
Water Use License Application:
Bulk Sewage Upgrade, Greenhaven, Great Brak
WU49243

DRAFT WULA SUMMARY REPORT

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1 BACKGROUND & PURPOSE

Confluent Environmental was appointed to submit a Water Use License Application (WULA) for the proposed upgrade of a bulk sewerage line from Amy Searle Street/Greenhaven to the cricket field sewerage pumpstation in Great Brak. The proposed project entails the installation of a new Ø300mm pipeline which will run along the edge of the estuarine functional zone (EFZ) of the Great Brak Estuary (Figure 1).

The existing Ø300mm bulk AC sewerage gravity pipeline flowing from the Greenhaven residential area to the so-called cricket field sewerage pumpstation in the centre of the town CBD area has insufficient capacity to accommodate the current and planned future developments in the Greenhaven Area. The purpose of the project is therefore to replace the existing Ø300mm AC pipeline from the Greenhaven residential area (Amy Searle/Muller Street intersection) flowing to the so-called cricket field sewerage pumpstation with a Ø315 or Ø355mm class 34 uPVC pipeline depending on the available gradient. This pipeline is 1 455 m long.

The pipeline route will follow an existing pipeline servitude. The development will take place within the regulated area of a watercourse and triggers several water uses that require a Water Use License (WUL) in terms of the National Water Act (NWA).

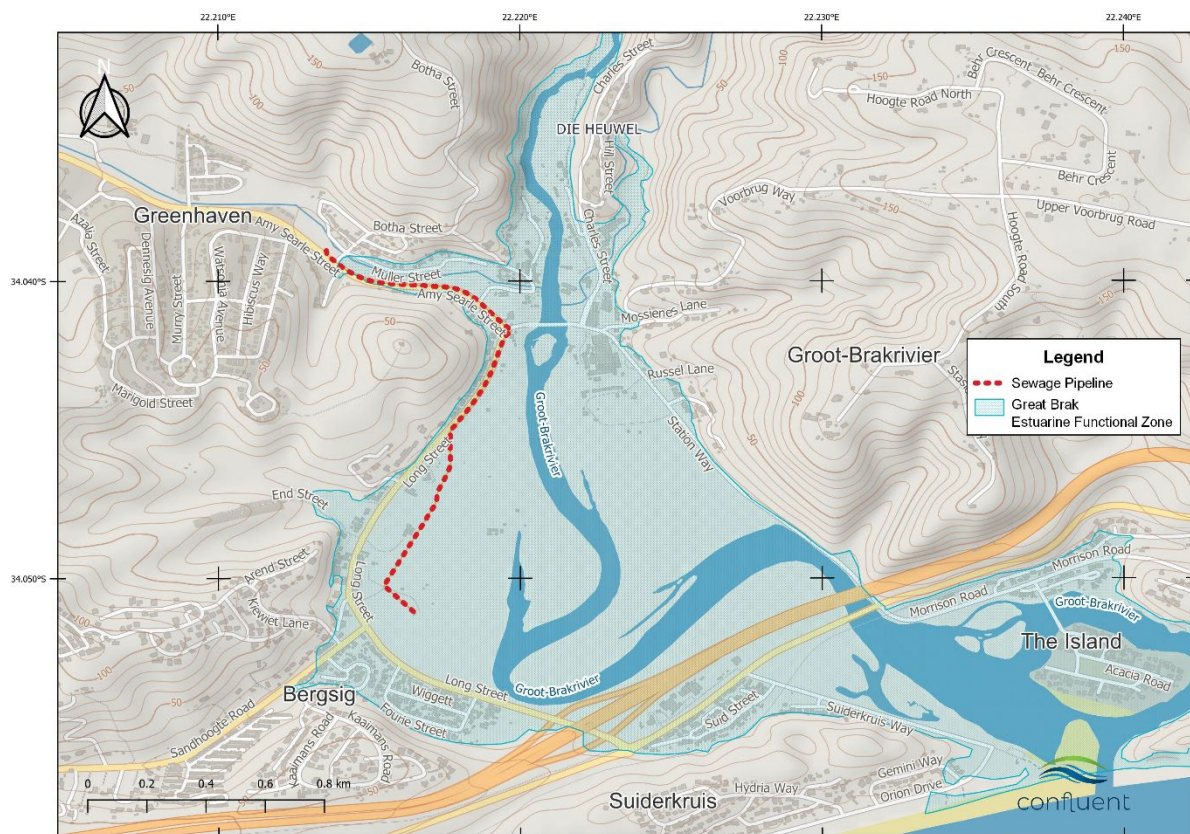


Figure 1: Proposed pipeline route in Great Brak.

2 LOCATION OF WATER USES

The Great Brak estuary falls in quaternary catchment K20A (Figure 2). The main river flowing through the catchment area is the Groot Brak River. The estuary falls within level 22.02 of the

Southern Coastal Belt ecoregion, which is characterised by moderately undulating plains of moderate relief with altitude ranging from 0 to 500 m above mean sea level. Mean annual precipitation for the catchment area is relatively high (between 300 and 700 mm per annum), and occurs year-round, with peaks in late winter and early spring (August to October).

The majority of the pipeline runs through the Estuarine Functional Zone (EFZ - Figure 1). In South Africa, the Estuarine Functional Zone (EFZ) is defined as the area that not only delineates the boundaries of the estuarine waterbody, but also the supporting physical and biological processes and adjacent habitats necessary for estuarine function and health (Van Niekerk et al., 2019). It includes all dynamic areas influenced by long-term estuarine sedimentary processes, multiple ecotones of floodplain and estuarine vegetation that contribute organic material and provide refuge from strong currents during high flow events. EFZs are currently delineated by the 5 m contour line and therefore include large areas of terrestrial habitat (much of which has been historically developed) that border the actual water body. The EFZ is now commonly used to delineate the spatial extent of the entire estuary. Estuaries are not defined as watercourses and the section of the pipeline that runs through the EFZ is therefore not regulated in terms of Section 21 (c) and (i) of the NWA.

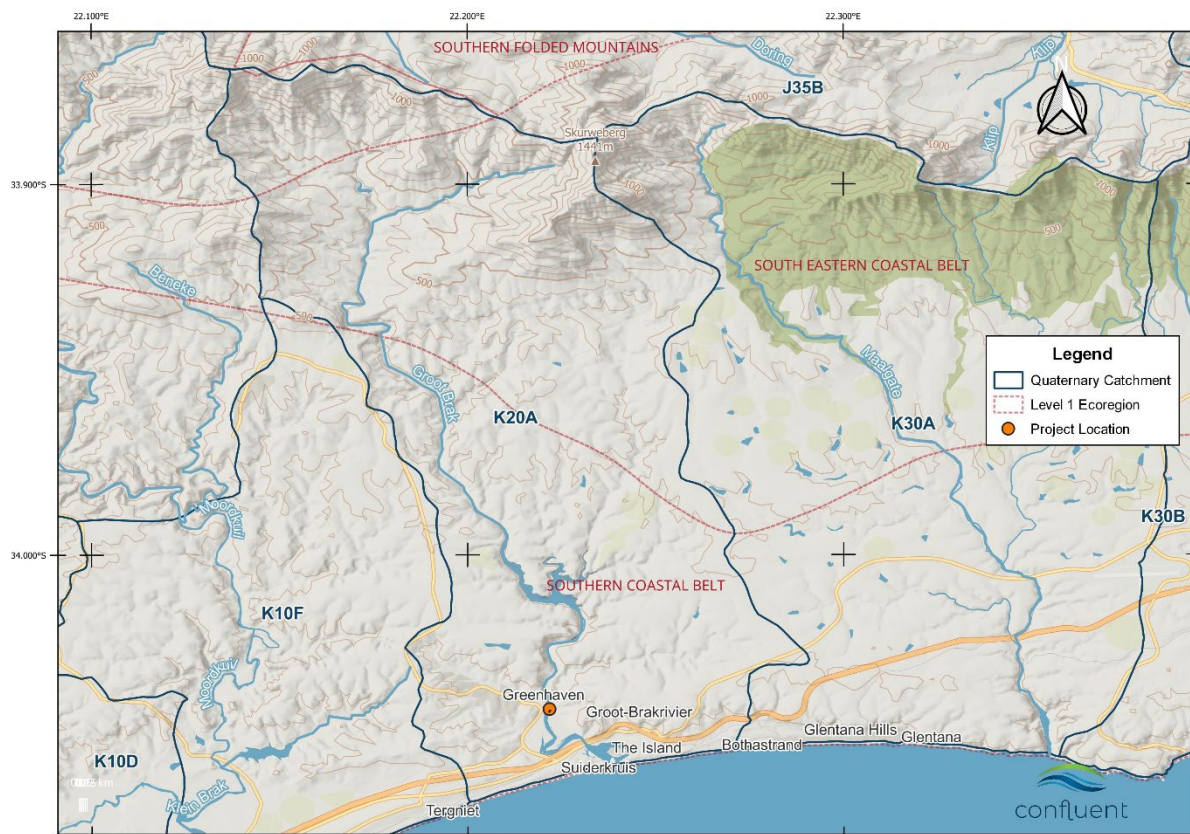


Figure 2: Location of the project area relative to quaternary catchment K20A.

The upper-most section of the proposed pipeline upgrade is however located adjacent to a channel that extends from a large *Phragmites australis* dominated unchannelled valley-bottom wetland (Figure 3). Other prominent species include *Nidorella ivifolia* and *Cyperus textilis*. The channel is narrow and receives stormwater input from the surrounding area. The channel drains water from the wetland and has been diverted from its original course, which used to run closer to Amy Searle Street. This wetland falls outside of the EFZ and is considered as

freshwater habitat (not estuarine). Construction of bulk sewage lines that fall within the regulated area of a wetland (i.e. within 500 m) require a water use license.



Figure 3: Map indicating the upper section of the bulk sewage pipeline upgrade that lies adjacent to an unchannelled valley-bottom wetland.

3 PROJECT DESCRIPTION

The pipeline route runs adjacent to Amy Searle and Long streets (Figure 1). The upper, western most section of the pipeline is located adjacent to freshwater wetland habitat (i.e. outside of the EFZ). The majority of the pipeline is located within the EFZ and will be buried immediately adjacent to Amy Searle and Long streets (beneath the sidewalk). The southern most section of the pipeline deviates from Long Street, further in towards the EFZ and closer to open water estuarine habitat. While the entire pipeline route is mapped within the EFZ, long sections of the route run through urbanised, transformed habitat. Five distinct zones have been identified (Figure 4):

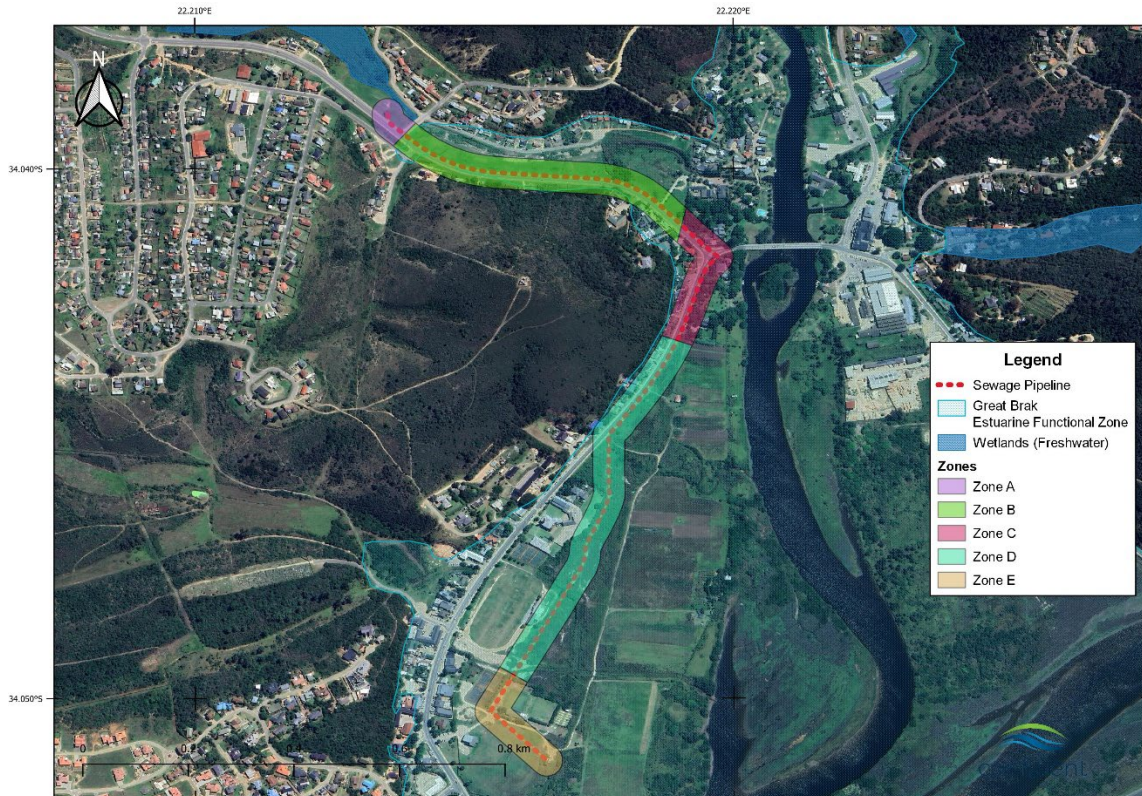


Figure 4: Habitat zones identified along the route of the proposed sewage pipeline upgrade.

- Zone A:** The upper-most manhole linked to the proposed pipeline upgrade is located adjacent to a channel that extends from a large *Phragmites australis* dominated unchannelled valley-bottom wetland (Figure 5). Other prominent species include *Nidorella ivifolia* and *Cyperus textilus*. The channel is narrow and receives stormwater input from the surrounding area. The channel drains water from the wetland and has been diverted from its original course, which used to run closer to Amy Searle Street. This wetland falls outside of the EFZ and is considered as freshwater habitat (not estuarine).



Figure 5: Photographs of the wetland (left) and the channel extending from the lower end of the wetland towards the EFZ (right).

- Zone B:** The upper section of the pipeline (running adjacent to Amy Searle Street) runs through a grassed public open space area (Figure 6). Open water estuarine habitat has been transformed into a concrete-lined canal. The pipeline route along this section runs immediately beneath the sidewalk and does not traverse through any natural estuarine habitat. The closest distance to the canal is approximately 20 m. Several stormwater channels drain stormwater from Amy Searle Street down towards the canal. The canal has undergone many modifications in the past and has been diverted from its natural course. There is a patch of estuarine wetland vegetation that extends away from the channel towards Amy Searle Street. This is a remnant of the historical channel that used to run closer to Amy Searle Street. The wetland area is dominated by *P. australis* reedbeds but also includes *C. textilis* and *N. ivifolia*. There are clear signs of historical excavation within the wetland as was by vegetated mounds of soil around the perimeter (adjacent to Amy Searle Street). These mounds have been invaded by alien tree species – most notably *Melia azedarach* (Syringa).



Figure 6: Photographs of the grassed area adjacent to the canal (top left), the canal lined with open concrete pavers (top right), a stormwater channel leading from Amy Searle Street down towards the canal (bottom left) and a patch of remnant wetland vegetation in close proximity to Amy Searle Street (bottom right).

- Zone C:** This section of the pipeline follows Long Street and runs immediately adjacent to the road and sidewalk. The pipeline runs through a transformed section of the EFZ and does not run through or adjacent to any natural estuarine habitat.
- Zone D:** The pipeline route passes through natural, estuarine habitat located immediately adjacent to Long Street and eventually deviates from Long Street and passes through estuarine habitat, characterised by stands of *Phragmites australis* and

patches of salt marsh vegetation (Figure 7). The habitat is supratidal and lies above the level of the highest high tide. Several stormwater channels that divert stormwater off of Long Street intersect with the pipeline route. While, the pipeline passes along an existing, disturbed servitude, the habitat immediately adjacent to the servitude is considered to be sensitive.



Figure 7: Examples of estuarine habitat located immediately adjacent to the sewer line servitude, including Juncus kraussii sedge beds (top left), P. australis reed beds (top right), salt marsh (bottom left) and vegetated stormwater channels extending from Long Street further into the interior of the EFZ (bottom right).

- **Zone E:** The final section of the pipeline passes through the Great Brak municipal sport grounds complex where any former natural estuarine habitat has once again been transformed (roads, parking areas and sports fields) - Figure 8.



Figure 8: Paved roads and sports fields in Zone E (left and right).

4 WATER USES

Based on the project layout and proposed plans, the following water uses have been identified and will form the subject of the WUL application:

- 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.

Further details are provided in Table 1.

Table 1: List of water uses that will be included in the WULA

ID	Water Use	Description	Start	End
Amy Searle Line	21 c	Bulk Sewage Line	-34.0389714 22.2135812	-34.0392990 22.2138093
Amy Searle Line	21 i	Bulk Sewage Line	-34.0389714 22.2135812	-34.0392990 22.2138093

5 IMPACTS & MITIGATION

Impact 1: Sewer line design in the flood line (applicable to all zones)

The entire pipeline route is located within the 1:50 and 1:100 year floodline. The primary concern around development of sewerage infrastructure in flood prone areas is prevention of the leakage of sewage during flood events which could pollute the wetland and estuary.

	Without Mitigation	With Mitigation
Intensity	High	High
Duration	Brief	Brief
Extent	Local	Local
Probability	Likely	Probably
Significance	-50: Minor	-40: Minor
Reversibility	High	High
Irreplaceability	Low	Low
Confidence	High	High

Mitigation:

- Air valves along sewer lines must be elevated above the 1:100-year flood line
- Sewer manhole covers should not be made of metal because of the risk of theft.
- Manholes must be designed to be watertight to prevent environmental contamination from leaking sewage and to avoid ingress of surface water during rainfall and flood events. Watertight manholes achieve this seal using components like gaskets on the manhole cover, proper joint sealing between sections, and leak-resistant pipe-to-manhole connections, which are essential for system integrity and cost efficiency.

5.1 Construction Phase**Impact 2: Disturbance of estuarine and wetland habitat caused by construction activities.**

Construction activities in Zone A, B and D will take place in, or adjacent to natural freshwater and estuarine habitat. These activities include clearing of vegetation, excavation of trenches, stockpiling of materials and mixing of cement (e.g. for construction of manholes). Care must therefore be taken to minimise disturbance and impact on adjacent habitat.

	Without Mitigation	With Mitigation
Intensity	High	Moderate
Duration	Short term	Short term
Extent	Limited	Very limited
Probability	Almost certain	Unlikely
Significance	-60: Minor	-24: Negligible
Reversibility	High	High
Irreplaceability	Low	Low
Confidence	High	High

Mitigation:

- An Environmental Control Officer (ECO) must be appointed for the duration of the construction phase to monitor and report back on compliance with conditions of the environmental authorisation.
- Consult weather forecasts daily and weekly. Do not work during rainfall and minimise the storage of mobile materials in low-lying areas. Plan the construction area as if it could be inundated with floodwaters in the event of a significant rainfall event.
- Construction access for the pipeline through Zone D should utilise existing access points from Long Street. No new roads should be necessary.
- The width of the working area through Zone D must be as narrow as possible and must be clearly demarcated. Estuarine habitat outside of this demarcated area must be considered as No-Go areas.
- Revegetation of the pipeline through Zone D must be actively encouraged. The route is currently well covered by indigenous vegetation (e.g. sedges, *P. australis*, *Stenotaphrum secundatum* etc.). It is recommended that when trenching, a top layer of vegetation in association with 20-30 cm of soil should be removed and set aside for replanting or covering the filled in trench.
- Open trenching for sewer lines should be done in as short a stretch as possible and backfilled with material as soon as possible to reduce the likelihood of material loss in the event of flooding

- Keep a skip on site so that any waste materials can be conveniently discarded and removed. This includes small amounts of dirty water, such as that used for mixing concrete.
- Equipment and materials lay-down areas should be located away from estuarine habitat and stormwater channels leading into the estuary. Minimise the storage of loose materials in case of a flood event that could wash them into the estuary.
- Post-construction site clean-up must be completed to ensure the entire site footprint and surrounding area has been cleared of litter and any waste materials associated with construction. The ECO should be informed of the construction close-out and complete an inspection to ensure this measure has been implemented.
- The pipeline route through Zone D must be routinely inspected for the establishment of alien invasive plant species. This must be done at a high frequency following construction (i.e. monthly) and can be reduced once natural vegetation along the pipeline has recovered. These must be controlled by hand. No aerial application of herbicides is permitted. Herbicides may only be applied to cut-stumps and must be registered for use on the target plant species.

5.2 Operational Phase

Impact 3: Pollution of wetland and estuarine habitat caused by pipeline blockages.

There is a high likelihood that occasional leaks will occur due to blockages or damaged sections of the pipeline. Standard operating procedures must be developed and implemented in order to detect, respond to and contain leaks when these do occur. The objective is to reduce the risk of pollution entering the wetland and estuary.

	Without Mitigation	With Mitigation
Intensity	High	Moderate
Duration	Brief	Brief
Extent	Local	Local
Probability	Almost certain	Almost certain
Significance	-60: Minor	-54: Minor
Reversibility	High	High
Irreplaceability	Low	Low
Confidence	High	High

Mitigation:

- When blockages to sewerage infrastructure occur, the maintenance team should ensure a honey-sucker is on standby to mop up any spills or overflows for removal and disposal at the Wastewater Treatment Works.
- Any serious sewage spills that result in large quantities of sewage leaking from a pump station or manhole must be contained in a temporary coffer dam which can be constructed using sandbags for the walls and plastic sheeting as a base. From here, honey-suckers can collect sewage for removal.
- Any water-tight seals around manholes, joints or other access points that must be broken for maintenance should be replaced thereafter to ensure the mitigation measures to prevent water ingress or sewage leakage are maintained under flood scenarios.
- Keep sewer lines clear of dense vegetation to facilitate access and reduce the risk of roots cracking sewer lines.

Impact 4: Disturbance of wetland and estuarine habitat caused by maintenance on pipelines (Zone A, B and Zone D).

The operational phase primarily relates to maintenance and repairs required for the sewer lines within the EFZ. The proximity of the pipeline to estuarine habitat increases the risk that contractors appointed for maintenance could inadvertently create impacts to the estuary. Mitigation measures aim to reduce the risk of damage or disturbance to nearby estuarine or wetland habitat.

	Without Mitigation	With Mitigation
Intensity	High	Moderate
Duration	Short term	Short term
Extent	Limited	Very limited
Probability	Almost certain	Unlikely
Significance	-60: Minor	-24: Negligible
Reversibility	High	High
Irreplaceability	Low	Low
Confidence	High	High

Mitigation:

- All of the mitigation measures provided for the construction phase are applicable to maintenance work where applicable.

6 REPORTS AND OTHER TECHNICAL DOCUMENTS

Table 5: Additional technical reports relevant to application

Technical documents	Compiled by	Date compiled
Appendix 1 – Specialist Estuarine and Freshwater Assessment Report	Confluent Environmental	September 2025
Appendix 2 - Greenhaven, Groot Brakrivier, Upgrading of Sewer Lines Phase 3 and the Upgrading of the Bulk Sewerage Pipeline from Muller/Amy Searle street to the Cricket Field Sewerage Pumpstation	Cobus Louw Pr Eng cc	February 2025