2018)

A South African Inventory of Inland Aquatic Ecosystems (SAIIAE) was established during the National Biodiversity Assessment of 2018 (NBA 2018). The SAIIAE offers a collection of data layers pertaining to ecosystem types and pressures for both rivers and inland wetlands.

The SAIIAE builds on previous efforts while also introducing improvements and several new elements. An inventory of inland aquatic ecosystems responds to a multi-stakeholder need for the planning, conservation and management of these systems, as mandated by a number of Legislative Acts, including the South African National Water Act (Act No. 36 of 1998) (NWA) and the National Environmental Management: Biodiversity Act (NEMBA).

The dataset indicates the presence of four wetland features within a 500m radius of the development site. These features are identified as “Depression Wetlands”.



Figure 8-1: Location of the wetland features, (shown in green) identified in the Wetland Map5 dataset within a 500m radius, shown in yellow, of the development sites

8.5 Critical Biodiversity Areas and Ecological Support Areas

Critical Biodiversity Areas (CBAs) are areas required to meet biodiversity targets for ecosystems, species, and ecological processes, as identified in a systematic biodiversity plan and/or bioregional plan.

As indicated in the Critical Biodiversity Map (Figure 8-2), a CBA is located less than 65m northwest of the proposed site footprint, according to the Nelson Mandela Bay Municipality's Bioregional Plan (2015). Ecological Support Areas (ESAs) also play an important role in supporting the ecological functioning of Critical Biodiversity Areas and/or in delivering ecosystem services. As shown in the Ecological Support Areas Map (Figure 8-2), there are a few ESAs surrounding the proposed development, however, none of them are within critical proximity to the proposed development.

The study area does not intersect with any Critical Biodiversity Areas, or Ecological Support Areas, as designated in the Eastern Cape Biodiversity Conservation Plan (2019) or the NMBMBP (2015).

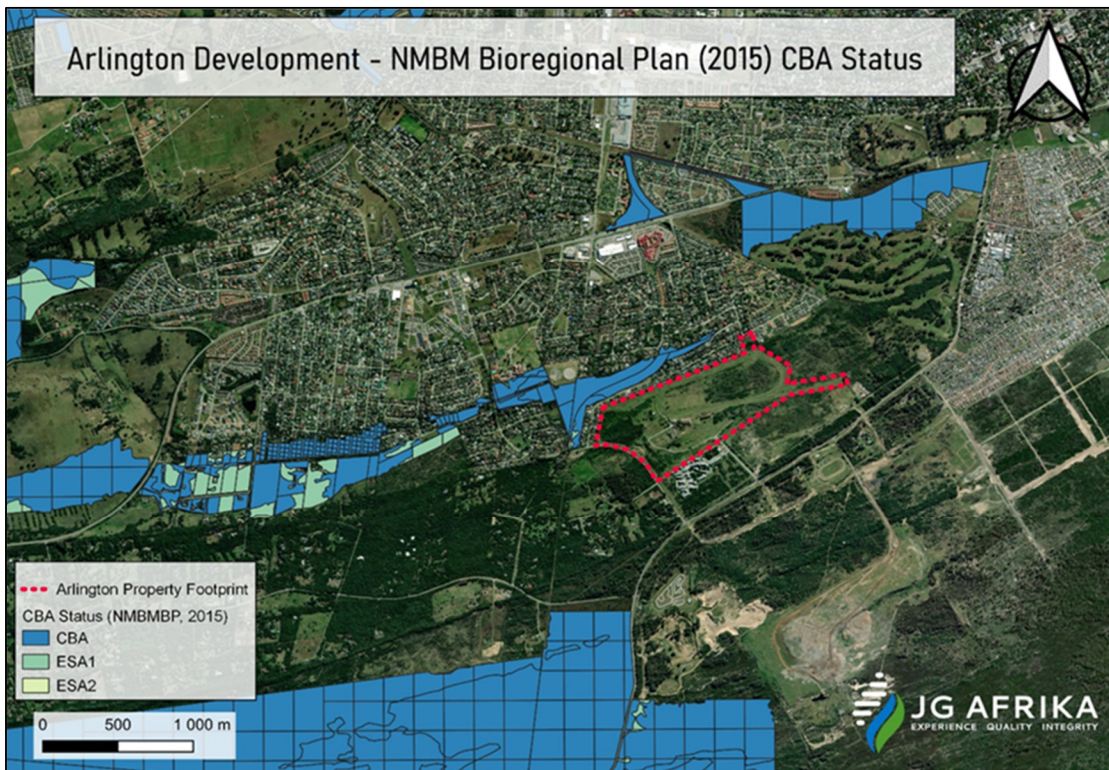


Figure 8-2: Map indicating the CBAs and ESAs in relation to the development site (courtesy of JG Afrika)

9 SITE ASSESSMENT RESULTS

The findings presented in this section is based on the desktop assessment of the proposed project site discussed above. The information from the desktop assessment was used to inform the site assessment.

9.1 Identification, delineation and mapping of aquatic features

The site assessment confirmed the absence of any natural wetland features within the study areas. In addition, no wetland features were identified within a 500m radius of the development properties. The wetland features included in the Wetland Map5 were visited and found to not be “Depression Wetlands” as per the dataset. These areas are areas of disturbance in the vegetation that has developed a grass covering consisting of *Stenotaphrum secundatum* (Buffalo Grass).



Plate 9-1: View of the area identified in the Wetland Map5 as a “Depression Wetland” that does not have any wetland markers

No watercourse features were identified within the boundaries of the development site or within a 100m radius of the development site.

As no aquatic features were identified either on the development site or within a 500m radius of the site, no further assessment in this regard was necessary.

10 RISK / IMPACT ASSESSMENT

The impact assessment in this report aims to identify and assess the significance of the potential impacts associated with the construction and operation of the development on the aquatic features considered in this assessment. For the purposes of this assessment, the Standardised Risk (or Impact) Assessment Matrix as specified by the Department of Water and Sanitation will be used to assess the impacts in the “regulated area of the watercourse” as defined in the National Water Act (Act No. 36 of 1998).

The “regulated area of a watercourse” as defined in the Act make provision for the following:

- a) The outer edge of the 1 in 100 year flood line and/or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse or a river, spring, natural channel, lake or dam;
- b) In the absence of a determined 1 in 100 year flood line or riparian area the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench; or
- c) A 500m radius from the delineated boundary (extent) of any wetland or pan.

The extent of this “regulated area of a watercourse as it pertains to the Risk Assessment is shown in Figure 10-1. In absence of any wetland features, the “regulated area” is associated with a 100m from the edge of the identified watercourse.

The Risk Assessment Matrix makes provision for the identification of risks at the various phases applicable to the project (construction and operational) and assesses these to determine the magnitude of the risk / impact to be low, medium or large. Provision is also made for pre- and post-mitigation assessment.

As no aquatic features were identified either within the boundaries of the development site or within the distances specified to determine the “regulated area of a watercourse” the completion of a Risk Assessment was not necessary.

11 COMPLIANCE STATEMENT

As the Site Sensitivity Verification completed in the sections, above, has indicated that the Aquatic Biodiversity of the proposed development site is considered to be “LOW”, the following Compliance Statement has been prepared for the project in relation to the Aquatic Biodiversity. The contents of the Compliance Statement are provided in the table below.

Table 11-1: Minimum contents requirements of the Compliance Statement

Compliance statement requirement	Section of this report
Contact details and relevant experience as well as the SACNASP registration number of the specialist preparing the compliance statement, including the curriculum vitae	Appendix A
A signed statement of independence by the specialist	Page iv
A statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment	Section 3
A description of the methodology used to undertake the site survey and prepare the compliance statement, including equipment and modelling used where relevant	Section 3 and 4
The mean density of observations / number of sample sites per unite area	NA
Where required, proposed impact management actions and outcomes or any monitoring requirements for inclusion into the EMPr	Section 11
A description of the assumptions made and any uncertainties or gaps in knowledge or data	Section 3
Any conditions to which the compliance statement is subjected.	Section 11

The classification Aquatic Biodiversity Theme in the DFFE Online Screening Tool of “very high” sensitivity is related to the development site’s presence in the Tsitsikamma SWSA. The nature of the development will not impact on the SWSA’s status as it will not result in the impeding of any surface runoff into the localized groundwater regime and it will not influence the amount of water that is currently provided by the development through runoff and seepage. As such, the “very high” sensitivity of the development site is considered to be “low”.

Table 11-2: Management and mitigation measures to be included in the Environmental Management Programme for the construction phase

Nature of the impact	Impact summary	Proposed management and mitigation measures
Contamination of the area by petrochemical spillages.	The presence of plant and equipment as well as possible petrochemical stores on the construction site that make use of petrochemical substances a risk of contamination to the possible groundwater that may occur under the site.	All plant and equipment that make use of petrochemical substances must be checked leakages on a daily basis before operations commence.
		All plant and equipment that are found to be leaking must be removed from the site and only returned once the leakages have been addressed.
		If any petrochemical substances are stored on the site, this storage must be done on an impermeable surface in a bunded area that makes provision for 110% of volume of the substances that are stored.
		All refuelling of plant and equipment must be conducted over a drip-tray.
		If any plant or equipment is to be parked on the site, these must be parked within the demarcated construction footprint that has been cleared.
		If any spillages from plant or equipment occur, the spill must be contained immediately, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service provider.
		The domestic waste from these waste bins must be removed off site and disposed of at a municipal landfill site on a weekly basis or more regularly if the bins fill up quicker.
Contamination of the area as a result of leaking portable toilet facilities.	Portable toilet facilities will be present of the property to service the labour associated with the construction.	Only portable chemical toilets with a sealed reservoir will be allowed on site.
		All portable chemical toilets must be located further than 30m away from the delineated edges of any aquatic feature.

Nature of the impact	Impact summary	Proposed management and mitigation measures
	These toilets will pose a risk of leakages and spillages which may impact on the possible groundwater that may occur on the site.	The capacity of the reservoirs in the portable chemical toilets must be monitored on a daily basis to ensure that they can be serviced timeously. All removal of the collected sewage waste from the portable chemical toilets must be conducted by a registered service provider for disposal at a municipal wastewater treatment facility.

12 CONCLUSION

No part of the proposed development site is located within the “regulated area of a watercourse” as defined by the National Water Act (Act No. 36 of 1999). As such, there will be no requirement for the completion of any Water Use License Application for Section 21 (c) and (i) for the development.

Similarly, no part of the development is in any aquatic feature or within 32m of any aquatic feature, as such there will be no requirement for any Application for Environmental Authorisation in accordance with the National Environmental Management Act (Act No. 107 of 1998): Environmental Impact Assessment Regulations (2014), as amended.

The classification Aquatic Biodiversity Theme in the DFFE Online Screening Tool of “very high” sensitivity is related to the development site’s presence in the Tsitsikamma SWSA. The nature of the development will not impact on the SWSA’s status as it will not result in the impeding of any surface runoff into the localized groundwater regime and it will not influence the amount of water that is currently provided by the development through runoff and seepage. As such, the “very high” sensitivity of the development site is considered to be “low”.

As no aquatic feature will be impacted upon, it is the recommendation of this report that there is no reason why this development cannot be authorised.

13 REFERENCE LIST

Department of Water and Sanitation Report – Wetland and riparian habitat delineation document;

Department of Water and Sanitation Report – Risk Assessment Protocol and associated Matrix;

MUCINA, L. and RUTHERFORD, M.C. (eds.), 2006. The Vegetation of South Africa, Lesotho and Swaziland. Strelitzia Publishers.

South African National Biodiversity Institute – Wetland buffer guideline document;

South African National Biodiversity Institute – Classification System for Wetlands and other Aquatic Ecosystems in South Africa (Ollis. et al.)

Water Research Commission Report TT659/16 – Wetland Offset;

Water Research Commission Report TT659/16 – High Risk Wetland Atlas;

Water Research Commission Report TT658/16 – Wetland Rehabilitation in mining landscapes;

Water Research Commission Report TT339/08 – WET-EcoServices a technique for rapidly assessing ecosystem services supplied by wetlands; and

Water Research Commission Report TT340/08 – WET-Health a technique for rapidly assessing wetland health.

APPENDIX A
SPECIALIST CURRICULUM VITAE

