water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

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WATER USE LICENCE APPLICATION SUMMARY

NAME OF APPLICANT:

Exact Trade 139 (Pty) Ltd

Compiled by:

James Dabrowski
(Confluent Environmental)

Signature: 

Date: 16 January 2024

1. Applicant Details

Name of applicant: Exact Trade 139 (Pty) Ltd
Address: PO Box 10460, George, 6530
Cell phone number: +27 6164314312
E-mail address: pw@steinbergs.co.za

2. Person Submitting Application

Dr J.M Dabrowski (Ph.D., Pr.Sci.Nat. Water Resources)

Registration Number: 114084
Date of registration: November 2015

3. Background and Purpose

Confluent Environmental was appointed to submit a Water Use License Application (WULA) for the proposed Eagle Creek residential development, Mossel Bay, Western Cape. The development has an Environmental Authorisation (EA) dated 2009, but no water use authorisation was undertaken at the time. The development will take place within the regulated area of a wetland and triggers Section 21 (c) and (i) water uses as defined by the National Water Act. The development has not yet commenced.

4. Location of Water Uses

The development will take place near Mossel Bay, which is situated within Primary Catchment K (Kromme) and in quaternary catchment K10A. Numerous, mostly non-perennial, rivers drain the catchment area and terminate at the coastline (Figure 1). The catchment area falls within the South Coastal Belt Level 1 ecoregion (22.2 Level 2 ecoregion), which is characterised by moderately undulating plains with altitude ranging from 0 to 500 m above mean sea level. Mean annual precipitation for the catchment area is between 300 and 700 mm per year and occurs all year-round, with peaks in October to November and March to April.

The development area covers three farm portions (
Table 1) located just west of the N2 highway in Mossel Bay (Figure 2). A watercourse runs occurs along the northern boundary of the properties. The watercourse flows from an instream dam (which is visible in aerial photographs from as far back as 1936 and is an Existing Lawful Use) and runs along a valley bottom (representing the macro-channel) approximately 30 - 40 m wide. The active channel of the watercourse is narrow (less than 3 m) and is comprised of mixed cobble and boulder substrate forming riffles and occasional pools. Immediately below the dam and for a stretch of approximately 300 m eastwards, the channel is confined immediately to the south by a very steep embankment (approximately 4 – 5 m high), which also forms the southern extent of the macro-channel). The upper reach of the watercourse immediately below the dam is consistent with a narrow non-perennial river (stream), fringed by a relatively wide riparian zone consisting of thicket species, namely *Olea exasperate*, *Carissa bispinosa* and *Searsia spp*. There is no wetland vegetation on this embankment and vegetation is characterised by a mixture of indigenous and invasive terrestrial shrubs and trees.

As the channel approaches the N2 highway to the east, the gradient of the southern embankment becomes more gentle, and the river grades into a channelled-valley bottom wetland. The active channel widens and is bordered by wetland habitat, characterised by dense reed beds consisting of *Cyperus textilis*, *Arundo donnax* and *Phragmites australis*. Analysis of historical imagery indicates that the wetland area immediately south of the active channel was historically cultivated and at various times in the past was crossed by various road crossings. Construction of the N2 highway resulted in infilling across the watercourse, causing impedance of higher flows, and increased inundation and saturation of the banks adjacent to the channel – enhancing wetland habitat. It also

appears as if the eastern-most extent of the wetland (where it widens noticeably against the N2 highway) was associated with an area of disturbance (possibly an excavation), which allowed water to extend beyond its natural course.

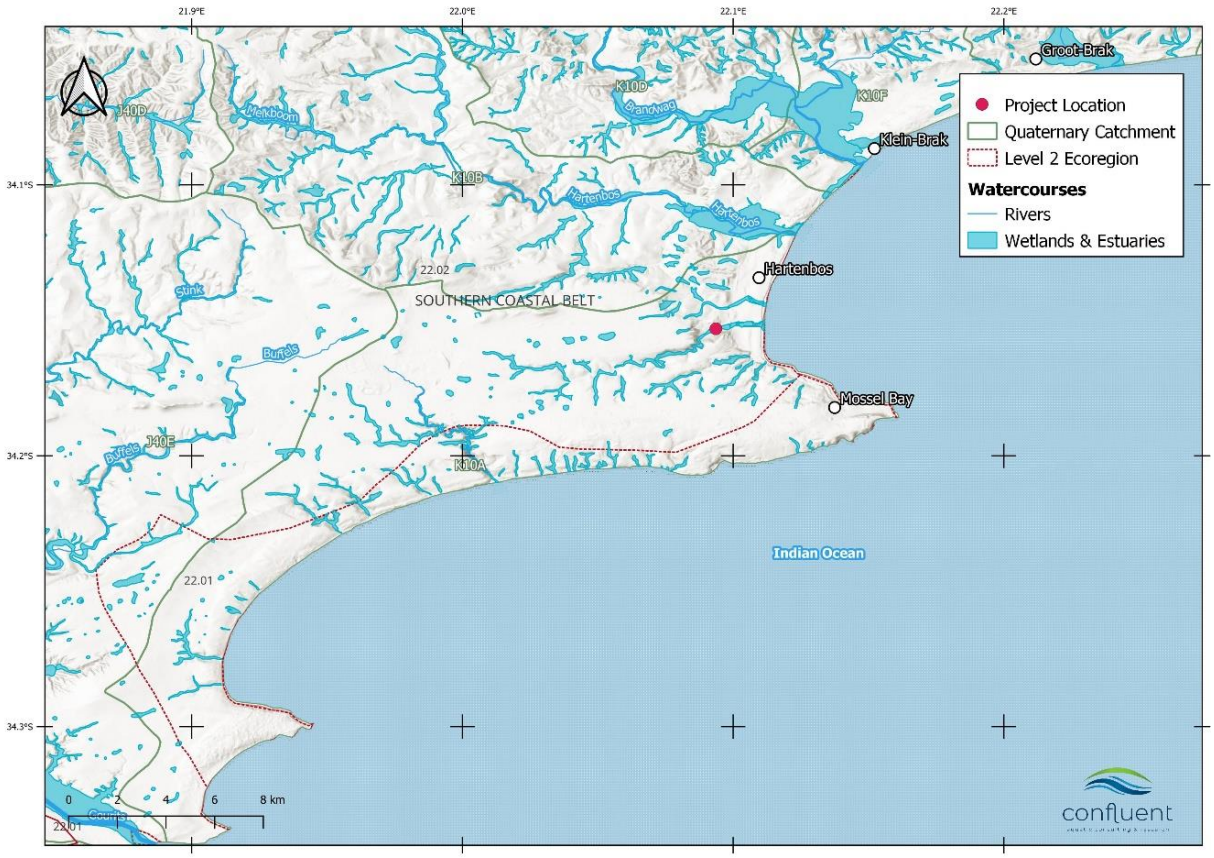

Figure 1: Project location in quaternary catchment K30B

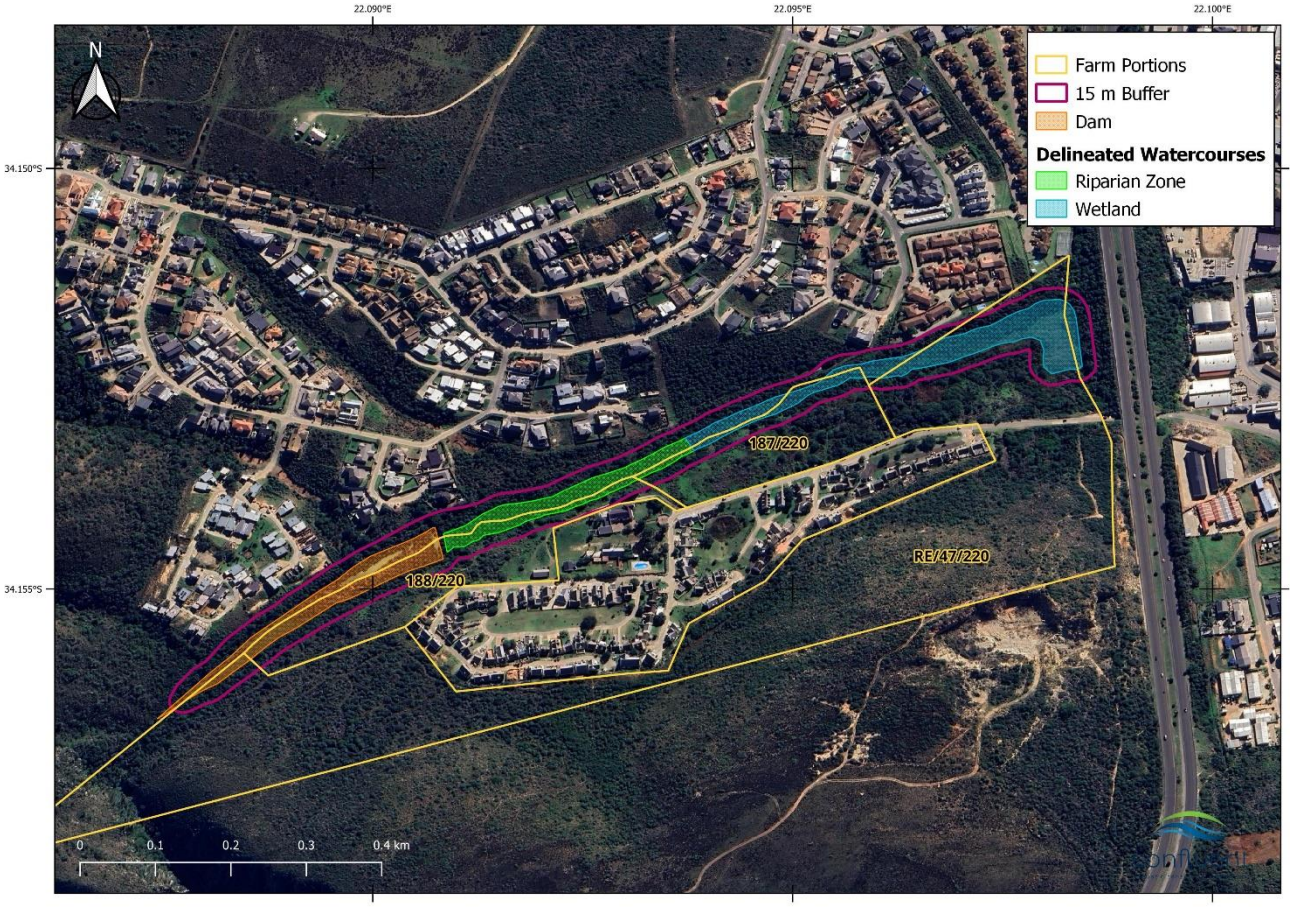

Figure 2: Map indicating watercourse running along the northern boundary of the properties.

Table 1: Property Details

Property description	Title Deed	Owner
Remaining Portion 188 (Portion of Portion 47) of the Farm Vyf-Brakke-Fontein No. 220	T87233/2006	Exact Trade 139 (Pty) Ltd
Portion 187 (a Portion of Portion 47) of Farm Vyf-Brakke- Fontein No. 220	T69276/2005	Exact Trade 139 (Pty) Ltd
Remaining Portion 47 of Farm Vyf-Brakke-Fontein No. 220	T69277/2005	Exact Trade 139 (Pty) Ltd

5. Administrative Documents and Technical Reports Submitted by Applicants

Administrative Documents

The following administrative documents will be submitted in support of this application:

- Letter of Appointment
- Title Deed of properties
- Tax invoice of Breede-Olifants Catchment Management Agency administration fee
- Applicant's company registration certificate – No. vs Title Deed
- Applicant's contact details

Reports and Other Technical Documents

Table 2: Technical Report

Technical documents	Compiled by	Date compiled
Appendix 1 - Aquatic Biodiversity Report	Dr. JM Dabrowski Confluent Environmental	October 2024
Appendix 2 - Engineering Services Report	V3 Consulting Engineers	December 2017
Draft WULA Summary Report	Confluent Environmental	January 2025

6. Project Description

The development involves the subdivision of the three farm portions into 103 residential erven, including the construction of infrastructure such as a stormwater network, a water and sewage reticulation network and access roads (including a bridge crossing the watercourse). The development is essentially split into a western and eastern section. The two sections are connected via a road that is planned to run immediately adjacent to the watercourse. The residential erven will be located outside of the 1:100 year floodline, immediately adjacent to the southern bank of the watercourse. A 15 m buffer has been recommended by the freshwater specialist assessment, primarily to offer protection to this steep embankment. Some infrastructure – or part thereof - (sewage pipelines, stormwater outlets, and road crossing) falls within or immediately adjacent to the 1:100 year floodline of the river and the 15 m buffer. The following details are relevant:

- The final SDP as provided in Figure 3 was determined following an initial round of consultation between the freshwater specialist and the developer. The initial design had several erven in the western section of the development over-lapping with the proposed 15 m buffer. Given the steepness of the embankment and the importance of a buffer for protecting the banks, these erven were subsequently removed from the updated layout presented in this report. The road connecting the western and eastern sections of the development will run within the proposed buffer, directly adjacent to the watercourse as no alternative option for this access is possible.
- An internal gravity sewer system will collect the sewage from the development and deliver it to a proposed new pump station as indicated Figure 4. From this new pump station, sewage will be pumped to a sewer manhole on the existing municipal system as indicated and gravitate to the Voorbaai pump station (Figure 5).
- Stormwater will be discharged into the watercourse via several headwall outlets located along the watercourse (Figure 6).
- A concrete culvert bridge will be constructed across the watercourse to connect the development to Island View to the north. The bridge will be designed for the 1:50 year flood level. Flow will be directed through four box culverts (3.6 m wide x 3.0 m high) (Figure 8). Box culverts which will maximise flows beneath the bridge and are considered more suitable in comparison to circular culverts.

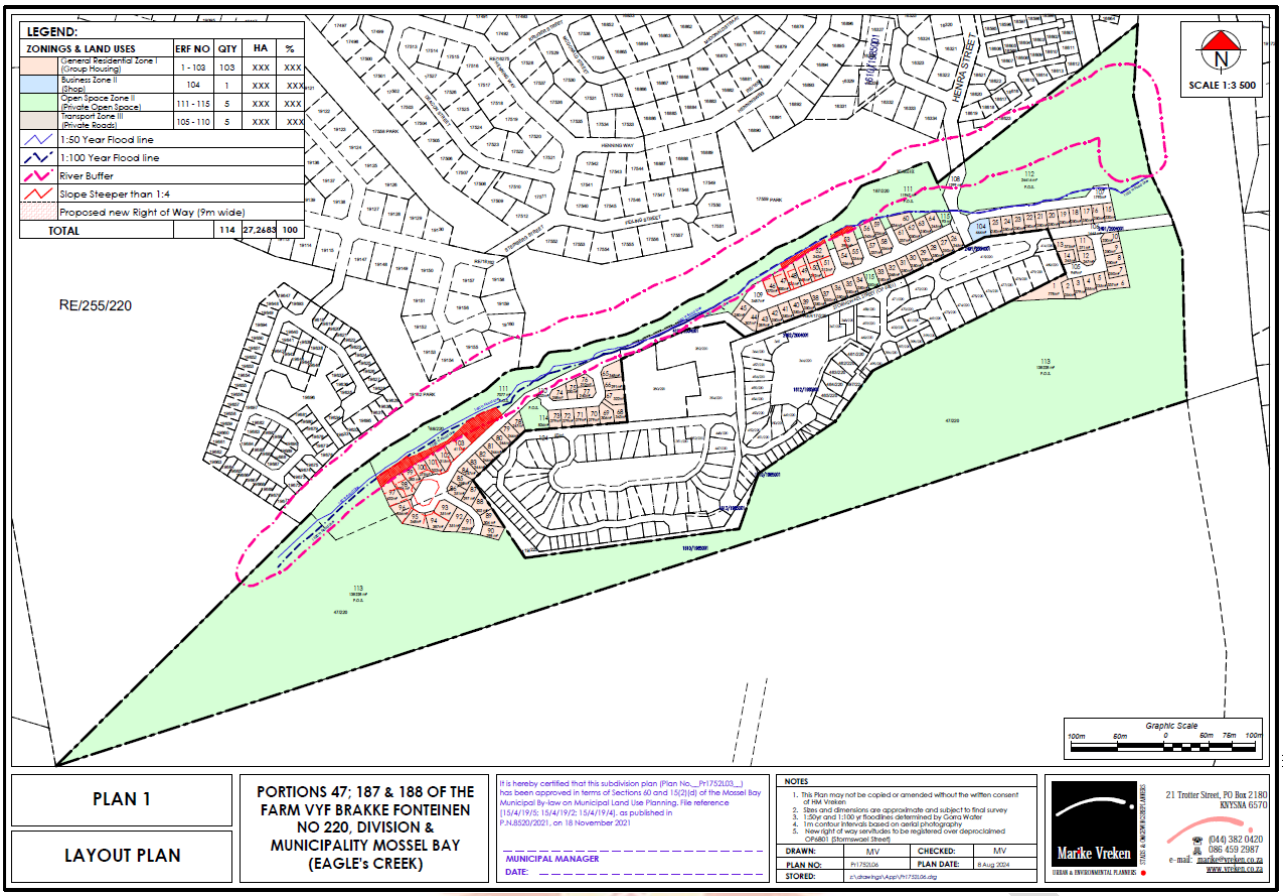

Figure 3: Site Development Plan showing the location of erven relative to the recommended 15 m buffer.

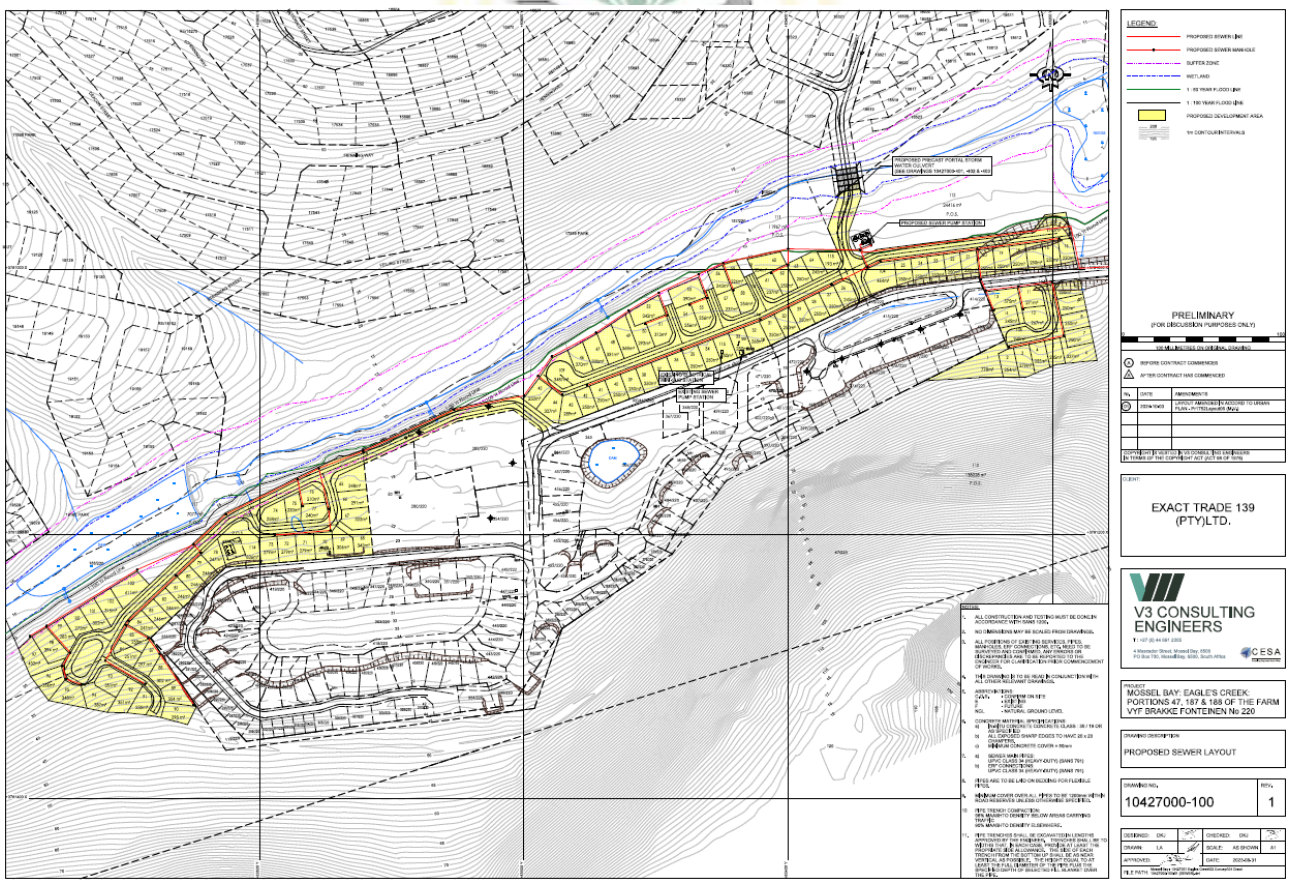

Figure 4: Proposed sewage network.

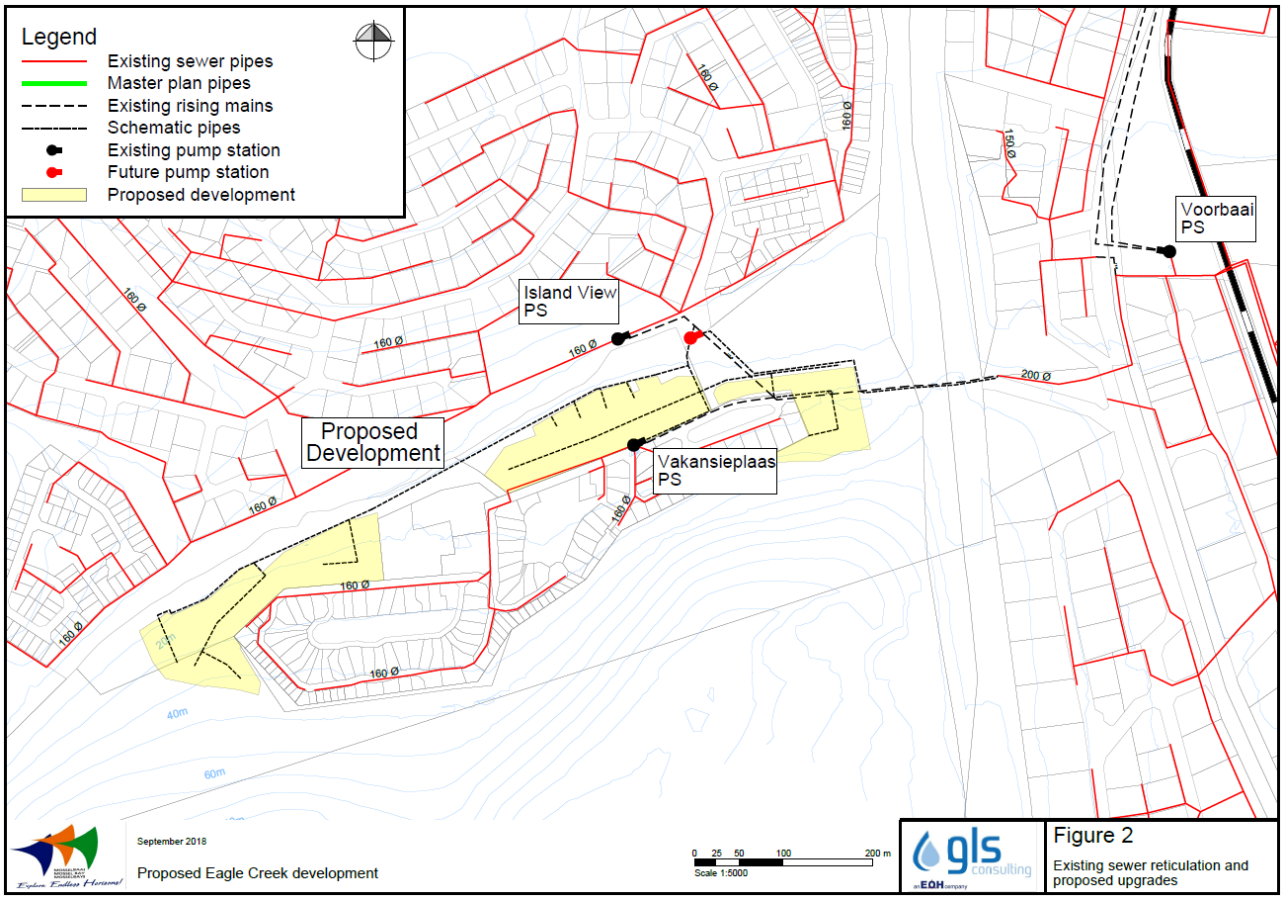

Figure 5: Schematic diagram showing the sewage network, pump station and links to the existing sewage network.

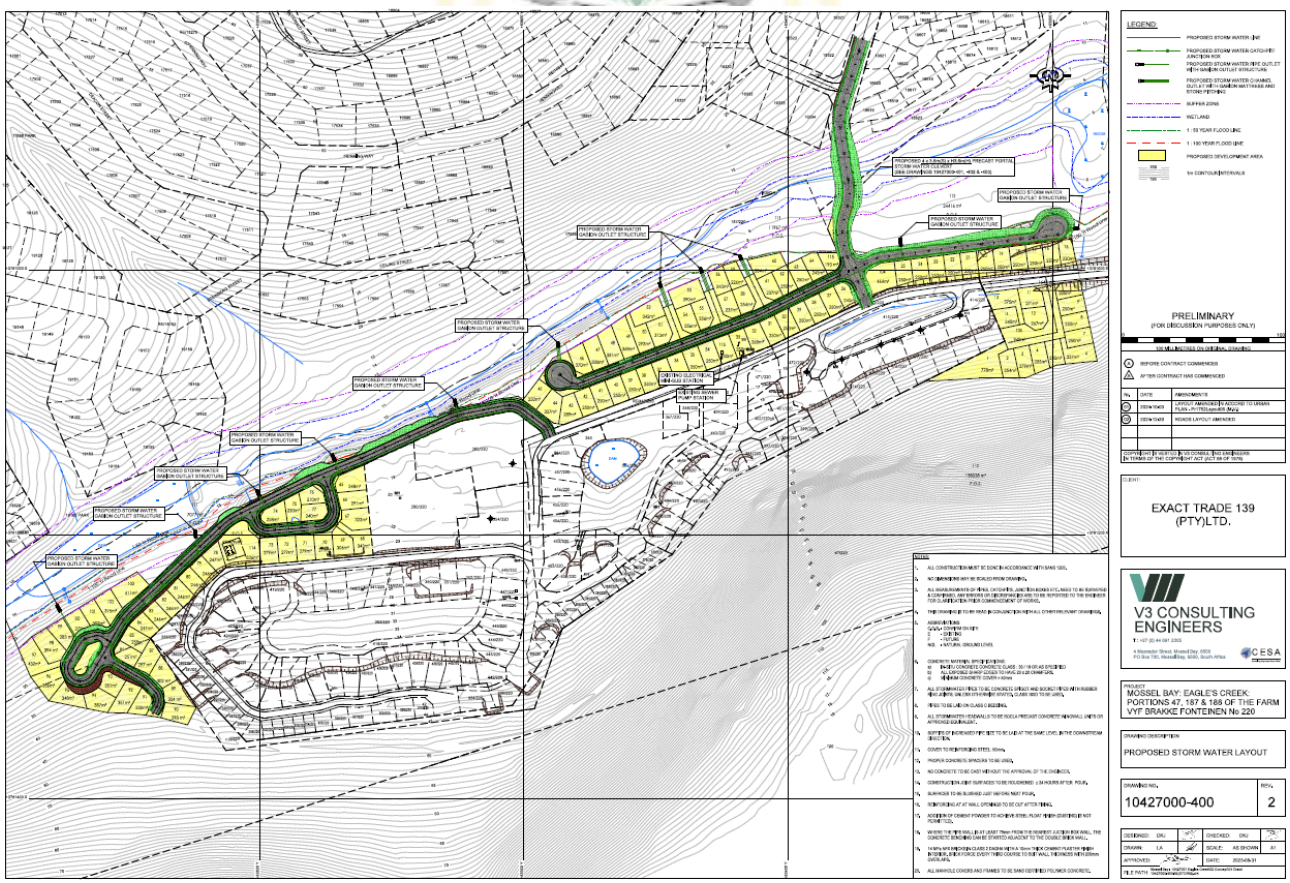

Figure 6: Proposed stormwater network.

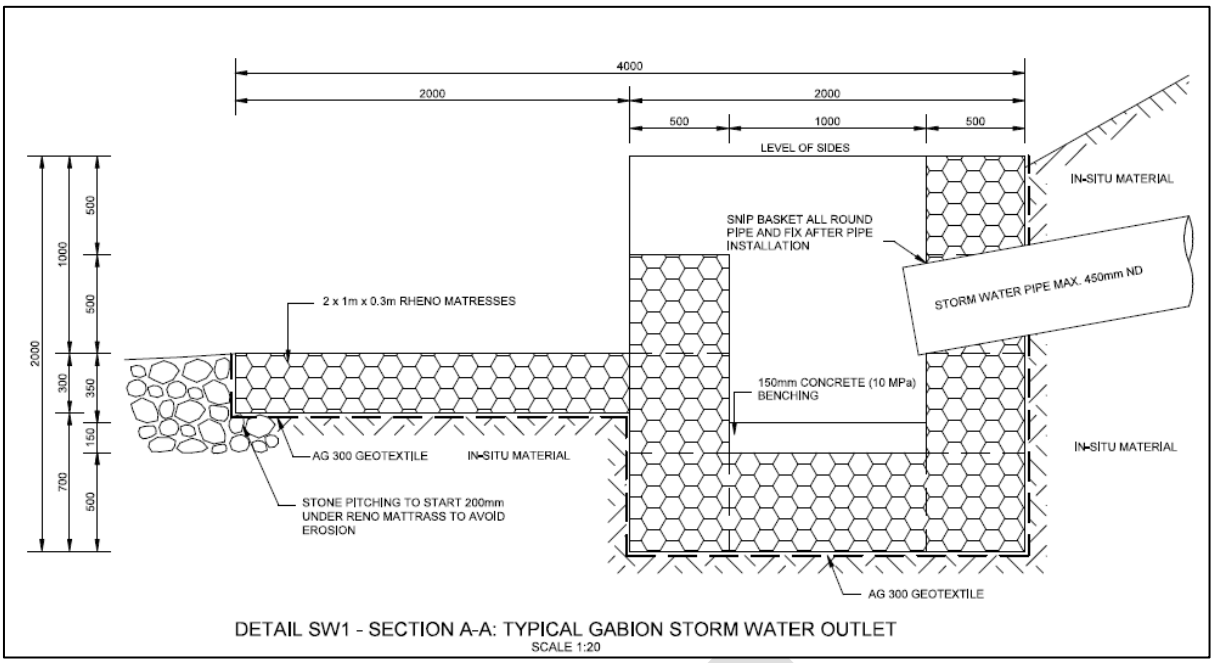

Figure 7: Section drawing of proposed stormwater outlets.

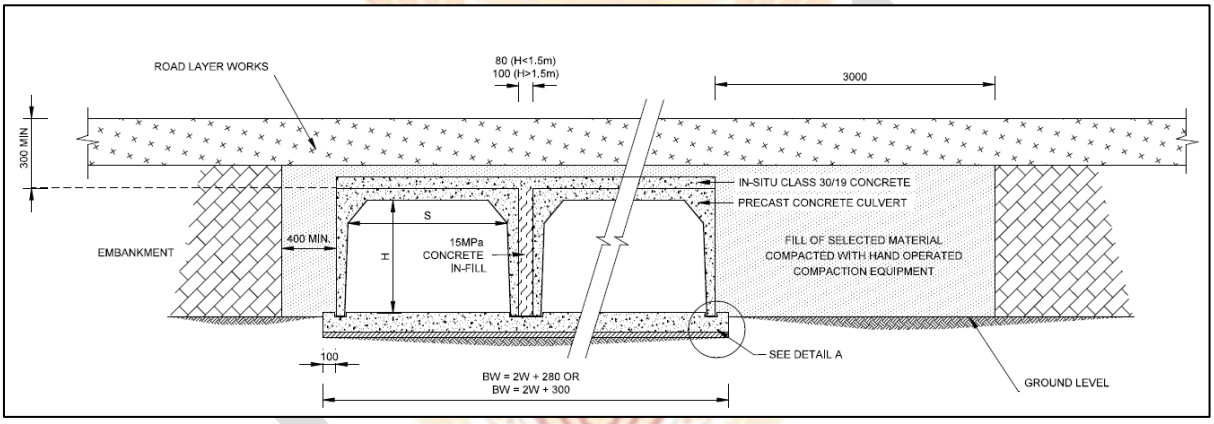

Figure 8: Drawing of proposed concrete culvert bridge.

7. Methods Statement (only for c and i activity)

Construction methods, typical for a housing estate would be followed. This would include earth moving, the use of heavy machinery and excavation work for the construction of the housing development. Specific method statements for the construction of the following water uses is pending:

- Concrete Culvert Bridge
- Infilling and construction of access road connecting the western and eastern section of the development (immediately adjacent to the watercourse)
- Stormwater headwall outlets

8. Stormwater Management Plan

Construction Phase

- To prevent soil erosion and possible pollution as a result of storm water runoff during the construction stage, erosion control methods such as silt fences and silt traps, energy breakers in the form of logs secured with stakes, brush-packing and mulching and re-seeding will be implemented.

- It will be the responsibility of the Developer to ensure Contractors apply erosion control measures throughout the period of risk and that the works are protected from damage that may be caused through runoff of rainwater.
- Detail of such requirements as well as demarcating of sensitive areas, environmental awareness training of construction personnel, possible restrictions of certain construction activities, accommodation of staff on site, access to the site, site camps and offices, fire prevention measures, dust control, noise control and alien vegetation clearing, etc. will be addressed in the Construction Environmental Management Plant after the project has been approved.

Stormwater runoff will be managed carefully during construction to prevent input of sediment and pollutants into the watercourse: The following techniques will be implemented:

- Runoff from disturbed areas will be directed through silt traps (silt fences, sandbags etc.) to remove sediment and reduce the sedimentation of the river in the valley below.
- Clearing and grading will occur only where absolutely necessary to build and provide access to structures and infrastructure. Clearing will be done immediately before construction, rather than leaving soils exposed for months or years.
- Construction phasing (sequencing) will be implemented. Only a portion of the site will be disturbed at any one time according to a planned schedule to complete the needed building in that phase. Other portions of the site will not be cleared and graded until exposed soils from the earlier phase have been stabilized and the construction is nearly completed.
- When excavated areas are backfilled the surface will be level with the surrounding land surface, to minimise soil erosion from the areas when the excavation is complete.
- During the excavation of pits, roads, construction sites etc. the removed topsoil should be stored and appropriately protected so that it does not wash into waterbodies, causing sedimentation and nutrient loading. This is then used to backfill the area so that it can be effectively rehabilitated.
- Backfilled areas will be revegetated
- The 15 m buffer must be implemented and demarcated. No construction activities (apart from stormwater outlets and the access road), stockpiles or laydown of construction equipment are permitted in the buffer.

Operational Phase

- Up to 1:5 year flood to be handled in channels and/or underground pipes (450 mm concrete pipes). Stormwater runoff from the roads will be channeled along concrete channels and/or road kerbs to catch pits from where it will be piped to low points.
- Bigger floods to run on surface as is the standard.
- Stormwater outlets will consist of gabion basket stilling basin (for energy dissipation) which will overflow onto a reno mattress (for erosion protection) (Figure 9).

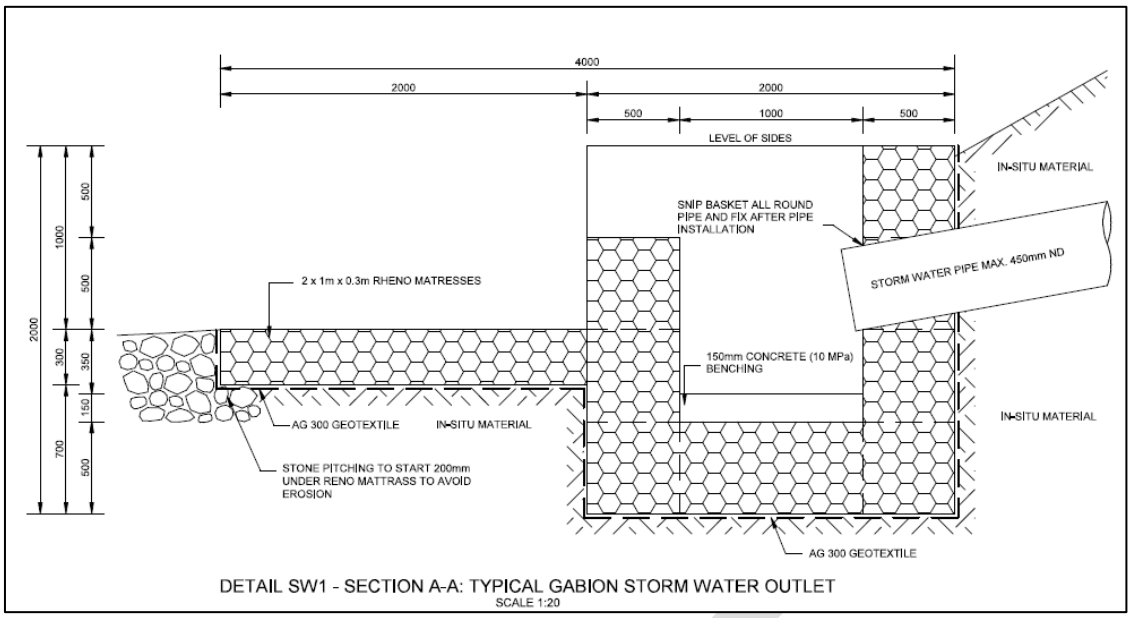

Figure 9: Section drawing of proposed stormwater outlets.

9. Rehabilitation Plan

Rehabilitation will be limited to re-profiling and revegetating disturbed areas following construction of infrastructure. For the purposes of the WULA, relevant water uses where rehabilitation will be required include the concrete culvert bridge, stormwater headwall outlets and infill along the embankment of the watercourse required for the access road connecting the eastern and western sections of the development. The following rehabilitation measures must be implemented during and following completion of construction:

- Topsoil excavated during the construction process must be stockpiled and covered for re-use in rehabilitation;
- Following completion of construction, disturbed areas must be backfilled and/or re-profiled to natural contours and must include a minimum 100 mm topsoil layer. Road verges should ideally be regraded to achieve slopes of 1:4 or flatter.
- Reshaped river bank/slopes must be seeded with a fast-growing indigenous fynbos reclamation mix. For example, the seed company Sakata produces a mix of perennial grasses consisting of *Eragrostis curvula*, *Digitaria erianthus*, *Cynodon dactylon*, *Cenchrus cilliaris* and *Eragrostis tef* and is considered ideal for the purposes of this project;
- Seeding of the banks must ensure an even distribution of seed. In this respect hydroseeding is preferable;
- Re-seeded banks/slopes must be protected by rolled biodegradable erosion control mats. For example, SoilSaver® is made from a biodegradable 100% jute yarn woven to form a 65 % open mesh structure which is ideal for erosion control. These mats conserve moisture and hold seeds and soil firmly in place. The open structure provides space for plant propagation and growth and most importantly biodegrade over time;
- Wooden stakes must be used to anchor erosion control mats as there is a high probability that metal stakes will be stolen; and
- Active alien invasive plant control measures must be implemented to prevent invasion by exotic and alien vegetation within disturbed areas.

10. Water Uses Applied For

The location of water uses that will be applied for are illustrated in Figure 10 and additional details are provided in Table 3.

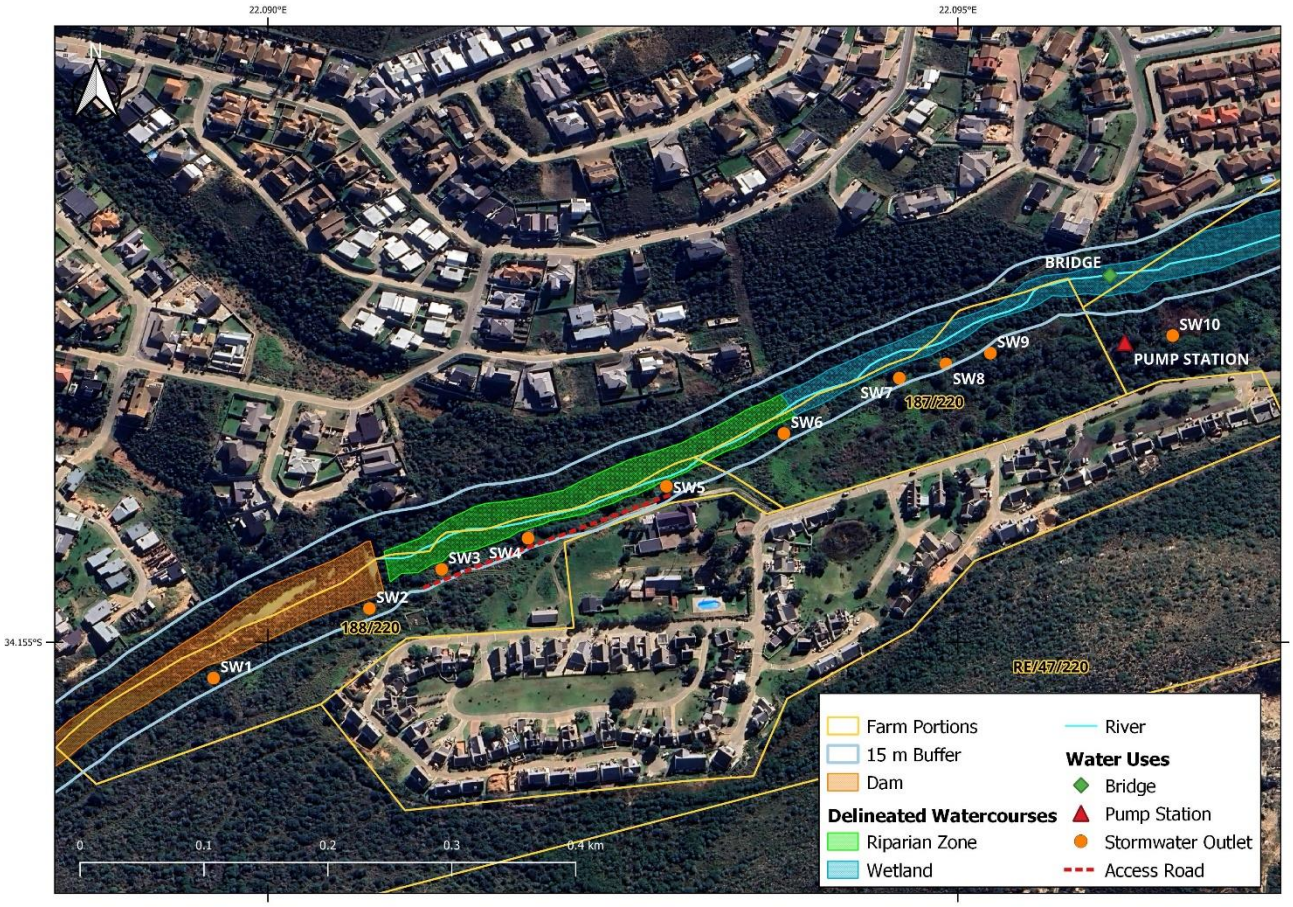

Figure 10: Section 21 (c) and (i) water uses.

Table 3: Water uses

Water use(s) activities	Purpose	Capacity/ Volume (m^3, tonnes and/or m^3/annum)/ dimension	Property Description	Co-ordinates
Section 21 c				
Infilling for Access Road	Access road connecting western and eastern section of development	215 x 5 m	RE/188 of 220	22.522 -33.993
Concrete Culvert Bridge	Connect the Eagle Creek development to Island View to the north		RE/47 of 220	22.522 -33.992
Section 21(i)				
Infilling for Access Road	Access road connecting western and eastern section of development	215 x 5 m	RE/188 of 220	22.522 -33.993
Concrete Culvert Bridge	Connect the Eagle Creek development to Island View to the north		RE/47 of 220	22.522 -33.992
Stormwater Outlet 1	Discharge and energy dissipation of stormwater into watercourse	4 x 2 x 1.5 m	RE/188 of 220	22.090 -34.155

Water use(s) activities	Purpose	Capacity/ Volume (m^3, tonnes and/or m^3/annum)/ dimension	Property Description	Co-ordinates
Stormwater Outlet 2	Discharge and energy dissipation of stormwater into watercourse	4 x 2 x 1.5 m	RE/188 of 220	22.091 -34.155
Stormwater Outlet 3	Discharge and energy dissipation of stormwater into watercourse	4 x 2 x 1.5 m	RE/188 of 220	22.091 -34.154
Stormwater Outlet 4	Discharge and energy dissipation of stormwater into watercourse	4 x 2 x 1.5 m	RE/188 of 220	22.092 -34.154
Stormwater Outlet 5	Discharge and energy dissipation of stormwater into watercourse	4 x 2 x 1.5 m	RE/188 of 220	22.093 -34.154
Stormwater Outlet 6	Discharge and energy dissipation of stormwater into watercourse	4 x 2 x 1.5 m	187 of 220	22.094 -34.153
Stormwater Outlet 7	Discharge and energy dissipation of stormwater into watercourse	4 x 2 x 1.5 m	187 of 220	22.095 -34.153
Stormwater Outlet 8	Discharge and energy dissipation of stormwater into watercourse	4 x 2 x 1.5 m	187 of 220	22.095 -34.153
Stormwater Outlet 9	Discharge and energy dissipation of stormwater into watercourse	4 x 2 x 1.5 m	187 of 220	22.095 -34.153
Stormwater Outlet 10	Discharge and energy dissipation of stormwater into watercourse	4 x 2 x 1.5 m	RE/47 of 220	22.097 -34.153
Sewage Pump Station	Sewage will be pumped to existing municipal system and gravitate to the Voorbaai pump station.		RE/47 of 220	22.096 -34.152

11. Impacts and Mitigation Measures

The potential impacts and mitigation measures that are expected from the proposed activities are presented in Table 3**.**

Table 4: Summary of impacts and mitigation measures

Water Use activity	Possible causes of impacts to the water resources	Possible Impacts to the water resource and other water users	Mitigation Measures
Design Phase			
Concrete Culvert Bridge	• Impeding Flow	• Inundation and sedimentation of habitat upstream of the road and often erosion and scouring of habitat downstream of the road due to concentrated, high energy flows passing through relatively narrow culverts	• The design will incorporate box culverts which will maximise flows beneath the bridge and are considered more suitable in comparison to circular culverts. • The culvert invert must be level with the bed of the river to allow free-flow of the river during low base-flow periods and to prevent inundation of habitat upstream of the road. • No vertical drop-offs below the road crossing. Alternatively, erosion protection must be incorporated into the design of the bridge downstream of the crossing.
Stormwater Outlets	• Concentrated high energy, high volume flows	• Erosion and scouring of instream habitat	• Stormwater must, as far as is possible, be managed onsite through the implementation of Sustainable Drainage Systems (SuDS) which should include infiltration devices that capture and retain a portion of the runoff and allow it to infiltrate into the soil. Such devices include infiltration trenches, infiltration basins, dry wells, leaching catch basins, porous pavement/blocks, and infiltration islands. • Runoff from impervious surfaces should be directed towards open areas (e.g. lawns and parks) to increase infiltration and minimise high-level flow into stormwater infrastructure and watercourses. • Sidewalks should be graded so that runoff drains into open areas (e.g. lawns and parks) rather than toward the street. • Stormwater leaving the development footprint must not under any circumstances be allowed to be discharged directly onto the steep slopes of the southern embankment (i.e. the steep slopes to the south of the development footprint). • Stormwater leaving the development footprint must be conveyed/piped to an area of lower elevation and must be discharged through an appropriate energy dissipation structure (e.g. detention basin, reno mattress etc.). • As stormwater drains discharge directly into the watercourse, inlets to these drains should be labelled with painted or prefabricated messages that warn residents of the environmental hazards of dumping materials into stormwater drains. • The recommended 15 m buffer must be enforced, with a view to providing some protection to the watercourse.
Internal Access Road	• Infilling along embankment		
Construction Phase			
Concrete Culvert Bridge & Stormwater Outlets	• Construction within bed and banks of watercourse	• Loss of instream and riparian habitat	• Areas where instream construction activities will take place must be confined to clearly demarcated areas so as to prevent unnecessary disturbance of instream and riparian habitat outside of these areas; • The recommended 15 m buffer must be implemented and demarcated to protect the watercourse from construction activities and to provide a corridor that allows movement of aquatic and riparian biota from the wetland area, upstream to the dam and beyond to more undeveloped areas of the catchment; • No equipment or materials to be stored or stockpiled within the delineated area of the wetland or riparian zone or within the 15 m buffer.

Water Use activity	Possible causes of impacts to the water resources	Possible Impacts to the water resource and other water users	Mitigation Measures
		• Sedimentation of Instream Habitat	• Instream construction activities should as far as possible be scheduled for a period of low probability of rainfall. • A temporary check dam (using sand bags) must be established upstream of the construction site to create dry working conditions. Water from upstream should be transferred through the construction area by an appropriately sized flexible pipe. • Temporary straw-bale check dams must be placed across the channel, immediately downstream of instream construction activities as a back-up to trap high levels of sediment in the event of a high rainfall event. Accumulated sediment and the check dams must be removed by hand and as soon as construction is complete. • All materials (e.g. sandbags) must be removed from the watercourse following completion of the construction activity. • Exposed, disturbed banks must be reprofiled to natural contours and revegetated (using indigenous grass-seed mix) once construction has been completed. • Construction phasing (sequencing) must be implemented. Only a portion of the site must therefore be disturbed at any one time according to a planned schedule to complete the needed building in that phase. Other portions of the site must not be cleared and graded until exposed soils from the earlier phase have been stabilized and the construction is nearly completed.
Residential units and associated services	• Clearing of vegetation	• Erosion and sedimentation of instream habitat.	• Runoff from disturbed areas must be directed through silt traps (silt fences, sandbags etc.) to remove sediment and reduce the sedimentation of the river in the valley below. • Clearing and grading should occur only where absolutely necessary to build and provide access to structures and infrastructure. Clearing should be done immediately before construction, rather than leaving soils exposed for months or years. • Construction phasing (sequencing) must be implemented. Only a portion of the site must therefore be disturbed at any one time according to a planned schedule to complete the needed building in that phase. Other portions of the site must not be cleared and graded until exposed soils from the earlier phase have been stabilized and the construction is nearly completed. • When excavated areas are backfilled the surface must be level with the surrounding land surface, to minimise soil erosion from the areas when the excavation is complete. • During the excavation of pits, roads, construction sites etc. the removed topsoil should be stored and appropriately protected so that it does not wash into waterbodies, causing sedimentation and nutrient loading. This is then used to backfill the area so that it can be effectively rehabilitated. • The 15 m buffer must be implemented and demarcated. No construction activities (apart from stormwater outlets and the access road), stockpiles or laydown of construction equipment are permitted in the buffer.
Operational Phase			
Internal Access Road	• Construction within buffer area	• Fragmentation of riparian habitat	• The final SDP has removed all residential erven from the buffer and only a ### section of the internal access road will pass through the buffer
Residential Units and Associated Services	• Edge effects	• Water quality changes, litter, erosion, dumping and alien invasion	• No activities or gardens are permitted to extend into the buffer zone. The buffer should be viewed as a valuable green space, supporting local biodiversity and only low impact recreational activities (e.g. walking, bird-watching etc.) are permitted;

Water Use activity	Possible causes of impacts to the water resources	Possible Impacts to the water resource and other water users	Mitigation Measures
			• Numerous exotic invasive species were observed along the river embankments, including *Hylocereus undatus* (Dragon Fruit) and *Opuntia engelmannii* (Prickly Pear). These have the potential to invade and spread throughout the riparian area and must be actively controlled and removed from the site; • Active revegetation of bare exposed banks with indigenous vegetation is recommended; and • Strict rules must be implemented and enforced which forbid dumping of waste and garden refuse within the buffer zone.

12. Water Demand and Water supply

Water demand

Potable water for human consumption and domestic use will be required and will be provided by Mossel Bay Municipality from their water treatment works in Klein Brakriver. Based on the Guidelines for the Provision of Municipal Infrastructure as well as the Water Master Plan for the Mossel Bay Area, it is estimated that the water demand that will be required for domestic usage is as follows:

- Per annum: 54750 kℓ/y
- Average per day: 150,0 kℓ/day

Water supply

Water, for the proposed development, will be available from the existing water reticulation. Mossel Bay Municipality confirms that the development area will be serviced through one of two options[1]:

1. A new connection to the Island View reticulation currently being fed from the 3 Mℓ Aalwyndal Reservoir; or
2. Connect to the existing Vogelsang internal network at suitable points currently being supplied via the Municipality's bulk water lines in Louis Fourie Road.

13. Appendices

Appendix 1 – Freshwater Assessment Report

[1] Note: During the planning of the upgrade of the adjacent Vogelsang, the proposed Eagle's Creek development was included in the calculations for water supply.