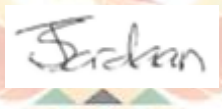
DRAFT WATER USE LICENCE APPLICATION SUMMARY REPORT

NAME OF APPLICANT:

Athina Development (Pty) Ltd

Compiled by:

Sonia Jordaan



Signature:

Date : 24 February 2023

1. Applicant details

Name of applicant: Athina Development (Pty) Ltd
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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

3.1 Background

The applicant, Athina Development Pty (Ltd), hereafter referred to as the developer, is applying for a Water Use License to build a small residential development consisting of nine erven ranging in size from ±1 319 m^2 to 1 987 m^2. The development will be known as the Athina Development. The proposed development is situated ±4 km south of Plettenberg Bay CBD. The site lies between Whale Rock Ridge development and the ocean. The development will cover approximately 2.52 hectares on 66/443 and 67/443 Brakkloof, which is in the process of being rezoned and consolidated (see Table 1) to residential erven. It is located in Plettenberg Bay, Western Cape.

There is no Existing Lawful Use (ELU) for this site.

3.2 Location of water uses

The water uses take place within quaternary catchment K60G, of the Kromme Primary Catchment (Figure 1), located within Bitou Municipality and the administrative district of Knysna, Western Cape. The site has the Duin en See development on the northern boundary and a serviced site, Portion 57/443 to the south (Engineering services report). A large depression wetland is located to the west of the property (Figure 2). The geographic location of the property where the water uses will take place is Latitude -34.0899 and longitude 23.3702.

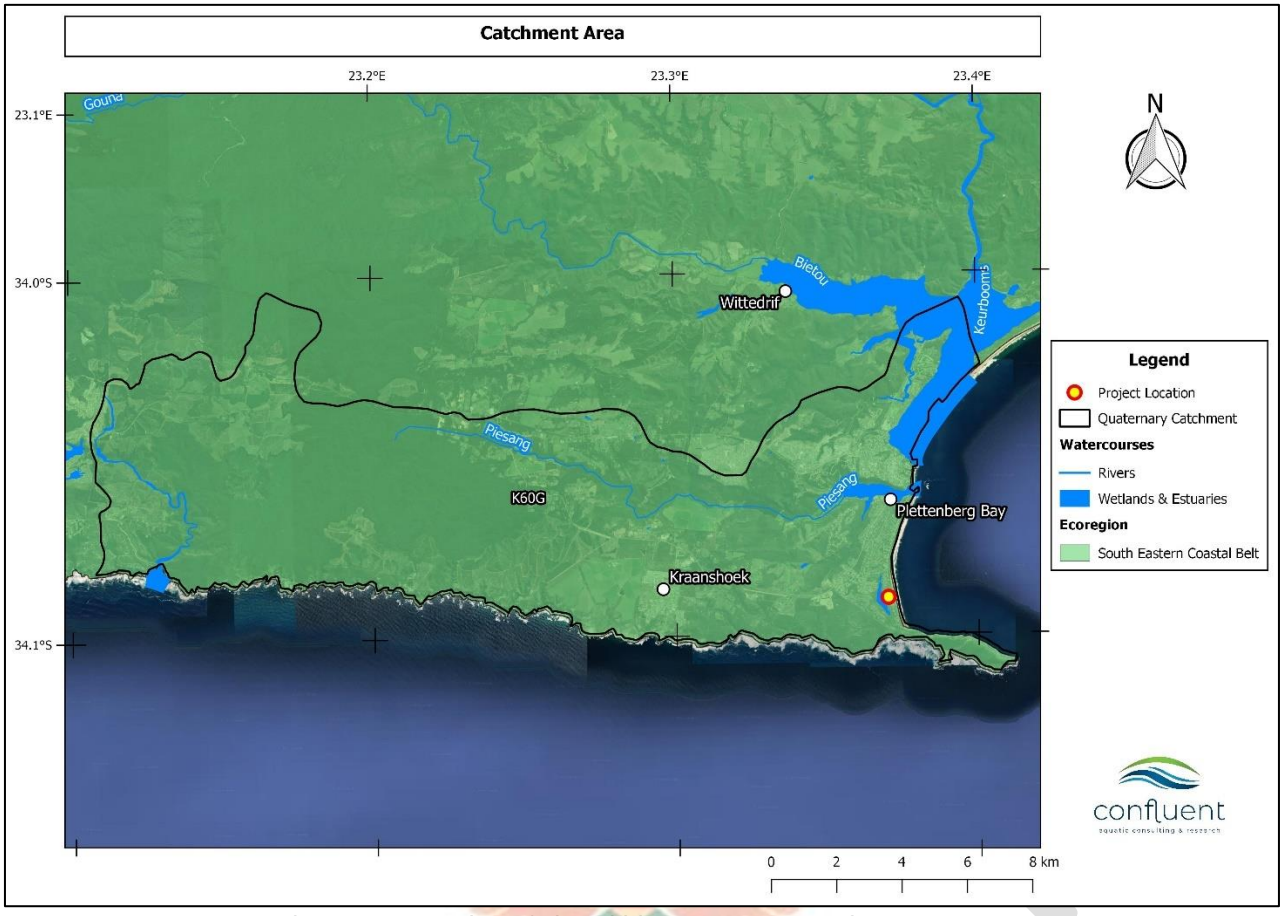

Figure 1 – Location of site within quaternary catchment K60G.

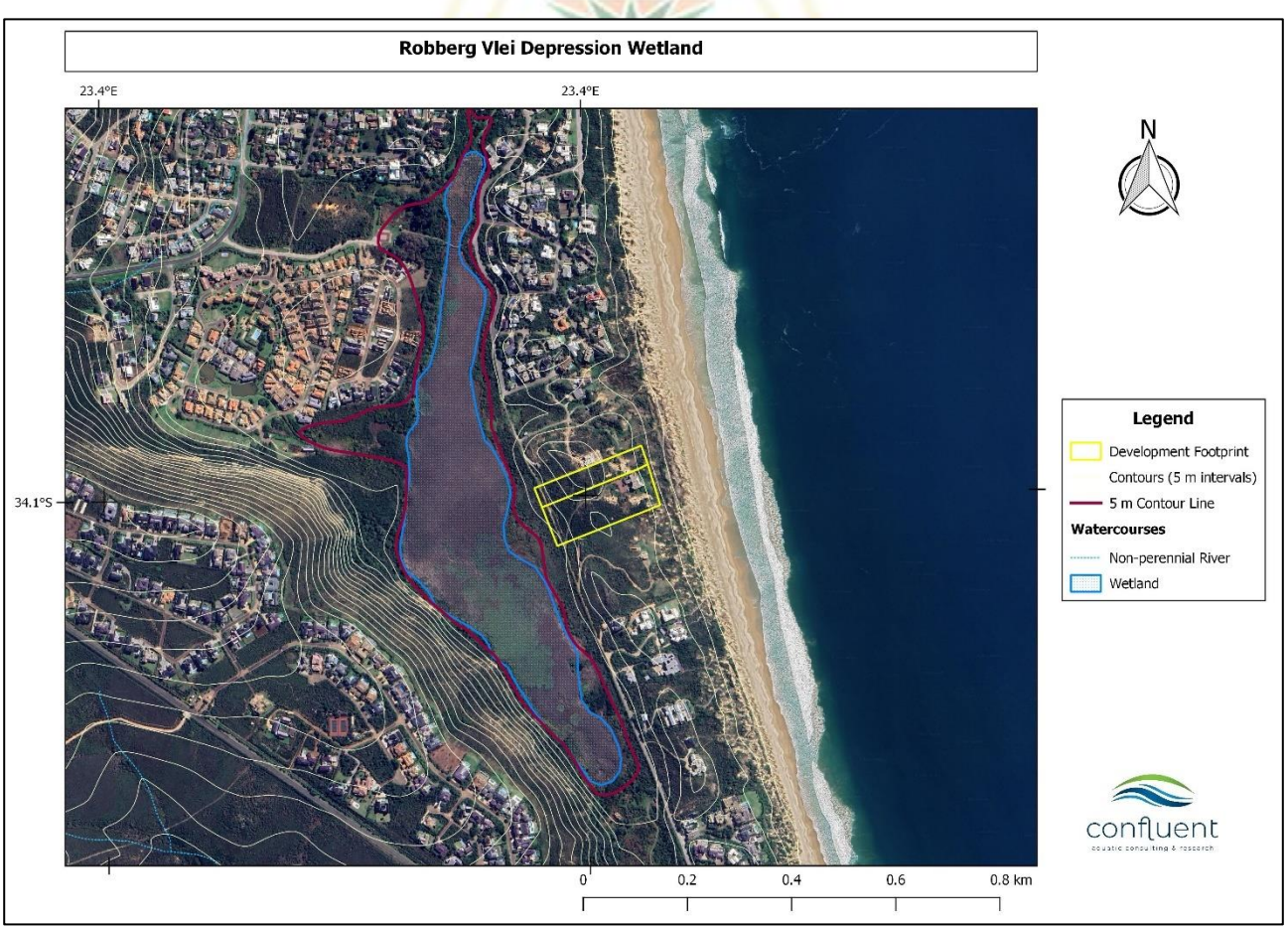

Figure 2- Depression wetland to the west of the development site.

Table 1: Property details

Property description	Title Deed number	Owner
Farm 66/443 Brakkloof	T58337/96	Mantevrede Trust
Farm 67/443 Brakkloof	T25165/2015	Seven Falls Trading 101 (Pty) Ltd

4. Administrative documents and other technical reports submitted to support the WULA

4.1 **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-Gourtiz administration fee
- Applicant's company registration certificate
- Applicant's contact details

4.2 **Reports and other technical documents**

Table 2 lists reports and other documents that will be submitted as part of the application.

Table 2: Documents to be submitted for the application.

Report Title	Compiled by	Date of report
Aquatic assessment report	Confluent Environmental	December 2022
Basic Assessment Report	Ecoroute	March 2023
Engineering report, including civil services and stormwater management	Tuiniqua Consulting Engineers	September 2021
Public Participation report	Confluent Environmental	Pending
WULA Technical report/summary	Confluent Environmental	February 2023 (Draft Version)

5. Project Description

The approved layout for the development has 9 dwelling units on the properties (Figure 3). The development is outside of the delineated area of the adjacent wetland. However, the construction of the development takes place within 500 m of the wetland and therefore takes place within the regulated area of a watercourse. The construction of a sewage pipeline within the regulated area of a watercourse to connect the development to the municipal sewage system triggers the need for a Water Use License (WUL) as per Section 21(c) and 21(i) of the National Water Act (NWA). The following activities will be included in the Water Use License Application (WULA):

- 21(c): impeding or diverting the flow of water in a watercourse and 21(i) altering the bed, banks, course or characteristics of a watercourse:
    - Construction of housing development
    - Construction of a sewer pipeline

- Construction of drinking water pipeline
- Construction of a sewage pump station
- Upgrade of access road (tarring, stormwater and alignment)

The wetland will be protected by a natural, well vegetated buffer area that lies in between Robberg Road to the east and the wetland to the west. The buffer varies between 30 to 90 m in width.

Potable water will be supplied by the municipality, primarily from the water purification works in Flying Cloud Avenue. Wastewater will be pumped from the site to the municipal bulk sewer connection point, which will primarily be treated at Old Nick sewage treatment works.

Figure 3: Site layout indicating water use activities.

6. Methods statement (only for 21 (c) and (i) activities)

The entire development footprint is within the regulated area of a wetland as defined by GN 509 of the NWA. Therefore, all construction-related activities involving earthworks and heavy machinery constitute Section 21(c) and 21(i) water uses. Construction methods, typical for a new housing development, would be followed. This would include earth moving, the use of heavy machinery and excavation work to be done to enable the construction of residential accommodation units on erven in an urban area. The constructed buildings will have various options for the house structures. Piling, rafts and re-compaction with reinforced strip footings are proposed. The type of foundations will depend on density tests done on site, slopes and the architecture of the houses. See Engineering report for more details.

The buffer area (varying between 40 and 90 m in width) in between the wetland and the development will be designated as No-Go area which will significantly minimise the potential impacts of the construction activities on the wetland. The sewage line from the development will be constructed and connected into an existing municipal bulk sewer system. Detailed stormwater drainage design (see following section) will protect the wetland following high rainfall events.

7. Stormwater Management Plan

Athina Development's Engineering report provides stormwater management plans with the description and layout of measures taken to control stormwater in the proposed development (Appendix 2). The report states that the development has a small catchment area with permeable dunes and soil conditions, not much runoff is envisaged. The large open areas which, will stay undeveloped within the housing development will also disperse runoff during times of rainfall. Each house will have a 5 000 ℓ rainwater tank and driveways can be built from grass blocks to allow percolation of rainwater and prevent erosion due to acceleration of water flow from hard surface runoff.

Roadways will have kerb and channel side drains to transport water to a trapezoidal grass block side drain. From here it will be discharged into a 1.2m deep stilling gabion chamber, which will act as a silt trap and retention chamber to percolate water through.

8. Rehabilitation Plan

Athina Development will be located outside of the delineated area of the wetland and its associated buffer area (which ranges between 40 and 90 m in width). There are no other watercourses within the development's footprint and therefore no rehabilitation of watercourses will be required.

9. Water Uses applied for

The application includes the following water uses as detailed in Table 3.

Table 3 – Water uses applied for.

Water use(s) activities	Purpose	Property Description	Co-ordinates
Section 21 (c & i)			
Construction of a housing development	Development of housing in an urban area	Portions 66&67 of Farm 443 Brakkloof	-34.0899 23.3702
Construction of a sewer line	Connecting development's wastewater to tie into municipal bulk sewer	RE/3925	-34.0881 23.3684
Construction of a sewage pump station	Pumping wastewater to municipal bulk sewer	Portions 66&67 of Farm 443 Brakkloof	-34.0902 23.3694
Construction of a drinking water pipeline	Supply the development with potable water	Portions 66&67 of Farm 443 Brakkloof	-34.0898 23.3691
Upgrade of access road	Road to access proposed housing development	Road	-34.0911 23.3696

10. Description of the Environment

The farm portions fall within quaternary catchment K60G of the Kromme Primary Catchment (Figure 1), within the South-Eastern Coastal Belt ecoregion, with an altitude ranging from 1 to 1 300 m above mean sea level. The mean annual precipitation for the catchment is 780 mm per annum and occurs year-round. The rainfall peaks in October to November and March to April. It is a temperate climate with no dry season and warm summers (Cape Farm Mapper, Köpper Gelger Climate Zones (1980-2016)).

The mapped wetland to the west of the properties is classified as a depression and no watercourses are mapped to flow into or out of the wetland (Aquatic specialist report). The wetland is constrained by an extension on the Robberg peninsula formation to the west (comprising of a high elevation layered sandstone, conglomerate and Table Mountain quartzite geological formation) and a lower elevation sandy coastal dune system to the east. The wetland is endorheic and has no outflow. The entire wetland is densely vegetated, predominantly by *Phragmites australis* (interspersed by a variety of other aquatic plants including *Typha capensis* and *Persicaria sp*.), which indicates that the main extent of wetland is permanently saturated and at least seasonally inundated. The margins of the wetland are characterised by species that favour seasonally saturated soils (e.g. *Nidorella ivifolia*). The entire wetland falls below the 5 m contour and the permanently saturated soils are most likely sustained by a high water table that remains at or near the ground surface for some or all of the year. Flow into the wetland is derived from overland surface runoff generated from the surrounding catchment area which slopes steeply from all directions into the wetland. The western slopes in particular are likely to be an important source of surface flow as they cover a large area along the border (approximately 800 m in length) that drops steeply down towards the wetland, dropping in elevation from 65 down to 5 m.a.m.s.l (over a distance of approximately 200 m). The eastern slopes are lower lying, sandy vegetated dunes where surface runoff into the wetland is not expected to be an important contribution to the hydrology of the system. Some sub-surface flow through the dune system into the wetland is likely but is not expected to form a significant contribution of flows into the wetland.

See Appendix 2 for further details.

11. Impacts and Mitigation Measures

The potential impacts and mitigation measures that are expected from the proposed activities are presented below:

11.1 Construction phase:

Impact 1: Sedimentation of the wetland caused by clearing of vegetation.

The lower section of the development slopes down towards the wetland. Clearing areas of the site and the road in preparation for construction (including houses and pipelines etc.) will expose bare soil which could potentially be mobilised into the wetland during heavy rainfall events. The buffer is however expected to provide good protection under such circumstances.

	Without Mitigation	With Mitigation
Intensity	Moderate	Low
Duration	Short term	Brief
Extent	Very limited	Very limited
Probability	Likely	Unlikely
Significance	**-40: Minor (-)**	**-18: Negligible (-)**
Reversibility	High	High
Irreplaceability	Low	Low
Confidence	High	High

Mitigation:

- A silt fence must be installed perpendicular to the angle of the slope to trap any soil or sediment mobilised from the site during the construction phase. Silt fences must be installed between the site and the Robberg Road, and in between Robberg Road and the buffer;
- The site must be monitored after every rainfall event to ensure that no sediment is being washed into the wetland by erosion;

- The laydown area and stockpiles of construction materials or excavated materials must be located on as flat an area as possible and should not drain towards the wetland. If necessary, stockpiles must be protected (e.g. through use of sandbags and/or tarpaulins) to prevent materials being washed downslope towards the wetland.

Impact 2: Pollution of wetland and buffer caused by waste generated by the construction process.

Construction activities are likely to generate significant quantities of solid waste that could pollute the wetland and buffer area. In addition, the high numbers of construction workers present on site will generate a significant amount of human waste, which could also pollute the wetland.

	Without Mitigation	With Mitigation
Intensity	Low	Very low
Duration	Short term	Brief
Extent	Very limited	Very limited
Probability	Likely	Unlikely
Significance	**-35: Negligible (-)**	**-15: Negligible (-)**
Reversibility	High	High
Irreplaceability	Low	Low
Confidence	High	High

Mitigation:

- All construction waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported;
- All construction waste materials must be collected and disposed of at a suitable waste facility;
- No dumping of construction material within the wetland or wetland buffer may take place;
- The buffer and wetland area must be monitored on a weekly basis to clean-up any waste that may have been blown from the construction site; and
- Adequate sanitary facilities and ablutions must be provided for all personnel throughout the project area. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation);

Impact 3: Impairment of water quality and disturbance to buffer caused by the operation of vehicles and heavy machinery within close proximity to the wetland.

Operation of vehicles in close proximity to the wetland could result in spillages or leaks of hydrocarbons (fuel and oil) and could lead to unnecessary disturbance of the wetland and its buffer.

	Without Mitigation	With Mitigation
Intensity	Low	Very low
Duration	Short term	Brief
Extent	Very limited	Very limited
Probability	Likely	Unlikely
Significance	**-35: Negligible (-)**	**-15: Negligible (-)**
Reversibility	High	High
Irreplaceability	Low	Low
Confidence	High	High

Mitigation:

- Construction activities must be confined to clearly demarcated areas so as to prevent unnecessary disturbance to the wetland and buffer;
- No vehicles are to park or operate within the buffer of the wetland (i.e. all activities must be restricted to Robberg Road or the eastern side of Robberg Road);

- Excavators and all other machinery and vehicles must be checked for oil and fuel leaks daily. No machinery or vehicles with leaks are permitted to work on site;
- No fuel storage, refuelling, vehicle maintenance or vehicle depots to be allowed on the slope leading towards the wetland;
- Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills. These areas must not be located within any natural drainage areas or preferential flow paths and must be located outside of the buffer of the wetland; and
- The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly

11.2 Operational Phase:

Impact 4: Alteration of surface flows into the wetland caused by increased stormwater runoff.

The development will result in an increase in the area of paved/hardened surfaces. This will generate increased volumes of stormwater runoff which will flow down towards the wetland. The main entrance road leading from Robberg Road into the development is also likely to become an important conduit for stormwater down towards the wetland. The upgraded section of Robberg Road will also generate a slight increase in stormwater runoff from the road surface. Existing developments along tarred sections of Robberg Road (to the south) have not resulted in obvious impacts the wetland as a result of stormwater runoff. Adequate management of stormwater should therefore effectively minimise the intensity of this impact.

	Without Mitigation	**With Mitigation**
Intensity	Moderate	Low
Duration	Ongoing	Ongoing
Extent	Very limited	Very limited
Probability	Almost certain	Unlikely
Significance	**-66: Minor (-)**	**-30: Negligible (-)**
Reversibility	High	High
Irreplaceability	Low	Low
Confidence	High	High

Mitigation:

- Each house must be fitted with a 5000 litre rainwater collection tank;
- Driveways must be constructed from grass blocks to facilitate percolation into the soil and reduce surface runoff;
- A trapezoidal grass block drain will be constructed to collect surface runoff from the road, which will also facilitate percolation into the soil;
- Water from the drain will be discharged into an effective 1,2m deep stilling gabion chamber that will also serve as a silt trap. The retention chamber will facilitate percolation and will not have an outlet. The majority of stormwater will therefore be attenuated onsite;
- The retention chamber must be routinely maintained to ensure that is has sufficient capacity to accommodate appropriate design floods;
- A suitable stormwater plan must be compiled for the section of Robberg Road that will be tarred and upgraded. The plan must discharge stormwater into the adjacent buffer area without causing any erosion. The runoff velocity of stormwater must therefore be reduced with energy dissipaters prior to discharge into the wetland buffer.

Impact 5: Alteration of sub-surface flows into the wetland caused by impervious surfaces and foundations.

Hardened surface and establishment of foundations for houses may impede sub-surface flows towards the wetland, although these are not expected to form a major or important contribution to the water balance of the wetland. This is supported by the fact that the numerous developments around the wetland do not appear to have affected the size of the wetland area over time.

	Without Mitigation	With Mitigation
Intensity	Very low	Negligible
Duration	Ongoing	Ongoing
Extent	Very limited	Very limited
Probability	Probably	Probably
Significance	**-36: Minor (-)**	**-32: Negligible (-)**
Reversibility	High	High
Irreplaceability	Low	Low
Confidence	High	High

Mitigation:

- Stormwater management should encourage infiltration of water into the soil profile and other on-site attenuation (i.e. using grass pavers etc.)

Impact 6: Fragmentation of Ecological Support Area.

The properties fall within an ESA that has been designated as an ecological corridor that connects the wetland to the undeveloped dune system that runs along the length of the Robberg Beach. It is likely that some wildlife may use the wetland as a refuge and move in between the wetland and the coastal dune system. The development of the property will fragment this ESA which could affect the movement of wildlife.

	Without Mitigation	With Mitigation
Intensity	Moderate	Low
Duration	Permanent	Permanent
Extent	Very limited	Very limited
Probability	Almost certain	Probably
Significance	**-72: Minor (-)**	**-44: Minor (-)**
Reversibility	High	High
Irreplaceability	Low	Low
Confidence	High	High

Mitigation:

- The eastern and western border of the servitude running along the northern boundary of the development must remain unfenced to allow wildlife to move between the coastal dune system and the wetland. Vegetation within this servitude should also not be cleared and must be maintained in a natural state. Control of alien invasive species must be undertaken if necessary.

Impact 7: Sewage spills caused by operation of the new sewage pipeline.

The sewage reticulation will require the construction of a sewage pumpstation to pump sewage from the development along a new sewage rising main and into the existing municipal gravity network. Spillage from pumpstations can occur frequently due to lack of maintenance and, more recently, due to loadshedding. Impacts from spillages are not anticipated to have a high intensity impact on the wetland due to the wide buffer in between the wetland and the development. Furthermore, the lack of flow through the wetland system

will result in a very localised impact should spillages occur. Finally, the dense vegetation and high associated microbial activity throughout the wetland will further limit the migration of spills and break harmful bacteria down relatively quickly.		
	Without Mitigation	**With Mitigation**
Intensity	Low	Very Low
Duration	Short term	Brief
Extent	Very limited	Very limited
Probability	Likely	Unlikely
Significance	**-40: Minor (-)**	**-18: Negligible (-)**
Reversibility	High	High
Irreplaceability	Low	Low
Confidence	High	High
Mitigation: • Undertake routine maintenance of pumps and other critical infrastructure according to a prescribed schedule; • Plan sewage transfers so as to avoid unnecessary overloading of the pumpstation or the rising main, particularly during peak periods; and • The design of the pumpstation will allow for 11 hours of emergency storage – which is almost three times the requirement of 4 hours and should therefore be able to accommodate loadshedding schedules.		

12. Water Demand and Water Supply Analysis

12.1 Water demand

Water requirements of the development was calculated with figures used by GLS Consulting Engineers, where the Bitou water masterplan have been used in place of the Red Book. According to the engineering report, calculations for the water demand of the development, indicated an average of 0.6 m^3/day per dwelling.

12.2 Water supply analysis

The Bitou Municipality confirmed that potable water supply is available and the proposed Athina Development can be accommodated. The Keurbooms River-Uplands works will be the source of water and provision is made for transportation from the source to the water purification works in Flying Cloud Avenue. The site can be served from the Quarry Reservoir (Engineering Report).

13. Water Quality

The water resource, in this case the wetland to the west of the development, will not be affected by the development.

14. Appendices

Appendix 1 – Engineering Report

Appendix 2 – Specialist Freshwater Assessment Report