

---

# Proposed Residential Development on Erf 23731, Aalwyndal, Mossel Bay

## Water Use License Application Technical Report WU47396



**Name of Applicant:**  
Aalwynbaai 21250 Properties (Pty) Ltd

**Prepared For:** Aalwynbaai 21250 Properties (Pty) Ltd  
Marthia Roos

**Author:** Sonia Jordaan  
**Reviewer:** Dr. J. Dabrowski (PhD)  
**SACNASP:** Pr. Sci. Nat. (Aquatic Science  
& Ecological Science) – 115166  
**Date:** November 2025  
**Version:** Draft for Public Participation



## TABLE OF CONTENTS

<b>LIST OF TABLES</b> .....	<b>III</b>
<b>LIST OF FIGURES</b> .....	<b>III</b>
<b>GLOSSARY</b> .....	<b>IV</b>
<b>ABBREVIATIONS</b> .....	<b>V</b>
<b>1. INTRODUCTION</b> .....	<b>6</b>
1.1 APPLICANT DETAILS .....	6
1.2 PERSON SUBMITTING THE APPLICATION .....	6
1.3 PROJECT BACKGROUND AND PURPOSE .....	7
1.4 LOCATION OF WATER USES .....	8
<b>2. ADMINISTRATIVE AND TECHNICAL DOCUMENTS SUBMITTED TO SUPPORT THE APPLICATION</b> .....	<b>10</b>
2.1 ADMINISTRATIVE DOCUMENTS .....	10
2.2 REPORTS AND OTHER TECHNICAL DOCUMENTS .....	10
<b>3. PROJECT DESCRIPTION</b> .....	<b>10</b>
3.1 SITE DEVELOPMENT PLAN .....	10
3.2 WASTEWATER DISPOSAL .....	14
<b>4. METHOD STATEMENT (FOR SECTION 21C AND I ACTIVITIES)</b> .....	<b>18</b>
<b>5. STORMWATER MANAGEMENT PLAN</b> .....	<b>18</b>
5.1 SUSTAINABLE URBAN DRAINAGE SYSTEM (SUDS) .....	21
5.2 EROSION PREVENTION .....	23
<b>6. REHABILITATION PLAN</b> .....	<b>23</b>
<b>7. WATER USES APPLIED FOR</b> .....	<b>24</b>
<b>8. DESCRIPTION OF THE ENVIRONMENT</b> .....	<b>25</b>
<b>9. IMPACTS AND MITIGATION MEASURES</b> .....	<b>26</b>
9.1 NO-GO DEVELOPMENT OPTION .....	26
9.2 CUMULATIVE IMPACTS .....	42
<b>10. WATER DEMAND AND SUPPLY ANALYSIS</b> .....	<b>42</b>
10.1 WATER DEMAND .....	42
10.2 WATER SUPPLY ANALYSIS .....	42
10.3 WATER BALANCE .....	43
<b>11. WATER QUALITY</b> .....	<b>43</b>
<b>12. PUBLIC PARTICIPATION</b> .....	<b>43</b>
<b>13. INPUTS / AUTHORISATIONS FROM OTHER DEPARTMENTS / STAKEHOLDERS</b> .....	<b>43</b>
<b>14. SECTION 27(1)</b> .....	<b>43</b>

<b>15. DECLARATION BY THE APPLICANT WITH SIGNATURE CONFIRMING THAT THE INFORMATION SUBMITTED IS CORRECT. ....</b>	<b>51</b>
<b>16. APPENDICES .....</b>	<b>51</b>

### LIST OF TABLES

Table 1: Property details of Erf 23731 .....	9
Table 2. List of reports and other technical documents submitted with this application. ....	10
Table 3: Housing development zoning.....	13
Table 4: Definitions and objectives for conservation categories identified in the Western Cape Biodiversity Spatial Plan (WCBSP,2023) .....	13
Table 5: Stormwater drainage zone A and B with relevant detention pond details as per Figure 11 and Figure 12.....	19
Table 6. Water uses applied for in this application .....	24
Table 7: Summary of proposed development area's features (Aquatic report, Appendix 1).....	26
Table 8. Summary of impacts and mitigation measures. ....	27
Table 9. Employment opportunities created by the development. ....	47

### LIST OF FIGURES

Figure 1: Sub-division of Erf 23731 from the original Erf 21250 .....	6
Figure 2: Proposed location of residential development on Erf 23731, Mossel Bay, with mapped valley bottom wetland and watercourses indicated. ....	7
Figure 3: Delineated watercourses and 30m buffer along the wetland (using established spatial layers from WCDEDT, 2025). ....	8
Figure 4: Proposed location of Aalwyndal Housing Development, Erf 23731, Mossel Bay: within quaternary catchment K10A in relation to mapped watercourses (Wetlands from National Wetland Map Version 5).....	9
Figure 5: Site Development Plan, Erf 23731.....	11
Figure 6: The proposed development area in relation to the Western Cape Biodiversity Spatial Plan.....	12
Figure 7: Sewer Reticulation Layout (Element Consultant Engineering).....	17
Figure 8: Natural drainage zones identified in the Element Engineering report (Appendix 2).....	19
Figure 9 Conceptual plan proposed for the upgrade of the stormwater V-drain leading to the outlet to the stream adjacent to Aalwyn Way. ....	20
Figure 10: Location (yellow arrow) of the proposed stormwater outlet upgrade to the wetland downstream of an existing dam (left photo). The existing outlet / dam spillway was concreted over but has been scoured out, leaving large holes under the concrete surface (right photo).....	21
Figure 11: Design drainage zones .....	22
Figure 12: Proposed stormwater drainage and discharge pathways (Appendix 5).....	22

## GLOSSARY

<b>Buffer</b>	A strip of land surrounding a wetland or riparian area in which activities are controlled or restricted to reduce the impact of adjacent land uses on the wetland or riparian area. Buffers are land use specific and are calculated for the specific environmental context and proposed land use.
<b>Characteristics of a watercourse</b>	Means the resource quality of watercourse within the extent of a watercourse.
<b>Construction</b>	Means any works undertaken to initiate or establish activities, site preparation including vegetation removal and ground levelling that may result in impeding or diverting or modifying resource quality.
<b>Delineation of a wetland or riparian habitat</b>	Means delineation of wetlands and riparian habitat according to the methodology as contained in the Department of Water Affairs and Forestry, 2008 publication: A Practical Field Procedure for Delineation of Wetlands and Riparian Areas or amended version.
<b>Diverting</b>	Means to, in any manner, cause the instream flow of water to be rerouted temporarily or permanently.
<b>Impeding</b>	Means to, in any manner, hinder or obstruct the instream flow of water temporarily or permanently.
<b>Regulated area of a watercourse</b>	<p>a) The outer edge of the 1 in 100-year flood line or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, dams and lakes.</p> <p>b) In the absence of a determined 1 in 100-year flood line or riparian area as contemplated in (a) above the area within 100m of distance from the edge of a watercourse where the edge of the watercourse (excluding floodplains) is the first identifiable annual bank fill flood bench.</p> <p>c) In respect of a wetland: a 500m radius around the delineated boundary (extent) of any wetland (including pans).</p>
<b>Rehabilitation</b>	Means the process of reinstating natural ecological driving forces within part or whole of a degraded watercourse to recover former or desired ecosystem structure, function, biotic composition and associated ecosystem services.
<b>Resource quality</b>	Of a watercourse means the quality of all the aspects of a water resource including: <ul style="list-style-type: none"> <li>(a) The quantity, pattern, timing, water level and assurance of instream flow;</li> <li>(b) The water quality, including the physical, chemical and biological characteristics of the water;</li> <li>(c) The character and condition of the instream and riparian habitat, and;</li> <li>(d) The characteristics, condition and distribution of the aquatic biota.</li> </ul>
<b>Site Assessment</b>	Comprehensive evaluation of the proposed development site, including the identification of wetlands, watercourses, and soil characteristics.
<b>Topography</b>	The physical features of the land surface, considered for its potential influence on drainage and ecological features.

## ABBREVIATIONS

<b>CBA:</b>	Critical Biodiversity Area
<b>CR:</b>	Critical Endangered
<b>DWS:</b>	Department of Water & Sanitation
<b>EIS:</b>	Ecological Importance and Sensitivity
<b>ESA:</b>	Ecological Support Area
<b>FEPA:</b>	Freshwater Ecosystem Priority Area
<b>GA:</b>	General Authorisation
<b>GPS:</b>	Global Positioning System
<b>NEMA:</b>	National Environmental Management Act
<b>NFEPA:</b>	National Freshwater Ecosystem Priority Areas
<b>NWA:</b>	National Water Act
<b>NWM5:</b>	National Wetland Map 5
<b>PES:</b>	Present Ecological State
<b>SACNASP:</b>	South African Council for Natural Scientific Professions
<b>WCBSP:</b>	Western Cape Biodiversity Spatial Plan
<b>WUL:</b>	Water Use License

# 1. INTRODUCTION

Confluent Environmental Pty (Ltd) was appointed by the landowner of Erf 23731 to apply for a Water Use License (WUL) for a housing development on the property. The property, measuring approximately 6.86 ha and called Erf 23731 was recently subdivided from the original Erf 21250 (Figure 1). The subdivision was largely informed by environmental sensitivities established prior to the subdivision by biodiversity specialists at Confluent Environmental. The remainder of the original erf (now Erf 23730) will remain in its current condition which has a number of existing residential dwellings and an operating guesthouse.

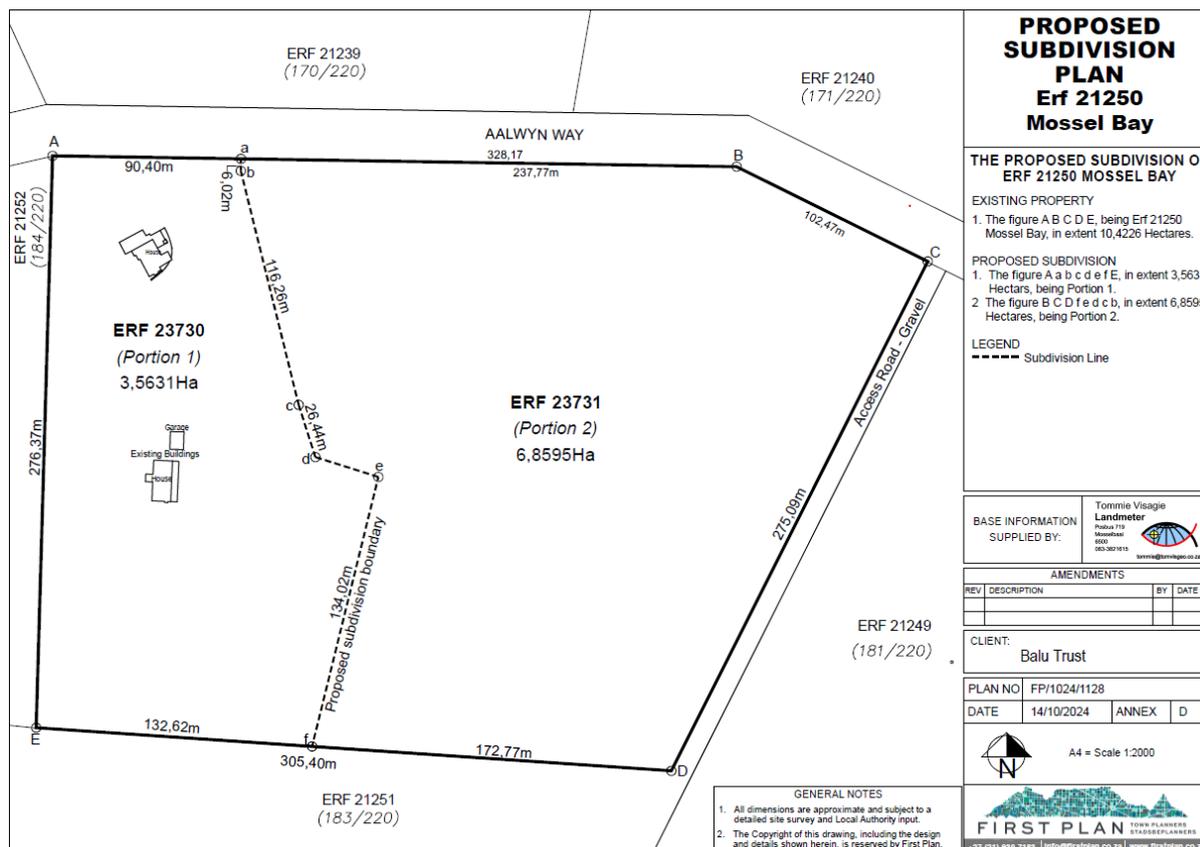


Figure 1: Sub-division of Erf 23731 from the original Erf 21250

## 1.1 Applicant Details

Name of applicant: Aalwynbaai 21250 Pty (Ltd)  
 Postal address: 378 Lauren Street, Lynwood Park, Pretoria  
 Cell phone number: 082 8971 742  
 E-mail address: [jaco@tlj.co.za](mailto:jaco@tlj.co.za)

## 1.2 Person Submitting the Application

Jackie Dabrowski (Ph.D.)  
 The South African Council for Natural Scientific Professions (SACNASP)  
 Registration Number 115166: Aquatic and Ecological Science  
 Date of registration 27 January 2016

### 1.3 Project Background and Purpose

The applicant, Aalwynbaai 21250 (Pty) Ltd, hereafter referred to as 'the developer' is applying for a WUL in terms of the National Water Act (NWA; Act 36 of 1998), to build a residential housing development on Erf 23731, with Erf size 6.86 in Mossel Bay, Western Cape (Figure 2). The property is located on Aalwyn Way, the main entrance road off the N2 highway into Aalwyndal. A mapped wetland and non-perennial drainage line are indicated along the southern boundary of the property flowing in an easterly direction, under the road and into the Tweekuilen River.



Figure 2: Proposed location of residential development on Erf 23731, Mossel Bay, with mapped valley bottom wetland and watercourses indicated.

The most recent Site Development Plan (SDP) provided (Figure 5), was laid out to avoid environmental sensitivities on and near the erf (Figure 3). The existing entrance to the operational guesthouse will remain as it is, and a new entrance is proposed midway along the development from Aalwyn Way.

Environmental sensitivities of the site and surrounding area are well understood as a result of the recently concluded Aalwyndal Biodiversity Offset Framework Plan; a series of 5 reports jointly compiled by Confluent Environmental and Eco-Pulse (WCDEDT, 2025). Therefore, the delineated wetland area and associated buffer zone of 30m informed the layout of the SDP (Figure 3). Refer to Section 3 below for more details on the Aalwyndal Biodiversity Offset Framework Plan.



Figure 3: Delineated watercourses and 30m buffer along the wetland (using established spatial layers from WCDED, 2025).

The applicant is applying for the authorisation of water uses in terms of Section 21 of the NWA as follows:

- Section 21(c); Impeding or diverting the flow of water in a watercourse;
- Section 21 (i); Altering the bed, banks, course or characteristics of a watercourse;
- Section 21(g): Disposing of waste in a manner which may detrimentally impact on a water resource;

There are no existing registered water uses on the property.

#### 1.4 Location of Water Uses

The water uses take place in quaternary catchment **K10A**, located within the Mossel Bay Municipality and administrative district of Mossel Bay, Western Cape (Figure 4).

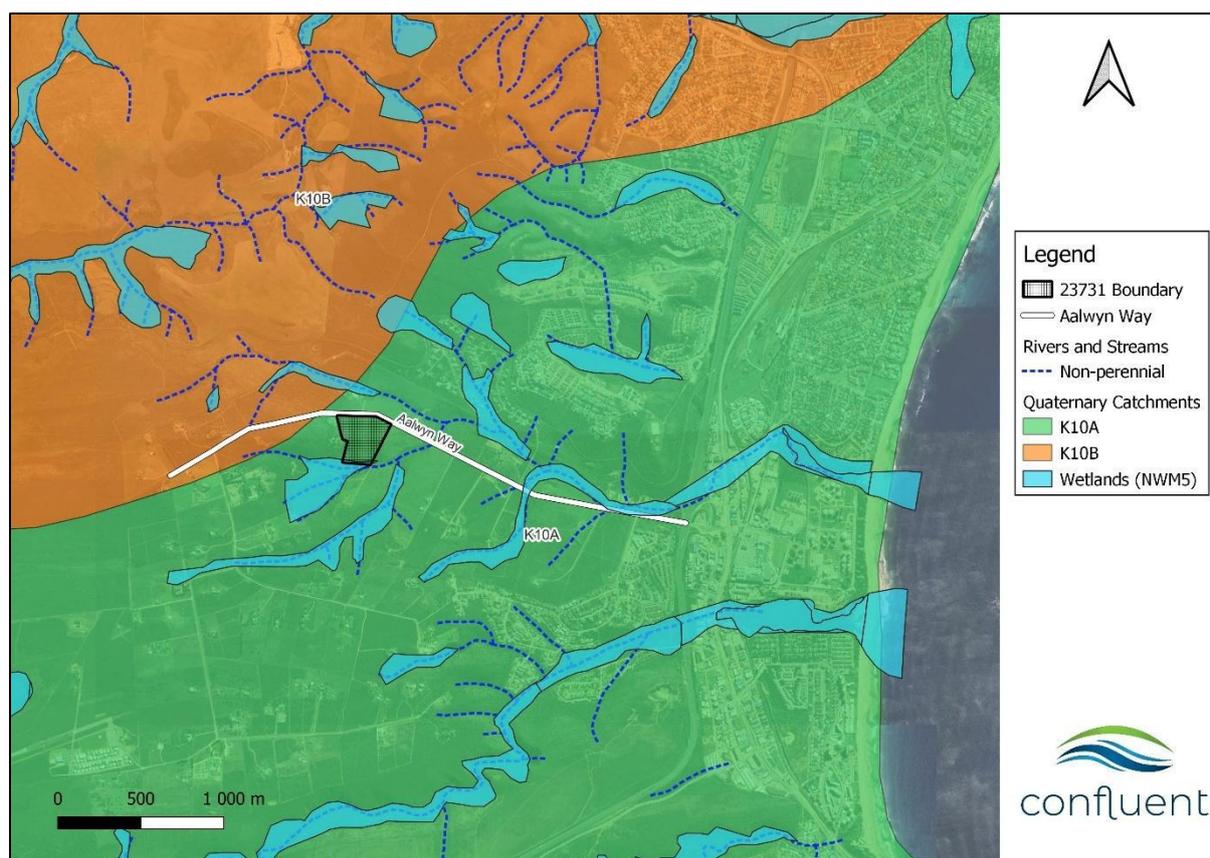


Figure 4: Proposed location of Aalwyndal Housing Development, Erf 23731, Mossel Bay: within quaternary catchment K10A in relation to mapped watercourses (Wetlands from National Wetland Map Version 5).

Erf 23731 is located on Aalwyn Way on historically transformed and grazed land which slopes gently to the south towards a valley-bottom wetland on the neighbouring property. The only mapped intersection between Erf 23731 and any aquatic features is along the southern boundary and the south-eastern corner where the buffer extends into the erf. The watercourses and associated 30m buffers indicated in Figure 3 were delineated in Report 1 (WCDEDT, 2025) of the series, and therefore no further delineation or classification of watercourses is required (Appendix 1).

The geographic location at the property where the water uses will take place is:

Latitude: -34.141434°S and Longitude: 22.077830°E

Property details of Aalwyndal Housing Development are presented in Table 1.

Table 1: Property details of Erf 23731

Property description	Title Deed number	Area of property (ha)	Owner details on Title Deed
Erf 23731	T44585/2025	6.8596	Aalwynbaai 21250 Properties (Pty) Ltd

## 2. ADMINISTRATIVE AND TECHNICAL DOCUMENTS SUBMITTED TO SUPPORT THE APPLICATION

### 2.1 Administrative Documents

Letter of Appointment  
 Title deed of property  
 Tax invoice of Breede-Olifants administration fee  
 Applicant's company registration certificate  
 Applicant's contact details

### 2.2 Reports and Other Technical Documents

*Table 2. List of reports and other technical documents submitted with this application.*

Report Title	Compiled By	Date of Report
Aquatic Specialist Report: Biodiversity Site Sensitivity Verification and Impact Assessment	Confluent Environmental, Dr Jackie Dabrowski, August 2025	November 2025
Civil Engineering Services Report	Element Consulting Engineers, Hannes Lourens	Rev.2, October 2025
WULA Technical Report	Confluent Environmental, Sonia Jordaan	November 2025
Aalwyndal Stormwater Management Master Plan	Sky High Consulting Engineers in association with Graeme McGill Consulting	25 July 2024
Geotechnical Report	Outeniqua Geotechnical Services	4 March 2025

## 3. PROJECT DESCRIPTION

### 3.1 Site Development Plan

The most recent Site Development Plan (SDP) is provided in Figure 5 below. This layout, along with the sub-division (Figure 1), were planned to avoid environmental sensitivities on the erf as far as possible (see Figure 6). Therefore, the entire development except for minor stormwater conveyance infrastructure, is located outside of the 30m buffer, which is also referred to as the Core Area in Report 1 of the WCDEDT (2025).



Figure 5: Site Development Plan, Erf 23731

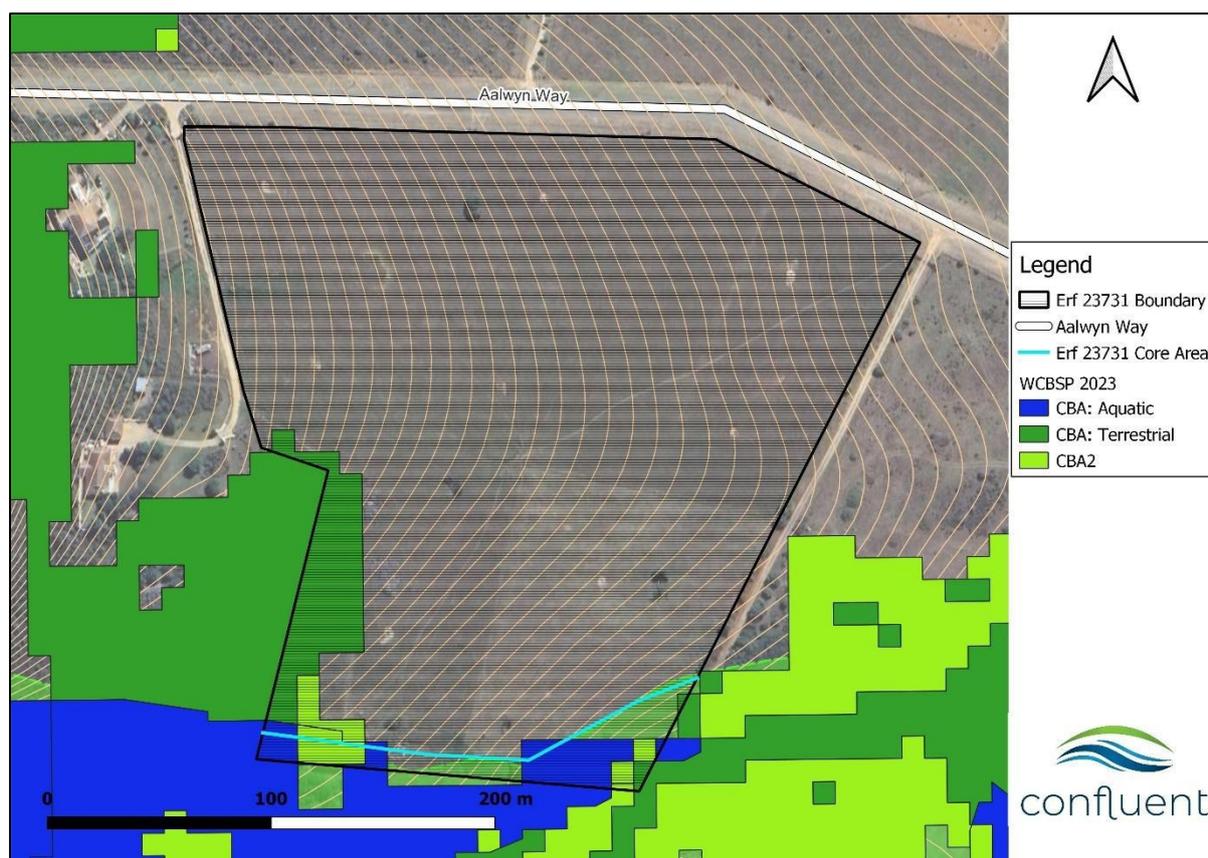


Figure 6: The proposed development area in relation to the Western Cape Biodiversity Spatial Plan.

The Core Area is a conservation corridor that was proposed through Aalwyndal for the purpose of conserving well connected areas of important or irreplaceable biodiversity and sensitive habitats (Report 1, WCDEDT, 2025). The aim is for the Core Area to preferentially provide on-site (in Aalwyndal) offset opportunities before off-site areas are required. As such, the Core Area must be set aside and managed for conservation as described in Report 3 of the WCDEDT (2025) series. Although the Aalwyndal Offset Framework Plan has not been formally adopted, the 30m riparian buffer would have been required as a means to protect the watercourse from proposed development as a matter of best practice.

A small section of the Core Area is located along the southern boundary and south-eastern corner of Erf 23731 (Figure 6) which extends onto neighbouring properties to the west and east. To the west, the Core Area extends behind the existing dwellings and guesthouse close to the original boundary of the Erf 21250 (prior to sub-division; Figure 1) (Appendix 1).

In Table 3 below a summary of what the proposed 69 single residences, 26 townhouses and 59 apartments in the housing development, as well as the amenities will be zoned, as indicated in the SDP (Figure 5 above).

Table 3: Housing development zoning

Portions	Use	Zoning	Area (m <sup>2</sup> )
1 – 69	General Residential I	Group Housing	26 334
73 – 99	General Residential II	Town Houses	5 380
70 – 72	General Residential III	Flats	6 213
100 – 112	Open space Zone II	Private Open Space	11 831
113	Transport Zone III	Private Road	15 922
	Open Space Zone III	Conservation	2 916

The Western Cape Biodiversity Spatial Plan (WCBSP; 2023; Figure 6) indicated the following Biodiversity Priority Areas (BPA) on the development site and surrounding area:

### Critical Biodiversity Area 1 (CBA1): Aquatic and Terrestrial

### Critical Biodiversity Area 2 (CBA2): Degraded Areas

In terms of aquatic features, these biodiversity priority areas were identified due to the presence of the mapped valley-bottom wetland (Figure 4).

The location of CBAs was one of the aspects considered during the revision of the Aalwyndal precinct plan and proposal of the Core Area. Therefore these priority areas have already been ground-truthed and accommodated in the proposed Core Area (Figure 8 of the Aquatic report, Appendix 1) which will achieve the specified management actions appropriate to conservation of CBAs (Table 4).

Table 4: Definitions and objectives for conservation categories identified in the Western Cape Biodiversity Spatial Plan (WCBSP, 2023)

WCBSP Category	Definition	Management Objective
Critical Biodiversity Area 1	Areas in a natural condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.	Maintain in a natural or near-natural state, with no further loss of natural habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land uses are appropriate.
Critical Biodiversity Area 2	Areas in a degraded or secondary condition that are required to meet biodiversity targets, for species, ecosystems or ecological processes and infrastructure.	Maintain in a natural or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity-sensitive land-uses are appropriate.

As the current development footprint on Erf 23731 does not directly interact with the watercourse and has been adjusted to exclude both the watercourse and its buffers, the primary issues to consider is the management of stormwater due to the slope, increase in hard surfaces and low soil permeability.

The construction of Aalwyndal Housing Development is within 500m of a wetland and therefore in the regulated area of a watercourse as defined in GN4167 of the NWA. The

development will have a conservancy tank, which will be designed in a modular fashion as the development expands in a phased approach. This will be until such time that the municipal network is available to connect to.

### 3.2 Wastewater Disposal

According to the Element Engineering Services Report (Appendix 2) the property is not serviced with a sewer connection as there are no sewerage bulk services at present in Aalwyndal. Therefore, two onsite conservancy tanks for wastewater from the development are proposed, until such time that the development can connect to the municipal service, when that becomes available.

The Municipal masterplan upgrades will still take some years to be implemented, with associated high costs to construct. The municipality confirmed that one developer will not be able to carry the cost of the needed upgrade to the line and pump station. The municipality can therefore not provide sewage service to the new development due to capacity constraints and supports the use of conservancy tanks at the development until the upgrades have been done and the development can connect to the municipal bulk sewage service line (The municipal bulk services confirmation letter was not available at the time of writing this report, but will be provided for the final application phase of the WULA).

According to the Element Consulting Engineers Report, the Average Dry Weather Flow (ADWF) created by the proposed development is calculated at approximately 71.1kl/day. The design peak flow, inclusive of a peak factor of 3.5 and 15% extraneous flow, will be calculated during detail design stage (Appendix 2).

The Element Report describes how three alternatives for the handling of bulk sewer for the development were investigated. These options were:

1. Upgrading and expansion of municipal bulk sewer infrastructure:
  - The Aalwyndal sewer masterplan has been published in the 2025 and concluded that it is too large expense to be carried by any one developer.
  - The Municipality agreed that funding would be made available for bulk infrastructure upgrades and will commence in July 2027 and that it is not feasible to prevent development while waiting for this infrastructure.
2. Sewer package plant:
  - Before the confirmation from the municipality in 2025 that the bulk services will be implemented in 2027, this housing development would have applied for a WULA to construct a package plant to treat the wastewater and dispose of the treated effluent by means of irrigation on site.
  - However, the Department of Environmental Affairs and Development Planning (DEADP), was not in favour of a sewage package plant being approved, if all impacts cannot be managed on site.
  - The decision by the applicant was therefore made not to proceed with the application for the package plant and irrigation with the treated wastewater.

### 3. Sewer conservancy tanks

- Sewer conservancy tanks were deemed the best option for containing all impacts on site, and avoiding / minimising the risks to watercourses.
- The design of the conservancy tanks will be done in a phased approach as the development expands. This will be used until the municipal bulk infrastructure is available and the development can tie into it.
- Continual consultation with the municipality will be kept, to assess the possibility of the housing development's connection to the municipal bulk sewer network.

The sewer conservancy tanks were chosen as the preferred alternative for the application for the water use authorisation. The conservancy tanks will be added in a modular, phased approach aligned with development of different phases of the residential units. The tanks will be utilised until such time that upgrades are complete and a connection can be made to the municipal bulk sewer system. See Figure 7 for the sewer reticulation layout.

According to the Element Engineering Report, the conservancy tank design will allow for drainage in Zone A1 and Zone B1 (Figure 8) in the following way:

#### Drainage Zone A1:

- ADWF 47.3kl/day
- Installation type – underground concrete tank
- Design for 24hr flow (worst case scenario / risk mitigation time included)
- Tank size – 50kl concrete
- Tank dimensions – 5m(w) x 6.7m(l) x 1.5m(d)
- Modular design size (per phase) of approximately 25kl
- Number of modular units – 2 units
- Modular unit capacity – 25kl
- Arrangement of units – parallel
- Size per unit – 5m(w) x 3.3m(l) x 1.5m(d)

#### Drainage Zone B1:

- ADWF 23.8kl/day
- Installation type – underground concrete tank
- Design for 24hr flow (worst case scenario / risk mitigation time included)
- Tank size – 25kl concrete
- Tank dimensions – 5m(w) x 3.3m(l) x 1.5m(d)
- Modular design size (per phase) of approximately 25kl
- Number of modular units – 1 unit
- Modular unit capacity – 25kl
- Arrangement of units – parallel
- Size per unit – 5m(w) x 3.3m(l) x 1.5m(d)

According to the Element report (Appendix 2), the tanks will be designed for a 24-hour raw sewage storage capacity, with an operational and maintenance (O&M) manual, which will include the following to be enforced and operated by the Home Owner's Association (HoA):

- During the first phase *ad hoc* emptying of the tanks will be required and a dedicated, permanent stand-by, vacuum truck operator will be assigned for this.
- After the first phase of the project, a vacuum truck operator will be assigned with a fixed daily schedule.
- In later phases of the project, the emptying of the tanks will be continuous, i.e. more loads than once a day. At this stage as soon as it is feasible a vacuum truck will be purchased by the development to perform this duty.
- With the final phase of the project concluded, a total of 7 loads per day is expected with a truck of 10 kℓ capacity, but this stage is only expected within 7-years from commencement of the construction of the first units of this development.
- Inspection of the tanks will be performed by the supervisor of the estate.
- The wastewater will be removed to Hartenbos regional WWTW, who has capacity and been confirmed by the Mossel Bay municipality. (The municipal bulk services confirmation letter was not available at the time of writing this report, but will be provided for the final application phase of the WULA).

At the time of writing this report, no procedures had been provided for emergency events or decommissioning of the conservancy tanks. It is expected that this information would be provided in an updated engineering services report in advance of the final phase of the Water Use License Application.

See Section 5 of this report for additional information on the stormwater management of the housing development and municipal stormwater V-drain upgrade, which will form part of the WULA application.

The water uses applicable to this application are:

- 21(c): Impeding or diverting the flow of water in a water course due to the construction of a housing development within the regulated area of a wetland
- 21(i): Altering the bed, banks, course or characteristics of a water course due to the construction of a housing development within the regulated area of a wetland
- 21(g): Disposing of waste in a manner which may detrimentally impact on a water resource; by treating wastewater on site

At the time of writing this report, no Municipal letter was available to confirm approval for the proposed conservancy tanks for wastewater from the development and the supply of potable water to the development. It is expected that this information would be provided in an updated engineering services report in advance of the final phase of the Water Use License Application.



Figure 7: Sewer Reticulation Layout (Element Consultant Engineering)

#### 4. METHOD STATEMENT (FOR SECTION 21C AND I ACTIVITIES)

Typical construction methods for a housing estate would be followed. This would include grubbing to clear vegetation from the development area, followed by mass earth moving and the use of heavy machinery for excavation work. Once construction of hard infrastructure has been completed, landscaping of open space, including stormwater detention ponds will follow.

The construction of the proposed development is within 500m of a wetland and therefore in the regulated area of a watercourse as defined in GN4167 of the NWA. As mentioned before, since the development footprint on Erf 23731 has been adjusted to exclude both the watercourse and its buffers, the primary issue to consider is the management of stormwater from the site (Appendix 1). See the following section on stormwater management.

#### 5. STORMWATER MANAGEMENT PLAN

A stormwater management plan was provided by Element Consulting Engineers (Appendix 2) and additional recommendations are made in the Aquatic Specialist Report (Appendix 1).

Surface stormwater management needs to be implemented for drainage in the area due to the moderate to steep gradients. This will require a formal stormwater reticulation system comprising of a combination of paved roads, kerbing, lined channels, catchpits, stormwater pipes and detention ponds. The stormwater management plan for the proposed housing development is guided by Sustainable Drainage Systems (SuDS) design principles. Detailed design of all the proposed SuDS interventions was not available at the time of writing this report.

The Element Report advised that a formal stormwater reticulation system will be provided through a combination of surfaced roadways, kerbs, channels, cut-off drains, stormwater pipes, detention ponds and various minor structures. Energy dissipation will be performed as standard practice with gabion mattresses at all outlets. All pipe outlets will be standard concrete headwalls. Litter traps will be provided at all stormwater outlets and will be cleaned on a regular basis by the estate's landscaping and maintenance teams (Appendix 2).

The Aquatic specialist report states that while there is no doubt that the planned stormwater detention ponds will positively impact on stormwater management for the site, there are still some uncertainties and gaps that should be addressed as part of the design and layout phase.

The stormwater report does not currently refer to the **Stormwater Master Plan for Aalwyndal** (Sky High Engineers, 2024) which stipulates the following requirements for developments in Aalwyndal based on Sustainable Drainage Systems (SuDS) principles:

1. Provide post-development attenuation to pre-development peaks for storm events ranging from 1:5-year to the 1:50-year storm events.
2. Provide controlled discharge of the 1:100-year storm event with freeboard so that the peak outflow from the development site will protect downstream floodplains and developments from the adverse impacts of extreme floods, as well as help in evaluating the effect the 1:100 year storm event will have on the stormwater management system (Appendix 1).

Approximately 85% of the Stormwater drains towards the southeast (Zone A) and 15% towards the northeast (Zone B of the property). See Figure 8 below, where the drainage zones A and B are indicated as per the Element Engineering report (Appendix 2).

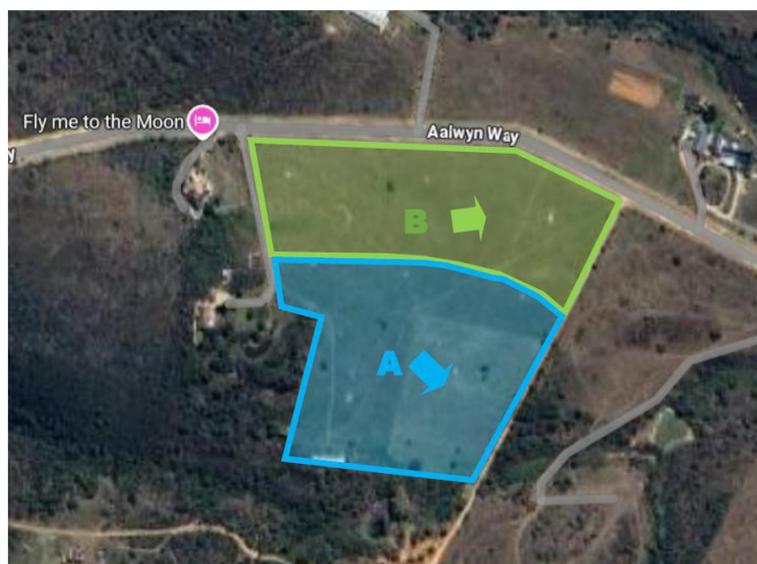


Figure 8: Natural drainage zones identified in the Element Engineering report (Appendix 2).

According to Element consulting engineers, no perched water table is evident and a low to moderate water retention rate is expected and due to the moderate steep gradients on the site and low soil permeability, lateral movement of stormwater can be fast (Appendix 2).

According to the Geotechnical report (Appendix 3) the subsurface investigation did not reveal any groundwater, but seasonal seepage was expected in the upper part of the soil profile (upper 0.6m) during wet weather periods due to gradual infiltration.

The stormwater drainage zones A and B are subdivided and provision is made for a series of five stormwater detention dams with volumes as per Table 5 below.

Table 5: Stormwater drainage zone A and B with relevant detention pond details as per Figure 11 and Figure 12

Drainage Zone	Area (ha)	1:2-year peak flow (m <sup>3</sup> /s)	1:50 year peak flow (m <sup>3</sup> /s)	Detention pond volume (m <sup>3</sup> )
<b>Zone A: Drains ±85% of the layout to the southeastern corner</b>				
A1	0.43	0.044	0.126	145
A2	0.78	0.080	0.229	263
A3	1.73	0.178	0.509	584
A4	1.34	0.138	0.394	452
<b>Zone B: Drains ±15% of the layout to the east of the development</b>				
B1	0.63	0.065	0.185	213

Figure 12 indicates that stormwater will trickle through detention ponds A1 to A4 for the southern part of the development, from where it will discharge into the drainage line to the

southeast of the development. The outlet from detention pond A4 will have energy dissipation by means of a gabion mattress design.

The northern part of the development’s stormwater will drain to detention pond B1, which will drain along the existing grassed swale along Aalwyn Road, which will discharge into the drainage line to the east of the development (Figure 12). Energy dissipation will be performed at the outlet with a gabion mattress design. Part of this development proposal includes an upgrade of the swale to a V-drain and gabion protection at the outlet ( Figure 9), which is currently badly eroded (Figure 10).

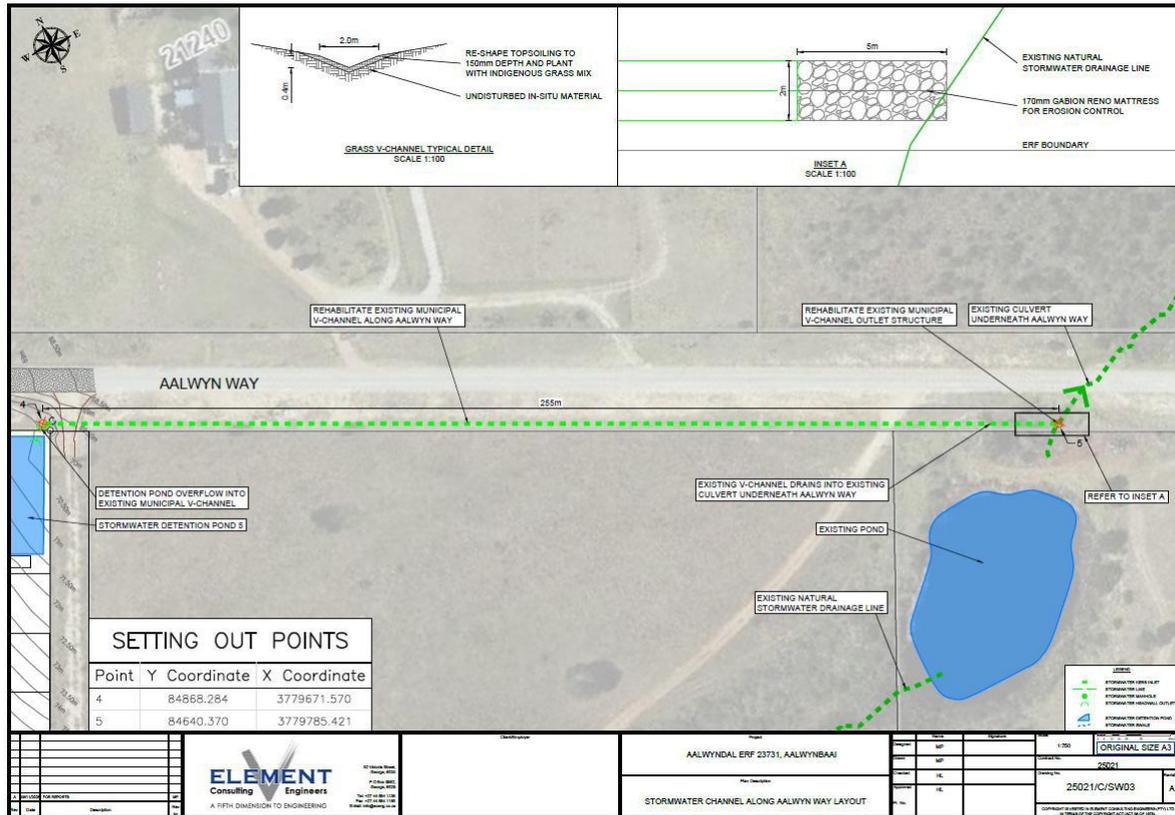


Figure 9 Conceptual plan proposed for the upgrade of the stormwater V-drain leading to the outlet to the stream adjacent to Aalwyn Way.



*Figure 10: Location (yellow arrow) of the proposed stormwater outlet upgrade to the wetland downstream of an existing dam (left photo). The existing outlet / dam spillway was concreted over but has been scoured out, leaving large holes under the concrete surface (right photo).*

Stormwater from remaining areas outside of A1-A4 and B1 along the northern, eastern and southern boundaries will be discharged naturally and unconcentrated along the development boundaries. Stormwater dams are to be vegetated with wetland vegetation, and outlets between dams will be designed as swales.

### **5.1 Sustainable Urban Drainage System (SuDS)**

Stormwater design will make use of Sustainable Drainage Systems (SuDS) to manage stormwater from the proposed development and eventually into the natural drainage line to the south-east of the development. SuDS will assist in preventing significant impact on the hydrological functioning of the drainage line, reduce the risk of flooding and reduce the risk of erosion.

Detailed information typically found in the engineering services report was not available at the time of writing. A high-level stormwater management plan was provided which summarised the conceptual approach to stormwater management. This would be guided by the Aalwyndal Stormwater Master Plan and typical SuDS interventions, although no detailed designs were provided, or incorporated into the SDP at the time of writing (Appendix 1).

The Element engineering report (Appendix 2), provided information on proposed SuDS interventions through vegetation with indigenous wetland species to assist with water polishing, trapping hydrocarbons from the development runoff before this is released into the drainage line.



Figure 11: Design drainage zones



Figure 12: Proposed stormwater drainage and discharge pathways (Appendix 5)

## 5.2 Erosion Prevention

Further SuDS interventions in the Element Engineering report (Appendix 2), refers to erosion prevention specifically. These are:

- By using permeable surfaces where practical (e.g., permeable concrete/brick pavers, stone, gravel) to allow infiltration and slow runoff.
- Incorporate swales in upstream and other development areas.
- Use materials with high surface roughness to slow flows, reduce erosion risk, and enhance habitat provision.
- Connect detention pond outlets via swales to the next pond, maintaining continuous energy-dissipating flow paths.
- Position outlets frequently to avoid water build-up and erosion at discharge points.
- Include erosion protection (e.g., gabion mattresses) set at natural slopes and ground levels.
- The Element stormwater report indicated that moderate steep slopes exist across the entire site, so that no natural slope instability is present.
- At the final detention pond a culvert outlet and overflow into a stormwater channel will be used to flow into a 2m grass block channel or gabion mattress via overland flow into the river.

According to the Geotechnical report of Erf 23731 (Appendix 3), results of the investigation into the soil moisture, permeability and groundwater indicated that the soil is not suitable to accept increased volumes of stormwater from hard surfaces, therefore retention dams would be needed to accommodate increased run-off. This recommendation has been incorporated in the stormwater management plan.

## 6. REHABILITATION PLAN

According to the Aquatic Specialist Report (Appendix 1), basic actions are required to protect the Core Area (buffer around the wetland) and wetland during construction and operational phase. This is to improve and provide basic rehabilitation for the Core Area within Erf 23731. This is a small area covering approximately 0.4 ha.

The report further recommends that progressive revegetation of disturbed areas of bare soil within the development area should be undertaken with suitable plant species (Refer to table number in my report) to be used in rehabilitation of disturbed areas, as well as for gardens and landscaped areas in the development.

Impacts and mitigation measures are discussed in Section 9. Recommendations prior to the start of construction, is to ensure the Core Area's condition can be maintained or improved and best practice management for conservation started early on.

There is no specific rehabilitation plan relevant for this housing development.

## 7. WATER USES APPLIED FOR

Table 6. Water uses applied for in this application

Water use(s) activities	Purpose	Capacity/ Volume	Property Description	Co-ordinates
<b>Section 21 (c) – impeding or diverting the flow of water to a watercourse</b>				
Impeding the flow of water to the watercourse (NE boundary)	Construction of a housing development within 500m of a valley-bottom wetland	N/A	Erf 23731	-34.140936°S 22.079802°E
Impeding the flow of water to the watercourse (SE boundary)	Construction of a housing development within 500m of a valley-bottom wetland	N/A	Erf 23731	-34.142368°S 22.078955°E
Impeding the flow of water to the watercourse (SW boundary)	Construction of a housing development within 500m of a valley-bottom wetland	N/A	Erf 23731	-34.142508°S 22.077136°E
Impeding the flow of water to the watercourse (NW boundary)	Construction of a housing development within 500m of a valley-bottom wetland	N/A	Erf 23731	-34.140377°S 22.076283°E
Diverting the flow of water to the watercourse	Upgrade of the stormwater V-drain	N/A	Road Reserve	-34.141877°S 22.082215°E
<b>Section 21 (i) – altering the bed, banks course or characteristics of a watercourse</b>				
Altering the characteristics of a watercourse (NE boundary)	Construction of a housing development within 500m of a valley-bottom wetland	N/A	Erf 23731	-34.140936°S 22.079802°E
Altering the characteristics of a watercourse (SE boundary)	Construction of a housing development within 500m of a valley-bottom wetland	N/A	Erf 23731	-34.142368°S 22.078955°E
Altering the characteristics of a watercourse (SW boundary)	Construction of a housing development within 500m of a valley-bottom wetland	N/A	Erf 23731	-34.142508°S 22.077136°E
Altering the characteristics of a watercourse (NW boundary)	Construction of a housing development within 500m of a valley-bottom wetland	N/A	Erf 23731	-34.140377°S 22.076283°E
Altering the characteristics of a watercourse	Upgrade of the stormwater V-drain	N/A	Road reserve	-34.141877°S 22.082215°E
<b>Section 21 (g) - disposing of waste in a manner which may detrimentally impact on a water resource;</b>				
Wastewater conservancy tank	Construction of a conservancy tank	47.3 kL/day	Erf 23731	

Water use(s) activities	Purpose	Capacity/ Volume	Property Description	Co-ordinates
for Drainage Zone A within 500m of a wetland	within 500m of a wetland at the southeast corner of Erf 23731			-34.142637°S 22.078622°E
Wastewater for Drainage Zone B1 households within 500m of a wetland	Construction of a conservancy tank within 500m of a wetland at the northeast corner of Erf 23731	23.8 kℓ/day	Erf 23731	-34.141329°S 22.079454°E

## 8. DESCRIPTION OF THE ENVIRONMENT

According to the Aquatic report (Appendix 1), the proposed development site is located in quaternary catchment K10A (Figure 4). The valley-bottom wetland and non-perennial drainage line are confirmed south of the development and flow into the Tweekuilen River. No other watercourses are mapped on, or in the vicinity of the site. No other watercourses were observed in the development footprint during the site visit. The Tweekuilen River flows east through Aalwyndal before exiting through a box culvert under the N2, from where it is mostly canalised beneath built infrastructure before reaching a small estuary.

In terms of aquatic features, biodiversity priority areas were Critical Biodiversity Area 1 (CBA1): Aquatic and Terrestrial and Critical Biodiversity Area 2 (CBA2): Degraded Areas were identified due to the presence of the mapped valley-bottom wetland (Figure 4).

The location of CBAs was one of the aspects considered during the revision of the Aalwyndal precinct plan and proposal of the Core Area. Therefore, these priority areas have already been ground-truthed and accommodated in the proposed Core Area (Figure 7) which will achieve the specified management actions appropriate to conservation of CBAs (Table 4).

The whole Sub-quaternary reach (SQR) is identified as a FEPA. Thus, the whole sub-quaternary catchment indicated needs to be managed in a way that maintains the good ecological condition of the river reach, which in this case, is the watercourse located in the valley-bottom south-east of the development site. It is therefore important that development does not result in any deterioration of the watercourse or its catchment area (Aquatic report, Appendix 1).

Table 7 provides a summary of the relevant catchment features for the proposed development area.

Table 7: Summary of proposed development area's features (Aquatic report, Appendix 1)

Feature	Description
Quaternary catchment	K10A
Mean Annual Runoff	68.76 mm
Mean Annual Precipitation	520 mm
Inherent erosion potential of soils (K-factor)	0.67, High
Rainfall intensity	Very High
Ecoregion Level II	20.02, Southeastern coastal belt
Geomorphological Zone	Not applicable
NFEPA area	Sub-quaternary reach 9292, FEPA.
Mapped Vegetation Type	FRs14: Mossel Bay Shale Renosterveld (Critically Endangered)
Conservation	CBA1 and 2: Aquatic; WCBSP (2023).

## 9. IMPACTS AND MITIGATION MEASURES

The impact assessment is fundamentally guided by the mitigation hierarchy, which seeks to avoid and minimise impacts as the priority. Every effort must be made to avoid and minimise impacts and rehabilitate affected areas. Offsets are the final option in the mitigation hierarchy. The impact assessment includes not only direct and indirect impacts, but also cumulative impacts, which are additive.

The newly sub-divided Erf 23731 is one of the few properties in Aalwyndal with no sensitive vegetation or habitat remaining within the development footprint. Given that the SEI of the proposed development area has a Low SEI, no offset would be triggered for development of the sub-divided property.

Site-specific aspects of the proposed development are considered in terms of the impact assessment, and mitigation measures provided to compliment and support the management aims of the proposed Core Area (Appendix 1).

### 9.1 No-go development option

The Aquatic specialist report advised that the no-go development option would not be a feasible alternative in the case of Erf 23717. The property has confirmed low ecological sensitivity and Aalwyndal has been identified as a key point of expansion and residential development by the Mossel Bay Municipality. The Western Cape Government has made significant investments into the planning and practical aspects of implementing the biodiversity offset for Aalwyndal.

From an aquatic ecosystem perspective, however, impacts in terms of increased flows from stormwater and potential pollutant sources (e.g. leaking conservancy tanks) are currently very low, and the no-go would be preferable. Mitigation of these impacts is therefore the primary focus of the impact assessment.

Table 8. Summary of impacts and mitigation measures.

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
<b>Design and Layout phase</b>			
<p>Degradation of habitat and water quality in the valley-bottom wetland due to inadequate planning for stormwater management</p>	<ul style="list-style-type: none"> <li>The stormwater management plans by (Appendix 2) provide detail on 5 proposed stormwater detention ponds for the estate (Figure 5).</li> <li>During the wet season when soil in open space areas may be saturated and the detention dams would be relatively full of stormwater, high volumes of fast flowing water could cause erosion where it is discharged into the watercourse.</li> </ul>	<ul style="list-style-type: none"> <li>The stormwater management plan must be updated to incorporate, reference and address relevant aspects of the Stormwater Master Plan for Aalwyndal (SkyHigh, 2025).</li> <li>The SuDS principles mentioned at a conceptual level in the stormwater management plan (e.g. swales, permeable paving etc.) are fully supported and a detailed plan indicating the extent to which each intervention will be implemented should be provided. Measurable and quantifiable areas must be provided so that future compliance and monitoring can effectively assess implementation of these measures. Stating that interventions will be ‘considered where practical’ provides no assurance of whether an intervention will be implemented or not in the final design.</li> <li>Consider whether the outlet from the final stormwater detention pond requires further protection or conveyance of stormwater to the watercourse. While stormwater detention would not be supported in the Core Area, stormwater conveyance, provided it aims to minimise impacts of stormwater to the environment, would be necessary provided excessive environmental impacts are avoided, minimised and rehabilitated where possible.</li> </ul>	<p>The assessment of impacts for the design and layout phase was not rated due to incomplete information at the time of writing. Mitigation measures primarily seek clarity in terms of designs and modelling associated with the stormwater management plan. Once the mitigation measures provided have been addressed it may be feasible to more realistically assess the impacts with and without mitigation.</p>

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
<p>Design to facilitate transitioning from conservancy tanks to municipal bulk sewerage</p>	<p>The current proposal for wastewater management on Erf 23731 is to provide at least two conservancy tanks for the development’s sewage. This would be trucked from the site for disposal to the Hartenbos Wastewater Treatment Works on a daily basis, with increasing numbers of daily trips as the development phases progress. While the plan is a phased construction of the proposed development over several years, it is necessary to plan ahead so that when the municipal bulk sewer line and associated pump station is available, the development can switch over to this system with relative ease, without potentially polluting any watercourses, and without the requirement for costly reconfiguration of infrastructure.</p>	<ul style="list-style-type: none"> <li>• Ensure the internal sewerage reticulation system with the proposed development has the capacity to seamlessly transition from the use of conservancy tanks to the municipal connection.</li> <li>• The future municipal connection point should be indicated on all plans relating to engineering services (if known).</li> <li>• A method statement should be provided for how this transition will be achieved.</li> </ul>	<p>The assessment of impacts for the design and layout phase was not rated due to incomplete information at the time of writing. Mitigation measures primarily seek clarity in terms of designs and modelling associated with the stormwater management plan. Once the mitigation measures provided have been addressed it may be feasible to more realistically assess the impacts with and without mitigation</p>
<b>Construction Phase</b>			
<p>Basic rehabilitation of the wetland buffer in the Core Area delayed until after construction could result in poor effort applied to this area.</p>	<p>Basic actions are required to protect the Core Area and wetland during construction, and to improve and provide basic rehabilitation for the Core Area within Erf 23731.</p>	<ul style="list-style-type: none"> <li>• An Environmental Control Officer (ECO) must be appointed for the duration of the construction phase of the development. Weekly inspections of the site should be undertaken. The ECO must be provided with and familiarise themselves with all the reports supporting the development application, as well as the report series for the Biodiversity Offset Framework Plan for Aalwyndal (once formally adopted).</li> </ul>	<p>Post-mitigation impact rating = Negligible</p>

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		<ul style="list-style-type: none"> <li>• The proposed Core Area must be surveyed and pegged out prior to commencement of construction.</li> <li>• The livestock pen and labourer dwelling present within the Core Area adjacent to the site should be demolished and all rubble removed and disposed of at a registered landfill. Foundations should be removed to a depth of at least 50cm so that topsoil from the site to be disturbed can be placed over this and it can be more effectively rehabilitated.</li> <li>• Post clearing of the livestock pens and dwellings can be revegetated using a mix of indigenous grass species (<i>Cynodon dactylon</i> and <i>Stenotaphrum secundatum</i>) and any bulbs that can be rescued from the actual development area. The latter is purely recommended, and should not be a condition of development approval. There are two species of <i>Moraea</i> sp. that occur in the development footprint that could be rescued and replanted. These are not threatened species, but could improve the results of rehabilitation through preservation of indigenous species to the area.</li> <li>• Any existing fencing within the Core Area adjacent to the proposed development site should preferably be removed in consultation with neighbours. The long-term aim is to remove all internal barriers preventing wildlife movement, especially along watercourses. .</li> </ul>	

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		<ul style="list-style-type: none"> <li>Site preparation prior to construction should include formal fencing off the Core Area in line with the fencing requirements stipulated in Report 3 of the Biodiversity Offset Framework Plan. That is, to use galvanised Clear Vu type fencing of 1.8m high. This would be applicable to the section along the southern extent of the development as shown by the turquoise line in Figure 8 (of Aquatic report). This section is approximately 200m in length and would eventually tie into neighbouring sections of the fenceline to protect this area. The fence should include a gate through which a single vehicle could access this area if necessary for maintenance in future. However, this must be locked for the duration of the construction phase (except for the replacement of topsoil over demolished livestock pens).</li> </ul>	
<p>Stormwater runoff from excavated building platforms and road cuts could result in erosion and sedimentation in the valley-bottom wetland</p>	<p>Stormwater runoff from excavated areas with bare soil could result in concentrated flows causing channel incision through the Core Area, sedimentation in the wetland, and impacts to water quality and wetland habitat.</p>	<ul style="list-style-type: none"> <li>Prior to construction, the ECO must measure water clarity (in cm) in the downstream dam using a water clarity tube (available from Grountruth). The baseline value must be used to compare to monitoring, particularly post heavy rainfall during the construction phase.</li> <li>The construction team must have a stockpile of suitable erosion control products such as soil saver matting, wooden stakes, shade cloth for silt fencing, and sandbags as a minimum. Haybales can be used for check dams if necessary. See examples in Figure 20 of Aquatic report.</li> </ul>	<p>Post-mitigation impact rating = Negligible</p>

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		<ul style="list-style-type: none"> <li>• The objective of stormwater management during the construction phase is to eliminate the risk as far as possible of discharging sediment-laden water downslope to the wetland either in controlled or uncontrolled circumstances. This means that</li> <li>• Erosion protection measures must be installed in conjunction with clearance of the site.</li> <li>• General principles to be applied are to keep earthworks to a minimum and to phase earthworks as far as possible to minimise areas of exposed soil, making sediment control systems easier to manage.</li> <li>• Daily and weekly site meetings must consider forecasted rainfall events to avoid working during such events, and to plan accordingly for predicted high rainfall events.</li> <li>• When rainfall is predicted ensure the site has been well prepared. All foreign materials and equipment must be removed from the edge of the Core Area to prevent them from being washed into this zone.</li> <li>• Work on the site must cease altogether during and immediately following heavy rainfall events.</li> <li>• The site office must have a store of suitable materials for a rapid response to erosion control such as shade-cloth (for silt fencing), haybales (for check dams), wooden droppers, hessian fabric, sandbags and fencing wire.</li> </ul>	

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		<ul style="list-style-type: none"> <li>• All building material stockpiles (e.g. sand, cement, topsoil) should be kept on flat areas, out of water flow paths and bunded to prevent material loss during rainfall. Cement mixing must be done on wooden boards or bunded areas and not in the open environment as it is considered an environmental pollutant.</li> <li>• The construction of low soil berms around active areas of high risk for stormwater runoff can aid the prevention of runoff downslope.</li> <li>• Monitor the site during/following periods of rainfall, and install haybale check dams or silt fences at points to collect runoff before it leaves the site.</li> <li>• Following rainfall, any water that must be pumped out of road cuts or excavations must not be directed directly to the wetland, but rather to a temporary sediment control dam where it can evaporate or seep out through a filter material. Temporary haybale structures allow the water to seep through the hay while most of the sediment is removed. Sediment must be removed from the water prior to releasing into the natural environment – any method is acceptable, provided the end result is no sediment in the wetland (Figure 20 of Aquatic report).</li> <li>• Protect any inlets to stormwater drains (once constructed) to ensure silt can settle out before discharging to attenuation dams.</li> </ul>	

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		<ul style="list-style-type: none"> <li>Progressively revegetate disturbed areas of bare soil once works have concluded. Suitable plant species listed in Table 4 of Report 3 of the Biodiversity Offset Framework Plan should be used in rehabilitation of disturbed areas, as well as recommended for gardens and landscaped areas throughout the development.</li> <li>Maintain and regularly clear out silt-laden structures to ensure they remain functional for the duration of the construction phase</li> </ul>	
<p>Poor management of waste and materials in the proposed Core Area during and post-construction resulting in unnecessary habitat degradation</p>	<p>Contractors may dispose of waste materials by throwing or dumping them into the Core Area, instead of taking them to a formal waste disposal site</p>	<ul style="list-style-type: none"> <li>The ECO must conduct regular (weekly) inspections along the fence line of the Core Area to ensure that no dumping or access to this area has occurred resulting in habitat degradation.</li> <li>Any dumped materials must be removed by hand by the relevant contractor, and the site rehabilitated under supervision of the ECO if damage to vegetation has occurred. Suitable plants for rehabilitation are provided in Table 4 of Report 3 of the Biodiversity Offset Framework Plan.</li> <li>To reduce the risk of washing materials into the watercourse all construction materials (topsoil, subsoil, building sand) must be stockpiled as far from the watercourse as practically possible.</li> </ul>	

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		<ul style="list-style-type: none"> <li>• Materials no longer required must be removed from the site without delay to reduce the risk of washing downslope or into the watercourse.</li> <li>• Any cement mixing must be done on a wooden board and not on open ground (Figure 21 of Aquatic report).</li> <li>• Retain the upper 50cm of topsoil (if open trenching) and separate this from subsoils. Topsoil must be carefully stockpiled and preserved so that it can be replaced last to facilitate rehabilitation and landscaping on the site.</li> <li>• Vehicle refuelling areas must be located as far from watercourses as possible, and a spill kit must be on hand in case of fuel spills.</li> <li>• Vehicles leaking fuel are not permitted to work on the site until they have been repaired.</li> <li>• No materials may be dumped in the watercourse, and any accidental spillages must be cleaned up by hand</li> </ul> <div data-bbox="1115 1046 1572 1390" style="text-align: center;"> </div>	

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		<p><i>Figure 21. Example of cement being mixed on a board instead of on bare/vegetated soil</i></p>	
<p>Post-construction Rehabilitation of Disturbed Areas and Landscaping</p>	<p>At the conclusion of construction there may be areas of bare soil sensitive to erosion and establishment by alien plants. If located near the Core Area, these could negatively impact on the watercourse and surrounding vegetation.</p>	<ul style="list-style-type: none"> <li>• Ensure all soil surfaces are reshaped to avoid preferential flow paths and overly steep gradients.</li> <li>• All areas disturbed during the construction phase must be revegetated and cannot be left bare. Revegetation within the development where grass is desirable can utilise indigenous grass seed (use <i>Stenotaphrum secundatum</i> and <i>Cynodon dactylon</i>, also known as kweek).</li> <li>• For landscaping of areas within the estate refer to Table 4 of Report 3 of the Biodiversity Offset Framework Plan for a comprehensive list of plant species that can be purchased from nurseries and are found locally in the area. Avoid planting exotic plant species that diminish the biodiversity value of the area and could introduce alien species adjacent to the watercourse.</li> <li>• Any steep slopes where grass seed or plugs have been placed should be protected with soil saver matting to reduce the risk of erosion.</li> <li>• Ensure any litter and/or materials associated with the construction phase are removed from the watercourse. No litter, food scraps, or waste materials can be left in or around the watercourse.</li> </ul>	<p>Post-mitigation impact rating = Negligible</p>
<p>Construction of the V-drain and upgraded stormwater outlet along Aalwyn Way</p>	<p>Careless operation of machines, storage of materials, or poor understanding of the work area could</p>	<ul style="list-style-type: none"> <li>• Prior to commencement of construction, the ECO and site manager must delineate a minimal, but workable disturbance footprint</li> </ul>	<p>Post-mitigation impact rating = Negligible</p>

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
	<p>increase the extent of habitat disturbance and sedimentation in the wetland.</p>	<p>adjacent to the watercourse using danger tape, temporary fencing, or similar. Signage on the fencing must indicate the area beyond this as a 'No-go Area.'</p> <ul style="list-style-type: none"> <li>• A waste material stockpile area must be identified where waste, such as the broken old outlet material can be set aside for removal to a landfill site.</li> <li>• Any clumps of wetland plants in the way of construction can be excavated out in a clump and set aside for replanting at conclusion of the works. These plants (e.g. <i>Cyperus textilis</i>) replant very successfully and can provide rapid stabilisation of disturbed soil to reduce erosion risk.</li> <li>• Any soil fill material required to backfill the eroded hole should be sourced from the Erf 23731 development area during construction. Sub-soils can be used as a base, but topsoil from the site should be used in the upper 50cm of soil.</li> <li>• Only galvanised gabion baskets can be used to prevent rusting, and stones larger than the basket holes must be used. Suitably sized stones sourced on the construction area of Erf 23731 can be used.</li> <li>• A geotextile such as bidim must be used to line the cavity into which gabions are built. This will prevent washout of material from behind the gabions.</li> </ul>	

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		<ul style="list-style-type: none"> <li>• Care must be taken to consider flows from both the V-drain as well as the dam spillway. The detailed design of the stormwater upgrade must consider this aspect.</li> <li>• Sandbags must be placed around the work area in the stream base. The intention is to prevent loos soil and mud from entering the watercourse, which may be flowing at the time that work is undertaken.</li> <li>• At conclusion of the works, replant any exposed areas of soil using plants rescued before the works. Any bare areas of soil can be revegetated with any of the wetland plant species indicated in Table 5 of the Aquatic report.</li> </ul>	
<b>Operational Phase</b>			
<p>Rehabilitation of the Core Area will be required to improve the condition of this area, which has been subject to vegetation clearance, grazing and settlement (workers housing) for many decades. The aim would be restoring a dense cover of indigenous vegetation that occurs naturally along the watercourse. The management of this area should be aligned with conservation outcomes and must consider aspects such as fire management and alien vegetation control. Funding to support this work was initially proposed through levies to be raised from residents in new developments and through the purchase of offset credits by developers elsewhere in Aalwyndal. However, this concept has proven unpopular through public participation and was not adopted by the Mossel Bay Municipality. The responsibility to improve this area therefore reverts to the landowner, and potentially the HOA in future. Individual HOAs may still elect to charge a conservation levy for the management of these open space areas, as it would provide a sustainable income for their management and security.</p>			
<p>Landscaping and garden maintenance practices within the development that could impact on the watercourse and buffer area</p>	<p>Extensive areas of exotic vegetation and practices such as throwing garden waste over the fenceline could introduce alien species to the watercourse and smother natural vegetation.</p>	<ul style="list-style-type: none"> <li>• Ensure the HOA clearly communicates special management criteria contained within Report 3 of the Biodiversity Offset Framework Plan to all new residents of the estate (Table 5), as well as contracted garden and security services. These should be provided in any appointment, sale or lease agreements. Regardless of whether the offset framework plan is formally</li> </ul>	<p>Post-mitigation impact rating = Negligible</p>

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		<p>adopted or not, these recommendations represent best practice for sensitive areas along a watercourse.</p> <ul style="list-style-type: none"> <li>• Consider implementing fines for any transgressions which must cover the cost for rehabilitation or removal where required.</li> <li>• All landscaped areas of the residential estate should utilise topsoil from the site, and be revegetated using plants that are listed in Table 5.</li> <li>• Stormwater detention ponds must be vegetated using wetland plant species indicated in Table 5. As there is a direct link between these ponds and the valley-bottom wetland, no exotic species should be planted that could introduce alien plant seeds into the natural system. Stormwater discharge is an important route of dispersal for alien and exotic plant seeds – hence the need to utilise follow the planting guidelines.</li> <li>• No garden waste or any other type of waste may be disposed of in the Core Area.</li> <li>• Add signs every 50m along the fenceline indicating the Core Area as a conservation area and highlighting fines for illegal dumping of waste.</li> <li>• Fenceline boundary pathways should be planted with indigenous grasses such as <i>Cynodon dactylon</i> and <i>Stenotaphrum secundatum</i> where necessary. Under no</li> </ul>	

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		<p>circumstances should Kikuyu be planted as this is a listed invasive species known to invade wetlands.</p> <ul style="list-style-type: none"> <li>• Apart from cut stump applications of herbicide to Rooikrans or other woody aliens, no herbicide should be sprayed along the fenceline of the Core Area.</li> <li>• No work should be undertaken in the Core Area unless it aligns with the Conservation Management Plan (Report 3) or a recognised Fire Management Plan representing best practice management for conservation in this area.</li> <li>• Access to the Core Area must be restricted to walking only, and no pets may be walked in this area.</li> </ul>	
<p>Poor functioning of stormwater management structures leading to erosion or sedimentation in the watercourse and buffer area</p>	<p>Stormwater management structures could become blocked or function poorly if they were poorly designed, sized or maintained. Serious flood events may also put these systems under pressure requiring maintenance.</p>	<ul style="list-style-type: none"> <li>• The ECO must inspect all stormwater structures at conclusion of works to ensure they were constructed as per approved plans, are clear of debris and appear to be functioning well.</li> <li>• As built plans must be submitted to regulating authorities (DEA&amp;DP and BOCMA).</li> <li>• Estate maintenance teams to ensure inlets and outlets are kept free flowing where specified.</li> <li>• It may not be necessary to frequently clear out vegetation in stormwater attenuation ponds, unless the vegetation becomes overgrown to the point that it takes up a significant volume of the pond's capacity. Vegetation in this context</li> </ul>	<p>Post-mitigation impact rating = Negligible</p>

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		<p>also serves the purpose of improving water quality through the removal of nutrients and other solutes.</p> <ul style="list-style-type: none"> <li>• Areas indicating erosion following heavy rainfall events should be rapidly addressed with inputs from the engineer and/or aquatic specialist if necessary.</li> </ul>	
<p>Leakage or overflows of sewage from conservancy tanks leading to stormwater outflows and ultimately the wetland.</p>	<p>Inadequate capacity of conservancy tanks could result in continuous slow overflow of sewage from conservancy tanks if they are undersized for the extent of development. Overflow could also occur if trucks do not arrive promptly to remove wastewater from the tanks.</p>	<ul style="list-style-type: none"> <li>• Ensure sufficient capacity is provided by the conservancy tanks for each phase of the development. Capacity should include contingency should a contractor not be able to fulfil removal for a day (e.g. truck breakdown or employee strike).</li> <li>• Vegetation around the septic tanks must be kept neatly mowed and cut, allowing clear visibility of the tank access points so that any overflows can be immediately observed.</li> <li>• Signage must be erected on fencing surrounding the tanks indicating that any overflows observed by residents must be immediately reported to the HOA.</li> <li>• Service level agreements or contracts must be entered into with service providers which ensure efficient removal of sewage in terms of frequency and volumes that maintain capacity for refilling of the tanks over a 24-hour period at least.</li> <li>• Design of the conservancy tanks must allow for a seamless transition to a municipal connection as soon as it is provided. This</li> </ul>	<p>Post-mitigation impact rating = Negligible</p>

Impacts of the activity on the water resources	Impacts of the activity to other water users	Mitigation Measures	Post-mitigation impact
		would be preferable to continued use of the conservancy tanks.	

## 9.2 Cumulative Impacts

The cumulative impact of higher density residential development and associated services across the Aalwyndal Precinct will have a significant residual impact on biodiversity in the precinct. However, watercourses have been protected throughout the proposed Core Area with a minimum of a 30m buffer in most places (e.g. Erf 23731), and much larger than this in other areas. The purpose of the Core Area was to provide an onsite offset area which is the final step in the mitigation hierarchy and aims to partially address the cumulative impacts of development in the precinct.

Whether the strategic biodiversity offset framework plan for Aalwyndal is formally adopted or not, the recommendations for management of the riparian buffer along the watercourse adjacent to Erf 23731 would remain the same. The cumulative impact of multiple developments utilising independent wastewater management systems is a concern, putting pressure on the municipality to provide bulk services to facilitate development expansion without compromising the integrity of aquatic ecosystems (Appendix 1).

## 10. WATER DEMAND AND SUPPLY ANALYSIS

### 10.1 Water Demand

No GLS data was available at the time of writing this report. However, Element Engineering (Appendix 2) stated that the property will be serviced by Bartelsfontein bulk municipal water line along Aalwyn Road. Discussions with municipal officials indicated that the development's pressure and capacity demand can be met if a minor diameter upgrading of the pipeline between the reservoir and the development is undertaken. This line does not cross any watercourses. This length of pipeline is  $\pm 1\ 350$  m.

According to the engineering report (Appendix 2) the potable water demand for the development on Erf 23731 will be as follows:

- Average Annual Daily Demand (AADD) = 79 kℓ/day
  - Single erven - 700 ℓ/day/erf
  - Group housing (townhouses) – 500 ℓ/day/unit
  - Group housing (apartments) – 300 ℓ/day/unit
- Fire flow 30 ℓ/sec and peak demand at the point of lowest pressure under peak conditions.
- Pipe diameters varying between 90mm and 110mm depending on pressure available and flow required.

### 10.2 Water Supply Analysis

A confirmation letter from Mossel Bay Municipality for the supply of bulk civil services to be provided for the proposed housing development from the existing water reticulation system, was not available at the time of writing this report, but is expected to be provided for the final application phase of the WULA.

The development will not be implemented without a signed services agreement with the Mossel Bay Municipality. The services agreement will contain all aspects and conditions from the engineering reports, EIA approvals, Water Use Licenses (WUL's) and town planning approvals (Appendix 2).

### **10.3 Water Balance**

N/A. Municipal potable water will be supplied.

## **11. WATER QUALITY**

The current development footprint on Erf 23731 does not directly interact with the watercourse and has been adjusted to exclude both the watercourse and its buffers. The primary issue to consider is the management of stormwater runoff from the site. While water quality is likely less of an issue from this site (during the operational phase). Water quantity would be the most important issue to consider given the slope, increase in hard surfaces, and low soil permeability. This aspect is considered in the impact assessment section of the Aquatic report (Appendix 1) and in Section 9 of this report.

The Present Ecological State (PES) of the Tweekuilen Estuary is rated as D (Largely Modified) and the Recommended Ecological Category is listed as C (Moderately Modified). The two main threats to the system are freshwater deprivation and impaired water quality due to stormwater inputs and periodic sewage spills. Based on the PES and REC, the high-density residential developments planned in Aalwyndal must be carefully managed as they could cumulatively result in further degradation of the Tweekuilen River system and estuary.

Possible negative impacts to water quality of the watercourse which could be caused during the construction and operational phase of the project has been addressed in the mitigation measures of the Aquatic report.

## **12. PUBLIC PARTICIPATION**

Public participation results will be provided in a separate report. This report was prepared as input to the public participation process.

## **13. INPUTS / AUTHORISATIONS FROM OTHER DEPARTMENTS / STAKEHOLDERS**

N/A

## **14. SECTION 27(1)**

The requirements contained in Section 27(1) of the National Water Act, 1998 (Act 36 of 1998) have been considered and are discussed further below.

### **a. Existing Lawful Water Uses**

There are no existing lawful water uses in place.

### **b. Need to redress the results of past racial and gender discrimination**

The construction of the housing development in Aalwyndal on Erf 23731 will contribute to redressing the results of past racial and gender discrimination, by creating work opportunities during the construction as well as operational phase of the project.

The proposed project's focus is on using local labour and local professionals in all phases of the project. Approximately 50% of the workforce during the construction phase will be locally sourced, with approximately 80% of the workforce employed from the local area during operational phase of the development. Skilled and unskilled job opportunities will be created during the construction phase of the project. A significant contribution and jobs will be created for Small, Medium and Micro Enterprises (SMME) contractors, to the value of ±R80 million.

Depending on the skills available, all phases of the project will source locally skilled and unskilled contractors. Material suppliers for the project will be largely local suppliers from Mossel Bay and the surrounding areas. Local consultants from various specialised fields will be used. This will include:

- A town planner
- Civil engineering services and consultants
- Electrical design consultants and contractors
- Sales personnel
- Landscaping engineers
- Structural engineers
- Conveyancers
- Environmental consultants etc.

During the construction and operational phase of the project it is estimated that 220 unskilled and 350 skilled workers will be needed. This will allow further economic growth and development for these individuals and businesses, while benefitting their families. The employment opportunities foreseen to be created due to the project can be found in Table 9. The job opportunities created with this project will allow economic growth and development for these individuals and businesses, while benefitting their families. With occupation of the development, additional work opportunities will be created by owners who are likely to employ domestic workers, service providers, garden services and security guards etc.

The applicant is a new special purpose vehicle (SPV), the company was established for the development and therefore does not have BBBEE status. There will be female managers and HDI individuals will be employed by the contractors for the project.

### **c. Efficient and beneficial use of water in the public interest**

In terms of the improvement and enhancement of the economy the proposed housing development will provide both temporary and permanent employment and contribute to the local economy. The water uses applied for the development of the housing estate relate to the Erf being within 500m of the wetland. The people that will benefit from these water uses

will be the community of Mossel Bay, since many jobs will be created both during the construction and operational phase of the housing development, and new residential capacity will be created.

As previously mentioned in this report, The Western Cape Biodiversity Spatial Plan (WCBSP; 2023, Figure 6) indicated the following Biodiversity Priority Areas (BPA) on the development site and surrounding area:

**Critical Biodiversity Area 1 (CBA1): Aquatic and Terrestrial**

**Critical Biodiversity Area 2 (CBA2): Degraded Areas**

In terms of aquatic features, these biodiversity priority areas were identified due to the presence of the mapped valley-bottom wetland (Figure 3).

The location of CBAs was one of the aspects considered during the revision of the Aalwyndal precinct plan and proposal of the Core Area, to achieve specified management actions for conservation of CBAs.

The water use is beneficial and an efficient use in the public interest, since the proposed development footprint has no watercourse within it. The edge of the delineated channelled valley-bottom wetland is > 32m from the development footprint on Erf 23731. It is therefore unlikely that the proposed development on Erf 23731 will directly impact on the valley-bottom wetland. Furthermore, the wetland has been protected through delineation along the wetland edge and a 30m buffer applied beyond that which links it to the proposed Core Area that connects along watercourses and other sensitive features throughout the Aalwyndal Precinct. These spatial layers were used to inform the development proposal for Erf 23731.

A range of management criteria for the proposed Core Area have been stipulated in Report 3 of the Biodiversity Offset Framework Plan, which aim to ensure that biodiversity along with ecological structure and function are preserved as far as possible. Relevant management recommendations have been provided as mitigation measures in this report.

The only way that the development could impact the watercourse would be through the ill-considered handling of stormwater or effluent spillage / overflow runoff, which could result in eroded flow paths, sedimentation of the natural wetland (Aquatic Specialist report, Appendix 1).

#### **d. Socio-economic Impact**

Housing for a growing population is becoming increasingly important on a global, national and local level. Building houses not only creates part-time employment during the construction phase, but also ensures permanent work opportunities, which in turn create downstream employment opportunities.

The dynamic nature of local, national and global environments constantly present local government with new challenges and demands. Similarly, the needs and priorities of the local communities within Mossel Bay are ever-changing. This presupposes greater co-ordination

and integration with other external stakeholders such as national and provincial government, business community and civil society.

The mission statement of the Mossel Bay municipality is:

- To render cost-effective and sustainable services to the entire community with diligence and empathy.
- To create mutual trust and understanding between the municipality and the community.
- To have a motivated and representative municipal workforce with high ethical standards, which is empowered to render optimal services to the community.
- The community is our inspiration and our workforce is our strength in the quest for community development and service delivery. (Mossel Bay IDP:2017-2022: Vision, Mission and Values)

Permanent direct and indirect work, such as domestic workers as well as skilled vocations such as plumbers and electricians are created with the construction of the development. Indirect job opportunities will also be created during operational phase when homeowners enter into contracts with local service providers such as fibre contracts, delivery services etc. The expected annual income, either through direct or indirect job creation, is expected to benefit the local Mossel Bay community and surrounding areas. People who will be employed for this development will consist of skilled and unskilled workers, providing opportunity for different social areas to be uplifted by means of employment.

The expected costs and income which will be generated by this development:

- The total cost for this project is expected to be R340 million.
- The expected annual income created by the development is approximately R2.8 million, for labourer jobs, consultants employed, materials bought and capital investment.
- Approximately R216 million is expected to be for employment cost during construction.

Socio-economic impacts are expected to be positive, by reducing unemployment within the local municipality of Mossel Bay, benefitting the local economy as well as living conditions of the community.

Mossel Bay Spatial Development Framework (SDF) / Environmental Management Framework, status quo and review report (May 2022) states:

The SDF strives to align with relevant global, national, provincial and municipal policy and strategic plans, including local strategic plans of the district and neighbouring municipalities; to inform appropriate responses to local spatial development challenges. Most of the goals set by all tiers of government relate to some aspect of land development, and the spatial manifestation of these developmental solutions, specifically at local SDF level, must reflect the intent of government to build an equitable, sustainable and enabling South Africa.

Aalwyndal was identified in the Mossel Bay Spatial Development Framework 2018 and 2022 as an intensification node and one of the main urban expansion areas for Mossel Bay

According to the Municipality's Aalwyndal Precinct Plan has the following design objectives:

- Contribute towards the goal of densification and compact development by designing the residential component accordingly
- Provide housing for a gradient mix of income groups
- Incorporating the natural environment in the design of land parcels
- Contain the footprint of the neighbourhood and land use mix at a density that will promote walkability
- Linking the commercial area with the airport activities to create a viable economic hub
- Design and build with renewable energy and green construction in mind
- Integrate Aalwyndal with the rest of the town by road linkages, bulk service networks, and continuing natural systems.

#### i) Of water use or uses if authorised.

The development of the housing estate will create not only part-time employment during the construction phase but also ensure permanent work opportunities once it is operational. The estimated job opportunities that will be created is summarised in Table 9 below.

*Table 9. Employment opportunities created by the development.*

Job Opportunities	Number of Job Opportunities	Value	Affected sectors of the economy
<b>Construction Phase</b>	Temporary: 300	R216 000 000	Civils Planning Surveying Security Town planners Environmental specialists Architects Engineers Geologists Heritage consultants
<b>Operational Phase</b>	Temporary: 10 Permanent: 6	R2 800 000	
<b>Skilled</b>	220		
	Unskilled: 350		
<b>SMME contractors</b>		R80 000 000	
<b>Civil services employment</b>		R20 000 000	
<b>Electrical services employment</b>		R14 000 000	

#### ii) Of the failure to Authorise Water Use or Uses

Failure to authorise the water use of the proposed Aalwyndal Housing Development, will forfeit the economic benefits to the local area as well as local people who can benefit from employment opportunities during the construction and operational phase of the project as listed in Table 9.

Furthermore, failure to authorise the water use would set a negative precedent for future proposed developers in Aalwyndal where densification and expansion has been clearly planned, and environmental sensitivities mostly addressed through the comprehensive Aalwyndal Biodiversity Offset Framework Plan (although not formally adopted at the time of writing). This could jeopardise multiple layers of planning that has been put in place to support development in the Aalwyndal precinct, along with serious investments made in the process over the years.

### **e. Any Catchment Management Strategy Applicable to the Relevant Water Resource**

The National Biodiversity Strategy and Action Plan 2015-2025 provide a framework to integrate biodiversity needs into sectoral plans and strategies. The National Biodiversity Strategy and Action Plan outlines a path to ensure the management of biodiversity assets and ecological infrastructure continue to support South Africa's development path and play an important role in underpinning the economy.

According to the Aquatic Specialist report (Appendix 1), the Breede-Olifants Catchment Management Agency concluded an assessment of major rivers in the Water Management Area (DWS, 2018).

The Tweekuilen Estuary was included in the assessment and the RQOs that have been set for the estuary are in many cases directly applicable to how water resources are managed upstream in the catchment.

The Present Ecological State (PES) of the Tweekuilen Estuary is rated as D (Largely Modified) and the Recommended Ecological Category is listed as C (Moderately Modified). The two main threats to the system are freshwater deprivation and impaired water quality due to stormwater inputs and periodic sewage spills. Based on the PES and REC, the high-density residential developments planned in Aalwyndal must be carefully managed as they could quite possibly result in further degradation of the estuary. If the REC is to be achieved, then potentially affected watercourses on all properties will need to be adequately buffered along with the careful maintenance of flows and water quality (Appendix 1).

Application for the WUL and the implementation of associated licensing conditions such that the Reserve and Resource Quality Objectives are met, is linked directly to Strategic Area 1 of the BOCMA management strategy:

*“Protecting People and Nature as well as sharing for Equity and Development.”*

The WUL application process has been implemented to ensure that water use activities are authorised in a manner that achieves these broad mission statements, particularly the mission of ensuring healthy water resources and allocating water for all forever.

### **f. Likely Effect of the Water Use to be Authorized on the Water Resource and on Other Water Users.**

As the rainfall intensity in the area is classified as Very High and the inherent erosion potential of soils also as High, erosion of soils and stormwater management are factors that must be carefully considered when developing in this area, especially considering the large amounts of stormwater associated with urban developments and sloping ground towards the southern property boundary.

A thorough assessment covering multiple biodiversity themes was undertaken in the precinct in support of the Aalwyndal biodiversity offset framework plan. Two of the outcomes of this project were the complete delineation of watercourses in the precinct, along with a 30m buffer which is preserved within the proposed Core Area, and in some areas is much wider than this. These spatial layers were used to inform the development proposal for Erf 23731.

The only mapped intersection between Erf 23731 and any aquatic features is along the southern boundary and the south-eastern corner where the buffer extends into the erf. The watercourses and associated 30m buffers indicated in Figure 3 were delineated in Report 1 of the series, and therefore no further delineation or classification of watercourses is required.

A high-level stormwater management plan was provided which summarised the conceptual approach to stormwater management. This would be guided by the Aalwyndal Stormwater Master Plan (Appendix 6) and typical SuDS interventions, although no detailed designs were provided, or incorporated into the SDP at the time of writing (Appendix 1).

#### **g. Class and the Resource Quality Objectives (RQOs) of the Water Resource.**

Resource Quality Objectives (RQOs) are defined as clear goals (numerical or descriptive statements) relating to the quality of a water resource and are set in accordance with the management class for the resource to ensure the water resource is protected. The purpose of RQOs is to set clear objectives for the resource against which WULs and the related impacts can be evaluated and managed to achieve a balance between the need to protect and utilise the resource.

The Breede-Olifants Catchment Management Agency concluded an assessment of major rivers in the Water Management Area (DWS, 2018).

The Tweekuilen Estuary was included in the assessment and the RQOs that have been set for the estuary are in many cases directly applicable to how water resources are managed upstream in the catchment. Some of the most applicable objectives are listed as follows:

- Maintain flows as the system is small and needs most of its freshwater flows;
- Waterborne pathogens (e.g. E. coli) must be maintained at levels suitable for full contact recreation;
- Flood regime must be maintained to support the natural bathymetry and sediment characteristics of the estuary;
- Clear alien vegetation from the catchment.

The Present Ecological State (PES) of the Tweekuilen Estuary is rated as D (Largely Modified) and the Recommended Ecological Category is listed as C (Moderately Modified). The two main threats to the system are freshwater deprivation and impaired water quality due to stormwater inputs and periodic sewage spills. Based on the PES and REC, the high-density residential developments planned in Aalwyndal must be carefully managed as they could quite possibly result in further degradation of the estuary. If the REC is to be achieved, then potentially affected watercourses on all properties will need to be adequately buffered along with the careful maintenance of flows and water quality (Appendix 1).

#### **h. Investments Already Made and to be Made by the Water User in Respect of the Water Use in Question.**

Significant investments have already been made in the acquisition of the property, appointment of contractors and various environmental authorisation and planning development processes more than R16.5 million.

### **i. Strategic Importance of the Water Use to be Authorised.**

The Mossel Bay Municipality IDP (2021/2022) strategic objectives are as follows:

1. Creating a Conducive Environment by  
Inclusive, Responsive, and Healthy Environment  
Effective Land-Use Management  
Efficient Environmental Health and Disaster Management
2. Enhancing public services through:  
Efficient Public Safety and Law Enforcement  
Recreational Facilities and Community Development:
3. Promoting Economic Growth:  
Economic and Tourism Development:  
Financial Viability and Sustainability:
4. Strengthening Governance and Capacity:  
Good Governance:  
Skilled Workforce:

The Mossel Bay Municipality's Integrated Development Plan (IDP) includes a focus on the Aalwyndal area, with a dedicated precinct plan to guide its development. This plan addresses aspects like spatial planning, potential densification, and the impact of the adjacent airfield on the area's economic development. In the Draft Mossel Bay Municipality IDP (2025/26) the proposed Aalwyndal development area is seen as an opportunity to enhance the gross average floor area ration target, and the proposed development is well aligned with these objectives.

The proposed development project will create a significant number of employment opportunities (Table 9). Work opportunities have already been created in the planning phase with land surveying, as well as the employment of numerous and various local professionals, including but not limited to town planners, environmental specialists, architects, heritage consultants, geologists, archaeologists and engineers.

Should this water use be authorised, it will create the opportunity for high income earners to contribute to the wealth of people in the area from disposable income that will be spent in the area along with additional rates and taxes for the Municipality. Rental opportunities within the homes will also encourage new visitors to the area, contributing to the local economy.

### **j. The Quality of Water in the Water Resource Which May be Required for The Reserve and For Meeting International Obligations**

The impact on downstream water quality and quantity has been addressed by the aquatic specialist in the impact and mitigation measures provided for this development. The current development footprint on Erf 23731 does not directly interact with the watercourse and has been adjusted to exclude both the watercourse and its buffers. The primary issue to consider

is the management of stormwater runoff from the site. While water quality is likely less of an issue from this site (during the operational phase), Water quantity would be the most important issue to consider given the slope, increase in hard surfaces, and low soil permeability. This aspect is considered in the impact assessment section of the Aquatic specialist report (Appendix 1). This development will not be taking water from a watercourse and Mossel Bay Municipality has sufficient raw water for the development with the implementation of upgrades (Appendix 2) Therefore, the ecological reserve in terms of water quantities is not applicable

#### **k. Probably Duration of Any Undertaking for Which A Water Use is to be Authorised**

The duration of the project's 21(c) and 21(i) water uses is permanent. The water use for 21(g) disposal of waste which might have an impact on a water resource may be discontinued in the future, should the development be able to connect to the Municipal bulk sewer line after upgrades are done. The conservancy tank can then be decommissioned.

### **15. DECLARATION BY THE APPLICANT WITH SIGNATURE CONFIRMING THAT THE INFORMATION SUBMITTED IS CORRECT.**

"I, Dr J Dabrowski, hereby declare that the information provided by me/us in this application form is, to the best of my/our knowledge, true and correct."

SIGNED:

DATE:

### **16. APPENDICES**

Appendix 1: Aquatic Biodiversity Site Sensitivity Verification and Impact Assessment, November 2025

Appendix 2: Civil Engineering Services Report, Element Consulting Engineers, Rev.2, October 2025

Appendix 3: Geotechnical report, Outeniqua Geotechnical Services, 4 March 2025

Appendix 4: Sewer Reticulation layout, Element Consulting Engineers.

Appendix 5: Stormwater Reticulation layout, Element Consulting Engineers, 24 September 2024

Appendix 6: Stormwater Master Plan for Aalwyndal, Sky High Consulting Engineers, July 2024