



**Western Cape
Government**

Department of Environmental Affairs and
Development Planning

FINAL BASIC ASSESSMENT REPORT

THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS.

DEA&DP - APRIL 2024 TEMPLATE



FINAL BASIC ASSESSMENT REPORT

THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND
THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS.

(DEA&DP APRIL 2024 TEMPLATE)
FINAL BAR

(For official use only)	
Pre-application Reference Number (if applicable):	
EIA Application Reference Number:	
NEAS Reference Number:	
Exemption Reference Number (if applicable):	
Date BAR received by Department:	
Date BAR received by Directorate:	
Date BAR received by Case Officer:	



Protection of Personal Information Act (POPIA), Act No. 4 of 2013.

Zutari and the City of Cape Town places a high premium on the privacy & personal information of our stakeholders. The processing of personal information is subject to the Protection of Personal Information Act (POPIA), Act No. 4 of 2013.

As a responsible party, Zutari is entrusted with the personal information of many stakeholders such as yourself, potential clients, staff and service providers and we are therefore obligated to process this information in line with the law.

POPIA came into effect on the 1st of July 2021, and we would like to make sure that you are happy to continue receiving communications from us.

Please note that the following, as a Registered I&AP, you will be subject to the following conditions:

- As per the requirements of the Environmental Impact Assessment (EIA) Regulations, 2014, your personal details including your name, contact details and address will be entered into a register and appended to the Basic Assessment Report (BAR) that will be submitted to the Competent Authority [Department of Environmental Affairs and Development Planning (DEA&DP)]. Any comments received, including responses to such comments, will be recorded and attached in the Final BAR.
- The DRAFT BAR is made available to members of the public as well as various authorities for review and decision making. As such the following measures have been implemented to adhere to the requirements of both the EIA Regulations, 2014 as amended and POPIA, 2013 as amended:
 - Personal Information of POTENTIAL I&APs is omitted from the Final BAR made available in the public domain.
 - Personal Information of REGISTERED I&APs will be included in the Final BAR as per the requirements of the EIA Regulations, 2014 as amended and will be submitted to the Competent Authority (DEA&DP).
 - Any comments / views / opinions received, including responses to such comments and records of meetings, was recorded, and attached to the Final BAR in the Comments and Response Report (CRR)

Basic Assessment Report: Macassar Wastewater Treatment Works

GENERAL PROJECT DESCRIPTION

Macassar Wastewater Treatment Works, Capacity Extension and Associated Infrastructure Refurbishment and proposed Biodiversity Offset

1. Project Background:

On the 07 July 2016, the Department of Environmental Affairs and Development Planning issued an Environmental Authorisation (EA) to the City of Cape Town approving the proposed upgrade and expansion of the Macassar Wastewater Treatment Works (WWTW) and associated infrastructure on the basis that they were necessary to continue to provide essential wastewater treatment services to the surrounding community. The subsequent upgrade to the authorised project is proposed on the following sites:

Erf No. 1205 Macassar, however, the effluent outlet overlaps on Erf No. 703, and the proposed guard house will be located on Erf 708.

- SG Digit code (s) entail:
 - C06700150000120500000
34° 4'33.46"S 18°45'44.77"E
 - C06700080000070300000
34° 4'24.03"S 18°45'36.41"E
 - C06700150000070800000
34° 4'18.45"S 18°45'46.18"E



The river outlet will overlap with 703 and the WWTW is on erf 1205



The guard house security hut) will be on erf 708 (near the bridge/river crossing)-

The proposed Eskom line will cross a number of erven of which the SG codes are listed below.

- SG Digit code (s) entail:
 - C06700000000068000000
 - C06700000000068000005
 - C06700000000078500002
 - C06700000000078500018
 - C06700000000078500019
 - C06700000000078700000
 - C06700000000078700005
 - C06700000000078700011
 - C06700000000079400000
 - C06700000000079400037
 - C06700000000079400038
 - C06700000000079400043
 - C06700080000061200000
 - C06700080000063500000
 - C06700080000077800000
 - C06700150000070700000
 - C06700150000071000000
 - C06700150000106200000
 - C06700150000106300000
 - C06700150000120900000
 - C06700150000745300000
 - C06700080000070300000
 - C06700150000070800000
 - C06700150000120500000

The main purpose of the proposed project is to implement the aforementioned authorised upgrade of the WWTW, the construction of which has already commenced. However, due to the time that has passed since the approval in 2016, new design engineers have been appointed to finalise the detailed design. The design engineers have identified alternative technology options that will enable the works to run more efficiently and improve the quality of the effluent being discharged to the estuary.

Application and Amendment:

The proposed revised design upgrade constitutes listed activities in terms of the EIA Regulations, 2014 (as amended). Written authorisation is therefore required from the competent authority, the Department of Environmental Affairs and Development Planning (DEA&DP), prior to the undertaking of the said activities. This determination is based on the following:

The proposed revision to the design upgrades will require the clearance of more than 1ha of indigenous vegetation, which includes Endangered Cape Flats Dune Strandveld vegetation. Therefore, Listing Notice 1, and 27 and Listing Notice 3 Activity 12 is being applied for.

Furthermore, an application is made to amend the previous EA dated 7 July 2017. This amendment should include the following project scope and description.

New project description (project scope):

- 1. Inlet Works:** New elevated inlet works and a primary sludge handling facility will be constructed
- 2. Primary Settling Tank Splitter:** A new primary settlement tank splitter to split the flow to the new primary settling tanks
- 3. Primary Settling Tanks (PSTs):** New PSTs
- 4. Reactor Flow Splitter:** A new reactor flow splitter to split the flow to new biological reactors. The structure will also contain a controlled and passive overflow outlet which will convey flow to the offline balancing tank.
- 5. Biological Reactors:** New reactor modules with the UCT process as the base configuration and the option to switch to a Modified Ludzack-Ettinger (MLE) process
- 6. Offline Balancing Tank:** Modifying and refurbishing the existing biological reactor into an offline balancing tank. Flows coming into the works which are in excess of the PWWF and will include a passive overflow from the Inlet Works or the Reactor
- 7. Secondary Settling Tanks Splitter:** New secondary settling tank splitters to split the flow into the new secondary settling tanks
- 8. Secondary Settling Tanks (SSTs):** New secondary settlement tanks
- 9. Effluent Conveyance Channels:** Comprising of an outlet channel to collect the treated effluent from the SST's and direct the flow into the disinfection system. It also comprises of channels from the disinfection system to the river and a series of bypass channels and outlets to the maturation ponds
- 10. Disinfection:** A hybrid system of gas chlorination and UV disinfection. Effluent passing through the disinfection system will pass back into the effluent conveyance channel
- 11. Primary Sludge Screening Facility:** New primary sludge screening facilities will be constructed
- 12. Gravity Thickeners:** Primary sludge will be treated through thickening in new gravity thickeners
- 13. Anaerobic Digesters:** New mesophilic anaerobic digesters
- 14. Waste Activated Sludge (WAS) Holding Tanks:** New WAS holding tanks to store waste activated sludge
- 15. Primary Sludge (PS) Holding Tanks:** New PS holding tanks to store primary sludge
- 16. Dewatering Building:** PS will be thickened on linear screens followed by the PS and the WAS being dewatered via belt presses
- 17. Sludge Silos:** Sludge silos to store the primary and secondary sludge cake before disposal off site
- 18. Main Sludge Transfer Pump Station:** This building will host three types of pump systems, namely, to pump primary sludge from the primary sludge screening facility to the gravity thickeners, pump thickened sludge from the gravity thickeners to the anaerobic digesters and pump waste activated sludge from the bioreactors to the WAS holding tanks
- 19. Return Activated Sludge (RAS) Pump Station:** A RAS pumpstation to pump sludge from the under flow of SSTs back into the biological reactors
- 20. Scum Pump Station:** A scum pumpstation to pump scum from PST's, Reactors and the SST's to the Anaerobic Digesters
- 21. Return Flow Pump Station:** A return flow pumpstation to pump sewage back to the inlet works.
- 22. Blower Building:** A new blower facility to house the aeration equipment, including blowers, compressors and other necessary equipment required for aeration.
- 23. Boiler House Facility:** A new boiler house facility, with a steam boiler system
- 24. Gas Holding Tanks:** New gas storage tanks, with gas cleaning facility
- 25. Chlorination building:** A new chlorination building will be required for operation of the chlorine disinfection facilities
- 26. Service water pump station:** A new service water pumpstation for treated effluent reticulation network (wash water) to be used for mechanical equipment and on-site requirements
- 27. Treated sewage effluent (TSE) infrastructure:** Will comprise a new TSE pump station and filter building, used to pump treated effluent to off-site users
- 28. Ancillary Structures:** The construction of small concrete structures including flow diversion, flow division, flow measurement, collection chambers and outlet structures
- 29. MV Substation:** A new MV substation for onsite MV electrical requirements
- 30. Centralised Generator Building:** A new centralised Generator building which will house diesel generators
- 31. Electrical Buildings:** New MCC buildings housing all MCC and energy generation and electrical infrastructure for process units on site. This will comprise of several buildings across the site. Some of the other electrical infrastructure will be incorporated into the footprint of the process unit or process building.
- 32. Combined Heat and Power Building:** New building housing an internal combustion engine which generates electricity from the Biogas for onsite use. The infrastructure also includes a gas engine collector substation.
- 33. Weighbridge:** A new weighbridge with a facility to house the control needed for the weigh bridge

- 34. Process Operations Building:** A new two storey administration building which will comprise of a reception area, laboratory, offices, control room, canteen and kitchenette, board rooms and laundry on the ground floor. The second floor will include offices, storage, kitchenette and eating area, ablutions, boardroom and a braai area.
- 35. Workshop and store Building:** A new two storey workshop and store facility which will have storage area, workshop area, kitchenette and eating area and ablutions on the ground floor. The second floor will include offices and ablution facilities
- 36. Guard House:** A new guard house facility which will house security personnel, the facility will include ablution facilities
- 37. Security Hut:** A new security hut located at the entrance of the WWTW main access road
- 38. Site Clearance and Bulk Earthworks:** Site to be cleared to make provision for the construction of new buildings, process structures, roads and other civil infrastructure. Bulk earthworks will be required for certain areas to level out dunes and to create platforms.
- 39. Flow Diversions and Demolition:** Flow to be diverted to keep the existing plant in operation during construction of the upgrade. Flow to be diverted to the new infrastructure after completion. Decommissioning and demolition of older process units and older buildings, namely inlet works, secondary settling tanks and associated ancillary structures, 1 x biological reactor, 2 x RAS pumpstation buildings, associated ancillary structures, chlorine contact tank, dewatering building, sludge silo, guard house, inlet works MCC, administration building, workshop building, board rooms, chlorine building, wash water building and generator building.
- 40. Interconnecting Pipework:** The interconnecting pipework associated with directing flow through the new structures and connecting to the existing structures. It will also include the pipelines which will serve as overflow or emergency bypass pipelines.
- 41. Roadworks:** Main access road (tarred), internal roads (paved and gravel) and public road to beach (gravel)
- 42. Stormwater Drainage:** New stormwater drainage systems that includes pipes, channels, inlet catchments and head walls to direct surface water off site
- 43. Potable Water Reticulation:** New potable water network for onsite requirements
- 44. Service Water Reticulation:** New service water reticulation network for onsite use, which includes use by mechanical equipment and on-site irrigation
- 45. Onsite sewage Reticulation:** New onsite sewage reticulation network to return sewage the inlet works
- 46. Fencing:** A new access road fence and on-site fence and a 2-m high fencing <20 m at the guardhouse.
- 47. Maturation Pond Refurbishment:** Cleaning and minor modifications to the existing ponds including the concrete lining of one of the ponds. The ponds modification will also include a new effluent channel and internal modifications to allow flow in the ponds to be diverted through each of the respective ponds.
- 48. Fire Design:** All new buildings and site to have fire designs depending on the building and site requirements
- 49. Ventilation:** New buildings to have adequate ventilation measures in place, suited to the buildings use.

The City of Cape Town also proposes the following electrical infrastructure as part of the refurbishment of the WWTW, the proposed electrical infrastructure will supply the WWTW with power sourcing it from the nearest Eskom substation:

2x 11kV MV Cables with a length of 6,941m and a distance of 300mm apart between these cables. The construction of the cables will require a trench depth and width of approximately 1m with a buffer of 500mm on either side of the proposed route. The route of the cables follows the previous Eskom overhead line/cable route and then follow the existing roads heading up to the WWTW. Some sections of the proposed cable route fall within a road servitude. The crossing at Eerste River will either be in the form of a road/pipe bridge crossing or drilling underneath the river.

Biodiversity Offset

Reason for the offset: The Biodiversity Offset Strategy was developed for the Macassar WWTW expansion to align with the principles and requirements of the 2023 Biodiversity Offset Guidelines. This strategy addresses the residual impacts of the development on the EN Cape Flats Dune Strandveld, a threatened vegetation type which will be impacted on as part of the refurbishment of the Macassar WWTW.

According to best practice, the offset principles indicate that a biodiversity offset is required. Offsets are implemented as part of the mitigation hierarchy and are specifically intended to mitigate or compensate for the residual environmental impacts of development/mining (often referred to as "compensatory mitigation") after all viable measures have been taken to first avoid or prevent, minimize or reduce, and remediate or rehabilitate those impacts.

Description of the Offset:

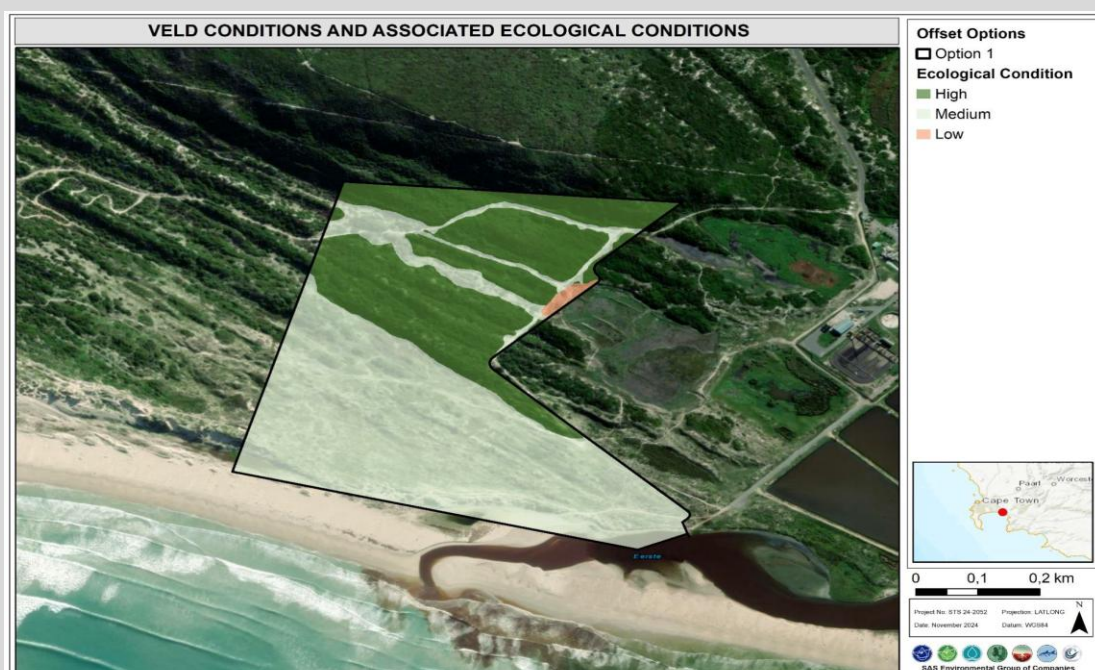
Comprehensive offset ratio calculations, adjusted for habitat sensitivity and functionality (e.g., presence of functioning CBA habitat), determined that 176.3 ha habitat is required to achieve compliance with biodiversity offset standards and ensure the long-term viability of the affected ecosystems. The selected Offset Areas

namely Options 1, 7 and 8 – (refer images below) offer substantial opportunities for achieving conservation gains through targeted management actions, such as AIP control, erosion control, and the rehabilitation of degraded areas. These Offset Areas, especially Option 8, also provide suitable habitat to support various SCC and enhance ecological connectivity within the region, contributing to broader conservation priorities. Although Option 8 is not located within the same vegetation type as the WWTW (Cape Flats Dune Strandveld), its use as an offset is considered acceptable due to its alignment with "trading up" principles. While this does not involve trading up to a vegetation type with a higher threat status, it constitutes an improvement in terms of ecosystem conservation value due to the significantly lower REE % of the proposed vegetation.

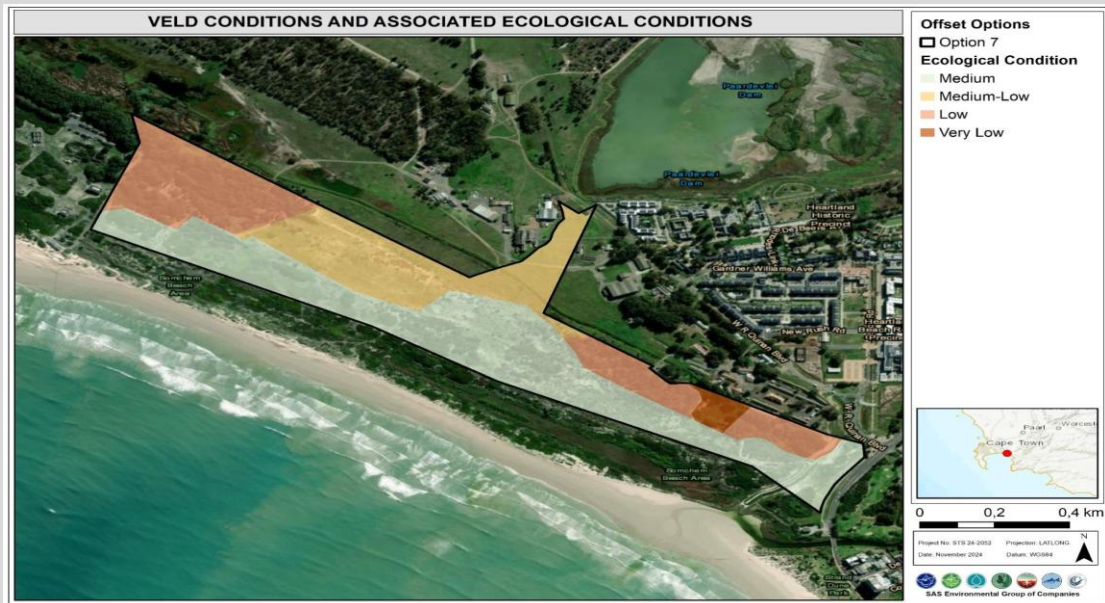
Please refer to appendix G.8.3 for a detailed Biodiversity Offset Strategy Report (December 2024) as well as Section I.8 and 4.7 of this BAR.



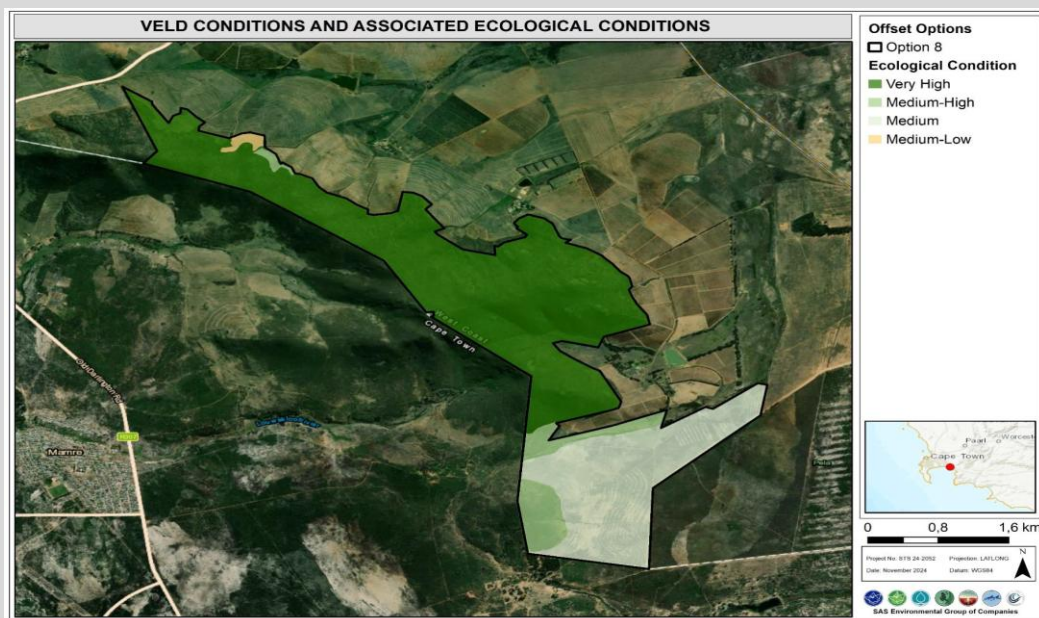
Figure 1 Locality of the proposed upgrade of the Macassar WWTW and Eskom cable line



Option 1.



Option 7.



Option 8

2. Application:

The proposed revised design upgrade constitutes listed activities in terms of the EIA Regulations, 2014 (as amended). Written authorisation is therefore required from the competent authority, the Department of Environmental Affairs and Development Planning (DEA&DP), prior to the undertaking of the said activities. This determination is based on the following:

The proposed revision to the design upgrades will require the clearance of more than 1ha of indigenous vegetation, which includes Endangered Cape Flats Dune Strandveld vegetation. Therefore, Listing Notice 1, and 27 and Listing Notice 3 Activity 12 is being applied for.

3. Amendment application to the existing Environmental Authorisation:

Furthermore, an application is made to amend the previous EA dated 7 July 2017 to include the new project description. This amendment should include the following project scope and description as per Section B.2 and B.4.4.

Table 1 Amendment of EA to new project description

<u>Existing Environmental Authorisation:</u> <u>16/3/1/1/A3/39/2078/14</u>	
<u>Proposed new WWTW facilities:</u>	<u>To Be Replaced With:</u>
1. The construction of 2 x 16 Ml/day conventional activated sludge bioreactor units. 2. The construction of 6 x settling tanks (clarifiers) with approximately 30m diameters each. 3. The construction of new inlet works to receive a capacity of approximately 80 Ml/day. 4. The construction of a new sludge dewatering facility to with a capacity of 50 Ml/day. 5. The construction of storage facilities for temporary storage of dewatered sludge with a capacity of approximately 200 m³. 6. The construction of a chemical dosing facility for the purpose of phosphorous removal. 7. The construction of a chlorine tank within the maturation pond with an approximate capacity of 900 m³. 8. The construction of a new/upgraded outlet pipe from the maturation ponds into the Everest River approximately 330 mm in diameter and 75m in length. 9. The construction of bunded storage areas for the storage of hazardous substances. 10. The construction and upgrading of the access road and other internal roads. 11. The construction of a boundary fence. 12. The construction and installation of an odour control system at the inlet works and the sludge dewatering facility. 13. The construction of electrical infrastructure, including a new 12 kV infeed substation, a new underground medium voltage cable and a new motor control centre building to house a new 2 MVA stand-by generator, 2MVA transformer and 11kV switchgear. 14. The construction of various associated internal WWTW infrastructure e.g., interconnecting pipes, storage rooms, pump stations, paved areas, etc.	1. Inlet Works: New elevated inlet works, and a primary sludge handling facility will be constructed. 2. Primary Settling Tank Splitter: A new primary settlement tank splitter to split the flow to the new primary settling tanks. 3. Primary Settling Tanks (PSTs): New PSTs. 4. Reactor Flow Splitter: A new reactor flow splitter to split the flow to new biological reactors. The structure will also contain a controlled and passive overflow outlet which will convey flow to the offline balancing tank. 5. Biological Reactors: New reactor modules with the UCT process as the base configuration and the option to switch to a Modified Ludzack-Ettinger (MLE) process. 6. Offline Balancing Tank: Modifying and refurbishing the existing biological reactor into an offline balancing tank. Flows coming into the works which are in excess of the PWWF and will include a passive overflow from the Inlet Works or the Reactor. 7. Secondary Settling Tanks Splitter: New secondary settling tank splitters to split the flow into the new secondary settling tanks. 8. Secondary Settling Tanks (SSTs): New secondary settlement tanks with sloped bottom floors. 9. Effluent Conveyance Channels: Will comprise of an outlet channel to collect the treated effluent from the SST's and direct the flow into the disinfection system. It also comprises of channels from the disinfection system to the river and a series of bypass channels and outlets to the maturation ponds. 10. Disinfection: A hybrid system of gas chlorination and UV disinfection. Effluent passing through the disinfection system will pass back into the effluent conveyance channel. 11. Primary Sludge Screening Facility: New primary sludge screening facilities will be constructed. 12. Gravity Thickeners: Primary sludge will be treated through thickening in new gravity thickeners. 13. Anaerobic Digesters: New mesophilic anaerobic digesters.

	14. Waste Activated Sludge (WAS) Holding Tanks: New WAS holding tanks to store waste activated sludge. 15. Primary Sludge (PS) Holding Tanks: New PS holding tanks to store primary sludge. 16. Dewatering Building: PS will be thickened on linear screens followed by the PS and the WAS being dewatered via belt presses. 17. Sludge Silos: Sludge silos to store the primary and secondary sludge cake before disposal off site. 18. Main Sludge Transfer Pump Station: This building will host three types of pump systems, namely, to pump primary sludge from the primary sludge screening facility to the gravity thickeners, pump thickened sludge from the gravity thickeners to the anaerobic digesters and pump waste activated sludge from the bioreactors to the WAS holding tanks. 19. Return Activated Sludge (RAS) Pump Station: A RAS pumpstation to pump sludge from the under flow of SSTs back into the biological reactors. 20. Scum Pump Station: A scum pumpstation to pump scum from PST's, Reactors and the SST's to the Anaerobic Digesters. 21. Return Flow Pump Station: A return flow pumpstation to pump sewage back to the inlet works. 22. Blower Building: A new blower facility to house the aeration equipment, including blowers, compressors and other necessary equipment required for aeration. 23. Boiler House Facility: A new boiler house facility, with a steam boiler system. 24. Gas Holding Tanks: New gas storage tanks, with gas cleaning facility. 25. Chlorination building: A new chlorination building will be required for operation of the chlorine disinfection facilities. 26. Service water pump station: A new service water pumpstation for treated effluent reticulation network (wash water) to be used for mechanical equipment and on-site requirements. 27. Treated sewage effluent (TSE) infrastructure: Will comprise a new TSE pump station and filter building, used to pump treated effluent to off-site users. 28. Ancillary Structures: The construction of small concrete structures including flow diversion, flow division, flow measurement, collection chambers and outlet structures. 29. MV Substation: A new MV substation for onsite MV electrical requirements. 30. Centralised Generator Building: A new centralised Generator building which will house diesel generators. 31. Electrical Buildings: New MCC buildings housing all MCC and energy generation and electrical infrastructure for process units on site. This will comprise of several buildings
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	across the site. Some of the other electrical infrastructure will be incorporated into the footprint of the process unit or process building. 32. Combined Heat and Power Building: New building housing an internal combustion engine which generates electricity from the Biogas for onsite use. The infrastructure also includes a gas engine collector substation. 33. Weighbridge: A new weighbridge with a facility to house the control needed for the weigh bridge. 34. Process Operations Building: A new two storey administration building which will comprise of a reception area, laboratory, offices, control room, canteen and kitchenette, board rooms and laundry on the ground floor. The second floor will include offices, storage, kitchenette and eating area, ablutions, boardroom and a braai area. 35. Workshop and store Building: A new two storey workshop and store facility which will have storage area, workshop area, kitchenette and eating area and ablutions on the ground floor. The second floor will include offices and ablution facilities. 36. Guard House: A new guard house facility which will house security personnel, the facility will include ablution facilities. 37. Security Hut: A new security hut located at the entrance of the WWTW main access road. 38. Site Clearance and Bulk Earthworks: Site to be cleared to make provision for the construction of new buildings, process structures, roads and other civil infrastructure. Bulk earthworks will be required for certain areas to level out dunes and to create platforms. 39. Flow Diversions and Demolition: Flow to be diverted to keep the existing plant in operation during construction of the upgrade. Flow to be diverted to the new infrastructure after completion. Decommissioning and demolition of older process units and older buildings, namely inlet works, secondary settling tanks and associated ancillary structures, 1 x biological reactor, 2 x RAS pumpstation buildings, associated ancillary structures, chlorine contact tank, dewatering building, sludge silo, guard house, inlet works MCC, administration building, workshop building, board rooms, chlorine building, wash water building and generator building. 40. Interconnecting Pipework: The interconnecting pipework associated with directing flow through the new structures and connecting to the existing structures. It will also include the pipelines which will serve as overflow or emergency bypass pipelines. 41. Roadworks: Main access road (tarred), internal roads (paved and gravel) and public road to beach (gravel).
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	42. Stormwater Drainage: New stormwater drainage systems that includes pipes, channels, inlet catchments and head walls to direct surface water off site. 43. Potable Water Reticulation: New potable water network for onsite requirements. 44. Service Water Reticulation: New service water reticulation network for onsite use, which includes use by mechanical equipment and on-site irrigation. 45. Onsite sewage Reticulation: New onsite sewage reticulation network to return sewage the inlet works. 46. Fencing: A new access road fence and on-site fence and a 2-m high fencing <20 m at the guardhouse. 47. Maturation Pond Refurbishment: Cleaning and minor modifications to the existing ponds including the concrete lining of one of the ponds. The ponds modification will also include a new effluent channel and internal modifications to allow flow in the ponds to be diverted through each of the respective ponds. 48. Fire Design: All new buildings and site to have fire designs depending on the building and site requirements 49. Ventilation: New buildings to have adequate ventilation measures in place, suited to the buildings use. 50. 2x 11kV MV Cables with a length of 6,941m.
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IMPORTANT INFORMATION TO BE READ PRIOR TO COMPLETING THIS BASIC ASSESSMENT REPORT

1. **The purpose** of this template is to provide a format for the Basic Assessment report as set out in Appendix 1 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended) in order to ultimately obtain Environmental Authorisation.
2. The Environmental Impact Assessment ("EIA") Regulations is defined in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA") hereinafter referred to as the "NEMA EIA Regulations".
3. *Submission of documentation, reports and other correspondence:*

The Department has adopted a digital format for corresponding with proponents/applicants or the general public. If there is a conflict between this approach and any provision in the legislation, then the provisions in the legislation prevail. If there is any uncertainty about the requirements or arrangements, the relevant Competent Authority must be consulted.

The Directorate: Development Management has created generic e-mail addresses for the respective Regions, to centralise their administration. Please make use of the relevant general administration e-mail address below when submitting documents:

DEADPEIAAdmin@westerncape.gov.za

Directorate: Development Management (Region 1):
City of Cape Town; West Coast District Municipal area;
Cape Winelands District Municipal area and Overberg District Municipal area.

DEADPEIAAdmin.George@westerncape.gov.za

Directorate: Development Management (Region 3):
Garden Route District Municipal area and Central Karoo District Municipal area

General queries must be submitted via the general administration e-mail for EIA related queries. Where a case-officer of DEA&DP has been assigned, correspondence may be directed to such official and copied to the relevant general administration e-mail for record purposes.

All correspondence, comments, requests and decisions in terms of applications, will be issued to either the applicant/requester in a digital format via email, with digital signatures, and copied to the Environmental Assessment Practitioner ("EAP") (where applicable).

4. The required information must be typed within the spaces provided in this Basic Assessment Report ("BAR"). The sizes of the spaces provided are not necessarily indicative of the amount of information to be provided.
5. All applicable sections of this BAR must be completed.
6. Unless protected by law, all information contained in, and attached to this BAR, will become public information on receipt by the Competent Authority. If information is not submitted with this BAR due to such information being protected by law, the applicant and/or Environmental Assessment Practitioner ("EAP") must declare such non-disclosure and provide the reasons for believing that the information is protected.
7. This BAR is current as of **April 2024**. It is the responsibility of the Applicant/ EAP to ascertain whether subsequent versions of the BAR have been released by the Department. Visit this Department's website at <http://www.westerncape.gov.za> to check for the latest version of this BAR.
8. This BAR is the standard format, which must be used in all instances when preparing a BAR for Basic Assessment applications for an environmental authorisation in terms of the NEMA EIA Regulations when the Western Cape Government Department of Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority.
9. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this BAR must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this Report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.
10. This BAR must be duly dated and originally signed by the Applicant, EAP (if applicable) and Specialist(s) and must be submitted to the Department at the details provided below.
11. The Department's latest Circulars pertaining to the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must be taken into account when completing this BAR.
12. Should a water use licence application be required in terms of the National Water Act, 1998 (Act No. 36 of 1998) ("NWA"), the "One Environmental System" is applicable, specifically in terms of the synchronisation of the consideration of the application in terms of the NEMA and the NWA. Refer to this Department's Circular EADP 0028/2014: One Environmental Management System.
13. Where Section 38 of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA") is triggered, a copy of Heritage Western Cape's final comment must be attached to the BAR.
14. The Screening Tool developed by the National Department of Environmental Affairs must be used to generate a screening report. Please use the Screening Tool link

<https://screening.environment.gov.za/screeningtool> to generate the Screening Tool Report. The screening tool report must be attached to this BAR.

15. Where this Department is also identified as the Licencing Authority to decide on applications under the National Environmental Management: Air Quality Act (Act No. 29 of 2004) ('NEM:AQA'), the submission of the Report must also be made as follows, for-

Waste Management Licence Applications, this report must also (i.e., another hard copy and electronic copy) be submitted for the attention of the Department's Waste Management Directorate (Tel: 021-483-2728/2705 and Fax: 021-483-4425) at the same postal address as the Cape Town Office.

Atmospheric Emissions Licence Applications, this report must also be (i.e., another hard copy and electronic copy) submitted for the attention of the Licensing Authority or this Department's Air Quality Management Directorate (Tel: 021 483 2888 and Fax: 021 483 4368) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS	
CAPE TOWN OFFICE: DIRECTORATE: DEVELOPMENT MANAGEMENT (REGION 1) (City of Cape Town, West Coast District, Cape Winelands District & Overberg District)	GEORGE REGIONAL OFFICE: DIRECTORATE: DEVELOPMENT MANAGEMENT (REGION 3) (Central Karoo District & Garden Route District)
The completed Form must be sent via electronic mail to: DEADPEIAAdmin@westerncape.gov.za Queries should be directed to the Directorate: Development Management (Region 1) at: E-mail: DEADPEIAAdmin@westerncape.gov.za Tel: (021) 483-5829 Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1) Private Bag X 9086 Cape Town, 8000	The completed Form must be sent via electronic mail to: DEADPEIAAdmin.George@westerncape.gov.za Queries should be directed to the Directorate: Development Management (Region 3) at: E-mail: DEADPEIAAdmin@westerncape.gov.za Tel: (044) 814-2006 Western Cape Government Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530

MAPS

Provide a location map (see below) as Appendix A1 to this BAR that shows the location of the proposed development and associated structures and infrastructure on the property.	
Locality Map:	The scale of the locality map must be at least 1:50 000. For linear activities or development proposals of more than 25 kilometres, a smaller scale e.g., 1:250 000 can be used. The scale must be indicated on the map. The map must indicate the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; and • a linear scale. For ocean based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken.

	Where comment from the Western Cape Government: Transport and Public Works is required, a map illustrating the properties (owned by the Western Cape Government: Transport and Public Works) that will be affected by the proposed development must be included in the Report.
Provide a detailed site development plan / site map (see below) as Appendix B1 to this BAR; and if applicable, all alternative properties and locations.	
Site Plan:	Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following: • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be clearly indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • On land where the property has not been defined, the co-ordinates of the area in which the proposed activity or development is proposed must be provided. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be clearly indicated on the site plan. • The position of each component of the proposed activity or development as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the proposed development must be clearly indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): ◦ Watercourses / Rivers / Wetlands ◦ Flood lines (i.e., 1:100 year, 1:50 year and 1:10 year where applicable); ◦ Coastal Risk Zones as delineated for the Western Cape by the Department of Environmental Affairs and Development Planning ("DEA&DP"); ◦ Ridges; ◦ Cultural and historical features/landscapes; ◦ Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas.
Site photographs	Colour photographs of the site that shows the overall condition of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached to this BAR as Appendix C. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.
Biodiversity Overlay Map:	A map of the relevant biodiversity information and conditions must be provided as an overlay map on the property/site plan. The Map must be attached to this BAR as Appendix D.
Linear activities or development and multiple properties	GPS co-ordinates must be provided in degrees, minutes and seconds using the Hartebeeshoek 94 WGS84 co-ordinate system. Where numerous properties/sites are involved (linear activities) you must attach a list of the Farm Name(s)/Portion(s)/Erf number(s) to this BAR as an Appendix. For linear activities that are longer than 500m, please provide a map with the co-ordinates taken every 100m along the route to this BAR as Appendix A3.

ACRONYMS

DAFF:	Department of Forestry and Fisheries
DEA:	Department of Environmental Affairs

DEA&DP:	Department of Environmental Affairs and Development Planning
DHS:	Department of Human Settlement
DoA:	Department of Agriculture
DoH:	Department of Health
DWS:	Department of Water and Sanitation
EMPr:	Environmental Management Programme
HWC:	Heritage Western Cape
NFEPA:	National Freshwater Ecosystem Protection Assessment
NSBA:	National Spatial Biodiversity Assessment
TOR:	Terms of Reference
WCBSA:	Western Cape Biodiversity Spatial Plan
WCG:	Western Cape Government

ATTACHMENTS

Note: The Appendices must be attached to the BAR as per the list below. Please use a ✓ (tick) or a x (cross) to indicate whether the Appendix is attached to the BAR.

The following checklist of attachments must be completed.

APPENDIX			✓ (Tick) or x (cross)
Appendix A:	Maps		
	Appendix A1:	Locality Map	✓
	Appendix A2:	Coastal Risk Zones as delineated in terms of ICMA for the Western Cape by the Department of Environmental Affairs and Development Planning	N/A
	Appendix A3:	Map with the GPS co-ordinates for linear activities A3.1 GPS Co-ordinates A3.2 Co-ordinates every 100m	✓
Appendix B:	Appendix B1	Site development plan(s) B1:1 Engineer Site Plan (1) B1:2 Engineer Site Plan (2) B1:3 Site Establishment Plan B1.3 Property boundaries B1.4 Roads and Servitudes B1.5 Environmental Sensitivities B1.6.1 Flood lines B1.6.2 Flood line 1:3000 B1.7 Contours	✓
	Appendix B2	A map of appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas. B2:1a Biodiversity map 1:25,000 B2:1b Biodiversity sensitivity map 1:7,000 B2:1c Biodiversity and Freshwater 32m buffer map B2.2 Freshwater sensitivity map 1:12,000 B2.3 Heritage & Palaeo sensitivity map 1:12,000 B2.4 Combined sensitivity map 1:12,000 B2.5 CBA protected area map 1:45,000 B2.6 All sensitivities and buffers map 1:20,000	✓
Appendix C:	Photographs		✓

APPENDIX		✓ (Tick) or x (cross)
	C1: Photographs – Dated April 2022 C2: Map with vantage points C3 Photographs matching vantage points	
Appendix D:	Biodiversity overlay map	✓
Appendix E:	Permit(s) / license(s) / exemption notice, agreements, comments from State Department/Organs of state and service letters from the municipality.	
	Appendix E1:	Final comment/ROD from HWC NID comment Included in PPP The final comment from HWC has been attached to the Final_BAR. The mitigation measures have been captured in the EMPR
	Appendix E2:	Copy of comment from Cape Nature Included in PP Report and CRR
	Appendix E3:	Final Comment from the DWS Included in PP Report and CRR
	Appendix E4:	Comment from the DEA: Oceans and Coast and Included in PP Report and CRR
	Appendix E5:	Comment from the DAFF Comment requested as part of PPP-No comment received
	Appendix E6:	Comment from WCG: Transport and Public Works Comment requested as part of PPP-No comment received
	Appendix E7:	Comment from WCG: DoA x N/A
	Appendix E8:	Comment from WCG: DHS x N/A
	Appendix E9:	Comment from WCG: DoH x N/A
	Appendix E10:	Comment from DEA&DP: Pollution Management and Included in PP Report and CRR
	Appendix E11:	Comment from DEA&DP: Waste Management and Included in PP Report and CRR

APPENDIX			✓ (Tick) or x (cross)
	Appendix E12:	Comment from DEA&DP: Biodiversity	✓ and Included in PP Report and CRR
	Appendix E13:	Comment from DEA&DP: Air Quality	✓ and Included in PP Report and CRR
	Appendix E14:	Comment from DEA&DP: Coastal Management	✓ and Included in PP Report and CRR
	Appendix E15:	Comment from the local authority	✓ Included in PP Report and CRR
	Appendix E16:	Confirmation of all services (water, electricity, sewage, solid waste management)	✓
	Appendix E17:	Comment from the District Municipality	x N/A There is no District Municipality for City of Cape Town
	Appendix E18:	Copy of an exemption notice	x N/A
	Appendix E19	Pre-approval for the reclamation of land	x N/A
	Appendix E20:	Proof of agreement/TOR of the specialist studies conducted. - Refer also to the section in each Specialist Study pertaining to the TOR	✓
	Appendix E21:	Proof of land use rights	✓
	Appendix E22:	Proof of public participation agreement for linear activities	Included in PPP
Appendix F:	Public participation information: including a copy of the register of I&APs, the comments and responses Report, proof of notices, advertisements and any other public participation information as is required. F: PP Report F.1 DEA&DP Meeting Minutes F.2 Macassar Email Notifications F.3 Advertisement F.4 Transmittal notes F.5 Site visit attendance register F.6 Engagement Meeting Invite F.7 Engagement Meeting Presentation and register F.8 Comments and Response Report and original comments F.9 Final I&AP Register		✓

APPENDIX		✓ (Tick) or x (cross)
Appendix G:	Specialist Report(s) G.1 Agricultural Compliance Statement G.2 Terrestrial Biodiversity Assessment G.3.1 Heritage Impact Assessment G.3.2 Palaeontological Impact Assessment G.4 Freshwater Impact Assessment G.5 Ecological Impact Assessment G.6 Geotechnical Report G.7 Defence Compliance Statement G.8.1 Biodiversity Offset Report G.8.2 Biodiversity Offset Report (Most recent and updated 25/10/24) G.8.3 Biodiversity Offset Strategy Report (December 2024) G.8.4 Offset Agreement	✓
Appendix H:	Final EMPr	✓
Appendix I:	Screening tool report	✓
Appendix J:	The impact and risk assessment for each alternative	✓ Refer section H
Appendix K:	Need and desirability for the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013)/DEA Integrated Environmental Management Guideline	✓
Appendix L:	Existing EA, DEA&DP Communication and Pre-application meeting Record	✓
Appendix M:	Site Sensitivity Verification Report	✓
Appendix N:	Footprint Comparisons (<u>has been updated</u>)	✓

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SECTION A: ADMINISTRATIVE DETAILS

Highlight the Departmental Region in which the intended application will fall	CAPE TOWN OFFICE: REGION 1		GEORGE OFFICE: REGION 3
	(City of Cape Town, West Coast District)	(Cape Winelands District & Overberg District)	(Central Karoo District & Garden Route District)
Duplicate this section where there is more than one Proponent Name of Applicant/Proponent: Name of contact person for Applicant/Proponent (if other): Company/ Trading name/State Department/Organ of State: Company Registration Number: Postal address: Telephone: E-mail:	City of Cape Town Keith Olsen City of Cape Town N/A 8 Voortrekker Road, corner of Mike Pienaar Boulevard Bellville (021) 444 7245 Keith.Olsen@capetown.gov.za		
Company of EAP: EAP name: Postal address: Telephone: E-mail: Qualifications: EAP registration no:	Zutari (Pty) Ltd Corlie Steyn PO Box 509 George (044) 805 5421 Corlie.Steyn@Zutari.com MPhil: Environmental Management 2019/999		
Duplicate this section where there is more than one landowner Name of landowner: Name of contact person for landowner (if other): Postal address: Telephone: E-mail:	() () () () ()		
Name of Person in control of the land: Name of contact person for person in control of the land: Postal address: Telephone: E-mail:	City of Cape Town Keith Olsen 8 Voortrekker Road, corner of Mike Pienaar Boulevard, Bellville Bellville (021) 444 7245 Keith.Olsen@capetown.gov.za		
Duplicate this section where there is more than one Municipal Jurisdiction Municipality in whose area of jurisdiction the proposed activity will fall: Contact person: Postal address: Telephone: E-mail:	() () () () ()		

SECTION B: CONFIRMATION OF SPECIFIC PROJECT DETAILS AS INCLUDED IN THE APPLICATION FORM

1.	Is the proposed development (please tick):	New		✓ YES The proposed application constitutes a refurbishment of the current WWTW. On the 07 July 2016, the Department of Environmental Affairs and Development Planning issued an Environmental Authorisation (EA) to the City of Cape Town approving the proposed upgrade and expansion of the Macassar Wastewater Treatment Works (WWTW) and associated infrastructure on the basis that they were necessary to continue to provide essential wastewater treatment services to the surrounding community. The main purpose of the new proposed project (subject of this application) is to implement the aforementioned authorised upgrade of the WWTW, the construction of which has already commenced. However, due to the time that has passed since the approval in 2016, new design engineers have been appointed to finalise the detailed design. The design engineers have identified alternative technology options that will enable the works to run more efficiently and improve the quality of the effluent being discharged to the estuary. In terms of the reuse of the treated effluent, a portion of the effluent will be used on site and portions of it will be used off site, thus reducing the volume discharged into the Eerste River Estuary. For onsite use, treated effluent is required for irrigation and service water for the operation and cleaning of some of the mechanical equipment and process units (inlet works, dewatering building, general washing down). Treated effluent will and be pumped off site to downstream users. The off-site requirement was derived from the 2021 report "Treated Effluent Strategy and Masterplan for Non-Potable Reuse in the City of Cape Town" and was capped at a summer re-use demand of
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					18.3 Mℓ/d. It is estimated that the offsite requirements will equate to 18.3 Mℓ/d.
2.	Is the proposed site(s) a brownfield of greenfield site? Please explain.				
The proposed refurbishment of the Macassar WWTW will be on a Brownfield.					
<u>Background to the proposed development</u>					
The existing Macassar WWTW is located on Erf 1205 Macassar, at the Eerste River Estuary, approximately 600m south of the town of Macassar. The existing WWTW was constructed in ±1977, and receives sewage from Strand, Somerset West and Macassar via the Macassar and Helderberg pump stations. The WWTW receives and treats domestic and commercial/business sewage only (no industrial sewage). The existing Macassar WWTW utilises Conventional Activated Sludge technology and has an estimated hydraulic capacity of 48MI/day Average Dry Weather Flow (ADWF). However, the effective treatment capacity of the works is currently limited to 30MI/day due to suboptimal performance of the works, as a result of insufficient aeration at the existing reactors. The site is approximately 62.1 hectares in extent and the current treatment infrastructure comprises of an inlet works (screening and grit removal), two carousal ditch activated sludge reactors, six circular settling tanks, a chlorine disinfection facility (gas), maturation ponds, a sludge dewatering facility (linear screens and belt presses) and dewatered sludge silos. The works currently receives domestic wastewater, for the most part, and has a hydraulic capacity of approximately 48Mℓ/day in terms of average dry weather flow (ADWF). However, the biological process treatment capacity is estimated at approximately 21.6 Mℓ/day based on the existing aeration capacity. Treated effluent from the plant is discharged into the Eerste River and a small portion is also recycled for both off-site and on-site use. Due to rapid urbanisation and a sustained population growth in the False Bay region, a shortfall in treatment capacity is experienced at the Macassar WWTW. The Macassar WWTW is also experiencing a number of operational problems. Both of these factors have led to the Macassar WWTW not being able to treat wastewater adequately, this has resulted in a poor effluent quality being discharged into the Eerste River. These challenges have prompted the City of Cape Town (CoCT) to prioritise the upgrade of the Macassar WWTW. The overall aim of this project includes the upgrade and capacity extension of the existing WWTW, which will include the refurbishment of selected infrastructure and an extension to the treatment capacity such that the ultimate design capacity is increased to 80 Mℓ/day (ADWF). The upgrade will remove capacity limitations on the existing process, reduce energy demand, optimise operation and maintenance and prevent further pollution of the Eerste River.					
<u>EA issued by DEA&DP July 2016:</u>					
On the 07 July 2016, the Department of Environmental Affairs and Development Planning issued an Environmental Authorisation (EA) to the City of Cape Town approving the proposed upgrade and expansion of the WWTW and associated infrastructure on the basis that they were necessary to continue to provide essential wastewater treatment services to the surrounding community. The activity items listed in the EA included the following: 1. The construction of 2 x 16 MI/day conventional activated sludge bioreactor units 2. The construction of 6 settling tanks (clarifiers)with approximately 30m diameters each 3. The construction of new inlet works to receive a capacity of approximately 80 MI/day 4. The construction of a new sludge dewatering facility with a capacity of 50 MI/day 5. The construction of storage facilities for temporary storage of dewatered sludge with a capacity of approximately 200m³ 6. The construction of a chemical dosing facility for the purpose of phosphate removal 7. The construction of a chlorine tank within the maturation pond with an approximate capacity of 900 m³ 8. The construction of a new/upgraded outlet pipe from the maturation ponds into the Eerste River approximately 330 mm in diameter and 75 m in length 9. The construction of bunded storage areas for the storage of hazardous substances 10. The construction and upgrading of the access road and other internal roads 11. The construction of a boundary fence. 12. The construction and installation of an odour control system at the inlet works and the sludge dewatering facility. 13. The construction of electrical infrastructure, including a new 12 kV infeed substation, a new underground medium voltage cable and a new motor control centre building to house a new 2 MVA stand-by generator, 2 MVA transformer and 11 KV switchgear 14. The construction of various associated internal infrastructure e.g. interconnecting pipes, storage rooms, pump stations, paved areas, etc.					
Please refer to Appendix L.3 for a copy of the EA.					
<u>The proposed development is on an existing brownfield site.</u>					
The proposed site falls within the existing cadastral boundary of the Macassar WWTW which is an operational WWTW and therefore a brownfield site. Some of the new infrastructure will be constructed in open areas within the site boundary and demolition of existing infrastructure will be required in order to construct some of the new infrastructure. The proposed development also includes construction of new infrastructure in old sludge lagoon type ponds which are no longer in use. To undertake construction in the lagoons the sludge will be removed and safely disposed of. New infrastructure will also be constructed where some of the old infrastructure is no longer required and will be demolished.					
<u>New proposed design:</u>					

The proposed design of the refurbishment of the existing Macassar WWTW has changed since the current EA of 2016. The proposed design will achieve improved treatment of the wastewater and improved operation of the works for the liquid and sludge process streams. These works are comprised of the construction of a new inlet works, primary settling tanks, biological reactors, secondary settling tanks, associated pipework, primary sludge screening, sludge pumping, gravity thickeners, anaerobic digesters, gas holding tanks, dewatering building, sludge facility and storage, phosphorus dosing, chlorine dosing, odour control, extension of the disinfection system (including ultra violet disinfection), wash water pump station, maturation ponds (modifications), new outlet to the river, smaller ancillary structures, new buildings on site (including new administration building, new workshop and store, new guardhouse and new electrical infrastructure buildings), civil infrastructure (including roads, fencing, paved areas). For a more detailed overview of the new project scope, please refer to the earlier section of this document, namely "General Project description".

The City of Cape Town proposes the following electrical infrastructure as part of the refurbishment of the WWTW, the proposed electrical infrastructure will supply the WWTW with power sourcing it from the nearest Eskom substation:

2x 11kV MV Cable with a length of 6,941m and a distance of 300mm apart between these cables. The construction of the cables will require a trench depth and width of approximately 1m with a buffer of 500mm on either side of the proposed route. The route of the cables follows the previous Eskom overhead line/cable route and then follows the existing roads heading up to the WWTW. Some sections of the proposed cable route fall within a road servitude. The crossing at Eerste River will either be in the form of a road/pipe bridge crossing or drilling underneath the river.

This Application: (i) Upgrade and (ii) Amendment:

- (i) **Upgrade:** The proposed revised design upgrade constitutes listed activities in terms of the EIA Regulations, 2014 (as amended). Written authorisation is therefore required from the competent authority, the Department of Environmental Affairs and Development Planning (DEA&DP), prior to the undertaking of the said activities. This determination is based on the following:

The proposed revision to the design upgrades will require the clearance of more than 1ha of indigenous vegetation, which includes Endangered Cape Flats Dune Strandveld vegetation. Therefore, Listing Notice 1, and 27 and Listing Notice 3 Activity 12 is being applied for.

- (ii) **Amendment:** Furthermore, an application is made to amend the previous EA dated 7 July 2017. This amendment should include the following project scope and new project description.

3.	For Linear activities or developments
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3.1.	Provide the Farm(s)/Farm Portion(s)/Erf number(s) for all routes:
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The WWTW is located on Erf No. 1205, however, the effluent outlet overlaps on Erf No. 703, and the proposed guard house will be located on Erf 708.

- SG Digit code (s) entail:
 - C06700150000120500000
34° 4'33.46"S 18°45'44.77"E
 - C06700080000070300000
34° 4'24.03"S 18°45'36.41"E
 - C06700150000070800000
34° 4'18.45"S 18°45'46.18"E

Please note that the upgrade is not seen as a "linear development" as per the Applicability Checklist and DEA&DP response – refer Appendix L.1. The information in this section is to provide context. The Erf is located on the False Bay coast, at the Eerste River Estuary, approximately 600m south of Macassar. The effluent outlet overlaps on Erf No. 703. .

The proposed Eskom line will cross a number of erven of which the SG codes are listed below. Please refer to **Appendix F**.

- SG Digit code (s) entail:
 - C06700000000068000000
 - C06700000000068000005
 - C06700000000078500002
 - C06700000000078500018
 - C06700000000078500019
 - C06700000000078700000
 - C06700000000078700005
 - C06700000000078700011
 - C06700000000079400000
 - C06700000000079400037
 - C06700000000079400038
 - C06700000000079400043
 - C06700080000061200000
 - C06700080000063500000
 - C06700080000077800000
 - C06700150000070700000
 - C06700150000071000000
 - C06700150000106200000
 - C06700150000106300000
 - C06700150000120900000

- o C06700150000745300000

The SG Codes for the proposed Biodiversity Offset Options 1,7 and 8 are as follows:

- o C06700150000125000000
- o C06700000007940000000
- o C04600000007540000000
- o C04600000007070000000
- o C04600000010920000000

3.2.	Development footprint of the proposed development for all alternatives.	13,882m² (Eskom cables) 162,500 m² (proposed) 172,682 m² (existing)
The proposed development footprint will be located within the boundaries of the subject properties. Portions of the existing infrastructure is situated in the 1:50 year flood line, this includes the old sludge lagoons and the maturation ponds. The old sludge lagoons shall be cleared of sludge and infilled where structures shall be constructed in and around them at a higher level as part of the proposed development (i.e., final ground level will be above the 1:50 year flood line). For the maturation ponds, portions of the ponds shall be refurbished. This confirms the portion of the existing and refurbished infrastructure which sits in the 1:50 year flood line. In terms of the proposed development, provision has been made by elevating the final ground level across certain key portions of the site such that the new ground level sits higher than the 1:50 year flood line. In addition to this, the inlet works is elevated and contains a double lift screw pump station allowing sewage/effluent to flow under gravity to the different process units where the top water level and top of concrete levels of the process units ensuring that they are not flooded in the event of a 1:50 year flood event. The treated effluent channels which are located around the maturation ponds also sits higher than the 1:50 year flood line (Refer to image below). The development footprint will be superimposed on the existing development footprint of the facilities and in the open spaces on the property. The additional footprint required, over and above what is currently authorised, for the implementation of the identified alternative technology options that will enable the works to run more efficiently and improve the quality of the effluent being discharged to the estuary is approximately 162,500 m². In terms of the reuse of the treated effluent, a portion of the effluent will be used on site and portions of it will be used off site, thus reducing the volume discharged into the Eerste River Estuary. For on-site use, treated effluent is required for irrigation and service water for the operation and cleaning of some of the mechanical equipment and process units (inlet works, dewatering building, general washing down). Treated effluent will and be pumped off site to downstream users. MV Cables - Footprint including an excavation of 1m wide plus 500mm each side i.e. 6941 x 2m = 13,882m². Please refer to the site layout plan in Appendix B.1.1 and B.1.2.		



Floodlines

3.3.

Provide a description of the proposed development (e.g. for roads the length, width and width of the road reserve in the case of pipelines indicate the length and diameter) for all alternatives.

The proposed development entails the refurbishment of the existing Macassar WWTW, and as such alternative properties/sites cannot be considered.

Scope of Works: The current proposal is to refurbish or replace process units, facilities and amenities of the existing Macassar WWTW. The work is proposed to achieve improved treatment of the wastewater and improved operation of the works, for the liquid and sludge process stream. The current proposal will result in an additional operational capacity for the Macassar WWTW to 80ML/d (average dry weather flow). Further to this, the work is proposed within the cadastral boundary of the existing WWTW property.

The scope of the current proposal is to refurbish and improve the process units and facilities of the existing Macassar WWTW as follows:

- Inlet Works:** New elevated inlet works and a primary sludge handling facility will be constructed
- Primary Settling Tank Splitter:** A new primary settlement tank splitter to split the flow to the new primary settling tanks
- Primary Settling Tanks (PSTs):** New PSTs
- Reactor Flow Splitter:** A new reactor flow splitter to split the flow to new biological reactors. The structure will also contain a controlled and passive overflow outlet which will convey flow to the offline balancing tank.
- Biological Reactors:** New reactor modules with the UCT process as the base configuration and the option to switch to a Modified Ludzack-Ettinger (MLE) process
- Offline Balancing Tank:** Modifying and refurbishing the existing biological reactor into an offline balancing tank. Flows coming into the works which are in excess of the PWWF and will include a passive overflow from the Inlet Works or the Reactor
- Secondary Settling Tanks Splitter:** New secondary settling tank splitters to split the flow into the new secondary settling tanks
- Secondary Settling Tanks (SSTs):** New secondary settlement tanks
- Effluent Conveyance Channels:** Will comprise of an outlet channel to collect the treated effluent from the SST's and direct the flow into the disinfection system. It also comprises of channels from the disinfection system to the river and a series of bypass channels and outlets to the maturation ponds
- Disinfection:** A hybrid system of gas chlorination and UV disinfection. Effluent passing through the disinfection system will pass back into the effluent conveyance channel
- Primary Sludge Screening Facility:** New primary sludge screening facilities will be constructed.
- Gravity Thickeners:** Primary sludge will be treated through thickening in new gravity thickeners
- Anaerobic Digesters:** New mesophilic anaerobic digesters
- Waste Activated Sludge (WAS) Holding Tanks:** New WAS holding tanks to store waste activated sludge
- Primary Sludge (PS) Holding Tanks:** New PS holding tanks to store primary sludge
- Dewatering Building:** PS will be thickened on linear screens followed by the PS and the WAS being dewatered via belt presses
- Sludge Silos:** Sludge silos to store the primary and secondary sludge cake before disposal off site

- 18. Main Sludge Transfer Pump Station:** This building will host three types of pump systems, namely to pump primary sludge from the primary sludge screening facility to the gravity thickeners, pump thickened sludge from the gravity thickeners to the anaerobic digesters and pump waste activated sludge from the bioreactors to the WAS holding tanks
- 19. Return Activated Sludge (RAS) Pump Station:** A RAS pumpstation to pump sludge from the under flow of SSTs back into the biological reactors
- 20. Scum Pump Station:** A scum pumpstation to pump scum from PST's, Reactors and the SST's to the Anaerobic Digesters
- 21. Return Flow Pump Station:** A return flow pumpstation to pump sewage back to the inlet works.
- 22. Blower Building:** A new blower facility to house the aeration equipment, including blowers, compressors and other necessary equipment required for aeration.
- 23. Boiler House Facility:** A new boiler house facility, with a steam boiler system
- 24. Gas Holding Tanks:** New gas storage tanks, with gas cleaning facility
- 25. Chlorination building:** A new chlorination building will be required for operation of the chlorine disinfection facilities
- 26. Service water pump station:** A new service water pumpstation for treated effluent reticulation network (wash water) to be used for mechanical equipment and on-site requirements
- 27. Treated sewage effluent (TSE) infrastructure:** Will comprise a new TSE pump station and filter building, used to pump treated effluent to off-site users
- 28. Ancillary Structures:** The construction of small concrete structures including flow diversion, flow division, flow measurement, collection chambers and outlet structures
- 29. MV Substation:** A new MV substation for onsite MV electrical requirements
- 30. Centralised Generator Building:** A new centralised Generator building which will house diesel generators
- 31. Electrical Buildings:** New MCC buildings housing all MCC and energy generation and electrical infrastructure for process units on site. This will comprise of several buildings across the site. Some of the other electrical infrastructure will be incorporated into the footprint of the process unit or process building.
- 32. Combined Heat and Power Building:** New building housing an internal combustion engine which generates electricity from the Biogas for onsite use. The infrastructure also includes a gas engine collector substation.
- 33. Weighbridge:** A new weighbridge with a facility to house the control needed for the weigh bridge
- 34. Process Operations Building:** A new two storey administration building which will comprise of a reception area, laboratory, offices, control room, canteen and kitchenette, board rooms and laundry on the ground floor. The second floor will include offices, storage, kitchenette and eating area, ablutions, boardroom and a braai area.
- 35. Workshop and store Building:** A new two storey workshop and store facility which will have storage area, workshop area, kitchenette and eating area and ablutions on the ground floor. The second floor will include offices and ablution facilities
- 36. Guard House:** A new guard house facility which will house security personnel, the facility will include ablution facilities
- 37. Security Hut:** A new security hut located at the entrance of the WWTW main access road
- 38. Site Clearance and Bulk Earthworks:** Site to be cleared to make provision for the construction of new buildings, process structures, roads and other civil infrastructure. Bulk earthworks will be required for certain areas to level out dunes and to create platforms.
- 39. Flow Diversions and Demolition:** Flow to be diverted to keep the existing plant in operation during construction of the upgrade. Flow to be diverted to the new infrastructure after completion. Decommissioning and demolishment of older process units and older buildings, namely inlet works, secondary settling tanks and associated ancillary structures, 1 x biological reactor, 2 x RAS pumpstation buildings, associated ancillary structures, chlorine contact tank, dewatering building, sludge silo, guard house, inlet works MCC, administration building, workshop building, board rooms, chlorine building, wash water building and generator building.
- 40. Interconnecting Pipework:** The interconnecting pipework associated with directing flow through the new structures and connecting to the existing structures. It will also include the pipelines which will serve as overflow or emergency bypass pipelines.
- 41. Roadworks:** Main access road (tarred), internal roads (paved and gravel) and public road to beach (gravel)
- 42. Stormwater Drainage:** New stormwater drainage systems that includes pipes, channels, inlet catchments and head walls to direct surface water off site
- 43. Potable Water Reticulation:** New potable water network for onsite requirements
- 44. Service Water Reticulation:** New service water reticulation network for onsite use, which includes use by mechanical equipment and on-site irrigation
- 45. Onsite sewage Reticulation:** New onsite sewage reticulation network to return sewage the inlet works
- 46. Fencing:** A new access road fence and on-site fence and a 2-m high fencing <20 m at the guardhouse.
- 47. Maturation Pond Refurbishment:** Cleaning and minor modifications to the existing ponds including the concrete lining of one of the ponds. The ponds modification will also include a new effluent channel and internal modifications to allow flow in the ponds to be diverted through each of the respective ponds.
- 48. Fire Design:** All new buildings and site to have fire designs depending on the building and site requirements
- 49. Ventilation:** New buildings to have adequate ventilation measures in place, suited to the buildings use.

The City of Cape Town proposes the following electrical infrastructure as part of the refurbishment of the WWTW, the proposed electrical infrastructure will supply the WWTW with power sourcing it from the nearest Eskom substation:

2x 11kV MV Cable with a length of 6,941m and a distance of 300mm apart between these cables. The construction of the cables will require a trench depth and width of approximately 1m with a buffer of 500mm on either side of the proposed route. The route of the cables follows the previous Eskom overhead line/cable route and then follow the existing roads heading up to the WWTW. Some sections of the proposed cable route fall within a road servitude. The crossing at Eerste River will either be in the form of a road/pipe bridge crossing or drilling underneath the river.

Please refer to the site layout plan in **Appendix B.1.1 and B.1.2.**

Biodiversity Offset

Reason for the offset: The Biodiversity Offset Strategy was developed for the Macassar WWTW expansion to align with the principles and requirements of the 2023 Biodiversity Offset Guidelines. This strategy addresses the residual impacts of the development on the EN Cape Flats Dune Strandveld, a threatened vegetation type which will be impacted on as part of the refurbishment of the Macassar WWTW.

According to best practice, the offset principles indicate that a biodiversity offset is required. Offsets are implemented as part of the mitigation hierarchy and are specifically intended to mitigate or compensate for the residual environmental impacts of development/mining (often referred to as "compensatory mitigation") after all viable measures have been taken to first avoid or prevent, minimize or reduce, and remediate or rehabilitate those impacts.

Description of the Offset:

Comprehensive offset ratio calculations, adjusted for habitat sensitivity and functionality (e.g., presence of functioning CBA habitat), determined that 176.3 ha habitat is required to achieve compliance with biodiversity offset standards and ensure the long-term viability of the affected ecosystems. The selected Offset Areas namely Options 1, 7 and 8 – (refer images below) offer substantial opportunities for achieving conservation gains through targeted management actions, such as AIP control, erosion control, and the rehabilitation of degraded areas. These Offset Areas, especially Option 8, also provide suitable habitat to support various SCC and enhance ecological connectivity within the region, contributing to broader conservation priorities. Although Option 8 is not located within the same vegetation type as the WWTW (Cape Flats Dune Strandveld), its use as an offset is considered acceptable due to its alignment with "trading up" principles. While this does not involve trading up to a vegetation type with a higher threat status, it constitutes an improvement in terms of ecosystem conservation value due to the significantly lower REE % of the proposed vegetation.

Please refer to appendix G.8.3 for a detailed Biodiversity Offset Strategy Report (December 2024) as well as Section I.8 and 4.7 of this BAR.



Option 1

Farm 785 – 19/785	C	0	6	7	0	0	0	0	0	0	0	0	0	0	7	8	5	0	0	0	1	9	
Farm Helderberg Sleeper Plantation – RE/787	C	0	6	7	0	0	0	0	0	0	0	0	0	0	7	8	7	0	0	0	0	0	
Farm Herlderberg Sleeper Plantation – 5/787	C	0	6	7	0	0	0	0	0	0	0	0	0	0	7	8	7	0	0	0	0	5	
Farm Helderberg Sleeper Plantation – 11/787	C	0	6	7	0	0	0	0	0	0	0	0	0	0	7	8	7	0	0	0	1	1	
Farm 794 – 0/794	C	0	6	7	0	0	0	0	0	0	0	0	0	0	7	9	4	0	0	0	0	0	
Farm 794 – 37/794	C	0	6	7	0	0	0	0	0	0	0	0	0	0	7	9	4	0	0	0	3	7	
Farm 794 – 38/794	C	0	6	7	0	0	0	0	0	0	0	0	0	0	7	9	4	0	0	0	3	8	
Farm 794 – 43/794	C	0	6	7	0	0	0	0	0	0	0	0	0	0	7	9	4	0	0	0	4	3	
Erf 612	C	0	6	7	0	0	0	8	0	0	0	0	0	0	6	1	2	0	0	0	0	0	
Erf 635	C	0	6	7	0	0	0	8	0	0	0	0	0	0	6	3	5	0	0	0	0	0	
Erf 778	C	0	6	7	0	0	0	8	0	0	0	0	0	0	7	7	8	0	0	0	0	0	
Erf 710	C	0	6	7	0	0	1	5	0	0	0	0	0	0	7	1	0	0	0	0	0	0	
Erf 1062	C	0	6	7	0	0	1	5	0	0	0	0	1	0	6	2	0	0	0	0	0	0	
Erf 1063	C	0	6	7	0	0	1	5	0	0	0	0	1	0	6	3	0	0	0	0	0	0	
Erf 1209	C	0	6	7	0	0	1	5	0	0	0	0	1	2	0	9	0	0	0	0	0	0	
Erf 7453	C	0	6	7	0	0	1	5	0	0	0	0	7	4	5	3	0	0	0	0	0	0	
Biodiversity Offset Sites																							
Erven 1205 Portion 0	C	0	6	7	0	0	1	5	0	0	0	0	1	2	0	5	0	0	0	0	0	0	
Remaining Extent of Farm 794	C	0	6	7	0	0	0	0	0	0	0	0	7	9	4	0	0	0	0	0	0	0	
Farm 791 (RE/4/791)	C	0	6	7	0	0	0	0	0	0	0	0	7	9	1	0	0	0	0	0	0	4	
Farm 791 (RE/5/791)	C	0	6	7	0	0	0	0	0	0	0	0	7	9	1	0	0	0	0	0	0	5	
A portion Farm Burgers Post RE/754	C	0	4	6	0	0	0	0	0	0	0	0	7	5	4	0	0	0	0	0	0	0	
A portion of Farm Nieuwe Post 707	C	0	4	6	0	0	0	0	0	0	0	0	7	0	7	0	0	0	0	0	0	0	
A portion of Farm Hillside West 708	C	0	4	6	0	0	0	0	0	0	0	0	7	0	8	0	0	0	0	0	0	0	
Portion 0 of Farm Papenkuilsfontein (RE/173)	C	0	4	6	0	0	0	0	0	0	0	0	7	1	3	0	0	0	0	0	0	0	
3.6.	Starting point co-ordinates for all alternatives																						
	Latitude (S)	34°					04'					28.5"											
	Longitude (E)	18°					45'					47.5"											
	Middle point co-ordinates for all alternatives																						
	Latitude (S)	34°					03'					31.6"											
	Longitude (E)	18°					47'					19.2"											
	End point co-ordinates for all alternatives																						
	Latitude (S)	34°					04'					56.7"											
	Longitude (E)	18°					48'					26.2"											
Biodiversity Offset Sites Co-Ordinates																							
Erven 1205 Portion 0	Latitude (S)	34°					04'					32.94"											
	Longitude (E)	18°					45'					38.67"											
Remaining Extent of Farm 794	Latitude (S)	34°					05'					36.02"											
	Longitude (E)	18°					48'					34.49"											
Farm 791 (RE/4/791)	Latitude (S)	34°					05'					41.68"											
	Longitude (E)	18°					48'					24.49"											
Farm 791 (RE/5/791)	Latitude (S)	34°					05'					36.82"											
	Longitude (E)	18°					48'					25.26"											
A portion Farm Burgers Post RE/754	Latitude (S)	33°					29'					46.73"											
	Longitude (E)	18°					32'					41.27"											
A portion of Farm Nieuwe Post 707	Latitude (S)	33°					28'					27.36"											
	Longitude (E)	18°					29'					53.18"											
Portion 0 of Papenskuilsfontein (RE/173)	Latitude (S)	33°					28'					25.04"											
	Longitude (E)	18°					29'					11.35"											
A portion of Farm Hillside West 708	Latitude (S)	33°					29'					15.81"											
	Longitude (E)	18°					31'					14.75"											
Note: For Linear activities or developments longer than 500m, a map indicating the co-ordinates for every 100m along the route must be attached to this BAR as Appendix A3. Please refer to Appendix A3 for the map with co-ordinates for the Eskom cable route.																							
4.	Other developments																						

4.1.	Property size(s) of all proposed site(s):		Refer to Appendix Q	
4.2.	Developed footprint of the existing facility and associated infrastructure (if applicable):		172,682 m ²	
4.3.	Development footprint of the proposed development and associated infrastructure size(s) for all alternatives:		162,500 m ²	
4.4.	Provide a detailed description of the proposed development and its associated infrastructure (This must include details of e.g. buildings, structures, infrastructure, storage facilities, sewage/effluent treatment and holding facilities).			
Scope of Works: The current proposal is to refurbish or replace process units, facilities and amenities of the existing Macassar WWTW. The work is proposed to achieve improved treatment of the wastewater and improved operation of the works, for the liquid and sludge process stream. The current proposal will result in an additional operational capacity for the Macassar WWTW to 80ML/d (average dry weather flow). Further to this, the work is proposed within the cadastral boundary of the existing WWTW property. Please refer to Section 3.3 for the proposed project scope.				
4.5.	Indicate how access to the proposed site(s) will be obtained for all alternatives.			
Initial construction activities as undertaken by the CoCT in 2018 included the construction and upgrading of the access road and internal roads. These roads will be used as far as possible and new roads will be constructed as part of the development in order to reach additional areas within the site footprint which form part of the development. No new access roads are planned for the refurbishment of the proposed development.				
4.6.	SG Digit code(s) of the proposed site(s) for all alternatives:			
4.7.	Coordinates of the proposed site(s) for all alternatives:			
	Latitude (S)	°	'	"
	Longitude (E)	°	'	"

SECTION C: LEGISLATION/POLICIES AND/OR GUIDELINES/PROTOCOLS

1. Exemption applied for in terms of the NEMA and the NEMA EIA Regulations

Has exemption been applied for in terms of the NEMA and the NEMA EIA Regulations. If yes, include a copy of the exemption notice in Appendix E18.	YES	NO
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2. Is the following legislation applicable to the proposed activity or development.

The National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) ("ICMA"). If yes, attach a copy of the comment from the relevant competent authority as Appendix E4 and the pre-approval for the reclamation of land as Appendix E19. PLEASE refer to Appendix L.3 - The current Environmental Authorisation and the competent Authority is DEA&DP No reclamation of land is necessary for the refurbishment proposal.	YES	NO
The National Heritage Resources Act, 1999 (Act No. 25 of 1999) ("NHRA"). If yes, attach a copy of the comment from Heritage Western Cape as Appendix E1. Refer Appendix G.3.1-G.3.3 for the NID, Heritage Impact Assessment Report as the Palaeontological Impact Assessment. The final comment from HWC has been attached to the Final BAR	YES	NO
The National Water Act, 1998 (Act No. 36 of 1998) ("NWA"). If yes, attach a copy of the comment from the DWS as Appendix E3. The City of Cape Town submitted and amendment to the WUL to Ngobeni Tshembhani at DWS on the 24 Feb 2023. The amendment was done for 80ML/day capacity. Please refer to Appendix E.3.1 – Appendix E.3.3	YES	NO
The National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("NEM:QA"). If yes, attach a copy of the comment from the relevant authorities as Appendix E13.	YES	NO
The National Environmental Management Waste Act (Act No. 59 of 2008) ("NEM:WA")	YES	NO
The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004 ("NEMBA").	YES	NO
The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) ("NEMPAA").	YES	NO
The Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). If yes, attach comment from the relevant competent authority as Appendix E5.	YES	NO

3. Other legislation

List any other legislation that is applicable to the proposed activity or development.			
LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	ADMINISTERING AUTHORITY and how it is relevant to this application	TYPE Permit/license/authorisation/comment / relevant consideration (e.g. rezoning or consent use, building plan approval, Water Use License and/or General Authorisation, License in terms of the SAHRA and CARA, coastal discharge permit, etc.)	DATE (if already obtained):
National Environmental Management Act (Act 107 of 1998 as amended)	DEA&DP	Environmental Authorisation	Pending
National Environmental Management Laws Amendment Act (Act 25 of 2014)	DEA&DP	Public participation as part of the Environmental Authorisation	Pending
National Environmental Management: Biodiversity Act (Act 10 of 2004)	DEA&DP	Removal of invasive vegetation / impact on threatened ecosystem type	None
National Water Act (Act 36 of 1998)	Department of Water & Sanitation	The City of Cape Town submitted and amendment to the WUL to Ngobeni Tshembhani at DWS on the 24 Feb 2023. The amendment was done for 80ML/day capacity. Please refer to Appendix E.3.1 – E.3.3 DWS has not requested an increase in Orthophosphate or Nitrate. However, any changes to these parameters will only be highlighted to the DWS in Phase 3.	24 Feb 2023

National Forest Act (Act 84 of 1998)	Department of Forestry	None	None
Conservation of Agricultural Resources Act (Act 43 of 1983)	Department of Agriculture	Removal of invasive vegetation	None

4. Policies

Explain which policies were considered and how the proposed activity or development complies and responds to these policies.	
LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT	Describe how the proposed development complies with and responds:
PLANNING FRAMEWORKS, AND INSTRUMENTS	
National Environmental Management Act (Act 107 of 1998 as amended)	Environmental Impact Assessment is being undertaken in terms of Chapter 5 of NEMA using the 2017 EIA regulations.
National Environmental Management Laws Amendment Act (Act 25 of 2014)	The public participation is being undertaken in terms of this Act, specifically the 30-day comment period prescribed.
National Environmental Management: Biodiversity Act (Act 10 of 2004)	The identification of the onsite vegetation and the ecosystem status associated with the vegetation is undertaken in terms of this Act. This Act also applies to the control and management of Alien Invasive Species (AIS), which includes animals and vegetation.
National Water Act (Act 36 of 1998)	The City of Cape Town submitted an amendment to the WUL to Ngobeni Tshembhani at DWS on the 24 Feb 2023. The amendment was done for 80ML/day capacity. Please refer to Appendix E.3.1 – E.3.3
National Forest Act (Act 84 of 1998)	N/A
Conservation of Agricultural Resources Act (Act 43 of 1983)	This Act applies for the removal and control of alien invasive vegetation, protection of water resources and the prevention of soil erosion.
Land Use Planning Ordinance (Act 15 of 1985)	N/A
National Waste Management Strategy	All waste from construction to decommissioning must be dealt with in terms of this strategy.
Outeniqua Sensitive Coastal Areas Act (OSCA)	N/A
National Protected Area Expansion Strategy	There are no NPAES focus areas near the development properties.
<u>The National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) ("ICMA").</u>	<u>PLEASE refer to Appendix L.3 - The current Environmental Authorisation and the competent Authority is DEA&DP</u> <u>No reclamation of land is necessary for the refurbishment proposal.</u>

5. Guidelines

List the guidelines which have been considered relevant to the proposed activity or development and explain how they have influenced the development proposal.	
Guideline for Environmental Management Plans (2005)	An EMPr has been included with this Basic Assessment to provide practical and implementable actions to ensure that the development maintains sustainability and minimise impacts through all its phases. The document is drafted as per the Guidelines and requirements of NEMA.
Guideline for Public Participation (2013)	The PPP for this process is based on this Guideline and also includes any updated regulations.
Guideline on Alternatives (2013)	Feasible and reasonable alternatives must be considered alongside the development proposal in order to ensure the Best Practicable Environmental Option (BPEO). These Guidelines have been used in their consideration.
Guideline on Need & Desirability (2013)	Need & Desirability refers to the temporal and spatial need of an area for a specific development. This Guideline was used to define the requirements and implications of Need & Desirability.
The Helderberg District Plan (2023)	The Helderberg District Plan (2023) includes an integrated Environmental Management Framework (EMF) developed in terms of the National Environmental Management Act

This is the only EMF available at the time of compilation of this BAR.

(‘NEMA’). **This is the only EMF available at the time of compilation of this BAR.** (Note that the Draft Revised Environmental Management Framework and Proposed Urban Areas for the City of Cape Town was published for public comment by DEA&DP on 31 January 2025 in Provincial Gazette Extraordinary 9024.)

The relevant priorities of the EMF are never-the-less discussed below.

The EMF indicates that the Macassar WWTW and the proposed development site is located within the following Environmental Impact Management Zones:

The Coastal Protection Zone (seaward of the coastal edge line delineated by the City of Cape Town)

The development of bulk infrastructure (including WWTWs) is regarded as undesirable within the Coastal Protection Zone. However, “Essential activities required for the environmental management of the coastal area” are desirable. The proposed development will increase the capacity of the Macassar WWTW, improve the quality of the discharge released to the Eerste River and prevent future sewage overflows/ spills – in this way the proposed development may protect the surrounding environment from pollution and may thus support the environmental management of the surrounding coastal area.

Coastal Flood Risk Area

These are areas that “...have been developed in the past, but which have been identified as being vulnerable to flooding.... In all cases a precautionary approach must be adopted and emergency planning for flood and storm events undertaken”.

Other Ecological Support Area (OESA)

These are transformed areas with conservation importance, required for the connectivity and viability of surrounding CBAs and protected areas. Development of bulk service infrastructure (including WWTWs) is not desirable in OESAs

Cultural & Recreational Resource Zone = Structuring Open Spaces

Waste disposal activities (including WWTW) are regarded as undesirable in these areas.

Although the development of WWTW infrastructure within the coastal protection zone, EOSAs and Structuring Open Spaces is regarded as undesirable in terms of the EMF, it should be noted that the bulk of the proposed development will take place within the footprint of the existing WWTW and within historical WWTW ponds which are already highly modified.

6. Protocols

Explain how the proposed activity or development complies with the requirements of the protocols referred to in the NOI and/or application form

The following protocols apply:

- Site sensitivity verification requirements where a specialist assessment is required but no specific assessment protocol has been prescribed.
- Protocol for the specialist assessment and minimum report content requirements for environmental impacts on agriculture.
- Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity
- Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial plant species.
- Protocol for the specialist assessment and minimum report content requirements for environmental impacts on aquatic biodiversity
- Protocol for the specialist assessment and minimum report content requirements for environmental impacts on heritage.
- Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial animal species.

Please refer to Appendix M.1 for the site sensitivity verification report.

SECTION D: APPLICABLE LISTED ACTIVITIES

List the applicable activities in terms of the NEMA EIA Regulations

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1	Describe the portion of the proposed development to which the applicable listed activity relates.
27	<i>"The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan".</i>	The development of the proposed upgrade facilities will result in the clearance of approximately 7ha High sensitivity, 2ha Medium sensitivity and 9.3ha Low sensitivity of vegetation within an Endangered Ecosystem (Cape Flats Dune Strandveld) as identified in the Revised 2022 National List of Threatened Ecosystems. (2.4 ha forms part of the current authorisation)
12	<i>"The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. i. Western Cape i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; ii. Within critical biodiversity areas identified in bioregional plans; iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister".</i>	The development of the proposed upgrade facilities will result in the clearance of approximately 7ha High sensitivity, 2ha Medium sensitivity and 9.3ha Low sensitivity of vegetation within an Endangered Ecosystem (Cape Flats Dune Strandveld) as identified in the Revised 2022 National List of Threatened Ecosystems (2.4 ha forms part of the current authorisation)
Note: - The listed activities specified above must reconcile with activities applied for in the application form. The onus is on the Applicant to ensure that all applicable listed activities are included in the application. If a specific listed activity is not included in an Environmental Authorisation, a new application for Environmental Authorisation will have to be submitted. - Where additional listed activities have been identified, that have not been included in the application form, and amended application form must be submitted to the competent authority.		

List the applicable waste management listed activities in terms of the NEM:WA

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Category A	Describe the portion of the proposed development to which the applicable listed activity relates.
N/A	N/A	N/A

List the applicable listed activities in terms of the NEM:AQA

Activity No(s):	Provide the relevant Listed Activity(ies)	Describe the portion of the proposed development to which the applicable listed activity relates.
N/A	N/A	N/A

SECTION E: PLANNING CONTEXT AND NEED AND DESIRABILITY

1.	Provide a description of the preferred alternative.
The Macassar WWTW is located between Khayelitsha and Strand, along the False Bay coastline. The site is bounded to the South by the sea and the Macassar beach complex lies to the Southwest. On the East, the site is bounded by the Eerste River, with industries beyond the river. There is no development to the West of the site, and it is open vegetated dune landscape. The nearest residential development is the Macassar township, a distance of some 0.6 km from the works and over the years has encroached towards the WWTW but not crossing the Macassar Road. The catchment areas currently served by the Macassar WWTW include the areas of Somerset West, Strand, part of Gordons Bay, Helderberg and Macassar. In addition, there is the capability that parts of Blackheath and Eerste River can contribute to the Macassar WWTW flows via the Black-Mac Outfall Sewer. Refer to the locality plan in 	

Figure 2 below. Site Photographs are provided in Appendix C.1



- 11. Primary Sludge Screening Facility:** New primary sludge screening facilities will be constructed.
- 12. Gravity Thickeners:** Primary sludge will be treated through thickening in new gravity thickeners
- 13. Anaerobic Digesters:** New mesophilic anaerobic digesters
- 14. Waste Activated Sludge (WAS) Holding Tanks:** New WAS holding tanks to store waste activated sludge
- 15. Primary Sludge (PS) Holding Tanks:** New PS holding tanks to store primary sludge
- 16. Dewatering Building:** PS will be thickened on linear screens followed by the PS and the WAS being dewatered via belt presses
- 17. Sludge Silos:** Sludge silos to store the primary and secondary sludge cake before disposal off site
- 18. Main Sludge Transfer Pump Station:** This building will host three types of pump systems, namely to pump primary sludge from the primary sludge screening facility to the gravity thickeners, pump thickened sludge from the gravity thickeners to the anaerobic digesters and pump waste activated sludge from the bioreactors to the WAS holding tanks
- 19. Return Activated Sludge (RAS) Pump Station:** A RAS pumpstation to pump sludge from the under flow of SSTs back into the biological reactors
- 20. Scum Pump Station:** A scum pumpstation to pump scum from PST's, Reactors and the SST's to the Anaerobic Digesters
- 21. Return Flow Pump Station:** A return flow pumpstation to pump sewage back to the inlet works.
- 22. Blower Building:** A new blower facility to house the aeration equipment, including blowers, compressors and other necessary equipment required for aeration.
- 23. Boiler House Facility:** A new boiler house facility, with a steam boiler system
- 24. Gas Holding Tanks:** New gas storage tanks, with gas cleaning facility
- 25. Chlorination building:** A new chlorination building will be required for operation of the chlorine disinfection facilities
- 26. Service water pump station:** A new service water pumpstation for treated effluent reticulation network (wash water) to be used for mechanical equipment and on-site requirements
- 27. Treated sewage effluent (TSE) infrastructure:** Will comprise a new TSE pump station and filter building, used to pump treated effluent to off-site users
- 28. Ancillary Structures:** The construction of small concrete structures including flow diversion, flow division, flow measurement, collection chambers and outlet structures
- 29. MV Substation:** A new MV substation for onsite MV electrical requirements
- 30. Centralised Generator Building:** A new centralised Generator building which will house diesel generators
- 31. Electrical Buildings:** New MCC buildings housing all MCC and energy generation and electrical infrastructure for process units on site. This will comprise of several buildings across the site. Some of the other electrical infrastructure will be incorporated into the footprint of the process unit or process building.
- 32. Combined Heat and Power Building:** New building housing an internal combustion engine which generates electricity from the Biogas for onsite use. The infrastructure also includes a gas engine collector substation.
- 33. Weighbridge:** A new weighbridge with a facility to house the control needed for the weigh bridge
- 34. Process Operations Building:** A new two storey administration building which will comprise of a reception area, laboratory, offices, control room, canteen and kitchenette, board rooms and laundry on the ground floor. The second floor will include offices, storage, kitchenette and eating area, ablutions, boardroom and a braai area.
- 35. Workshop and store Building:** A new two storey workshop and store facility which will have storage area, workshop area, kitchenette and eating area and ablutions on the ground floor. The second floor will include offices and ablution facilities
- 36. Guard House:** A new guard house facility which will house security personnel, the facility will include ablution facilities
- 37. Security Hut:** A new security hut located at the entrance of the WWTW main access road
- 38. Site Clearance and Bulk Earthworks:** Site to be cleared to make provision for the construction of new buildings, process structures, roads and other civil infrastructure. Bulk earthworks will be required for certain areas to level out dunes and to create platforms.
- 39. Flow Diversions and Demolition:** Flow to be diverted to keep the existing plant in operation during construction of the upgrade. Flow to be diverted to the new infrastructure after completion. Decommissioning and demolition of older process units and older buildings, namely inlet works, secondary settling tanks and associated ancillary structures, 1 x biological reactor, 2 x RAS pumpstation buildings, associated ancillary structures, chlorine contact tank, dewatering building, sludge silo, guard house, inlet works MCC, administration building, workshop building, board rooms, chlorine building, wash water building and generator building.
- 40. Interconnecting Pipework:** The interconnecting pipework associated with directing flow through the new structures and connecting to the existing structures. It will also include the pipelines which will serve as overflow or emergency bypass pipelines.
- 41. Roadworks:** Main access road (tarred), internal roads (paved and gravel) and public road to beach (gravel)
- 42. Stormwater Drainage:** New stormwater drainage systems that includes pipes, channels, inlet catchments and head walls to direct surface water off site
- 43. Potable Water Reticulation:** New potable water network for onsite requirements
- 44. Service Water Reticulation:** New service water reticulation network for onsite use, which includes use by mechanical equipment and on-site irrigation
- 45. Onsite sewage Reticulation:** New onsite sewage reticulation network to return sewage the inlet works
- 46. Fencing:** A new access road fence and on-site fence and a 2m high fencing <20 m at the guardhouse.
- 47. Maturation Pond Refurbishment:** Cleaning and minor modifications to the existing ponds including the concrete lining of one of the ponds. The ponds modification will also include a new effluent channel and internal modifications to allow flow in the ponds to be diverted through each of the respective ponds.
- 48. Fire Design:** All new buildings and site to have fire designs depending on the building and site requirements
- 49. Ventilation:** New buildings to have adequate ventilation measures in place, suited to the buildings use.

The City of Cape Town proposes the following electrical infrastructure as part of the refurbishment of the WWTW, the proposed electrical infrastructure will supply the WWTW with power sourcing it from the nearest Eskom substation:

2x 11kV MV Cable with a length of 6,941m and a distance of 300mm apart between these cables. The construction of the cables will require a trench depth and width of approximately 1m with a buffer of 500mm on either side of the proposed route. The route of the cables follows the previous Eskom overhead line/cable route and then follow the existing roads

heading up to the WWTW. Some sections of the proposed cable route fall within a road servitude. The crossing at Eerste River will either be in the form of a road/pipe bridge crossing or drilling underneath the river.

The proposed associated infrastructure for this application is located inside Macassar East Conservation Area, which is in process for proclamation as a Section 23 Nature Reserve under the Protected Areas Act 2003.

Please refer to **Appendix B.1.1 and B.1.2** for the site layout and infrastructure.

Biodiversity offset:

The Biodiversity Offset Strategy developed for the Macassar WWTW expansion aligns with the principles and requirements of the 2023 Biodiversity Offset Guidelines. This strategy addresses the residual impacts on the EN Cape Flats Dune Strandveld, a threatened vegetation type.

The selected Offset Areas (Options 1, 7 and 8) offer substantial opportunities for achieving conservation gains through targeted management actions, such as AIP control, erosion control, and the rehabilitation of degraded areas. These Offset Areas, especially Option 8, also provide suitable habitat to support various SCC and enhance ecological connectivity within the region, contributing to broader conservation priorities. Although Option 8 is not located within the same vegetation type as the WWTW (Cape Flats Dune Strandveld), its use as an offset is considered acceptable due to its alignment with "trading up" principles. While this does not involve trading up to a vegetation type with a higher threat status, it constitutes an improvement in terms of ecosystem conservation value due to the significantly lower REE % of the proposed vegetation, please refer to appendix G.8.3 for a detailed biodiversity offset report.

2.	Explain how the proposed development is in line with the existing land use rights of the property as you have indicated in the NOI and application form? Include the proof of the existing land use rights granted in Appendix E21.
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The property is zoned utility, and the current authorised use will remain the same. The development site is located on Erf 1205 (34° 4'33.46"S 18°45'44.77"E), which is zoned for Utility use. The development of utility service infrastructure (e.g., WWTW facilities) is a permissible land use for Utility Zoning. The south-eastern section of the property has already been transformed by an existing, operational WWTW. It is now proposed to refurbish and expand the WWTW on the property.

Refer to **Appendix E.21.1 – E.21.4** for the land use rights and zoning map inclusive of the cable.

3.	Explain how potential conflict with respect to existing approvals for the proposed site (as indicated in the NOI/and or application form) and the proposed development have been resolved.
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On the 07 July 2016, the Department of Environmental Affairs and Development Planning issued an Environmental Authorisation (EA) to the City of Cape Town approving the proposed upgrade and expansion of the Macassar Wastewater Treatment Works (WWTW) and associated infrastructure on the basis that they were necessary to continue to provide essential wastewater treatment services to the surrounding community.

The main purpose of the new proposed project (subject of this application) is to implement the aforementioned authorised upgrade of the WWTW, the construction of which has already commenced. However, due to the time that has passed since the approval in 2016, new design engineers have been appointed to finalise the detailed design. The design engineers have identified alternative technology options that will enable the works to run more efficiently and improve the quality of the effluent being discharged to the estuary.

4.	Explain how the proposed development will be in line with the following?
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4.1	The Provincial Spatial Development Framework.
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The WWTW is an important part of required infrastructure for the city of Cape Town to meet its constitutional obligations to provide adequate services in the municipal area. It will be improving the basic services that will benefit the municipality and those living within the area.

Objective 9 of the Western Cape PSDF (2009) was to minimise consumption of scarce environmental resources. Within this strategic objective, Policy RC20 states that "Existing wastewater treatment works (WWTWs) should be progressively improved and realised by means of regulatory measures and thereafter maintained so that the water quality of the rivers and waterbodies with which they are associated achieve minimum potable (drinking), contact, phosphate, nitrate and e-coli standards. This requires that they comply with the effluent quality requirements set out in their licenses"

The PSDF further states that methods of sanitation which promote water resource protection (ground and surface water) should be implemented in all areas, but that the City of Cape Town should prioritise the maintenance and rehabilitation of their WWTWs.

The proposed upgrade and expansion of the Macassar WWTW will increase the treatment capacity and improve the overall functioning and operational efficiency of the WWTW. The upgrades will be done in accordance with all relevant norms, standards and best practise guidelines in order to ensure the protection of water resources and human health. The treated effluent that will be discharged to the Eerste River will be treated to the water quality standards (General Limit values, with Special Limit value for phosphate and ammonia) specified by the Department of Water & Sanitation, in order to ensure that the WWTW remains compliant with its Water Use License. It is expected that the proposed new WWTW facilities will improve the overall quality of the final effluent that is currently discharged to the Eerste River. The proposed project is therefore, aligned with the 2009 PSDF.

The more recent and latest PSDF (2014) highlights that investment in infrastructure (including maintenance and upgrading of existing infrastructure) is needed to bring about the desired urban spatial transitions envisaged in the PSDF. The proposed expansion of the Macassar WWTW will indirectly support/ facilitate further development in the upstream sewage

catchment – as continued development in these areas is dependent on the availability of sufficient wastewater treatment capacity. The proposed development is thus aligned with the 2014 PSDF.	
4.2	The Integrated Development Plan of the local municipality.
The property is developed as a WWTW outside of the urban edge on a property zoned for utility use.	
4.3.	The Spatial Development Framework of the local municipality.
The Macassar WWTW falls within the utility precinct in terms of the SDF. The proposed expansion aligns with the development of utility infrastructure to support the growing population in the areas of Gordon's Bay, Strand, Somerset West, and Macassar. In addition to this the following is stated in the 2023 Municipal SDF: • The need to upgrade the existing Macassar WWTW is identified in the Municipal SDF as this facility has reached its design capacity and cannot cater for future demand. It is indicated that WWTW effluent compliance has decreased in the last 10 years and the Macassar WWTW is one of the larger works identified in the Municipal SDF, which must be upgraded. • The upgrading and extension of the Macassar WWTW will ensure sufficient capacity for future developments in the catchment area as well as the eradication of maintenance backlogs. The Gordon's Bay WWTW will be decommissioned in future, and flow from this area will be diverted to the Macassar WWTW permanently.	
4.4.	The Environmental Management Framework applicable to the area.
The Helderberg District Plan (2023) includes an integrated Environmental Management Framework (EMF) developed in terms of the National Environmental Management Act ('NEMA'). This is the only EMF available at the time of compilation of this BAR. The EMF has not been formally adopted by the Department, but the relevant priorities of the EMF are never-the-less discussed below. The EMF indicates that the Macassar WWTW and the proposed development site is located within the following Environmental Impact Management Zones: The Coastal Protection Zone (seaward of the coastal edge line delineated by the City of Cape Town) The development of bulk infrastructure (including WWTWs) is regarded as undesirable within the Coastal Protection Zone. However, "Essential activities required for the environmental management of the coastal area" are desirable. The proposed development will increase the capacity of the Macassar WWTW, improve the quality of the discharge released to the Eerste River and prevent future sewage overflows/ spills – in this way the proposed development may protect the surrounding environment from pollution and may thus support the environmental management of the surrounding coastal area. Coastal Flood Risk Area These are areas that "...have been developed in the past, but which have been identified as being vulnerable to flooding.... In all cases a precautionary approach must be adopted and emergency planning for flood and storm events undertaken". Other Ecological Support Area (OESA) These are transformed areas with conservation importance, required for the connectivity and viability of surrounding CBAs and protected areas. Development of bulk service infrastructure (including WWTWs) is not desirable in OESAs Cultural & Recreational Resource Zone = Structuring Open Spaces Waste disposal activities (including WWTW) are regarded as undesirable in these areas. Although the development of WWTW infrastructure within the coastal protection zone, EOSAs and Structuring Open Spaces is regarded as undesirable in terms of the EMF, it should be noted that the bulk of the proposed development will take place within the footprint of the existing WWTW and within historical WWTW ponds which are already highly modified.	
5.	Explain how comments from the relevant authorities and/or specialist(s) with respect to biodiversity have influenced the proposed development.
According to the biodiversity specialist (Nick Helme Botanical Surveys) the site is categorised as the development will result in about 6.8ha of High sensitivity habitat will be lost to the proposed development, along with about 2.1ha of medium sensitivity habitat, and the rest (about 13.5ha) will be of Low sensitivity. A biodiversity offset was recommended. Please refer to the PP Report for information and the attendance register regarding the site visit that was conducted by the relevant authorities (inclusive of DFFE and DEA&DP) and the client. The aim of the site visit was to address the way forward for the Biodiversity Offset procedure and authorities had chance to familiarise themselves with the project.	

Site Visit 20 November 2024

Project number	Ref. No.: 16/3/31/A3/39/2054/24	Meeting date	2024-11-20
Project name	Macassar Wastewater Treatment Works, Capacity Extension and Associated Infrastructure Refurbishment		
Meeting/subject	Macassar: Site visit		

Item	Time	Program for the site visit	Speaker
1.	10:20	Meet at Macassar WWTW (sign in)	
		Introductions People attending: - Portia Makilla: Department of Forestry, Fisheries & the Environment (DFFE) B&C: Biodiversity Mainstreaming EIA - Nompumelelo Lejalakala: Department of Forestry, Fisheries & the Environment (DFFE) B&C: Biodiversity Mainstreaming EIA - Eldon van Boom: Department of Environmental Management and Development Planning (DEA&DP) - Taryn Dreyer: Department of Environmental Management and Development Planning (DEA&DP) - Rondine Isaacs: Department of Environmental Management and Development Planning (DEA&DP) - Cliff Dorse (Biodiversity Management Branch: City of Cape Town: Biodiversity Management Branch) - Bianca Bleuler (Scientific Terrestrial Services) - Stephen van Staden (Scientific Terrestrial Services – possibly join online during the concluding remarks session) - Samantha Daniels (Scientific Terrestrial Services – possibly join online during the concluding remarks session) - Ammaarah Baradien (Zutari) - Wynand Loftus (Zutari) - Corlie Steyn (Zutari – possibly join online during the concluding remarks session)	Wynand
3.	10: 45	Brief background on Biodiversity Offset Process	Bianca
4.	11:00	Brief project background and proposal WWTW – Upgrade	Ammaarah
5.	11:15	Offset area (Option 1) visit	Bianca and Cliff
6.	11:45	Offset area (Option 7) visit	Bianca and Cliff
7.	13:00	Meet at Scientific Terrestrial Services office: Concluding remarks / discussions	All

The outcome resulted in the agreement of the way forward in reference to the Offset Agreement. Please refer to the Final signed Offset Agreement Appendix G.8.4 as well as The Biodiversity Offset Agreement appended as G.8.3.

Further comments from the Biodiversity Branch of the City of Cape Town, Cape Town and the Biodiversity section of DFFE has also been addressed. Please refer to the CRR in this regard. All the Authorities and relevant parties indicated that their comments were well addressed and that issues were resolved.

Additional mitigation measures were added the EMPr and these were also communicated to relevant authorities. The project team also amend the site layout to address the issue raised by the City of Cape Town.

Comment from CCT: *The proposed perimeter road on the northern boundary of the waste water treatment works falls within the existing Conservation Area on the site layout plan. This must be moved into the development footprint within Erf 1205*

Please note: The design of the WWTW has been optimized to allow the plant to be fully located within Erf 1205.

6. Explain how the Western Cape Biodiversity Spatial Plan (including the guidelines in the handbook) has influenced the proposed development.

The Western Cape Biodiversity Spatial Plan (WC BSP) has mapped the site as the following, Critical Biodiversity Areas (CBA) (Terrestrial and Aquatic) and Ecological Support Areas (ESAs). The two CBAs represent the biodiversity priority areas that should be maintained in a natural to near-natural state.

Most of the Macassar WWTW has been mapped as an ESA that should be restored while the Eerste River immediately to the east is mapped as an aquatic CBA and the dunes to the west as terrestrial CBA. There is no biodiversity mapping at the location of the proposed sump.

7. Explain how the proposed development is in line with the intention/purpose of the relevant zones as defined in the ICMA.

An EA was authorised in 2016 for the current and existing WWTW as per the below: *The Coastal Protection Zone (seaward of the coastal edge line delineated by the City of Cape Town) The development of bulk infrastructure (including WWTWs) is regarded as undesirable within the Coastal Protection Zone. However, "Essential activities required for the environmental management of the coastal area" are desirable. The proposed development will improve the quality of the discharge released to the Eerste River and prevent future sewage overflows/ spills – in this way the proposed development may protect the surrounding environment from pollution and may thus support the environmental management of the surrounding coastal area.*

8. Explain whether the screening report has changed from the one submitted together with the application form. The screening report must be attached as Appendix I.

N/A

9. Explain how the proposed development will optimise vacant land available within an urban area.

N/A

10.	Explain how the proposed development will optimise the use of existing resources and infrastructure.
The proposed expansion will link to the existing WWTW. The City of Cape Town will re-use and refurbish infrastructure which is has not reached their useful lifespan.	
11.	Explain whether the necessary services are available and whether the local authority has confirmed sufficient, spare, unallocated service capacity. (Confirmation of all services must be included in Appendix E16).
Please refer to Appendix E.16 .	
12.	In addition to the above, explain the need and desirability of the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013) or the DEA's Integrated Environmental Management Guideline on Need and Desirability. This may be attached to this BAR as Appendix K.
Please refer to Appendix K.1 .	

SECTION F: PUBLIC PARTICIPATION

The Public Participation Process ("PPP") must fulfil the requirements as outlined in the NEMA EIA Regulations and must be attached as Appendix F. Please note that If the NEM: WA and/or the NEM: AQA is applicable to the proposed development, an advertisement must be placed in at least two newspapers.

1. Exclusively for linear activities: Indicate what PPP was agreed to by the competent authority. Include proof of this agreement in Appendix E22.

The current proposal is to refurbish or replace process units, facilities and amenities of the existing Macassar WWTW. The work is proposed to achieve improved treatment of the wastewater and improved operation of the works, for the liquid and sludge process stream. The current proposal will result in an additional operational capacity for the Macassar WWTW to 80ML/d (average dry weather flow). Further to this, the work is proposed within the cadastral boundary of the existing WWTW property.

The linear component entails the following:

2x 11kV MV Cable with a length of 6,941m and a distance of 300mm apart between these cables. The construction of the cables will require a trench depth and width of approximately 1m with a buffer of 500mm on either side of the proposed route. The route of the cables follows the previous Eskom overhead line/cable route and then follow the existing roads heading up to the WWTW. Some sections of the proposed cable route fall within a road servitude. The crossing at Eerste River will either be in the form of a road/pipe bridge crossing or drilling underneath the river.

2. Confirm that the PPP as indicated in the application form has been complied with. All the PPP must be included in Appendix F.

The PPP for the project complies with the requirements of the Environmental Regulation 41 of the EIA Regulations, 2014 (as amended) -

- Fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of the site where the activity to which the application relates is or is to be undertaken; and
- Giving written notice, in any manner provided for in section 47D of the NEMA, to –
 - o the occupiers of the site and, if the applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - o owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - o the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - o (the municipality (Local and District Municipality) which has jurisdiction in the area;
 - o Any organ of state having jurisdiction in respect of any aspect of the activity; and
 - o any other party as required by the Competent Authority;
- Placing an advertisement in -
 - o one local newspaper; or
- Using reasonable alternative methods, as agreed to by the Department, in those instances where a person is desirous of but unable to participate in the process due to— (i) illiteracy; (ii) disability; or (iii) any other disadvantage.

A first round of PPP has been completed for the proposed refurbishment of Macassar WWTW. Refer to appendix F for the public participation report pertaining to the first round of PPP.

The following was undertaken for the first Round of PPP (16 October 2024-15 November 2024):

- Written notifications were sent to all registered I&APs for this application as well as all I&APs that were on the database for the previous EA.
- An advert was placed on Distrikspas Newspaper on 30 October 2024.
- Site notices were on the fence of Erf 1205, Erf 703 and at Macassar Library
- A hard copy of the draft BAR and annexures have been made available at the Macassar Library 10 Bind Avenue, Macassar, Cape Town. Copies were also provided on a memory stick when requested.
- The draft BAR and annexures have been published on the Zutari website for the full 30-day PP period at the following link <https://www.zutari.com/macassar-wwtw-public-participation/>

A second round of PPP has been completed for the proposed refurbishment of Macassar WWTW. Refer to appendix F for the public participation report pertaining to the second round of PPP.

The following was undertaken for the first Round of PPP (15 January 2025 -14 February 2025):

- Written notifications were sent to all registered I&APs for this application as well as all I&APs that were on the database for the previous EA.
- An advert was placed on Distrikspos Newspaper on 15 January 2025. The advert was placed in Afrikaans and English. The advert also invited the public to the second engagement meeting.
- Site notices were on the fence of Erf 1205, Erf 703 and at Macassar Library.
- Flyers inviting the public to the second engagement meeting was placed at the venue and the Macassar Library, the MMC of the City of Cape Town also invited the broader public to the second engagement meeting via Facebook and the Ward Councillor was also informed.
- A hard copy of the draft BAR and annexures have been made available at the Macassar Library 10 Bind Avenue, Macassar, Cape Town. Copies were also provided on a memory stick when requested.
- The draft BAR and annexures and meeting invitation have been published on the Zutari website for the full 30-day PP period at the following link <https://www.zutari.com/macassar-wwtw-public-participation/>

3. Confirm which of the State Departments and Organs of State indicated in the Notice of Intent/application form were consulted with.

The following State Departments were consulted as part of the BA process:

- National Department of Water and Sanitation
- Western Cape Government, Department of Environmental Affairs & Development Planning (various departments)
- Western Cape Government, Department of Agriculture
- Heritage Western Cape
- Cape Nature
- City of Cape Town (various branches – refer I&AP register)
- SANRAL
- Western Cape Government, Department of Health
- Western Cape Government, Department of Transport and Public works
- DFFE (Various departments)
- Department of Environmental Affairs: Oceans and Coast
- City of Cape Town: ERM Biodiversity Management
- National Department: Agriculture, Land Reform and Rural Development

4. If any of the State Departments and Organs of State were not consulted, indicate which and why.

Not applicable-all state departments and organ of the states were consulted

5. if any of the State Departments and Organs of State did not respond, indicate which.

DAFF and WCG: Transport and Public Works

6. Provide a summary of the issues raised by I&APs and an indication of the manner in which the issues were incorporated into the development proposal.

Two rounds of PPP were undertaken. Please refer to Appendix F for the PP Report and the and Appendix F.8 which is the CRR. All comments have been addressed and detailed answers have been prepared by the project team. This document summarizes the key themes, concerns, and communications surrounding the Public Participation Process (PPP) for the proposed upgrade and expansion of the Macassar Wastewater Treatment Works (WWTW) in the Western Cape, South Africa.

I&APs received these answers in letter format as well as in the CRR that was shared.

Summary of the issues:

- Clarification in reference to the extent of vegetation habitats on site has been provided: The development of the proposed upgrade facilities will result in the clearance of approximately 7ha High sensitivity, 2ha Medium sensitivity and 9.3ha Low sensitivity ha of vegetation within an Endangered Ecosystem (Cape Flats Dune Strandveld) as identified in the Revised 2022 National List of Threatened Ecosystems.
- DEA&DP requested the inclusion of certain listed activities. Please note that the explanation and data provided in the letter to DEA&DP on 14 January 2025 (Response to the letter of DEA&DP of 27 November 2024).
- Issues relating to site alternatives, however there is no site alternative since the project relates to the expansion of an existing WWTW.

- Issues related to the non-accommodation of indigenous people (KhoiSan) in the budget for the proposed expansion.
- Amendment to the EMPr to include mitigation measures for underground cables, water quality at the Estuary, dust and odour control (Please note there is a current EA. These issues were thus addressed additionally to the current EA that has already addresses these issues)
- Amendment to the BAR to include the Biodiversity Offset options, SG 21 codes for the offset sites and further explanation on how the mitigation hierarchy was applied to the expansion of Macassar WWTW.
- Impact on Birdlife: Issues related to access for bird watchers to the maturation ponds and the estuary and the impact of the expansion on Birds. These comments have been addressed and solutions were proposed.
- DEA&DP requested that the project addresses social, gender and climate change considerations, these have been addressed in the Need and Desirability report.
- Various comments were raised relating to the technical memorandum of the Biodiversity Offset Report.
- DFFE requested the development of a Search and Rescue Plan to remove and relocated species. This has been added to the EMPr.
- DEA&DP requested comments from the HWC for the HIA. This comment has been received and is included in this BAR and comments have been addressed.
- Various issues outside the scope of this BAR as this BAR application is for the listed activities additional to the current EA and the project description to be updated as described under the "General Project Description" of this BAR.
- Accessibility of Information: Initial difficulties were reported in accessing the project documents, with requests for WeTransfer links due to download times. While Zutari couldn't use WeTransfer for security reasons, alternative links were provided. The accessibility of hard copies at the Macassar library was also mentioned.
- DEA&DP requested a revised comment from the City of Cape Town's Biodiversity Management Department in reference to the perimeter road to be moved into the development footprint of Erf 1205. The project team has amended the project layout to ensure that almost the entire perimeter road is located on erf 1205 and has thus moved further away from the dune area in question, mitigating the impact. The City of Cape Town's Biodiversity Management Department confirmed their support in a revised comment.

Furthermore, please refer to the PP Report for information and the attendance register regarding the site visit that was conducted by the relevant authorities (inclusive of DFFE and DEA&DP) and the client. The aim of the site visit was to address the way forward for the Biodiversity Offset procedure and authorities had chance to familiarise themselves with the project.

Site Visit 20 November 2024			
Project number	Ref. No.: 16/3/31/A3/39/2054/24	Meeting date	2024-11-20
Project name	Macassar Wastewater Treatment Works, Capacity Extension and Associated Infrastructure Refurbishment		
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Item	Time	Program for the site visit	Speaker
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3.	10:45	Brief background on Biodiversity Offset Process	Bianca
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5.	11:15	Offset area (Option 1) visit	Bianca and Cliff
6.	11:45	Offset area (Option 7) visit	Bianca and Cliff
7.	13:00	Meet at Scientific Terrestrial Services office: Concluding remarks / discussions	All

The outcome resulted in the agreement of the way forward in reference to the Offset Agreement. Please refer to the Final signed Offset Agreement Appendix G.8.4 as well as The Biodiversity Offset Agreement appended as G.8.3.

Further comments from the Biodiversity Branch of the City of Cape Town, Cape Town and the Biodiversity section of DFFE has also been addressed. Please refer to the CRR in this regard. All the Authorities and relevant parties indicated that their comments were well addressed and that issues were resolved.

Additional mitigation measures were added the EMP and these were also communicated to relevant authorities. The project team also amend the site layout to address the issue raised by the City of Cape Town.

Comment from CCT: *The proposed perimeter road on the northern boundary of the wastewater treatment works falls within the existing Conservation Area on the site layout plan. This must be moved into the development footprint within Erf 1205*

Please note: The design of the WWTW has been optimized to allow the plant to be fully located within Erf 1205.

Note:

A register of all the I&AP's notified, including the Organs of State, and all the registered I&APs must be included in Appendix F. The register must be maintained and made available to any person requesting access to the register in writing.

The EAP must notify I&AP's that all information submitted by I&AP's becomes public information.

Your attention is drawn to Regulation 40 (3) of the NEMA EIA Regulations which states that *"Potential or registered interested and affected parties, including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in subregulation (1) prior to submission of an application but **must** be provided with an opportunity to comment on such reports once an application has been submitted to the competent authority."*

All the comments received from I&APs on the pre -application BAR (if applicable and the draft BAR must be recorded, responded to and included in the Comments and Responses Report and must be included in Appendix F.

All information obtained during the PPP (the minutes of any meetings held by the EAP with I&APs and other role players wherein the views of the participants are recorded) and must be included in Appendix F.

Please note that proof of the PPP conducted must be included in Appendix F. In terms of the required "proof" the following is required:

- a site map showing where the site notice was displayed, dated photographs showing the notice displayed on site and a copy of the text displayed on the notice;
- in terms of the written notices given, a copy of the written notice sent, as well as:
 - if registered mail was sent, a list of the registered mail sent (showing the registered mail number, the name of the person the mail was sent to, the address of the person and the date the registered mail was sent);
 - if normal mail was sent, a list of the mail sent (showing the name of the person the mail was sent to, the address of the person, the date the mail was sent, and the signature of the post office worker or the post office stamp indicating that the letter was sent);
 - if a facsimile was sent, a copy of the facsimile Report;
 - if an electronic mail was sent, a copy of the electronic mail sent; and
 - if a "mail drop" was done, a signed register of "mail drops" received (showing the name of the person the notice was handed to, the address of the person, the date, and the signature of the person); and
- a copy of the newspaper advertisement ("newspaper clipping") that was placed, indicating the name of the newspaper and date of publication (of such quality that the wording in the advertisement is legible)

SECTION G: DESCRIPTION OF THE RECEIVING ENVIRONMENT

All specialist studies must be attached as Appendix G.

1. Groundwater

1.1.	Was a specialist study conducted?	YES	NO
1.2.	Provide the name and or company who conducted the specialist study.		
	N/A		
1.3.	Indicate above which aquifer your proposed development will be located and explain how this has influenced your proposed development.		
	N/A		
1.4.	Indicate the depth of groundwater and explain how the depth of groundwater and type of aquifer (if present) has influenced your proposed development.		
	N/A		

2. Surface water

2.1.	Was a specialist study conducted?	YES	NO
2.2.	Provide the name and/or company who conducted the specialist study.		
	BlueScience: Ms Toni Belcher and Dana Grobler		
2.3.	Explain how the presence of watercourse(s) and/or wetlands on the property(ies) has influenced your proposed development.		

An environmental authorisation is required for the proposed additional clearance of indigenous vegetation (Refer DEA&DP letter dated 26 July 2023, appendix L.1) The Freshwater Impact Study placed therefore emphasis on the clearance of vegetation and associated impacts.

The following aquatic features have been identified namely the (i) Lower Eerste River; (ii) Eerste River Estuary; and (iii) Remnant wetland areas. The status quo is the result of ongoing disturbance of the topography in the area, particularly in association with the WWTW.

Background and proposal:

The existing Macassar Wastewater Treatment Works is located along the False Bay coastline at Macassar. Due to the significant development in the catchment area, this plant needs to be further extended. The upgrades will entail the construction of additional facilities and infrastructure for the treatment of wastewater on the property. It is proposed to expand the hydraulic capacity of the WWTW by 50ML/d to a final design capacity of 80ML/d for the entire, upgraded WWTW. It is also proposed to install additional electrical infrastructure as part of the refurbishment to supply power to the site from the nearest Eskom substation.

Aquatic features that are likely to be impacted by the proposed upgrade to the Macassar WWTW are the lower Eerste River and Estuary and some largely artificial wetland areas associated with past activities at the WWTW. The lower river and estuary are considered to be in a severely modified ecological state as a result of flow modification and water quality impacts arising from the discharge of treated wastewater from several WWTWs in the Kuils and Eerste River Catchment as well as storm water runoff. There is also an interbasin transfer of water into the upper Eerste River for irrigation purposes in the lower Eerste River.

The site is located adjacent to the lower reaches and estuary of the catchment of the Kuils / Eerste River (DWS quaternary catchment G22H) which is situated on Erf 1205, Macassar. The proposed powerline route follows the previous Eskom overhead line/cable route and existing roads heading up to the works where it falls within a road servitude. Both the WWTW and the WWTW are primarily within the floodplain of the Eerste River with the powerline extending into the wider floodplain of the Lourens River. This area falls within the eastern region of the CCT and is approximately 36 km south-east of Cape Town. The Eerste River is a relatively short river (roughly 40km) that originates in Jonkershoek northeast of Stellenbosch and enters False Bay just southeast of the site.

Lower Eerste River

The lower Eerste River is of moderate Ecological Importance and Sensitivity. This is largely due to the indigenous fish that occur within the river system and the link of the lower river with the estuary and marine protected area. The Eerste/Kuils River had three primary freshwater fish species, Cape Galaxias *Galaxias zebratus*, Cape kurper Sandelia *capensis* and an undescribed species of redfin thought to be closely related to the Berg River redfin *Pseudobarbus phlegethon*. These species were recorded in the upper reaches of the Eerste River and may have occurred in the project area. African longfin eels *Anguilla mossambica* have also been recorded in the Eerste River. Marine and estuarine migrants such as estuarine round herring *Gilchristella aestuaria*, Cape Silverside *Atherina breviceps* and freshwater mullet *Myxus capensis* have also been recorded in the lower river system.

Eerste River Estuary

The Eerste River Estuary is considered an important habitat for birds in the local context of False Bay in terms of the overall numbers and diversity of birds that it supports. At a national level, the estuary supports up to 6% of the estimated national coastal avocet population (Turpie 2000). The estuary is also noted for its small, but regular, population of the threatened African Black Oystercatcher (a red data species). Overall, however, the estuary is not considered important in a national or international context. The Recommended Ecological Category for the estuary was a D category (Largely modified).

Wetlands

The wetland areas associated with the Eerste River Estuary adjacent to the Macassar WWTW. Wetland 1 in Figure 3 is in a highly modified state while wetland areas in Figure 4 are largely artificial and are the result of past activities at the WWTW. The common *Phragmites australis* reed dominates the banks of the estuary together with some sedges *Scirpus* sp. Some intertidal salt marsh vegetation also occurs such as glasswort *Sarcocornia* sp. Vegetation within the artificially created and permanently inundated wetland (Wetland 2) is dominated by bulrushes (*Typha capensis*) while vegetation within the past oxidation or settling pond areas within the dunes (Wetland 3) consists of European weeds and alien grasses such as the saltwater couch *Paspalum vaginatum* with some arum lilies *Zantedeschia aethiopica*.



Figure 3: Aerial photograph of the maturation ponds





Figure 4: Views of the maturation ponds various wetland areas 2 and 3

Both wetland areas can be considered to be in a largely to severely modified ecological condition as a result of topographical changes, flow and water quality modification, removal of indigenous vegetation and growth of invasive alien plants. The wetland areas associated with the Macassar WWTW are considered to be of a low to very low ecological importance and sensitivity with the only ecological importance and sensitivity largely being associated with the Eerste River Estuary and the marine Protected Area.

The Eerste River and Estuary lie immediately to the east of the site, while to the west there is still largely natural vegetation remaining. Wetland habitat has been mapped within and adjacent to the WWTW, however much of it is artificial and has formed as a result of the works.

Proposed Eskom cable

In terms of the proposed new electrical infrastructure, the impact of the powerline at the Eerste River crossing and along the road reserve will be negligible as it will be within the footprint of already disturbed areas. The only area of concern along the route is thus along the eastern extent where a trench is proposed to be excavated to install the cable. The wetland in this area is a perched system, with seasonal inundation occurring following rainfall periods. The wetland habitat and functionality are already largely modified as a result of existing roads, rails, pipelines and powerlines constructed through the floodplain. Installation of the powerline could thus be adequately mitigated such that the potential impacts would be low. The proposed installation of the powerline within the western extent within the disturbed road reserve and attaching the cable to the bridge crossing the Eerste River is supported.

Existing EA and discharge

Due to the existing discharge of treated wastewater from the Macassar WWTW into the Eerste River, the estuary has already been considerably altered and thus the expected impact of an upgrade to this WWTW is likely to be less significant but the proposed increase in the discharge volume is nevertheless substantial. The proposed upgrade to the existing WWTW will result in an improvement in the final effluent quality, and as such, one could expect that the proposed upgrade would at least improve the existing water quality situation in the Eerste River Estuary. Thus, of greater concern is the large increase in the volume of the treated wastewater that would be discharged to the estuary as well as the cumulative impact of increased wastewater discharge volumes throughout the catchment of the Kuils / Eerste River System where all four large WWTW (Bellville, Stellenbosch, Zandvliet and Macassar) are needing to be increased in terms of their capacities.

Macassar WWTW is currently operated in terms of a water use licence (Licence No. 19/G22H/F/582), dated 21 July 2011, which allows for treated wastewater to be discharged into the Kuils / Eerste River. The current WULA amendment is an amendment which covers the following:

1. An increase to the amount of water to be released annually into the Eerste River, namely 80 Ml/day over 365 days
2. Request for relaxation of the effluent criteria for phosphate (5 mg/l) and nitrate/nitrite (8 mg/l).

Potential other water uses activities that may not be included in the current WULA and are of relevance to the proposed upgrade activities for the WWTW are:

- Section 21(c): Impeding or diverting the flow of water in a watercourse; and
- Section 21(i): Altering the bed, banks, course or characteristics of a watercourse.

In terms of the definitions provided, activities included under Sections 21(c) and 21(i) are (amongst others) the construction of roads, bridges, pipelines, culverts and structures for slope stabilisation and erosion protection. DWS will need to be approached to guide whether approval for Section 21(c) and (i) water uses would also be required in addition to Section 21(f) – discharge of treated wastewater to a water resource, Section 21(e) – irrigation of treated wastewater - and Section 21(g) - disposing of waste in a manner which may detrimentally impact on a water resource. This decision may be influenced by the location of the new expansion works.

Summary

The National Biodiversity Assessment for Estuaries (2011) indicated that the Eerste River Estuary should be given a high priority for rehabilitation due to the poor condition of the estuary, as well as the fact that the estuary occurs within a Marine Protected Area. The lower Eerste River is considered to be of moderate Ecological Importance and Sensitivity due to the indigenous fish that occur within the river system and the link of the lower river with the estuary and marine protected area. The lower river and estuary have also been mapped as a FEPA wetland/estuary.

The wetland areas likely to be impacted by the proposed activities are considered to be in a largely to severely modified ecological condition. They provide limited goods and services and are of low ecological importance and sensitivity. Loss of these wetland areas due to the proposed expansion of the WWTW would thus not be considered to be significant.

Refer to **Appendix B2.1a – B2.1c** for the sensitivity maps pertaining to Freshwater.

3. Coastal Environment

3.1.	Was a specialist study conducted?	YES	NO
3.2.	Provide the name and/or company who conducted the specialist study.		
N/A			
3.3.	Explain how the relevant considerations of Section 63 of the ICMA were taken into account and explain how this influenced your proposed development.		
N/A			
3.4.	Explain how estuary management plans (if applicable) has influenced the proposed development.		
N/A			
3.5.	Explain how the modelled coastal risk zones, the coastal protection zone, littoral active zone and estuarine functional zones, have influenced the proposed development.		
N/A			

4. Biodiversity

4.1.	Were specialist studies conducted?	YES	NO
4.2.	Provide the name and/or company who conducted the specialist studies.		
Nick Helme from Nick Helme Botanical Surveys			
4.3.	Explain which systematic conservation planning and other biodiversity informants such as vegetation maps, NFEPA, NSBA etc. have been used and how has this influenced your proposed development.		

An environmental authorisation is required for the proposed additional clearance of indigenous vegetation (Refer DEA&DP letter dated 26 July 2023, appendix L.1). The Biodiversity Impact Study placed therefore emphasis on the clearance of vegetation and associated impacts.

The following systemic conservation planning and biodiversity tools were utilised:

- SANBI Vegetation Maps 2018;
- Terrestrial ecosystem threat status and
- City of Cape Town Biodiversity Network (CBA/ESA/ONA, etc);
- Identify and locate any (likely) plant and terrestrial faunal Species of Conservation Concern in the study area; and based on observation, literature and iNaturalist website review.

The site was visited on 12 October 2023. This was late in the optimal winter – spring flowering season in this is mainly a winter rainfall area, and most (but not all) of the few likely geophytes and the many annuals were thus at the end of their flowering (and few were evident and identifiable), whilst all perennial plants were identifiable. There were thus some minor seasonal constraints on the accuracy of the botanical findings, but more than enough evidence was present for the confidence in the botanical findings to be high. Vegetation patterns were very clear, with degree of disturbance being the key driver of habitat quality.

The study area was walked, and all plants on site were noted. Photographs of some of the key species were made using a *Fuji mirrorless slr* camera and a Xiaomi cell phone and have been uploaded to the biodiversity website iNaturalist.org. Satellite imagery dated January 2023 (and earlier) was used to inform the Biodiversity assessment. It is assumed that any development would result in the permanent loss of all natural or partly natural vegetation and terrestrial faunal habitat in that area. Faunal observations were incidental during the site visit, and no formal trapping or surveying of any sort was undertaken, and thus most of the faunal species present are likely to have been missed. Faunal observations on iNaturalist.org were used to inform the faunal survey. One species of frog was calling during the site visit (*Breviceps rosei* ssp. *rosei*) and could be easily identified by call.

The Southwest Fynbos bioregion is characterised by relatively high winter rainfall, strong rainfall gradients, poor, sandy soils, high topographic diversity, and large urban areas and high levels of alien invasive vegetation. Due to this combination of factors the loss of natural vegetation in this bioregion has been severe (>60% of original extent lost within the region), and the bioregion has a very high number of threatened plant species (Raimondo *et al* 2009).

The City of Cape Town Biodiversity Network (Refer Figure 5) shows that CBA1b (Critical Biodiversity Area 1b, good condition) vegetation is mapped for about 60% of the target area. The degraded areas are mapped as No Natural Vegetation and OESA (Other Ecological Support Area). This map has good congruence with the groundtruthed sensitivity map shown in Figure 5, and the mapping is thus supported.

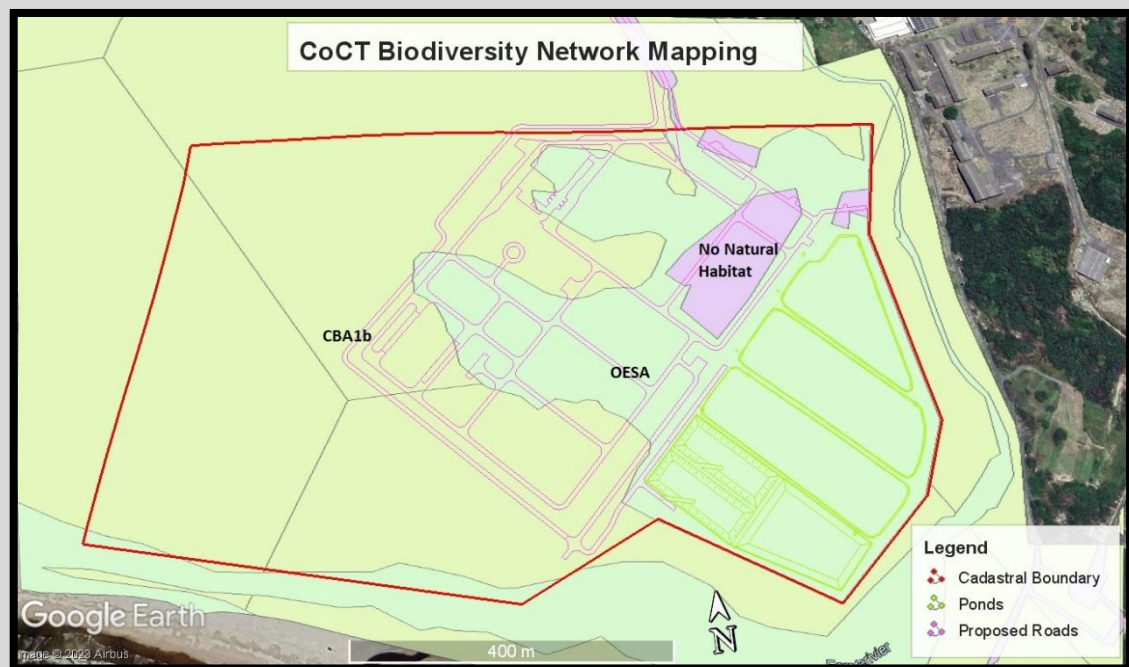


Figure 5: Extract of the City of Cape Town Biodiversity Network (Holmes *et al* 2018) for the area, showing that all natural areas are mapped as CBA1b, with the disturbed areas being OESA (Other Ecological Support Area) and No Natural Habitat

According to the SA Vegetation Map the original natural vegetation in virtually all the study area is Cape Flats Dune Strandveld (Mucina & Rutherford 2018). Based on the ground-truthing of the specialist this has been confirmed, and no copy of the vegetation map is provided as it adds little value.

Cape Flats Dune Strandveld is now gazetted as Endangered on a national basis (Government of South Africa 2022), with less than 60% of its total original extent remaining intact, less than 5% conserved, and a national conservation target of 24% (Rouget *et al* 2004). The unit supports a moderate number of threatened and endemic plant species, and occurs on deep, nutrient

poor, alkaline marine sands in the area between Macassar, Cape Point and Blouberg. The vegetation type does not need fire for optimal ecological functioning (Helme *et al* 2016). Ongoing loss to this habitat type is a major problem and concern, notably in the Cape Flats, where even "formal" conservation areas are being lost to land invasions, sand mining and numerous other pressures (such as in Driftsands NR and Macassar NR, refer to Figure 6).



Figure 6: View east from near the northern edge of the study area, with High sensitivity vegetated dunes on the left, and kikuyu grass dominated sludge pond on the right (low sensitivity), with existing WWTW beyond.

The project team has amended the project layout to ensure that almost the entire perimeter road is located on erf 1205 and has thus moved further away from the dune area in question, mitigating the impact. The affect dune area will be approx. 200m.

4.4.	Explain how the objectives and management guidelines of the Biodiversity Spatial Plan have been used and how has this influenced your proposed development.
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The Biodiversity Spatial Plan for the Western Cape (WC BSP) has mapped the site Critical Biodiversity Areas (CBA) (Terrestrial and Aquatic), Ecological Support Areas (ESA) (Critical and Other), Other Natural Remaining Areas and No Natural Remaining Areas. The first two mentioned categories represent the biodiversity priority areas that should be maintained in a natural to near-natural state.

Most of the Macassar WWTW has been mapped as an ESA that should be restored while the Eerste River immediately to the east is mapped as an aquatic CBA and the dunes to the west as terrestrial CBA. There is no biodiversity mapping at the location of the proposed sump, refer to Figure 7.

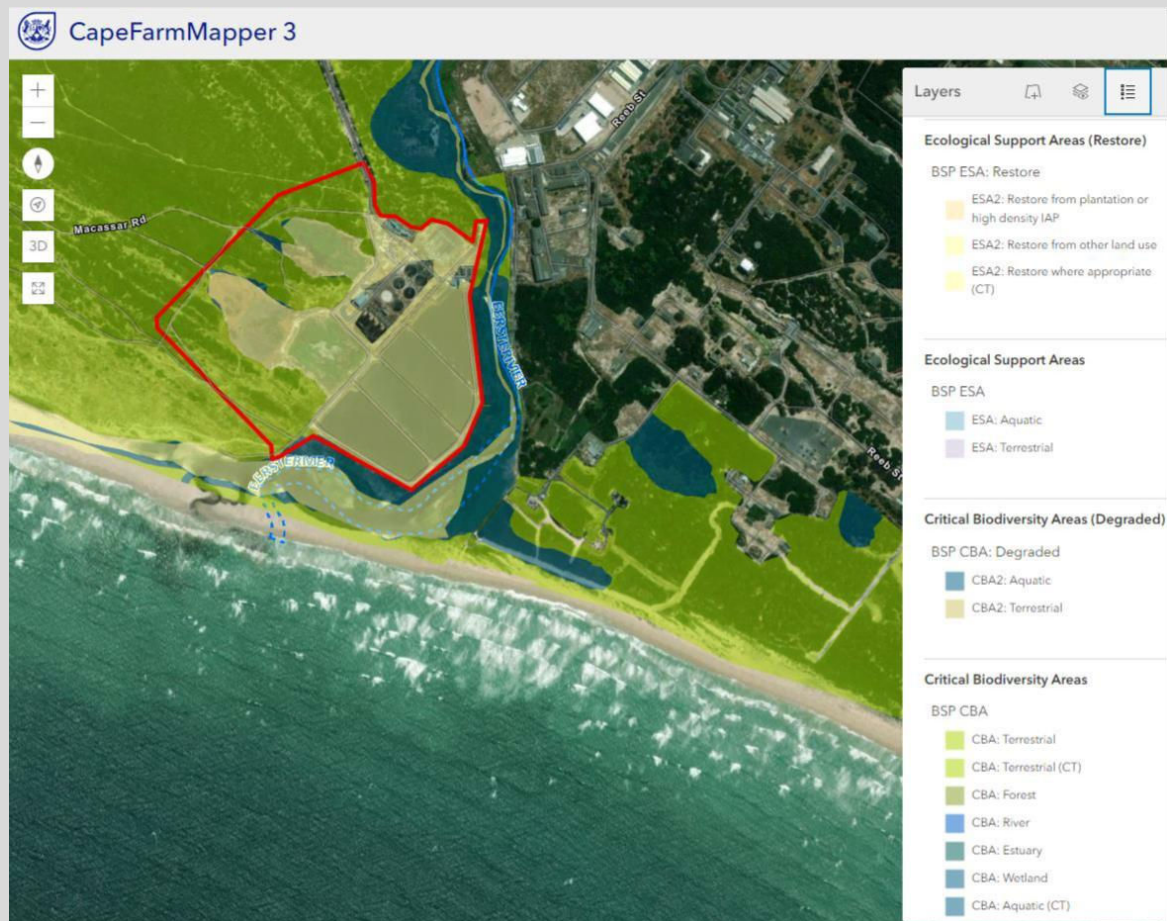


Figure 7:2017 Western Cape Biodiversity Spatial Plan for the area (obtained from CapeFarmMapper; 2023)

The Macassar WWTW and its surrounding open area have been mapped as a Transformed Site of Conservation Significance (OESA - pink area in Figure 8) or Irreplaceable High & Medium Condition site in terms of the terrestrial vegetation cover (CBA1B - maroon areas in Figure 8). Loss of CBA habitat will probably result in the extinction of some species and the inability to attain conservation targets. Conservation, low-impact recreation, and environmental education are seen as compatible activities for these areas. The ESA areas may be required for the long-term ecological functioning of neighbouring natural ecosystems. The loss would result in the degradation of ecological processes and potential loss of biodiversity elements. The objective for these areas is to maintain as open space and where appropriate restore degraded land to natural or near natural for improved ecological functioning. The coastline between the Eerste River Estuary and the Lourens River Estuary has also been demarcated as a Marine Protected Area.

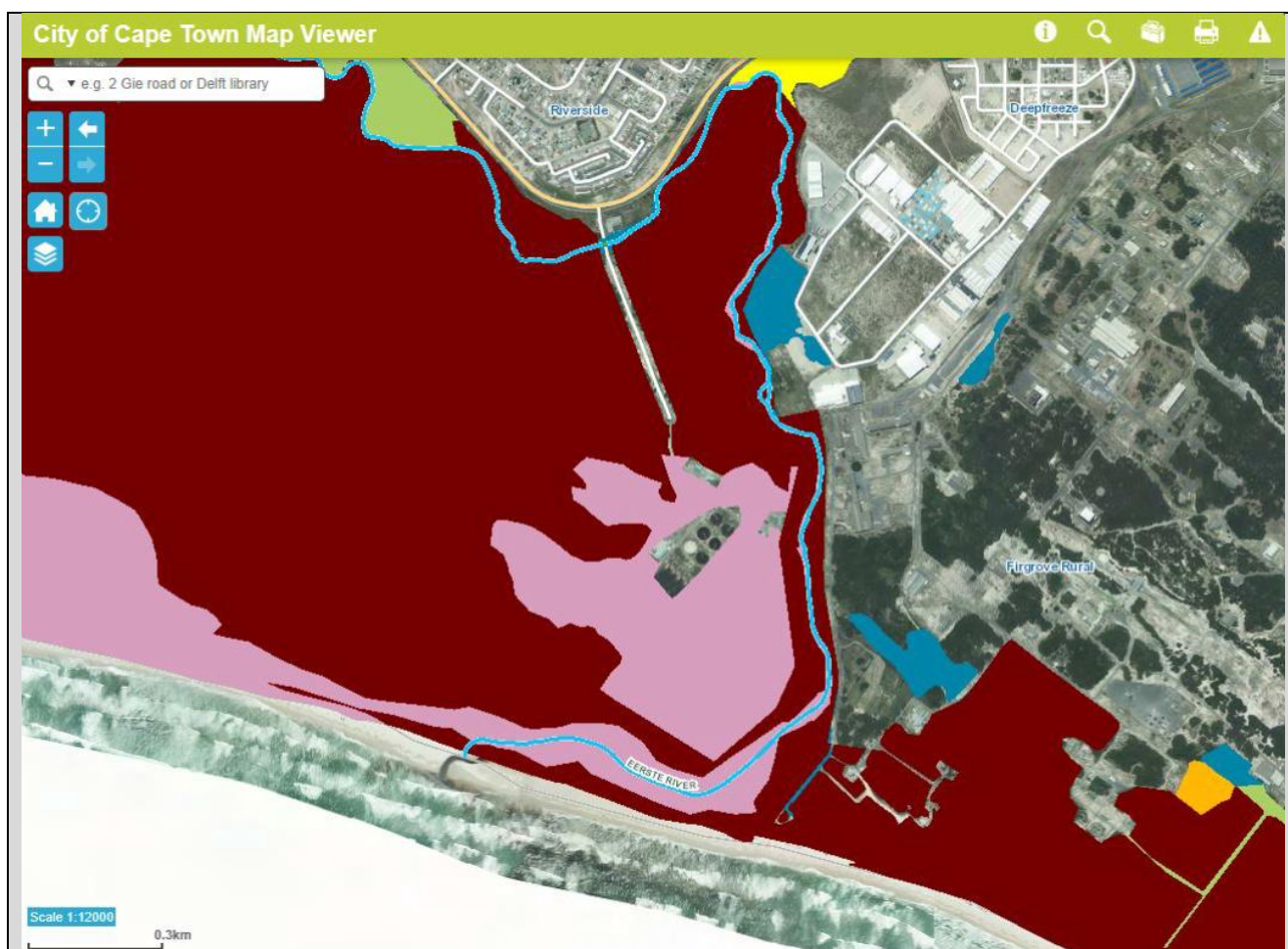


Figure 8:City of Cape Town Biodiversity Network for the area (City of Cape Town Map Viewer, 2023). Below is the legend.

	Critical Biodiversity Area	Critical Biodiversity Area Name
	Protected: In Perpetuity	Protected Area that is Proclaimed in Perpetuity
	Protected: Not In Perpetuity	Protected Area that is Proclaimed for a Limited Period
	Conservation Area	Conservation Area that is not Yet Proclaimed
	CBA 1a	Irreplaceable Core Flora site
	CBA 1b	Irreplaceable High & Medium Condition site
	CBA 1c	Minset (Minimum Set C-plan algorithm) High & Medium Condition site
	CBA 1d	Irreplaceable Consolidation site
	CBA 1e	Connectivity Site
	CBA 2	Restorable Irreplaceable site
	CESA	Unselected Natural Vegetation of Conservation Significance
	OESA	Transformed Site of Conservation Significance
	Other Natural vegetation	Unselected Natural Vegetation in high, medium or restorable condition
	No Natural Habitat	Unselected Transformed Site

The WCBSP's specific objectives are to:

- Serve as the primary source of biodiversity information for all land use planning and decision-making in the Western Cape, to be used in conjunction with information from other sectors.

The WCBSP was used by the EAP and the specialists in considering the biodiversity information applicable to the property.

- Ensure that the Western Cape's ecological infrastructure is maintained, ecosystem fragmentation and loss is avoided, and the resilience of ecosystems and human communities to the impacts of climate change is strengthened.
The preferred refurbishment (Alternative 1 Option 1, the subject of this BAR) has been identified as the best option, Refer to Appendix N.1 for motivations.
- Provide a spatial framework for environmentally sustainable development and resource use.
The WCBSP was used to consider the development within geographic area.
- Inform municipalities and other land use planners and regulators about spatial biodiversity priorities in order to promote the wise management of biodiversity, and to streamline and monitor land use decision-making.
The municipality has incorporated the WCBSP spatial data into their SDF.
- Focus on-the-ground conservation and restoration action in biodiversity priority areas, thus supporting CapeNature in implementing its biodiversity mandate, including working with landowners to consolidate and expand the provincial protected area network.
The co-operation with landowners is critical, and the applicant is committed to ensuring that the property retain its importance in conservation.
- Mainstream biodiversity conservation into the daily activities of a range of development and production sectors whose primary business is not biodiversity conservation, thus promoting greater synergy between biodiversity conservation and development through implementation of the WCBSP.

Refer to the summary below.

About 21.5ha of the study area has been mapped as High ecological sensitivity (refer Figure 9) about 10ha is mapped as Medium sensitivity, and the rest is mapped as Low sensitivity.

All High sensitivity areas support largely natural vegetation of an Endangered type (Cape Flats Dune Strandveld), with at least two plant Species of Conservation Concern (SoCC) present in these areas. These areas are essentially all mapped as CBA1b in the City's BioNet (Refer figure 9).

The Medium sensitivity areas are areas that support more recently colonised dunes, with structurally much simpler vegetation (not trees or large shrubs), and lower species diversity (fauna and flora). Most of these areas are also mapped as CBA1b, but do not support any plant SoCC.

Low sensitivity areas have been heavily disturbed, support little or no natural vegetation, and no plant SoCC.

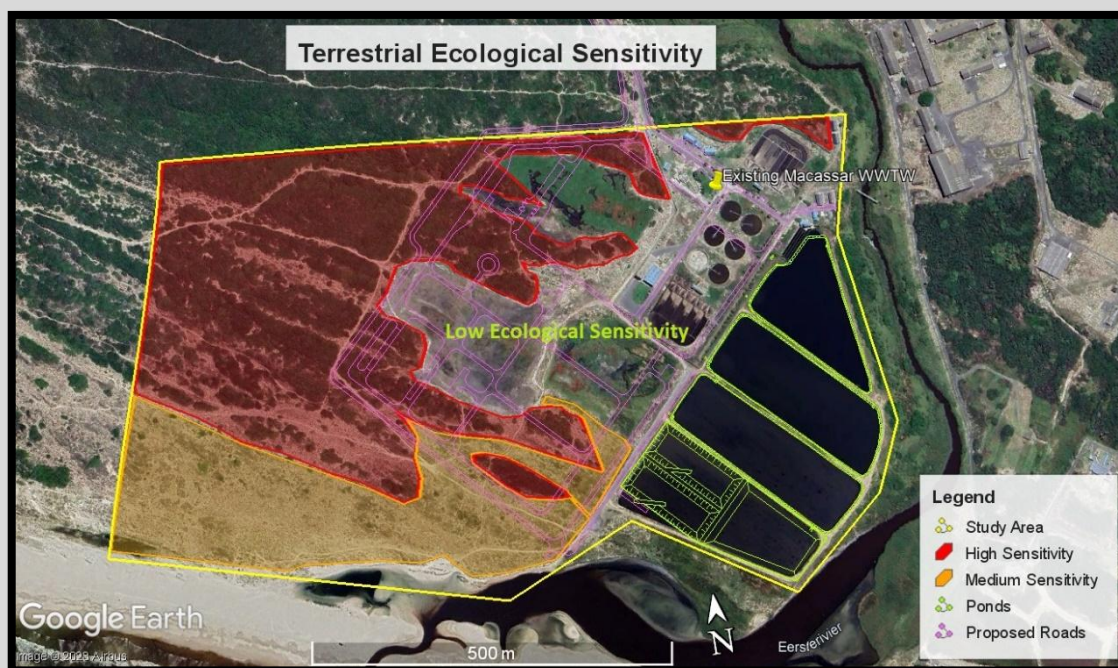


Figure 9: Ecological Sensitivity Map of the study area, overlaid on the proposed development layout (pink lines). All unshaded areas with the study area are deemed to be of Low sensitivity.

Two 11 kV MV cables (laid 300mm apart) about 6941m long will be laid underground and will require a trench about 1m deep and 1m wide, with a buffer of 500mm either side of the proposed route.

Starting from the WWTW the route initially goes through High sensitivity Dune Strandveld in an area of dune ridges, and then crosses Tie road and the Eerste River and runs along the southern edge of the M9, in another High sensitivity section of about 500m long (two sections), making the total High sensitivity section about 1300m long (see Figure 10). The rest of the route, all the way to the Paardevlei substation, is then in disturbed ground along road or in old, cultivated lands, and is deemed to be of Low ecological sensitivity, although it does cross areas that are seasonally wet and occasionally flooded.

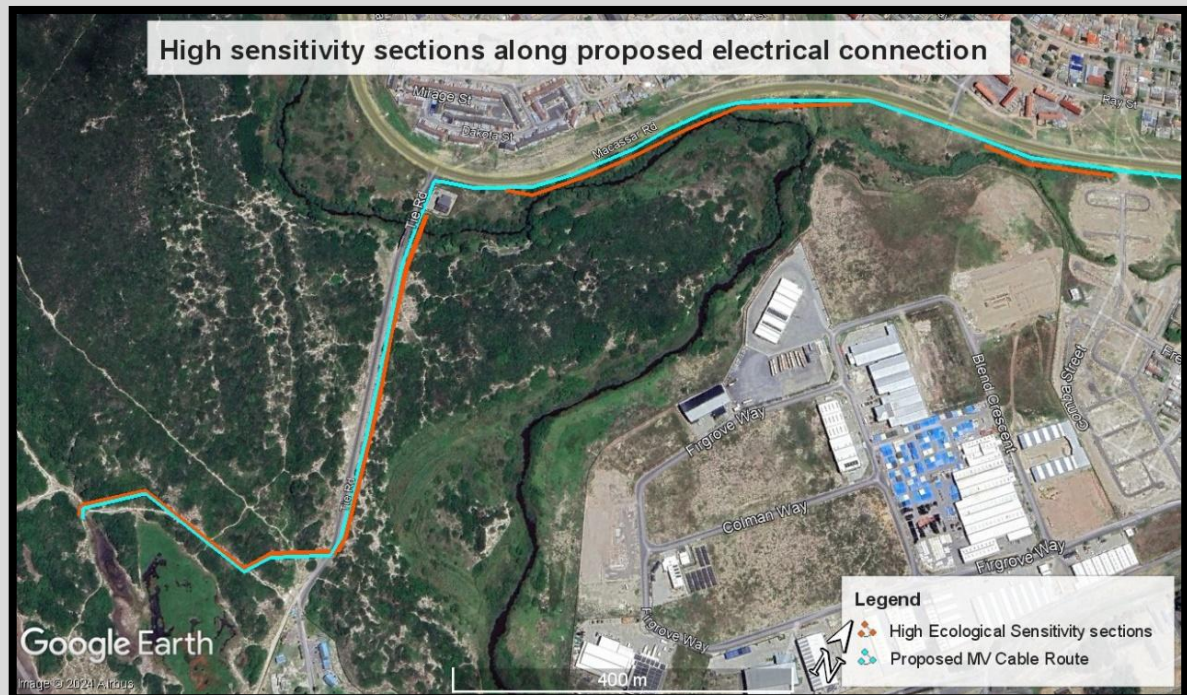


Figure 10: Ecological Sensitivity Map of the electrical connection route. All unshaded areas along the route are deemed to be of Low sensitivity, and this map shows all the High sensitivity sections.

Two 11 kV MV cables (laid 300mm apart) about 6941m long will be laid underground and will require a trench about 1m deep and 1m wide, with a buffer of 500mm either side of the proposed route. Starting from the WWTW the route initially goes through High sensitivity Dune Strandveld in an area of dune ridges, and then crosses Tie Road and the Eerste River and runs along the southern edge of the M9, in another High sensitivity section of about 500m long (two sections), making the total High sensitivity section about 1300km long. The rest of the route, all the way to the Paardevlei substation, is then in disturbed ground along road or in old, cultivated lands, and is deemed to be of Low ecological sensitivity, although it does cross areas that are seasonally wet and occasionally flooded.

Please refer to **Appendix B2.1a and B2.1b** for the maps indicating the vegetation sensitivities as well as Figure 11 below.



Figure 11: Map indicating the CBA, OESA and Indigenous vegetation

4.5.	Explain what impact the proposed development will have on the site-specific features and/or function of the Biodiversity Spatial Plan category and how has this influenced the proposed development. The vegetation on the site is consistent with the Western Cape BSPs classification of CBA1b. Loss of CBA habitat will probably result in the extinction of some species and the inability to attain conservation targets. Conservation, low-impact recreation and environmental education are seen as compatible activities for these areas. The ESA areas may be required for the long-term ecological functioning of neighbouring natural ecosystems. The loss would result in the degradation of ecological processes and potential loss of biodiversity elements. The objective for these areas is to maintain as open space and where appropriate restore degraded land to natural or near natural for improved ecological functioning. Loss of areas mapped as CBA1b is highly undesirable from a conservation perspective, as it piles a lot of extra pressure on all remaining natural areas to "absorb the burden of adequate habitat provision to ensure ecological viability". Very little can mitigate loss of CBAs in a system that is already Endangered.
4.6.	If your proposed development is located in a protected area, explain how the proposed development is in line with the protected area management plan. The proposed associated infrastructure for this application is located inside Macassar East Conservation Area, which is in process for proclamation as a Section 23 Nature Reserve under the Protected Areas Act 2003.
4.7.	Explain how the presence of fauna on and adjacent to the proposed development has influenced your proposed development.

Specialist site visit: The site was visited on 12 October 2023. This was late in the optimal winter – spring flowering season in this mainly winter rainfall area, and most (but not all) of the few likely geophytes and the many annuals were thus at the end of their flowering (and few were evident and identifiable), whilst all perennial plants were identifiable. There were thus some minor seasonal constraints on the accuracy of the botanical findings, but more than enough evidence was present for the confidence in the botanical findings to be high. Vegetation patterns were very clear, with degree of disturbance being the key driver of habitat quality.

Conclusion:

The site sensitivity for Terrestrial Biodiversity is confirmed as high based on the following reasons to support this finding:

- About half the proposed development area supports vegetation and faunal habitat that is mapped as High or Medium sensitivity and is also mapped as CBA1b in the City's Biodiversity Network. These areas should ideally not be lost to development.
- The loss of the High and Medium sensitivity areas on site would be associated with a High negative ecological impact, and the preferred alternative from an ecological perspective is thus currently the No Go alternative.
- All mitigation measure recommended by the biodiversity specialist must be implemented if development is authorised.
- Ideally a biodiversity offset should be considered to help minimise the unavoidable High negative ecological impacts of the proposed development, even though High negative impacts are supposed to present a No Go (Red Flag) scenario in terms of offsets (Dept. of Forestry, Fisheries & Environment 2022). Should an offset be required by the authorities then extensive negotiation would be required with all relevant parties, as finding a suitable offset (conserving the same habitat, but of a much larger extent) within the City of Cape Town would not be easy. Essentially no feasible offset areas are known to this specialist, except perhaps in the northern fringes of the City, north of Blouberg (near Atlantis).

Way forward in reference to the Biodiversity Offset Process. Please refer to Appendix G8 for the Biodiversity Offset Memo.

Scientific Terrestrial Services (Biodiversity offset specialist) has been appointed to conduct the biodiversity offset process and the following is proposed in this regard:

Phase 1 (Memo)

The objective of the project is to prepare a biodiversity offset report consistent with the National Biodiversity Offset Guideline published in the Government Gazette No. 46088 on 25 March 2023 (NBOG) (2023).

The development of the biodiversity offset initiative will be undertaken in two phases. Phase 1 will be a set approach that will include a consultative meeting with the relevant authorities. This will inform the feasibility of the offset/compensation initiative. Input and recommendations from the authorities will then be used to target offset sites to be considered for use in the final offset/compensation initiative that will be investigated as part of Phase 2.

Phase 2 (Strategy) will be initiated by undertaking more detailed investigations of the target offset site(s). A biodiversity offset implementation plan will be developed along with appropriate management, rehabilitation and restoration requirements as well as monitoring and auditing requirements. This phase will be and concluded with a presentation of the proposed offset to the relevant authorities in support of the final formal offset report for approval as part of the authorisation. The process will also include preparation of draft Memoranda of Understanding (MOU's) between the relevant Stakeholders including landowners of offset sites, the mining company and the relevant government stakeholders. **Appendix G8 for the Biodiversity Offset Memo**

The WWTW expansion project represents a significant infrastructural upgrade that is critical to accommodate the increasing wastewater load from the growing population and associated urbanisation. However, this expansion will result in unavoidable residual impacts on the surrounding environment, particularly the loss of an EN vegetation type, including the Cape Flats Dune Strandveld.

This development is overwhelmingly to the benefit of the local community and water resource conservation as well as protecting the Helderberg MPA. Through the application of the mitigation hierarchy, efforts to avoid, minimize, and rehabilitate impacts have been carefully considered. However, given the extent of unavoidable habitat loss, a biodiversity offset has been deemed necessary to ensure appropriate mitigation of the loss of biodiversity. This strategy aligns with best practice principles as outlined in the 2023 Biodiversity Offset Guidelines, ensuring compliance with national conservation objectives.

Following a detailed alternatives analysis, Offset Options 1, 2 and 5 were identified (refer Appendix G8) as the most viable candidates to meet the offset requirements for the project. These options are located within key biodiversity areas, including CBAs, and offer (in part) long-term ecological viability through state-owned land, reducing challenges related to land-legal issues and increasing the potential for successful stewardship agreements. With a combined extent of approximately 528 ha, these options adequately address the 302-ha (residual impact) required for offset purposes and allow for some flexibility in final planning, thus adequately compensating for the residual impacts associated with the proposed expansion activities.

In addition to the above-mentioned memo (Phase 1) a Biodiversity Offset Strategy (Appendix G.8.3) and Biodiversity Offset Agreement (Appendix G.8.4) was developed:

The proposed new facilities at the WWTW will extend into undeveloped areas adjacent to the existing WWTW. Part of the proposed development area appears to have been utilized historically (>10 years ago) as oxidation ponds/sludge beds, but these are no longer in use and have largely re-vegetated, albeit in a degraded manner. The proposed development will

also result in the discharge of additional treated wastewater to the Eerste River Estuary. A basic assessment is currently being undertaken to obtain environmental authorization for the project. According to best practice, the offset principles indicate that a biodiversity offset would most likely be required.

The Strategy aims to present a detailed specialist report that includes: (1) the identification, selection, and screening of potential offset options within the relevant property and/or broader region, along with an evaluation of their suitability to meet offset requirements, (2) an overview of the habitat characteristics associated with the WWTW and the identified Target Offset Site, (3) offset quantum analyses, which encompasses a Residual Impact Assessment and outlines the quantum of the Offset Target Ratios, and (4) a Rehabilitation and Management Plan that outlines the necessary steps required to manage the offset sites in perpetuity.

The Terrestrial Assessment states that a biodiversity offset would be required, to help minimise the unavoidable High negative ecological impacts of the proposed development. The impact entails the loss of Cape Flats Dune Strandveld which is gazetted as Endangered on a national basis. The development of the proposed upgrade facilities will result in the clearance of approximately 7ha High sensitivity, 2ha Medium sensitivity and 9.3ha Low sensitivity of vegetation within an Endangered Ecosystem (Cape Flats Dune Strandveld) as identified in the Revised 2022 National List of Threatened Ecosystems

Several options were evaluated on a desktop basis as potential offset sites as part of the Strategy. Eight (8) options were identified as potential candidate sites (given their location within specific vegetation types, associations with the National Protected Area Expansion Strategy (NPAES), proximity to protected area (as per the South African Protected Area Database (SAPAD), etc).

Available like-for-like offset options are limited due to the extensive development and urbanisation within the Cape Flats Dune Strandveld. Consequently, there is a scarcity of intact Cape Flats Dune Strandveld within the Cape region. This makes identifying suitable offset areas particularly challenging, especially when considering the need for large, contiguous sites and the difficulties associated with purchasing or establishing stewardship agreements with existing landowners. As such, trading up offsets were considered where necessary.

Offset Options 1, 7 and 8 were identified as the most suitable candidates for offset purposes. These options received the highest total scores of 21, 21 and 24, respectively in the alternatives analysis, indicating their strong alignment with the required offset criteria. These three options are also considered especially favourable as they are located within key biodiversity areas, such as CBA habitat and part of CoCTs Protected Area Implementation Plan (information supplied by CoCTs Biodiversity Management Branch (BMB)).

Option 1 is located within the WWTW property thus negating the need for additional purchasing of property. Options 7 and 8 are both state-owned, making them ideal for long-term stewardship agreements. State-owned land presents fewer challenges compared to privately owned land, where high asking prices and reluctance to enter into stewardship agreements often hinder progress.

Options 1 and 7 are located within the EN Cape Flats Dune Strandveld, thus satisfying the 'like-for-like' criteria pertaining to vegetation type. Although Option 8 is not located within the same vegetation type as that of the WWTW (i.e., EN Atlantis Sand Fynbos and EN Swartland Granite Renosterveld vs. EN Cape Flats Dune Strandveld), the use of Option 8 as an offset is still considered acceptable as it involves an even trade of EN vegetation for EN vegetation.

Moreover, the use of the EN Swartland Granite Renosterveld is considered acceptable for offset purposes as it can be seen as a specific type of "trading-up" offset. Although the associated trade-up would not entail trading up of a vegetation type of increased threat status, the use of the EN Swartland Granite Renosterveld would entail trading-up of a vegetation type with a significantly lower Remaining Ecosystem Extent percentage (REE %). That is, the REE % for the EN Cape Flats Dune Strandveld is 56% whereas, the REE % associated with the EN Swartland Granite Renosterveld is 20% (2023 Biodiversity Offset Guidelines).

Furthermore, Option 8 provides important habitat for a significant number of SCC, including 89 floral SCC (eight (8) critically endangered (CR) species, 28 EN species, 28 vulnerable (VU) species, and one (1) near threatened (NT) species), 6 bird species (four (4) EN species, one (1) VU species, and one (1) NT species), one (1) mammal species, as well as a newly identified population of Silvers-spotted Copper (*Trimenia wallengrenii wallengrenii* (Critically Endangered, Possibly Extinct; CR-PE)). Given this, the use of Option 8 as an offset is considered feasible and a special case involving a 'trade-up' for a vegetation type that is under greater threat of loss.

The CoCT, as the proponent and intended managing agent has expressed their willingness and agreement to use Option 7 and Option 8 as offset areas, provided that land use zoning within Option 7 is appropriate and that there are no plans for future settlements on parts of the associated farm portions.

Options 1, 7 and 8 were identified as the best options for offset purposes. By selecting these options, habitat within the EN Cape Flats Dune Strandveld, EN Swartland Granite Renosterveld and EN Atlantis Sand Fynbos can be safeguarded.

Note: The exact extent available for offset within Option 7 needs to be confirmed as it is currently unclear what may be available to contribute to the offset (given internal CoCT departmental ownership of the land). What is unavailable at Option 7 will need to be added to the area allocated from Option 8 (i.e., the Burgherspost offset bank).

5. Geographical Aspects

Explain whether any geographical aspects will be affected and how has this influenced the proposed activity or development.

The development will have the following geographical and physical aspects:

The transformation of land from undeveloped to built-up land (i.e., change of human and physical characteristics).
The WWTW is already in operation.

6. Heritage Resources

6.1.	Was a specialist study conducted?	YES	NO
6.2.	Provide the name and/or company who conducted the specialist study.		
	Dr Jayson Orton of Asha-Consulting		
6.3.	Explain how areas that contain sensitive heritage resources have influenced the proposed development.		

An environmental authorisation is required for the proposed additional clearance of indigenous vegetation (Refer DEA&DP letter dated 26 July 2023, appendix L.1) The Heritage and Palaeontological Impact Studies placed therefore emphasis on the clearance of vegetation and associated impacts.

A NID was compiled and submitted to Heritage Western Cape.

Macassar was named after the place of birth of Sheikh Yusuf (Josef) who was born in Makassar, Indonesia, in 1626. The story of his life is summarised by Cape Mazaar Society (1996). Of note is that he was exiled to South Africa by the Dutch in 1693; he arrived in Cape Town on 27th June of that year. He and his party of 49 followers were settled near the mouth of the Eerste River on the farm Zandvliet. This became the first Muslim community in South Africa, and they spread Islam amongst the slaves of the Cape. Sheikh Yusuf died on 23rd May 1699 and was buried on a low hill in what became known as Macassar. A shrine has been built over the grave. Fransen (2004) states that the current kramat building was designed by F.K. Kendall in 1925 and replaced an earlier, simpler structure.

The Macassar WWTW was originally constructed in 1977. Historical aerial photography shows the site to have entirely undeveloped in 1968 with the exception of a sand track that passed through the site. The 1978 image shows the small facility, while by 1989 it had been expanded.

Some structures older than 60 years are expected to occur in the wider area with the kramat commemorating Sheik Yusuf likely the most significant for its associational value. Sheik Yusuf died in 1699 after having been exiled to the Cape by the Dutch in 1693. He is credited with having brought Islam to South Africa.

No historical structures occur near the WWTW. The kramat is 1.7 km away towards the northwest.

Archaeological materials are very rarely encountered on the Cape Flats with none known from the immediate Macassar area. This area would have been mobile dunes in the past and archaeological materials are not expected to occur.

However, the field survey (tracks attached) revealed one ephemeral scatter of small shell fragments of unknown origin in a heavily deflated pathway just outside the southern edge of the study area (waypoint 1435). Some were waterworn, indicating a natural origin, while some were fresh. The latter included *Haliotis midae* (perlemoen) and *Cymbula granatina* (granite limpet) which are expected on anthropogenic shell accumulations. Some small fragments of building stone and cement were also present. Given the extreme sparsity of the shell and its uncertain origin, it is not considered significant. See attached photograph.

Probably the next nearest archaeology would be associated with the Zandvliet homestead which was stripped after July 2006. Its remaining walls were subsequently incrementally demolished with all standing fabric seemingly gone by about 2013.

In a letter dated 25 October 2023 from the HWC stated, you are hereby notified that, since there is reason to believe that the Proposed wastewater treatment works on Erven 703 and 1205, Macassar, will impact on heritage resources, HWC requires that a Heritage Impact Assessment (HIA) that satisfies the provisions of Section 38(3) of the NHRA be submitted.

A Heritage Impact Assessment was conducted.

The recommendation from the Heritage specialist is that the gravel road from the entrance to the coast must be placed adjacent to the edge of the facility to avoid fragmentation of the dune landscape. The appointed engineers have taken this recommendation into account and amended on the layout accordingly. **Refer to Appendix B.1.1. and B.1.2** in this regard.

Summary pertaining to the Heritage Impact Assessment:

- At the WWTW the possibility of encountering buried fossils was identified as the primary potential impact. These may occur within the dune sand but are most likely to occur in the underlying Langebaan (aeolianite) and Springfontyn (sand) Formations, and these would be categorized as of very high palaeontological sensitivity. Fossils in these formations are rare and sparsely distributed and, as a result, are of high cultural significance.
- Large numbers of Early Stone Age artefacts had previously been recorded within the Paardevlei precinct along the powerline route but a recent survey yielded very few in this same area. Nonetheless, the possibility that artefacts are now buried or covered by grass is real and an impact is thus possible.
- The natural dune landscape and its covering of Cape Flats Dune Strandveld vegetation was also identified as a heritage resource.

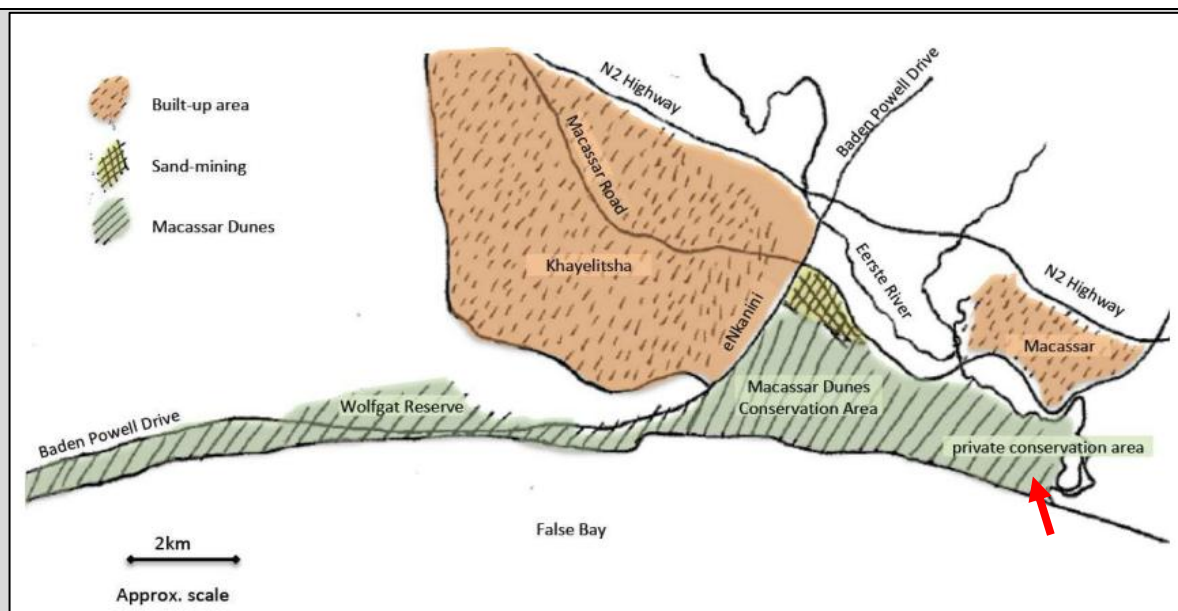


Figure 12: Map showing the local conservation areas relative to sand mining and urban areas. The Macassar WWTW is indicated by the red arrow. Source: Graham & Ernst (2012: fig. 2).

The site is an existing WWTW but is surrounded by a natural landscape of vegetated dunes. Aside from a small powerline and the access road to the WWTW, there is no other infrastructure present. Much of the area to the west is part of the Macassar Dunes Conservation Area (Figure 13 and Figure 14) but sand mining also occurs there. Cattle were noted grazing on the dunes closest to the coast.

The electrical cable follows roads through Macassar with a mix of residential and undeveloped land adjacent to it. It then enters Paardevlei which is a rural area that has been identified for future urban development. Although this section is currently undeveloped, the surrounding land still bears scattered the remains of the earlier industrial and agricultural uses of the land.

The WWTW site has the existing WWTW in its eastern part with informal ponds located to the west. Much of the new development is located over these ponds, but sand dune ridges with intact Cape Flats Dune Strandveld occur between and beyond the ponds. These dune ridges run from southeast to northwest owing to the influence of the prevailing southeast wind. Around the margins of the existing WWTW and closer to the shoreline the vegetation is somewhat disturbed and rather sparse. One the dune ridges, however, it is very dense.



Figure 13: Panoramic view towards the south from the northern edge of the study area. The existing WWTW is visible towards the left.



Figure 14: Looking south across the western corner of the existing WWTW

Site visit and findings

The field survey revealed one ephemeral scatter of small shell fragments of unknown origin in a heavily deflated pathway just outside the southern edge of the study area (waypoint 1435; Figure 15). Some were waterworn, indicating a natural origin, while some were fresh. Amongst the latter, *Haliotis midae* (perlemoen), *Cymbula granatina* (granite limpet), *Scutellastra barbara/tabularis* and *Oxysteles sinensis* (pink-lipped topshell) are generally more expected on anthropogenic shell accumulations. Some small fragments of building stone and cement were also present in the immediate vicinity. Given the extreme sparsity of the shell, the lack of associated finds and its uncertain origin, this location is not considered significant.

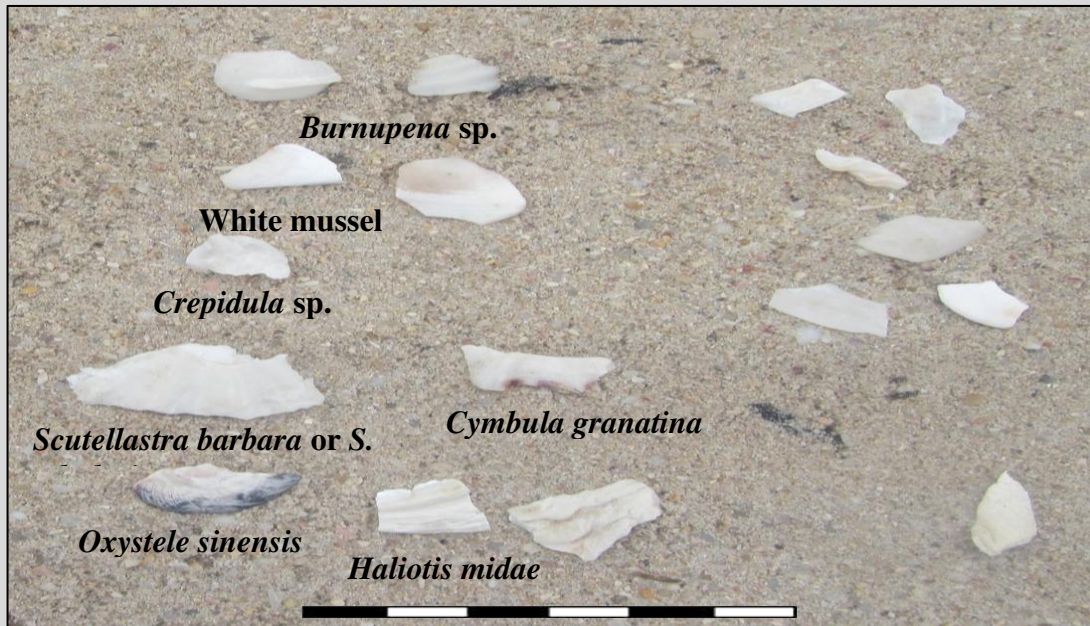


Figure 15: Shell fragments from waypoint 1435. Where identifiable, their species names are indicated. The fragments to the right could not be identified. Scale in cm.

Much of the cable route lies along roads where the sandy substrate would have been disturbed. However, in the Paardevlei area it extends across old fields where, as noted in the desktop study, stone artefacts have been recorded before. The area was not resurveyed and the finds in Orton (2021) are also applicable to the present project.

Graves

It is possible that isolated Later Stone Age (LSA) graves might occur within the local dunes but, given the general lack of LSA occupation in the area, this possibility is considered unlikely. It is notable, however, that Kaplan (2006) cites a contractor as

having reported the finding of burials at Strandfontein Pavillion. Morris (1992) notes burials to have been found on the Cape Flats but location details are very vague. The grave of Sheik Yusuf (also a National Heritage Site) occurs 1.7 km from the WWTW study area and 1.4 km from the cable route.

Places associated with living heritage

The kramat described above is associated with the history of Islam in South Africa and can be regarded as a place associated with living heritage. The site is far from the project area and will not be affected in any way.

Cultural landscapes and scenic routes

Cultural landscapes are the product of the interactions between humans and nature in a particular area. Sauer (1925) defined them thus: "The cultural landscape is fashioned from a natural landscape by a cultural group. Culture is the agent, the natural area is the medium, the cultural landscape the result". Cultural landscapes are thus areas containing multiple 'sites' and which have been shaped by the interaction of natural processes and anthropogenic activities such as construction and agriculture. Scenic routes are well-travelled roads that pass through natural or cultural landscapes with aesthetic value and that often have iconic or visually attractive views.

The river corridor of the Eerste River and its associated wetlands are considered a natural landscape of cultural significance. The river would have been the reason that the agricultural allotments were originally developed. This landscape was also the settling place of Sheik Yusuf on the farm Zandvliet in 1693. The Macassar Dunes Conservation area can be seen as a landscape of aesthetic and scientific significance for the natural vegetation coating the dunes. The area is listed as a Critical Biodiversity Area (Helme 2023).

The Paardevlei Precinct is a cultural landscape of historical buildings and features. However, it has been redeveloped in recent decades and development continues in the area. The many gum trees and open grassed fields in the as yet undeveloped parts contribute a rural character to this part of the study area. It is noted that it is already traversed by an existing powerline and that the electrical substation is also already a part of this landscape.

Baden Powell Drive can be regarded as a scenic route, but the project is well-screened from that road by intervening sand dunes. Due to the isolated location of the WWTW, there are no scenic route concerns for that part of the project. The N2 is not particularly scenic and, in this area, is largely flanked by modern development. The electrical cable will be placed underground and will thus not result in any change to the landscape along its route

7. Historical and Cultural Aspects

Explain whether there are any culturally or historically significant elements as defined in Section 2 of the NHRA that will be affected and how has this influenced the proposed development.

Some structures older than 60 years are expected to occur in the wider area with the Kramat commemorating Sheik Yusuf likely the most significant for its associational value. Sheik Yusuf died in 1699 after having been exiled to the Cape by the Dutch in 1693. He is credited with having brought Islam to South Africa.

No historical structures occur near the WWTW. The Kramat is 1.7 km away towards the northwest.

In a letter dated 25 October 2023 from the HWC stated, you are hereby notified that, since there is reason to believe that the Proposed wastewater treatment works on Erven 703 and 1205, Macassar, will impact on heritage resources, HWC requires that a Heritage Impact Assessment (HIA) that satisfies the provisions of Section 38(3) of the NHRA be submitted.

There are two heritage concerns for the proposed project. The first is the possibility that buried fossils may be exposed and destroyed during excavations for the new infrastructure. The locations of such fossils cannot be predicted from the surface and will require monitoring. The second issue is the alteration of the natural landscape which has aesthetic and scientific significance. Little can be done to avoid this impact, and the development has already been focused largely on the most disturbed areas. The remaining impacts are deemed acceptable in the light of the considerable socio-economic benefits to be derived from the project.

8. Socio/Economic Aspects

8.1. Describe the existing social and economic characteristics of the community in the vicinity of the proposed site.

According to City of Cape Town-2011 Census, Macassar is a suburb with the following classifications:

- The population is predominantly Coloured (89%).
- 27% of those aged 20 years and older have completed Grade 12 or higher.
- 76% of the labour force (aged 15 to 64) is employed.
- 50% of households have a monthly income of R3 200 or less.
- 88% of households live in formal dwellings.
- 98% of households have access to piped water in their dwelling or inside their yard.
- 92% of households have access to a flush toilet connected to the public sewer system.
- 97% of households have their refuse removed at least once a week.

99% of households use electricity for lighting in their dwelling.

8.2. Explain the socio-economic value/contribution of the proposed development.

The proposed development will increase the treatment capacity of the WWTW and will improve the quality of the final treated effluent that is discharged to the lower Eerste River. This has been addressed in the authorisation process of 2016 and will remain the same. The improved quality of the effluent discharge may help to limit any further deterioration in the water quality of the lower Eerste River and Eerste River Estuary, which may offer benefits to surrounding and downstream water users, land users, landowners and land occupants. The maximisation of local labour (expected to be approximately 600 construction job opportunities over four years) during the construction phase of the project. The use of small and emerging contractors will be specified in the construction contracts which will further include training and skills development." The cost of staff employed has been estimated based on market-related rates of employment for the various job descriptions and the requirement of the number of personnel based on the classification of the WWTW." (In the life cycle costing the value estimated for permanent staffing was roughly R 207 million, over a period of 20 years).	
8.3.	Explain what social initiatives will be implemented by applicant to address the needs of the community and to uplift the area. The proposed expansion of the Macassar WWTW will indirectly support/ facilitate further development in the upstream sewage catchment – as continued development in these areas is dependent on the availability of sufficient wastewater treatment capacity. The beneficiaries of this project will be the citizens of Macassar, Somerset West, Strand, Gordon's Bay and all other areas in the sewage catchment area, which comprise a number of low-income households. Potential beneficiaries are summarised as follows: • Social housing will provide 2,851 active housing opportunities providing housing for 12,830 beneficiaries from low-income households. In addition, there are also 5,440 informal structures which need to be relocated and serviced within the catchment area. • By catering for future demand, 49,056 new households (including social housing) or 220,752 beneficiaries will benefit.
8.4.	Explain whether the proposed development will impact on people's health and well-being (e.g. in terms of noise, odours, visual character and sense of place etc) and how has this influenced the proposed development. The proposed development will increase the treatment capacity of the WWTW and will improve the quality of the final treated effluent that is discharged to the lower Eerste River. The improved quality of the effluent discharge may help to limit any further deterioration in the water quality of the lower Eerste River and Eerste River Estuary, which may offer benefits to surrounding and downstream water users, land users, landowners and land occupants.

SECTION H: ALTERNATIVES, METHODOLOGY AND ASSESSMENT OF ALTERNATIVES

1. Details of the alternatives identified and considered

1.1.	Property and site alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
Provide a description of the preferred property and site alternative.	
The proposed development entails a refurbishment the existing Macassar WWTW, and as such alternative properties/ sites cannot be considered.	
Provide a description of any other property and site alternatives investigated.	
The proposed development entails a refurbishment the existing Macassar WWTW, and as such alternative properties/ sites cannot be considered.	
Provide a motivation for the preferred property and site alternative including the outcome of the site selection matrix.	
N/A	
Provide a full description of the process followed to reach the preferred alternative within the site.	
N/A	
Provide a detailed motivation if no property and site alternatives were considered.	
N/A	
List the positive and negative impacts that the property and site alternatives will have on the environment.	
N/A	
1.2.	Activity alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
Provide a description of the preferred activity alternative.	
There are no feasible activity alternatives.	
Provide a description of any other activity alternatives investigated.	
N/A	
Provide a motivation for the preferred activity alternative.	
N/A	
Provide a detailed motivation if no activity alternatives exist.	
N/A	
List the positive and negative impacts that the activity alternatives will have on the environment.	
N/A	
1.3.	Design or layout alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts
Provide a description of the preferred design or layout alternative.	
The only layout is the preferred layout as discussed in this BAR (the subject of the application). A table comparing the initial design details and what has been authorised with what is proposed by the design engineers (with reasons) is included in Appendix N.	
Provide a description of any other design or layout alternatives investigated.	
N/A	
Provide a motivation for the preferred design or layout alternative.	
N/A	
Provide a detailed motivation if no design or layout alternatives exist.	
N/A	
List the positive and negative impacts that the design alternatives will have on the environment.	
N/A	
1.4.	Technology alternatives (e.g., to reduce resource demand and increase resource use efficiency) to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
- Hybrid disinfection which includes, UV Disinfection - Production of Green Energy, i.e., Biogas. Waste to energy and also reduction in demand of energy required by Eskom (more energy for the grid) - Biogas can also be used for backup power, in the event of loadshedding, which means less diesel is required. - Solar Power	
Provide a description of any other technology alternatives investigated.	

N/A	
Provide a motivation for the preferred technology alternative.	
Refer to 1.4	
Provide a detailed motivation if no alternatives exist.	
N/A	
List the positive and negative impacts that the technology alternatives will have on the environment.	
N/A	
1.5.	Operational alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.
Provide a description of the preferred operational alternative.	
The preferred operational proposal is discussed in this BAR (the subject of the application). The operation phase is a refurbished WWTW (refer the Need and Disability section as well as Appendix K.1 . There are not suitable alternatives.	
Provide a description of any other operational alternatives investigated.	
N/A	
Provide a motivation for the preferred operational alternative.	
N/A	
Provide a detailed motivation if no alternatives exist.	
N/A	
List the positive and negative impacts that the operational alternatives will have on the environment.	
N/A	
1.6.	The option of not implementing the activity (the 'No-Go' Option).
Provide an explanation as to why the 'No-Go' Option is not preferred.	
The No-Go Option would imply that the Macassar WWTW revert back to the previous and "current" EA. A table comparing the initial design details and what has been authorised with what is proposed by the design engineers is included in Appendix N.1 . The no-go option will result in not reaching the need for the proposed upgrade. Without this necessary upgrade, the WWTW will soon reach its capacity.	
1.7.	Provide an explanation as to whether any other alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist.
A table comparing the initial design details and what has been authorised with what is proposed by the design engineers is included in Appendix N.1	
1.8.	Provide a concluding statement indicating the preferred alternatives, including the preferred location of the activity.
The preferred alternative is the proposed refurbishment as discussed and assessed in this BAR.	

2. "No-Go" areas

Explain what "no-go" area(s) have been identified during identification of the alternatives and provide the co-ordinates of the "no-go" area(s).
The Eerste River, estuary and lagoon are considered no-go areas. No further no-go areas have been identified by the specialists.

3. Methodology to determine the significance ratings of the potential environmental impacts and risks associated with the alternatives.

Describe the methodology to be used in determining and ranking the nature, significance, consequences, extent, duration of the potential environmental impacts and risks associated with the proposed activity or development and alternatives, the degree to which the impact or risk can be reversed and the degree to which the impact and risk may cause irreplaceable loss of resources.
Assessment Methodology The assessment of the significance of impacts for a proposed development is by its nature, a matter of judgement. To deal with the uncertainty associated with judgement and ensure repeatable results, Zutari rates impacts using a standardised and internationally recognised methodology adhering to ISO 14001 and World Bank/International Finance Corporation (IFC) requirements. This section outlines the proposed method for assessing the significance of the potential environmental impacts. For each predicted impact, criteria are ascribed, and these include the intensity (size or degree scale), which also includes the type of impact, being either a positive or negative impact; the duration (temporal scale); and the extent (spatial scale), as well as the probability (likelihood). The methodology is quantitative, whereby professional judgement is used to identify a rating for each criterion based on a seven-point scale (refer to Table 1); and the significance is auto-generated using a spreadsheet through application of the calculations. The assessment methodology is adopted by all specialists working on the project to ensure a standardised method of assessment across all disciplines. Where specialist require finer scale ratings or disagree with the auto-calculated impact significance rating, they have the opportunity to comment. Calculations

For each predicted impact, certain criteria are applied to establish the likely **significance** of the impact, firstly in the case of no mitigation being applied and then with the most effective mitigation measure(s) in place.

These criteria include the **intensity** (size or degree scale), which also includes the **nature** of impact, being either a positive or negative impact; the **duration** (temporal scale); and the **extent** (spatial scale). These numerical ratings are used in an equation whereby the **consequence** of the impact can be calculated. Consequence is calculated as follows:

Consequence = type x (intensity + duration + extent)

To calculate the significance of an impact, the **probability** (or likelihood) of that impact occurring is applied to the consequence.

Significance = consequence x probability

Depending on the numerical result, the impact would fall into a significance category as negligible, minor, moderate or major, and the type would be either positive or negative.

Table 2 Assessment criteria for the evaluation of impacts.

Criteria	Numeric Rating	Category	Description
Duration	1	Immediate	Impact will self-remedy immediately
	2	Brief	Impact will not last longer than 1 year
	3	Short term	Impact will last between 1 and 5 years
	4	Medium term	Impact will last between 5 and 10 years
	5	Long term	Impact will last between 10 and 15 years
	6	On-going	Impact will last between 15 and 20 years
	7	Permanent	Impact may be permanent, or in excess of 20 years
Extent	1	Very limited	Limited to specific isolated parts of the site
	2	Limited	Limited to the site and its immediate surroundings
	3	Local	Extending across the site and to nearby settlements
	4	Municipal area	Impacts felt at a municipal level
	5	Regional	Impacts felt at a regional level
	6	National	Impacts felt at a national level
	7	International	Impacts felt at an international level
Intensity	1	Negligible	Natural and/ or social functions and/ or processes are negligibly altered
	2	Very low	Natural and/ or social functions and/ or processes are slightly altered
	3	Low	Natural and/ or social functions and/ or processes are somewhat altered
	4	Moderate	Natural and/ or social functions and/ or processes are moderately altered
	5	High	Natural and/ or social functions and/ or processes are notably altered
	6	Very high	Natural and/ or social functions and/ or processes are majorly altered
	7	Extremely high	Natural and/ or social functions and/ or processes are severely altered
Probability	1	Highly unlikely / None	Expected never to happen
	2	Rare / improbable	Conceivable, but only in extreme circumstances, and/or might occur for this project although this has rarely been known to result elsewhere
	3	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
	4	Probable	Has occurred here or elsewhere and could therefore occur
	5	Likely	The impact may occur
	6	Almost certain / Highly probable	It is most likely that the impact will occur
	7	Certain / Definite	There are sound scientific reasons to expect that the impact will definitely occur

When assessing impacts, broader considerations are also considered. These include the level of confidence in the assessment rating; the reversibility of the impact; and the irreplaceability of the resource as set out in Table 1, Table 2, Table 3 and Table 4 respectively.

Table 3 Definition of confidence ratings.

Category	Description
Low	Judgement is based on intuition
Medium	Determination is based on common sense and general knowledge
High	Substantive supportive data exists to verify the assessment

Table 4 Definition of reversibility ratings.

Category	Description
----------	-------------

Low	The affected environment will not be able to recover from the impact - permanently modified
Medium	The affected environment will only recover from the impact with significant intervention
High	The affected environment will be able to recover from the impact

Table 5 Definition of irreplaceability ratings.

Category	Description
Low	The resource is not damaged irreparably or is not scarce
Medium	The resource is damaged irreparably but is represented elsewhere
High	The resource is irreparably damaged and is not represented elsewhere

Significance:	negative	positive
Negligible	Negligible - negative	Negligible - positive
Minor	Minor - negative	Minor - positive
Moderate	Moderate - negative	Moderate - positive

4. Assessment of each impact and risk identified for each alternative

Note: The following table serves as a guide for summarising each alternative. The table should be repeated for each alternative to ensure a comparative assessment. The EAP may decide to include this section as Appendix J to this BAR.

An impact assessment was conducted for the preferred alternative.

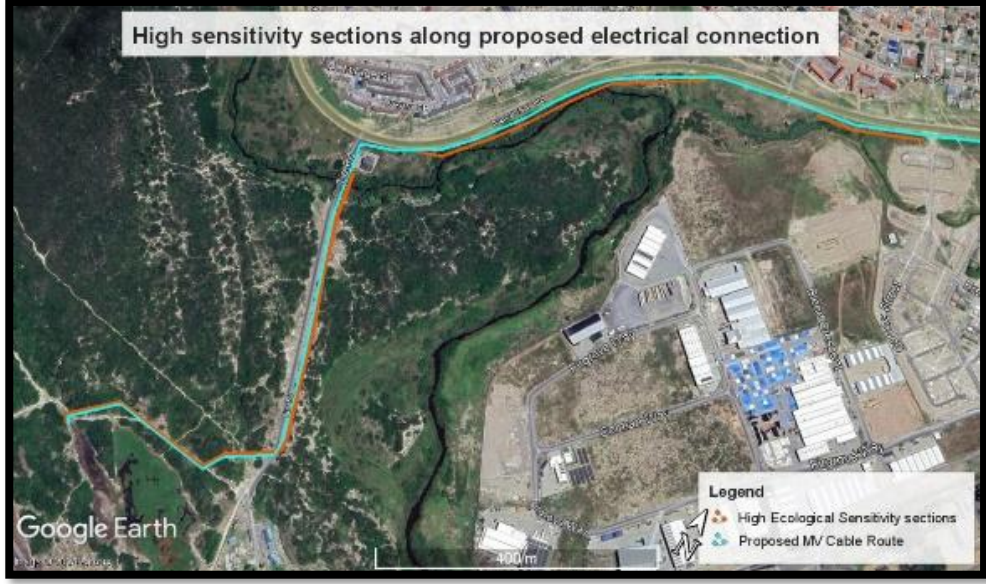
Please note the following:

- The impact tables below summarise the impacts from all specialists studied conducted for this project

PLANNING, DESIGN AND DEVELOPMENT PHASE

Ecological Impact Assessment

Table 6: Construction phase: Loss of vegetation

Project phase	Construction	
Impact	Loss of 6.8ha of High and 2.1ha of medium sensitivity vegetation	
Description of impact	Loss of vegetation in High and Medium sensitivity areas; loss of site populations of 2 plant Species of Conservation Concern	
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts
Potential mitigation	Avoidance or minimising the only real options The High sensitivity section of the cable trench must be hand excavated, whereas all other areas can be machine excavated (Refer image below)  This is to minimise the disturbance footprint at the construction stage.	

	The cable trench must be infilled as soon as possible after the cables are laid. In the High sensitivity areas this must be done by hand.			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	National	Impacts felt at a national level	National	Impacts felt at a national level
Intensity	Extremely high	Natural and/ or social functions and/ or processes are severely altered	High	Natural and/ or social functions and/ or processes are notably altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Major - negative		Major - negative	
	Minor – negative (proposed cable trench)		Negligible – negative (proposed cable trench)	
Comment on significance	Red Flag from an ecological perspective			
Cumulative impacts	The vegetation type is already Endangered, with few feasible options for further conservation areas in the Cape Flats			

Table 7: Construction phase: Loss of high sensitivity faunal habitat and associated animal species

Project phase	Construction			
Impact	Loss of High and Medium sensitivity faunal habitat and associated animal species			
Description of impact	Direct loss of certain animal species and their habitat			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	Search and Rescue for Dwarf Chameleons and other fauna before and during construction			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Regional	Impacts felt at a regional / provincial level	Regional	Impacts felt at a regional / provincial level
Intensity	Extremely high	Natural and/ or social functions and/ or processes are severely altered	Very high	Natural and/ or social functions and/ or processes are majorly altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified

Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Major - negative		Major - negative	
Comment on significance	Red flag from an ecological perspective			
Cumulative impacts	This habitat and the associated fauna is severely threatened on the Cape Flats			

Freshwater Impact Assessment

Due to the existing discharge of treated wastewater from the Macassar WWTW into the Eerste River, the estuary has already been considerably altered and thus the expected impact of an upgrade to this WWTW is likely to be less significant but the proposed increase in the discharge volume is nevertheless substantial. The proposed upgrade to the existing WWTW will result in an improvement in the final effluent quality, and as such, one could expect that the proposed upgrade would at least improve the existing water quality situation in the Eerste River Estuary.

Table 8: Construction Phase: Wetland and Estuarine habitat loss

Project phase	Construction	
Impact	Wetland and estuarine habitat loss	
Description of impact	Loss of artificial wetland areas associated with the existing WWTW as well as potential estuarine wetland habitat loss as a result of alteration to volumes of wastewater discharged	
Mitigatability	Medium	Mitigation exists and will notably reduce significance of impacts
Potential mitigation	In general, the construction activities should be limited to the already disturbed areas within the footprint of the WWTW and immediately to the west of the WWTW and away from the estuary. Disturbed areas should be rehabilitated as far as possible after the construction activities are complete and monitored and managed after rehabilitation to prevent the growth of invasive alien plants. The construction activities should be limited as far as possible within the wetland and riparian areas and the disturbed area should be rehabilitated afterwards. Use of already disturbed areas within the footprint of the WWTW and immediately to the west of the WWTW and away from the estuary is preferred. The proposed installation of the powerline within the western extent within the disturbed road reserve and attaching the cable to the bridge crossing the Eerste River is supported. Open trenching for the cable would be acceptable provided the works is undertaken during the low rainfall period (November to April) and the duration of the construction works is limited as far as possible. Before the construction activities, suitable indigenous wetland plants within the proposed trenching and construction areas could be identified and set aside for revegetating the disturbed areas immediately after construction is complete. It is essential that the clearing of invasive alien plants and in particular Port Jackson willows be undertaken during and after construction activities. The soil and cover vegetation removed to excavate the trench in which the cable is to be laid should be replaced over the line at the same level as the existing level. Use of machinery in the wetland areas should be limited as far as possible. Use of an excavator on tracks that can be driven along the excavated trench, excavating and backfilling as the pipeline is laid is recommended. The minimum area for the construction and lying of the cable in the eastern extent of the route should be demarcated and the wetland areas outside of the construction areas treated as no-go areas. Any areas significantly compacted by machinery will need to be ripped and revegetated following construction. All rubble associated with construction activities should be removed after the construction phase is complete. Control of invasive alien vegetation within the disturbed areas will need to continue for at least 5 years.	
Assessment	Without mitigation	With mitigation
Nature	Negative	Negative

Duration	Long term	Impact will last between 10 and 15 years	Medium term	Impact will last between 5 and 10 years
Extent	Local	Extending across the site and to nearby settlements	Local	Extending across the site and to nearby settlements
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Probable	The impact has occurred here or elsewhere and could therefore occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	The proposed expansion works may result in some localised loss of wetland habitat of very low significance.			
Cumulative impacts	The estuary already exhibits evidence of loss of estuarine biodiversity as a result of the existing treated wastewater discharges. This estuary has been given a high priority for rehabilitation because it is already in a severely degraded ecological state but is linked to a Marine Protected Area and has been mapped as a FFPA wetland/estuary.			

Heritage, Archaeology and Palaeontological Impact Assessment

Table 9: Construction phase: Intrusion into the cultural landscape of incompatible structures/features

Project phase	Construction			
Impact	Intrusion into the cultural landscape of incompatible structures/features			
Description of impact	Alteration of the landscape through its transformation from a natural to an industrial nature.			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	Minimise the disturbance footprint and ensure that dunes outside the development footprint are not affected. <u>The appointed engineers have redesigned, and this mitigation measure is captured in the latest layout where the road has been moved.</u>			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Short term	Impact will last between 1 and 5 years	Short term	Impact will last between 1 and 5 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environment will be able to recover from the impact	High	The affected environment will be able to recover from the impact

Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Minor - negative		Minor - negative	
Comment on significance	The minor significance is largely due to the short duration of the construction phase and because an existing WWTW is already present on the site.			
Cumulative impacts	Cumulative impacts are expected to be of minor significance.			

Table 10: Construction phase: Impacts to archaeology

Project phase	Construction			
Impact	Impacts to archaeology			
Description of impact	Damage to or destruction of archaeological materials during grubbing and excavation			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	Monitoring of excavation of cable trench			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site
Intensity	Low	Natural and/ or social functions and/ or processes are somewhat altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Low	The resource is not damaged irreparably or is not scarce	Low	The resource is not damaged irreparably or is not scarce
Significance	Minor - negative		Negligible - negative	
Comment on significance	While ESA materials are known to occur in the Paardevlei area, their distribution has changed since 1996 making the assessment somewhat uncertain. Nonetheless, there will definitely be ESA materials present at least in low density and a minor negative impact seems appropriate.			
Cumulative impacts	It is likely that many developments in the area have damaged or destroyed ESA materials. However, the density of such material is probably always low (based on other surveys). The cumulative impact contribution from this project is likely to be low because of its limited spatial extent.			

Table 11: Construction phase: Destruction of palaeontological resources

Project phase	Construction
Impact	Destruction of palaeontological resources

Description of impact	Destruction of and damage to palaeontological materials during earthmoving activities			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	- Monitoring of construction excavations, and - Removal of any fossil materials discovered during construction.			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Local	Extending across the site and to nearby settlements	Very limited	Limited to specific isolated parts of the site
Intensity	Extremely high	Natural and/ or social functions and/ or processes are severely altered	Very low	Natural and/ or social functions and/ or processes are slightly altered
Probability	Likely	The impact may occur	Unlikely	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	High	The resource is irreparably damaged and is not represented elsewhere	High	The resource is irreparably damaged and is not represented elsewhere
Significance	Moderate - negative		Negligible - negative	
Comment on significance	Fossils are known from the nearby sand mines but they can be very patchily distributed underground. Impacts are nonetheless probable. Individual fossils can have high cultural significance for their scientific value and the overall impact significance of moderate negative seems appropriate. Rescue of fossils will dramatically reduce the impact and negligible negative is again appropriate.			
Cumulative impacts	Cumulative impacts are expected to be of low significance.			

OPERATIONAL PHASE

Ecological Impact Assessment

Table 12: Operation: Loss of ecological connectivity, habitat fragmentation, loss of CBA1b

Project phase	Operation			
Impact	Loss of ecological connectivity, habitat fragmentation, loss of CBA1b			
Description of impact	Reduced ecological viability and resilience, impacting on adjacent Macassar NR and other natural areas			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	Avoidance or minimising the only real options			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years

Extent	Municipal area	Impacts felt at a municipal level	Municipal area	Impacts felt at a municipal level
Intensity	Moderate	Natural and/ or social functions and/ or processes are moderately altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Almost certain / Highly probable	It is most likely that the impact will occur	Almost certain / Highly probable	It is most likely that the impact will occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	Low	The affected environment will not be able to recover from the impact - permanently modified	Low	The affected environment will not be able to recover from the impact - permanently modified
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Moderate - negative		Moderate - negative	
Comment on significance				
Cumulative impacts	The vegetation type is already Endangered, with few feasible options for further conservation areas in the Cape Flats			

Freshwater Impact Assessment

Table 13: Operation: Flow Modification

Project phase		Operation		
Impact		Flow modification		
Description of impact		The largest potential impact of the proposed activities is because of the increase in the volume of treated wastewater discharged to the lower Eerste River and Estuary. The discharge when the WWTW is working at full capacity will be at least double the current discharge. This will result in a further 'freshening' of the estuary as well as added modification to the seasonal variability (quality and quantity) within the estuary which is important for maintaining biodiversity within the estuary. The resulting loss of variability in estuarine habitat will result in further loss of biotic diversity as well as more modification to the hydrodynamics within the Kuils / Eerste Estuary.		
Mitigatability		Medium	Mitigation exists and will notably reduce significance of impacts	
Potential mitigation		The use of the treated wastewater during the drier summer months should be encouraged to reduce the volumes that need to be discharged to the estuary, particularly during the low flow period when seawater intrusion and tidal exchange within the estuary may have naturally occurred. Considering the increase in the volume of treated wastewater to be discharged to the estuary as well as the high priority that was been awarded to the estuary for its rehabilitation, it is recommended that the ecological flow requirement for the estuary be determined at a rapid or intermediate level and considered in terms of the future volumes to be discharged to the estuary.		
Assessment		Without mitigation		With mitigation
Nature		Negative		Negative
Duration		Long term	Impact will last between 10 and 15 years	Long term
Extent		Regional	Impacts felt at a regional / provincial level	Local
Intensity		High	Natural and/ or social functions and/ or processes are notably altered	Moderate
Probability		Likely	The impact may occur	Probable
Confidence		High	Substantive supportive data exists to verify the assessment	Medium
Reversibility		High	The affected environmental will be able to recover from the impact	Medium

Resource irreplaceability	High	The resource is irreparably damaged and is not represented elsewhere	High	The resource is irreparably damaged and is not represented elsewhere
Significance	Moderate - negative		Minor - negative	
Comment on significance	Medium to low impact over the longer term should there be a systematic programme implemented for the reuse of the treated wastewater.			
Cumulative impacts	The estuary already exhibits evidence of loss of estuarine biodiversity as a result of the existing treated wastewater discharges.			

Table 14: Operation: Water Quality Impairment

Project phase	Operation			
Impact	Water quality impairment			
Description of impact	The nature of this impact is highly dependent on the level of treatment achieved and the effluent quality standards that would be met by the proposed WWTW upgrade.			
Mitigatability	High	Mitigation exists and will considerably reduce the significance of impacts		
Potential mitigation	The stipulated water quality requirement of the DWS (particularly for phosphates as the limiting nutrient to plant growth) to be achieved in the final effluent is supported to reduce eutrophication of the lower Eerste River and Estuary. It is recommended that the Special Limit for Ammonia of 2 mg/l or at least the General Limit of 6mg/l also be specified for the final treated wastewater as this is also a variable of concern within the current treated wastewater. An alternative mitigation measure would be to dispose of the wastewater in another way such as through reuse in line with the recommended mitigation for flow modification. Reuse of the treated wastewater rather than discharging it to the estuary is worth consideration, considering the treatment costs, the quality of the final treated effluent as well as the growing water demand. It is essential that there is ongoing monitoring to ensure that the WWTW is designed and operated to achieve the final treated wastewater quality indicated.			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Long term	Impact will last between 10 and 15 years	Long term	Impact will last between 10 and 15 years
Extent	Regional	Impacts felt at a regional / provincial level	Local	Extending across the site and to nearby settlements
Intensity	High	Natural and/ or social functions and/ or processes are notably altered	Moderate	Natural and/ or social functions and/ or processes are moderately altered
Probability	Likely	The impact may occur	Probable	The impact has occurred here or elsewhere and could therefore occur
Confidence	Medium	Determination is based on common sense and general knowledge	Medium	Determination is based on common sense and general knowledge
Reversibility	Medium	The affected environment will only recover from the impact with significant intervention	High	The affected environmental will be able to recover from the impact
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Low	The resource is not damaged irreparably or is not scarce
Significance	Moderate - negative		Minor - negative	
Comment on significance	Very Low – may result in an improvement due to an improvement in the existing wastewater quality			
Cumulative impacts	Provided that the mitigation measures are effectively implemented, the water quality-related impacts of the developments should be limited and will result in an improvement in the current condition of the river.			

Heritage and Palaeontological Impact Assessment

Table 15: Impact Intrusion into the cultural landscape of incompatible structures/features

Project phase	Operation
Impact	Intrusion into the cultural landscape of incompatible structures/features

Description of impact	Alteration of the landscape through its transformation from a natural to an industrial nature.			
Mitigatability	Low	Mitigation does not exist; or mitigation will slightly reduce the significance of impacts		
Potential mitigation	Ensure that all operational activities remain within the authorised footprint and that no new areas are affected during operation.			
Assessment	Without mitigation		With mitigation	
Nature	Negative		Negative	
Duration	Permanent	Impact may be permanent, or in excess of 20 years	Permanent	Impact may be permanent, or in excess of 20 years
Extent	Limited	Limited to the site and its immediate surroundings	Very limited	Limited to specific isolated parts of the site
Intensity	Moderate	Natural and/ or social functions and/ or processes are somewhat altered	Low	Natural and/ or social functions and/ or processes are somewhat altered
Probability	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur	Certain / definite	There are sound scientific reasons to expect that the impact will definitely occur
Confidence	High	Substantive supportive data exists to verify the assessment	High	Substantive supportive data exists to verify the assessment
Reversibility	High	The affected environment will be able to recover from the impact	High	The affected environment will be able to recover from the impact
Resource irreplaceability	Medium	The resource is damaged irreparably but is represented elsewhere	Medium	The resource is damaged irreparably but is represented elsewhere
Significance	Moderate - negative		Moderate - negative	
Comment on significance	The main driver of significance is the long duration.			
Cumulative impacts	Cumulative impacts are expected to be of minor significance. In relation to an activity, cumulative impact "means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may be significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities" (NEMA EIA Reg GN R982 of 2014). The project is expected to further reduce the extent of the Macassar Dunes but the area to be disturbed is very small in relation to the existing impacts. For this reason, the cumulative impact contribution from this project is expected to be minor negative. Mitigation is as per the individual impacts discussed above and will aim to minimise the disturbance of the dunes. Post-mitigation, the impact is still expected to be minor negative.			

The No-Go alternative

If the project were not implemented, then the site would stay as it currently is (impact significance of **neutral**). Although the heritage impacts with implementation of the preferred alternative would be greater than the existing impacts, the loss of socio-economic benefits due to poor service delivery from the WWTW is more significant and suggests that the No-Go option is less desirable in heritage terms.

SECTION I: FINDINGS, IMPACT MANAGEMENT AND MITIGATION MEASURES

1.	Provide a summary of the findings and impact management measures identified by all Specialist and an indication of how these findings and recommendations have influenced the proposed development. <u>Freshwater study findings:</u> Aquatic features that are likely to be impacted by the proposed upgrade to the Macassar WWTW are the lower Eerste River and Estuary and some largely artificial wetland areas associated with past activities at the WWTW. The lower river and estuary are considered to be in a severely modified ecological state as a result of flow modification and water quality impacts arising from the discharge of treated wastewater from several WWTWs in the Kuils and Eerste River Catchment as well as stormwater runoff. There is also an interbasin transfer of water into the upper Eerste River for irrigation purposes in the lower Eerste River. The existing discharge of treated wastewater from the Macassar WWTW has already considerably altered the estuary; thus the potential impact of an upgrade to this WWTW is likely to be less significant. The proposed upgrade to the existing WWTW provided the WWTW is constructed and operated according to the proposed design, will result in an improvement in the final treated wastewater quality, and as such, one could expect that the proposed upgrade would at least improve on the existing water quality situation in the Eerste River Estuary. Of greater concern however is the large increase in the volume of the treated wastewater that would be discharged to the estuary as well as the cumulative impact of increased wastewater discharge volumes throughout the catchment of the Kuils / Eerste River System where all four large WWTW (Bellville, Stellenbosch, Zandvliet and Macassar) are needing to be increased in terms of their capacities. The increase in the volumes of treated wastewater discharged to the lower Eerste River and Estuary would result in a further 'freshening' of the estuary as well as additional modification to the seasonal variability (quality and quantity) within the estuary that is considered important for maintaining biodiversity within the estuary. The resulting loss of variability in estuarine habitat will result in further loss of biotic diversity as well as more modification to the hydrodynamics within the Kuils / Eerste Estuary Considering the increase in the volume of treated wastewater to be discharged to the estuary as well as the high priority that was been awarded to the estuary for its rehabilitation, it is recommended that the ecological flow requirement for the estuary be determined at a rapid or intermediate level and be considered in terms of the future volumes and quality to be discharged to the estuary. While cognisance must be given to the reality of the current situation, there will have to be a committed programme for the progressive reuse of the treated wastewater in the area and a significant reduction in the volumes that would be disposed of in the estuary. While there are already plans to do this, there will need to be a legal imperative to ensure that this commitment is implemented within agreed-upon timescales that are set as soon as technically possible. In particular, the re-use of the treated wastewater during the drier summer months should be encouraged to reduce the volumes that need to be discharged to the estuary, particularly during the low flow period when seawater intrusion and tidal exchange within the estuary would naturally have occurred. The construction activities should be limited to the already disturbed areas within the new footprint of the WWTW. Disturbed areas should be rehabilitated as far as possible after the construction activities are complete and monitored and managed after rehabilitation to prevent the growth of invasive alien plants. <u>Botanical Impacts findings:</u> In the Western Cape Biodiversity Spatial Plan 2017 mapping for the site, the disturbed Dune Scrub and Dune Grassy Shrublands are mapped as Terrestrial Critical Biodiversity Areas while the disturbed pond areas adjacent to the WWTW are mapped as Ecological Support Areas that should be restored where appropriate. No species of conservation concern were observed as the area was examined during dry early summer conditions. The wood from local scrub, even in the green state, of <i>Euclea racemosa</i>, <i>Pterocelastus tricuspidatus</i> (kershout) and <i>Sideroxylon inerme</i> (milkwood) is preferred for local use as they burn for longer periods at lower temperatures and are easier to carry by hand, according to information given to the author by local wood collectors. The protection of this scrub through correct management without its destruction or its exploitation of indigenous species for firewood is a fundamental use of the area. Control over access is required. The vegetation on the foredunes is identified here as Dune Grassy Shrubland, which is also found in a variety of disturbed situations, such as along roads and tracks and between the Dune Scrub. Inter Dune Wetlands are still present between the dunes, which equates to O'Callaghan's Moist Shrubland. O'Callaghan's (1982) map shows <i>Acacia cyclops</i> Dune Shrubland to be present throughout the whole of the upland area. This is no longer the case as the dominance of invasive <i>Acacia cyclops</i> has changed, through appropriate management practices, into a fully developed Dune Scrub of the Cape Flats Dune Strandveld (Holmes, 2008; Mucina & Rutherford, 2006; Mucina, Rutherford & Powrie, 2005), with a Threatened Ecosystem Status of Endangered (B1(i), B2(i), B1(iii), B2(iii)) (Government Gazette 2022b). The planned construction at the WWTW is an opportunity to remove invasive aliens currently used on the terrain, replacing <i>Myoporum serratum</i> for instance, with <i>Pterocelastus tricuspidatus</i> (kershout) and <i>Sideroxylon inerme</i> (milkwood) trees.
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Any destruction of the Endangered Cape Flats Dune Strandveld vegetation, which is found on the site examined here, is subject to an Offset ratio of 30:1 in the area (ratio for outside an urban area) if its destruction cannot be avoided (refer to Department of Environment Affairs & Development Planning (DEA&DP), 2015; Government Gazette 2022a & 2022b).

For the Macassar project the following was determined: The proposed offset is adequate to compensate for the 176.3 hectares of residual impact, which was calculated using a 10:1 ratio, adjusted by factors of 2:1 or 1.5:1 based on habitat sensitivity. This results in an average offset ratio of 18.8:1, effectively offsetting 176.3 hectares for the 9.3 hectares lost. The precise area of the Dune Scrub to be impacted would need to be measured as part of an independent offset determination.

Terrestrial Biodiversity Study findings:

The remaining natural vegetation on site is Cape Flats Dune Strandveld, which is gazetted as Endangered on a national basis.

At least two plant Species of Conservation Concern (SoCC), and probably at least one Redlisted animal are present in the proposed development area. Neither of the two plant SoCC can be easily translocated, although this should be attempted.

About half the proposed development area supports vegetation and faunal habitat that is mapped as High or Medium sensitivity and is also mapped as CBA1b in the City's Biodiversity Network. These areas should ideally not be lost to development.

The overall ecological significance of this direct vegetation and faunal habitat loss for the proposed layout is **High negative before mitigation**. Mitigation in this case needs to invoke the mitigation hierarchy - viz. avoidance first, then minimising of impact, and then mitigation. Avoidance is the first step and means no loss of habitat within High sensitivity areas. If this is done the direct impacts could be reduced to an acceptable Low negative impact. However, given the probable physical requirements of the project for a certain minimum area this avoidance of impact is deemed unlikely. The likelihood of being able to minimise the impact (i.e. reduce the footprint in the High sensitivity areas) is also unlikely, as that would require substantial redesign and shrinking of the new facility.

This leaves a biodiversity offset as the only real way to try and reduce the unavoidable High negative residual impact to an acceptable level.

Please refer to Appendix G.8.3 for the final Biodiversity Offset Strategy and Appendix G.8.4 for the Biodiversity Offset Agreement

Heritage and Palaeontology findings:

There are two heritage concerns for the proposed project. The first is the possibility that buried fossils may be exposed and destroyed during excavations for the new infrastructure. The locations of such fossils cannot be predicted from the surface and will require monitoring. The second issue is the alteration of the natural landscape which has aesthetic and scientific significance. Little can be done to avoid his impact and the development has already been focused largely on the most disturbed areas. The remaining impacts are deemed acceptable in the light of the considerable socio-economic benefits to be derived from the project.

Palaeontological remains in the Langebaan and Springfontyn Formations are often sparsely distributed and rare but, if encountered, provide very important additions to the paucity of information currently recorded for the periods represented. In the Macassar area.

2.	List the impact management measures that were identified by all Specialist that will be included in the EMPr
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Measures recommended by specialists:

Freshwater impact management measures:

A) Construction phase

- The construction activities should be limited to the already disturbed areas within the footprint of the WWTW and immediately to the west of the WWTW and away from the estuary.
- Disturbed areas should be rehabilitated as far as possible after the construction activities are complete and monitored and managed after rehabilitation to prevent the growth of invasive alien plants.

B) Operation Phase

- The stipulated water quality requirement of the DWS (particularly for phosphates as the limiting nutrient to plant growth) to be achieved in the final effluent is supported to reduce eutrophication of the lower Eerste River and Estuary.
- It is recommended that the Special Limit for Ammonia of 2 mg/l or at least the General Limit of 6mg/l also be specified for the final treated wastewater as this is also a variable of concern within the current treated wastewater.
- Reuse of the treated wastewater rather than discharging it to the estuary is worth consideration, considering the treatment costs, the quality of the final treated effluent as well as the growing water demand. A portion of the treated effluent will be assigned for Re-use, namely 18.3 MI/day of the 80 MI/day during the summer months. This is based on the current projected demand for treated effluent in the catchment area based on a practical approach and could increase over time based on future requirements.
- It is essential that there is ongoing monitoring to ensure that the WWTW is designed and operated to achieve the final treated wastewater quality indicated.
- The use of the treated wastewater during the drier summer months should be encouraged to reduce the volumes that need to be discharged to the estuary, particularly during the low flow period when seawater intrusion and tidal exchange within the estuary may have naturally occurred. A portion of the treated effluent will be assigned for Re-use, namely 18.3 MI/day

of the 80 Ml/day during the summer months. This is based on the current projected demand for treated effluent in the catchment area based on a practical approach and could increase over time based on future requirements.

- It is recommended that the ecological flow requirement for the estuary be determined at a rapid or intermediate level and considered in terms of the future volumes to be discharged to the estuary.

Terrestrial impact management measures:

A) Construction Phase

- Any boundary fencing used must be permeable to small animals at ground level, with regular gaps of 200mm wide and 150mm high. This will not be applicable to the Main Security Fencing surrounding the build area of the WWTW. The Main Security Fencing needs to be secure to prevent theft and vandalism. Secondly, with continuous large vehicle movement, various open tanks and structures which contain wastewater or sludge, and mechanical and electrical equipment, which is live and operational, we need to ensure animals do not enter the plant due to their safety and well-being.
- The authorised overall development boundary should be surveyed and pegged out and fenced on site prior to any site development.
- No areas of natural or partly natural vegetation should be disturbed outside the pegged/fenced out and authorised site. No vehicular activity or dumping of material may take place outside the authorised site.
- Search and rescue of Cape Dwarf Chameleons (*Bradypodion pumilum*) and all other translocatable fauna should take place on site prior to any site disturbance, as well as during site establishment (site clearing). This should be undertaken by authorised and experienced faunal experts.
- Search and Rescue of all usable plant material should be undertaken on site prior to any site disturbance, as well as during site establishment (site clearing). Neither of the two plant SoCC recorded can be easily translocated, although this should be attempted. This should be undertaken by authorised and experienced horticultural experts, and in this regard the Stellenbosch Botanical Garden is recommended.
- Stabilisation of any cut sand dunes and slopes outside the approved development site should be undertaken using only the rescued plant material from site and should be undertaken by the appointed plant Search and Rescue contractor.
- Any trenches or excavations created during construction should be examined for trapped animals twice a day, and these should be removed and released in suitable natural habitat.
- The relevant permits will have to be sourced for removal of Protected Species such as milkwoods (*Sideroxylon inerme*).
- The applicant must ensure that there is adequate budget for all required mitigation.

Botanical impact management measures

A) Construction phase

- Sediments accumulated in stilling ponds should be utilized so that the ponds remain viable and do not fill up.
- An alien vegetation management plan is required, which includes the control of herbaceous weeds, and the development of cover of indigenous species in any dysfunctional sediment ponds.
- A management plan to ensure the survival of the important vegetation and protected flora on site is implicit to the expansion development of the WWTW. This plan should include control over movement through the dunes by humans and their stock. The area should have a carefully designed system of paths (and guides) for educational access.
- Any destruction of the Endangered Cape Flats Dune Strandveld vegetation, which is found on the site examined here, is subject to an Offset ratio of 30:1 in the area (ratio for outside an urban area) if its destruction cannot be avoided (refer to Department of Environment Affairs & Development Planning (DEA&DP), 2015; Government Gazette 2022a & 2022b). For the Macassar project the following was determined: The proposed offset is adequate to compensate for the 176.3 hectares of residual impact, which was calculated using a 10:1 ratio, adjusted by factors of 2:1 or 1.5:1 based on habitat sensitivity. This results in an average offset ratio of 18.8:1, effectively offsetting 176.3 hectares for the 9.3 hectares lost. The precise area of the Dune Scrub to be impacted would need to be measured as part of an independent offset determination.

Heritage Impact Management measures

A) Construction phase

- The Fossil Chance Finds Procedure must be included in the EMPr for the project.
- A palaeontologist must be contracted to monitor the excavation work on site.
- Disturbance of the dunes outside the project footprint must be minimised.
- The gravel road from the entrance to the coast must be placed adjacent to the edge of the facility to avoid fragmentation of the dune landscape
- If any fossils, archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.

Table 16: Heritage considerations for inclusion in the EMPr.

Impact	Mitigation / management	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility

	objectives & outcomes				
Impacts to palaeontology, archaeology and graves					
Damage or destruction of fossils	Rescue fossils before extensive damage occurs	<u>Construction Phase</u> : Contract a palaeontologist to conduct monitoring site visits. This should be done under an approved Workplan so as to minimise delays in the event that fossils are found.	Appoint palaeontologist	Once-off	Developer
Damage or destruction of archaeological materials	Rescue artefacts before extensive damage occurs	<u>Construction Phase</u> : Contract an archaeologist to conduct monitoring site visits. This should be done under an approved Workplan so as to minimise delays in the event that fossils are found.	Appoint archaeologist	Once-off	Developer
Damage or destruction of archaeological sites, fossils or graves	Rescue information, artefacts, fossils or burials before extensive damage occurs	<u>Construction Phase</u> : Reporting chance finds as early as possible to HWC or an archaeologist / palaeontologist, protect <i>in situ</i> and stop work in immediate area. Implement Fossil Chance Finds Procedure if relevant.	Inform staff to be vigilant and carry out inspections of new excavations	Ongoing basis	Construction Manager or Contractor
				Whenever on site (at least weekly during construction period only)	ECO
Impacts to the cultural landscape					
Visible landscape scarring	Minimise landscape scarring	<u>Construction Phase</u> : Ensure disturbance is kept to a minimum and does not exceed project requirements. Rehabilitate areas not needed during operation.	Monitoring of surface clearance relative to approved layout	Ongoing basis	Construction Manager or Contractor
				As required	ECO
Intrusion into cultural landscape	Minimise visual intrusion	<u>Operation Phase</u> : Ensure that all maintenance vehicles and operational activities stay within designated areas.	Undertake visual inspections and report non-compliance	As required	Environmental Manager

Palaeontological Impact Management Measures

A) Construction phase

- Monitoring of construction excavations must take place. A protocol to ensure recovery of any fossils, and possible further mitigation must be included in the project Environmental Management Plan (EMP).
- Application to Heritage Western Cape for a Workplan permit, before construction is initiated, is advisable since this would enable removal of any palaeo-material to be made with minimal delay.
- Any fossil material encountered during the course of construction must be retained and will be deposited in the Quaternary collection of Iziko South African Museum.

Palaeontological awareness training is a useful way to stimulate worker interest and facilitate their recognition and reporting of fossil material if encountered. This could be in the form of an illustrated online (Zoom or other digital format) lecture showing examples of what the fossils might look like and explaining why they are important elements of our heritage.

Please refer to Figure 17 - 19 for the overlay map indicating environmental sensitivities as well as **Appendix B**.

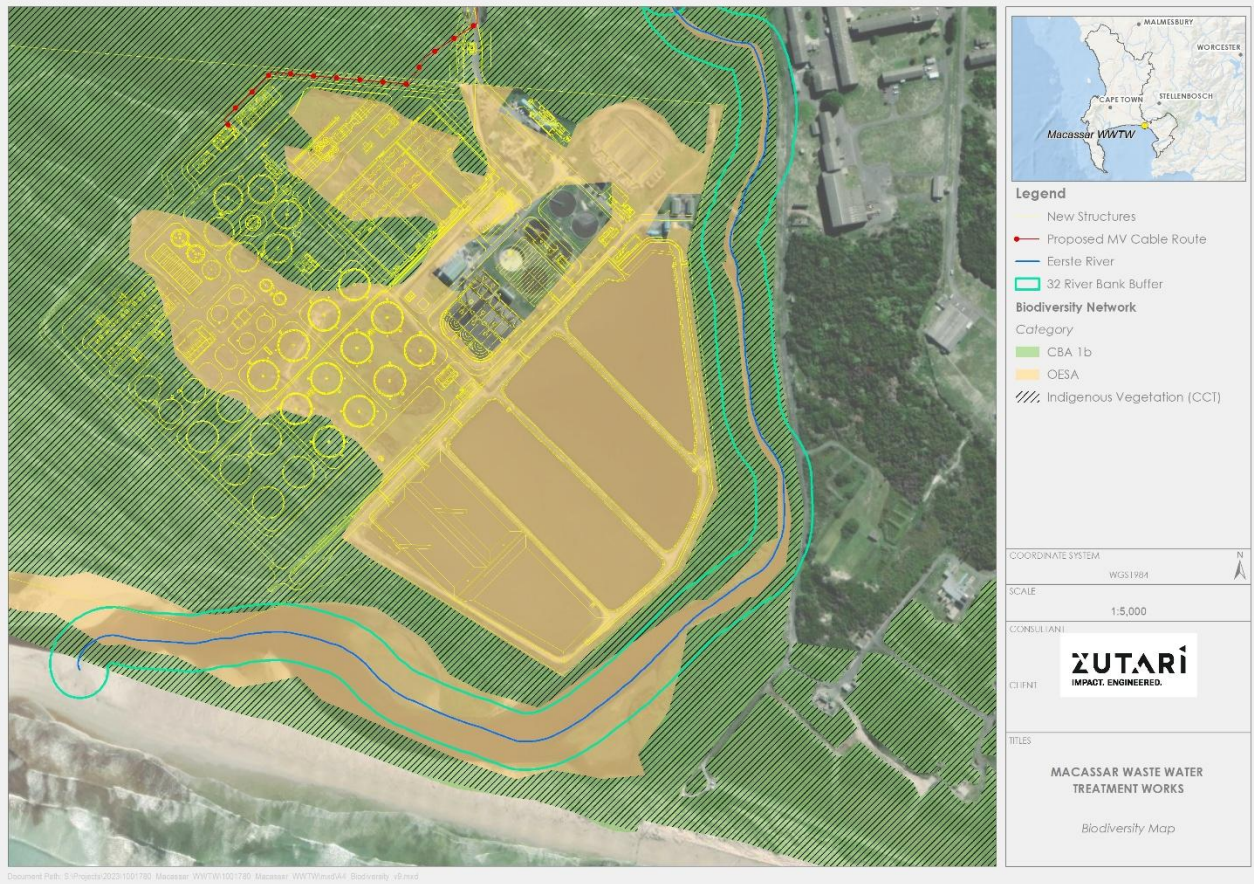


Figure 16: Zoomed in map of vegetation and biodiversity sensitivities and buffer area

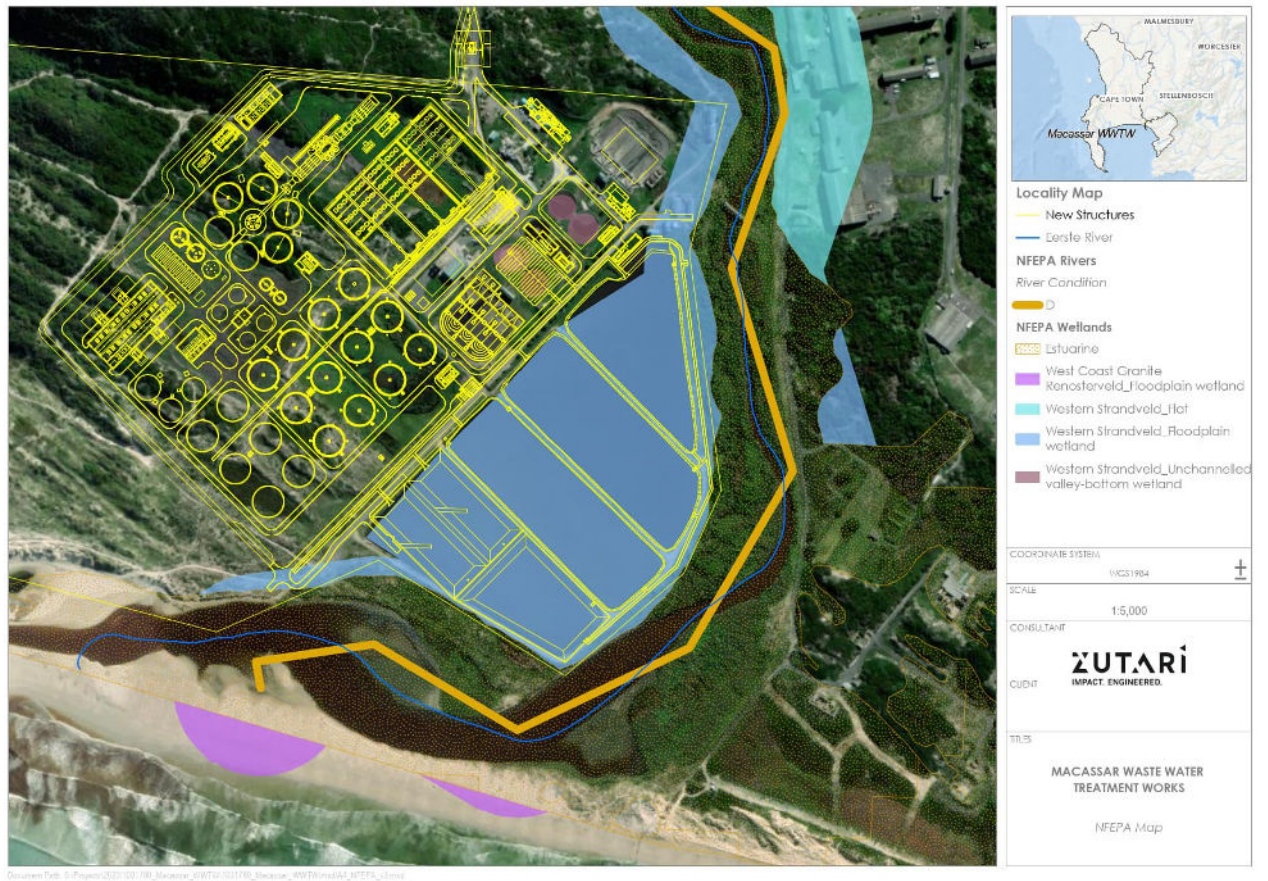


Figure 17: Zoomed in map of freshwater sensitivities and buffer area around the WWTW

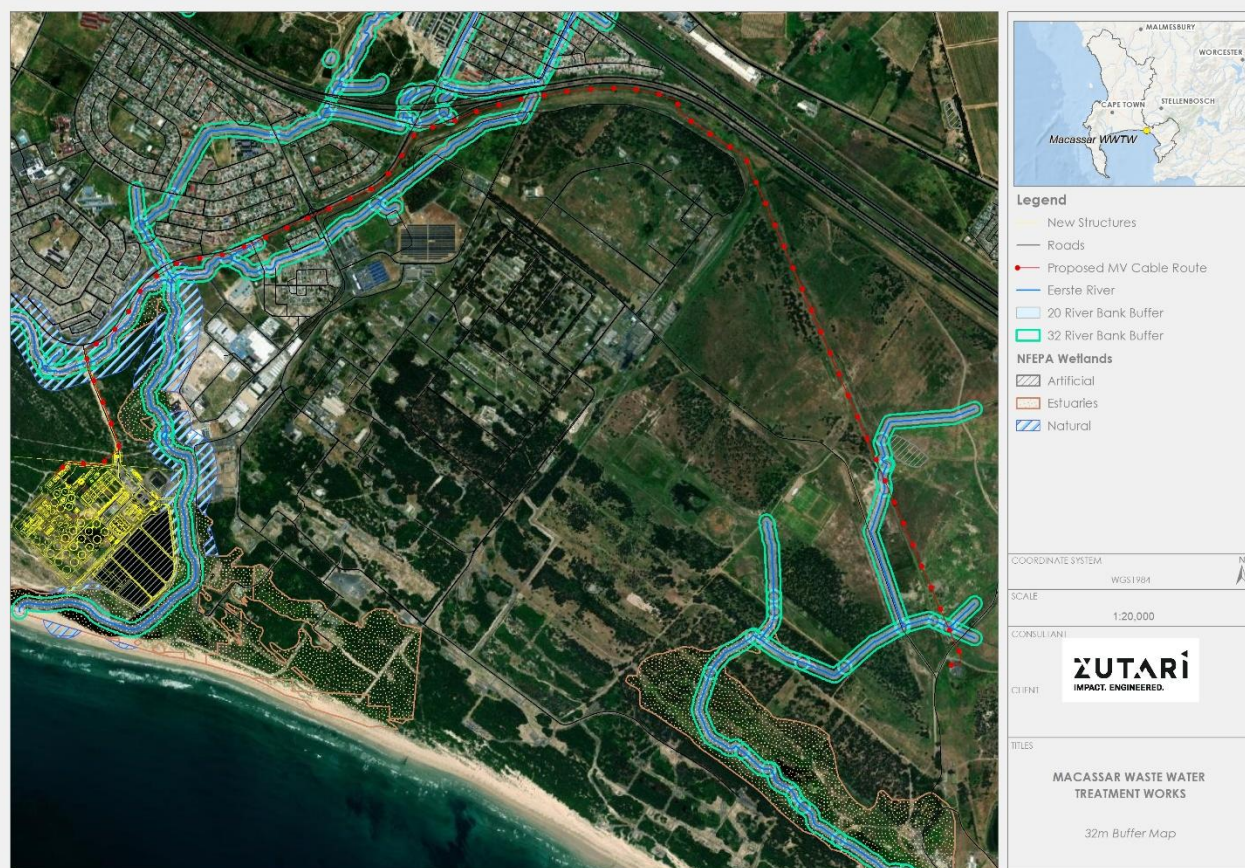


Figure 18: Map of freshwater sensitivities and buffer area inclusive of the Eskom cable

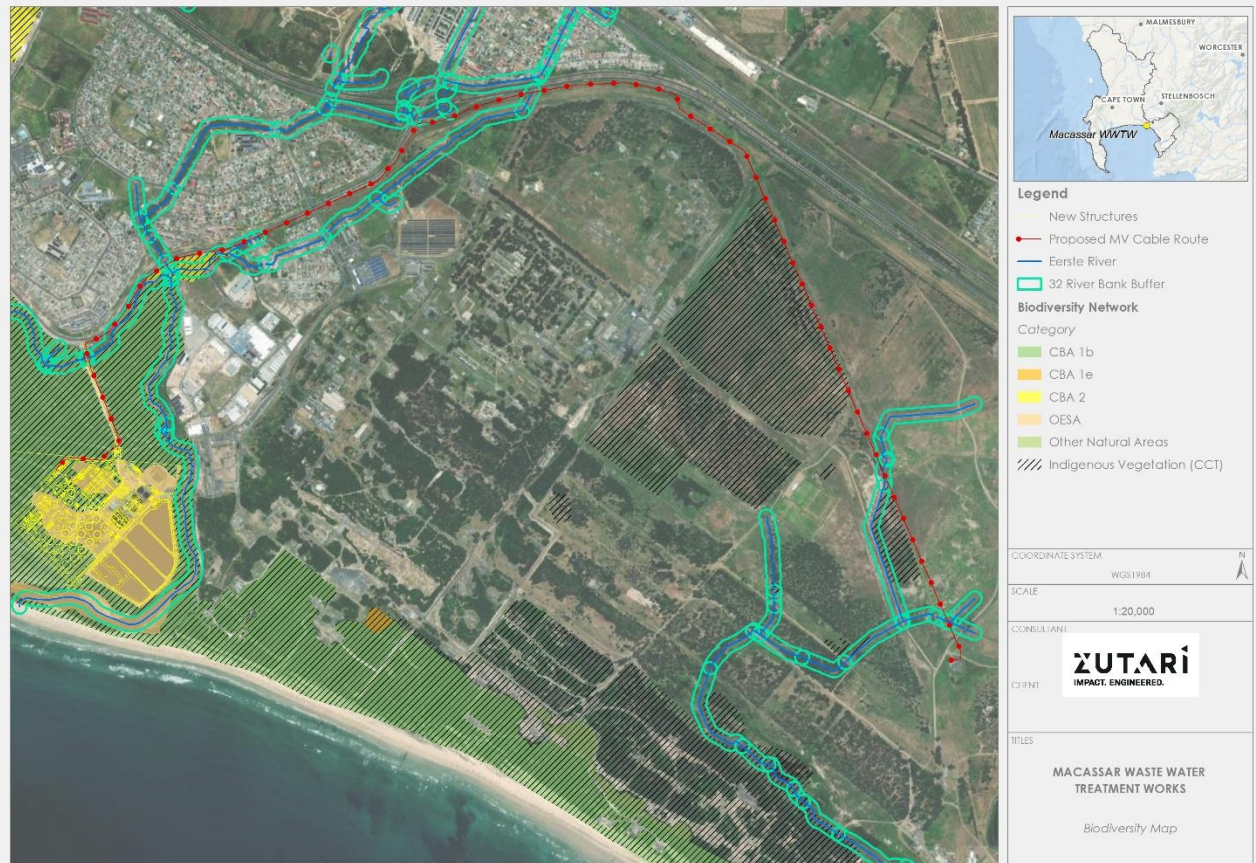


Figure 19: Sensitivities and buffer indication in reference to vegetation, biodiversity and freshwater sensitivities inclusive of the Eskom cable (All sensitivities).

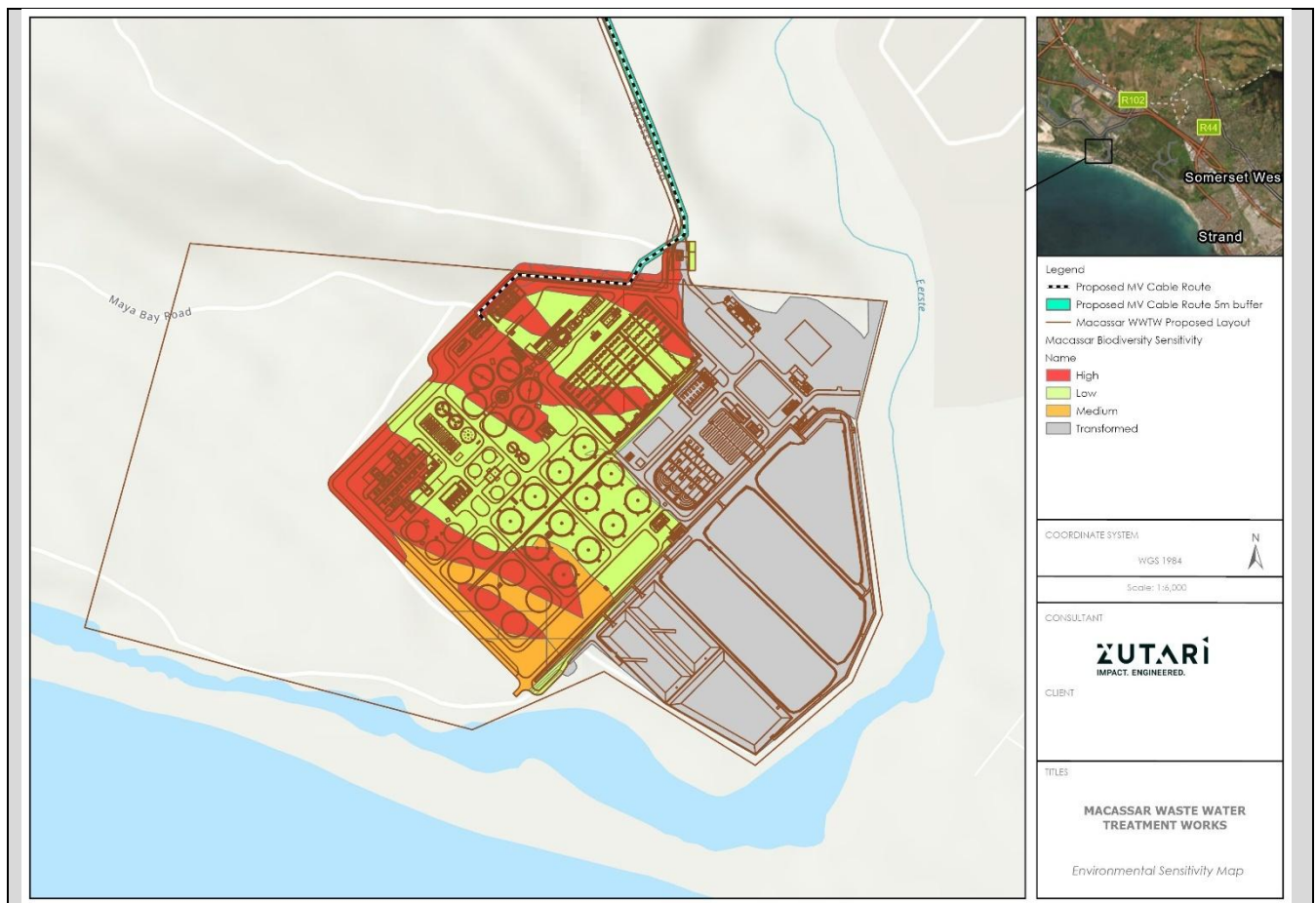


Figure 20: Macassar Biodiversity Sensitivity map

3. List the specialist investigations and the impact management measures that will **not** be implemented and provide an explanation as to why these measures will not be implemented.

N/A

4. Explain how the proposed development will impact the surrounding communities.

The expansion and upgrade of Macassar WWTW will be associated with noise, dust and visual impacts. The operational phase of the WWTW may result in an odour impact, however odour control measures are being implemented as part of the upgrade.

5. Explain how the risk of climate change may influence the proposed activity or development and how has the potential impacts of climate change been considered and addressed.

An increase in Mean Annual Precipitation (MAP) results to increased loading of sewage treatment works. Abnormal heat waves may result in impacts on water quality and odour. There will be an odour control system at the inlet and sludge dewatering facility (this was dealt with in the 2016 EA).

The proposed expansion of the Macassar WWTW will result in the increase in capacity of the WWTW to accommodate the peak flow events.

6. Explain whether there are any conflicting recommendations between the specialists. If so, explain how these have been addressed and resolved.

No areas of conflicting recommendations have been identified.

7. Explain how the findings and recommendations of the different specialist studies have been integrated to inform the most appropriate mitigation measures that should be implemented to manage the potential impacts of the proposed activity or development.

No areas of conflicting recommendations have been identified.

8. Explain how the mitigation hierarchy has been applied to arrive at the best practicable environmental option.

The identified impacts will be minimised, rectified and reduced through measures included in the EMP which aims to minimise The negative impacts associated with the development.

The mitigation hierarchy allows for successive steps in the once the previous step has been exhausted, the desired outcome of applying the mitigation hierarchy is to ensure that there is no loss of biodiversity, negativity impacts and risks are avoided. The mitigation hierarchy was applied in the following manner for the proposed project:

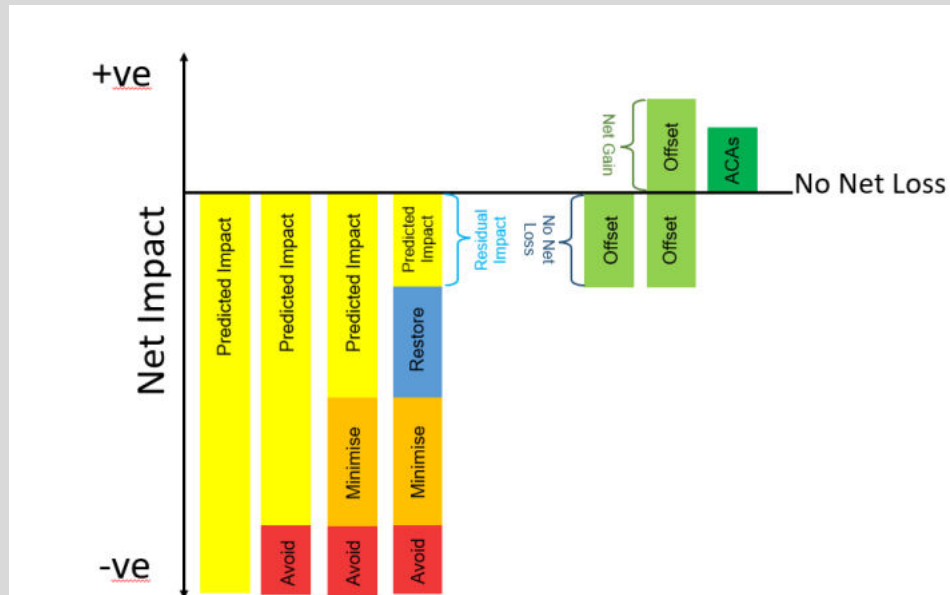
Avoidance: the proposed development/mining should first attempt to avoid or prevent negative impacts on biodiversity and ecosystem services by exploring alternative development types, locations, scales, layouts, and the siting of development/mining components:

Macassar WWTW is an existing treatment works that has been operational for years, therefore avoidance by site was not possible however infrastructure has been kept at a minimal footprint.

Minimisation and rehabilitation: when avoidance is not possible, efforts must be made to minimize negative impacts and to rehabilitate or remediate affected areas to reduce residual impacts

The site layout was amended and changed since the submission of the applicability checklist. The sensitive vegetation outside of proposed development site has been avoided.

Compensate/ Offsetting: residual impacts that remain after minimization and rehabilitation must be compensated for through biodiversity offsets. Offsets are designed to counterbalance these residual impacts by providing measurable conservation outcomes that ensure the overall biodiversity value is maintained or enhanced.



Depiction of the mitigation hierarchy and where offsets and additional conservation actions (ACAs) fit into the overall goal of achieving NPI. Image adapted from Temple et al., (2012). - Courtesy Scientific Terrestrial Services (Biodiversity Offset Strategy, 2024)

Due to residual impacts after all viable measures have been taken to first avoid or prevent, minimize or reduce, and remediate or rehabilitate those impact. The impacts were still moderate-negative, therefore a Biodiversity offset is being implemented to compensate for the loss of vegetation.

Alternatives Analysis

Several options were evaluated on a desktop basis as potential offset sites. Eight (8) options were identified as potential candidate sites (given their location within specific vegetation types, associations with the National Protected Area Expansion Strategy (NPAES), proximity to protected area (as per the South African Protected Area Database (SAPAD), etc). The identified candidate offset sites include:

1. An off-site offset option, encompassing approximately 25.0 ha, which is located within the same property as the proposed WWTW (i.e., Portion (Ptn) 0 of Erven 1205). This site is owned by the proponent;
 2. An off-site offset option, encompassing 72.3 ha, which is located immediacy west of the WWTW (i.e., Ptn 0 of Erven 702 and Ptn 0 of Erven 703);
 3. An off-site offset option, encompassing approximately 335.5 ha, which is located west of the WWTW, namely the properties associated with the informal 'Macassar Dunes Conservation Area' (i.e., Ptn 2 of Farm Drift Sands 544 and a section of Ptn 0 of Farm Drift Sands 544);
 4. An off-site offset option, encompassing approximately 509.83 ha, which is located approximately 10.5 km northwest of the WWTW. This land is owned by Airports Company South Africa SOC Ltd (ACSA) (i.e., Ptn 0 of Erven 75850);
 5. An off-site offset option, encompassing approximately 110.6 ha, which is located approximately 12.7 km northwest of the WWTW. This site is located within a section of the deproclaimed Driftsands Nature Reserve (Ptn 1 of Farm drift Sands 544);
 6. An off-site offset option, encompassing approximately 110.6 ha. This site is located immediately east of the existing WWTW (including a section of Ptn 0 of Erven 635). This land is owned by Denel SOC Ltd;
 7. An off-site offset option, encompassing approximately 53.53 ha, which is located approximately 3.7 km east of the WWTW. This land is city owned. The farm portions are as follows: ST791-4RE, ST791-5 (owned by Water and Sanitation), and a portion of STE794-0RE; and
 8. An off-site offset option, encompassing 824 ha, which forms part of the CoCT's Burgherspost offset land bank and is located approximately 65 km northwest of the WWTW. This land is currently under procurement by the city to be used as a land bank
- Note: only the necessary hectareage would be offset using this option.

Initially, only Option 1 through 5 were proposed as candidate offset sites; however, following discussions with the CoCT, the commenting authorities (CapeNature) and the competent authorities (Department of Environmental Affairs and Development Planning (DEA&DP)),

Options 7 and 8 were added for consideration. These options were specifically included in the offset analysis as it was established that land acquisition (land claims etc.) would likely be a serious factor limiting the feasibility of Options 2 through 5. As CoCT manages/owns/is in the process of acquiring the properties associated with Options 7 and 8, their inclusion was considered a beneficial decision.

Offset Options 1, 7 and 8 were identified as the most suitable candidates for offset purposes.

The Macassar WWTW holds the responsibility of mitigating negative impacts on biodiversity while enhancing opportunities to achieve long-term positive outcomes for ecological health and biodiversity, in line with regulatory and environmental commitments. Following the mitigation hierarchy, in the case of the Macassar WWTW, avoidance of impacts is not possible. Given the location of the existing WWTW and the pressing socio-economic need for the WWTW upgrades, impacts associated with the proposed development cannot be avoided. If environmental authorisation (EA) is received, the proponent will be required to implement mitigation measures. However, even with the implementation of strict mitigation measures lower in the mitigation hierarchy i.e. avoidance and minimisation, the construction and operation of the WWTW itself will still result in significant residual impacts to the receiving environment, e.g., loss of threatened vegetation type(s), loss of habitat connectivity, etc. To address this, rehabilitation measures will need to be implemented to rehabilitate any temporarily disturbed areas, ensuring that as much of the natural habitat as possible is rehabilitated post-construction. However, given the irreversibility of certain losses, particularly in threatened vegetation types, the final option in the mitigation hierarchy, i.e., offsetting, is deemed necessary.

To address these residual impacts, an Offset Strategy is being developed to compensate for the loss of biodiversity and habitat, especially following the recommendation for an offset by Boucher (2023). This strategy will ensure compliance with best practice and the principles of ecological sustainability.

In contrast to the WWTW construction, the MV cable installation will not result in significant residual impacts. By following the mitigation hierarchy, minimisation and rehabilitation measures within habitat impacted by the installation of the MV cable can be implemented during and after construction. As a result, the surrounding habitat will not experience significant residual impacts, as mitigation efforts should effectively address and rehabilitate any environmental disturbances. For this reason, only proposed activities that will result in significant residual impacts, i.e., the construction of the WWTW itself which will result in the direct loss of a threatened vegetation type (EN Cape Flats Dune Strandveld), will be considered applicable for offsetting purposes.

SECTION J: GENERAL

1. Environmental Impact Statement

1.1.	Provide a summary of the key findings of the EIA.
Freshwater statement The lower river and estuary are considered to be in a severely modified ecological state as a result of flow modification and water quality impacts arising from the discharge of treated wastewater from several WWTWs in the Kuils and Eerste River Catchment as well as stormwater runoff. The lower Eerste River is considered to be of moderate Ecological Importance and Sensitivity due to the indigenous fish that occur within the river system and the link of the lower river with the estuary and marine protected area. The wetland areas likely to be impacted by the proposed activities are considered to be in a largely to severely modified ecological condition. They provide limited goods and services and are of very low ecological importance and sensitivity. Loss of these wetland areas due to the proposed expansion of the WWTW would thus not be considered to be significant. The risk rating, of the proposed activities is considered to be moderate. The proposed activity will need to be authorised through an integrated water use license application or amendment to their existing water use licence for the WWTW. Botanical statement The overall conclusion is that the proposed expansion of Macassar WWTW will result in the loss and destruction of the Endangered Cape Flats Dune Strandveld, this is then subject to an offset as per regulations. So, a management plan to ensure the survival of the important vegetation and protected flora on site is implicit to the expansion development of the WWTW. This plan should include control over movement through the dunes by humans and their stock. The area should have a carefully designed system of paths (and guides) for educational access. Biodiversity Statement About half the proposed development area supports vegetation and faunal habitat that is mapped as High or Medium sensitivity and is also mapped as CBA1b in the City's Biodiversity Network. These areas should ideally not be lost to development. All mitigation outlined in Section 9 of the Terrestrial Biodiversity report must be implemented if development of this site is authorised. Ideally a biodiversity offset would be required, to help minimise the unavoidable High negative ecological impacts of the proposed development. Should an offset be required by the authorities then extensive negotiation would be required with all relevant parties, as finding a suitable offset (conserving the same habitat, but of a much larger extent) within the City of Cape Town would not be easy. Essentially no feasible offset areas are known to this specialist, except perhaps in the northern fringes of the City, north of Blouberg (near Atlantis). Heritage Statement There are three heritage concerns for the proposed project. The first is the possibility that buried fossils may be exposed and destroyed during excavations for the new infrastructure. The locations of such fossils cannot be predicted from the surface and will require monitoring. The second issue is the possibility of damaging or destroying ESA artefacts in the Paardevlei area. Recommendations relating to this area have been reproduced directly from Orton (2021) in order to be consistent. The third concern is the alteration of the natural landscape around the WWTW which has aesthetic and scientific significance. Little can be done to avoid this impact and the development has already been focused largely on the most disturbed areas. The remaining impacts are deemed acceptable in the light of the considerable socio-economic benefits to be derived from the project. Given that palaeontological impacts can be readily managed through monitoring and that the landscape impacts are relatively minor, it is the opinion of the heritage specialist that the proposed project should be authorised in its entirety. Agricultural Statement The agricultural impact of the proposed development is assessed as being acceptable because it results in negligible loss of future agricultural production potential. From an agricultural impact point of view, it is recommended that the development be approved. The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is not subject to any conditions. Biodiversity Offset Process: October 2024 Report – Refer Appendix G.8.2 Scientific Terrestrial Services (Biodiversity offset specialist) has been appointed to conduct the biodiversity offset process. The objective is to prepare a biodiversity offset report consistent with the National Biodiversity Offset Guideline published in the Government Gazette No. 46088 on 25 March 2023 (NBOG) (2023). Please refer to Appendix G.8.2 and below is the summary: The WWTW expansion project represents a significant infrastructural upgrade that is critical to accommodate the increasing wastewater load from the growing population and associated urbanisation. However, this expansion will result in unavoidable residual impacts on the surrounding environment, particularly the loss of an EN vegetation type, including the Cape Flats Dune Strandveld. This development is overwhelmingly to the benefit of the local community and water resource conservation as well as protecting the Helderberg MPA.	

Through the application of the mitigation hierarchy, efforts to avoid, minimize, and rehabilitate impacts have been carefully considered. However, given the extent of unavoidable habitat loss, a biodiversity offset has been deemed necessary to ensure appropriate mitigation of the loss of biodiversity. This strategy aligns with best practice principles as outlined in the 2023 Biodiversity Offset Guidelines, ensuring compliance with national conservation objectives.

Following a detailed alternatives analysis, and discussion with the relevant authorities, Offset Options 1, 7 and 8 were identified as the most suitable candidates for offset purposes. These options received the highest total scores of 21, 21 and 24, respectively in the alternatives analysis, indicating their strong alignment with the required offset criteria. These three options are also considered especially favourable as they are located within key biodiversity areas, such as CBA habitat.

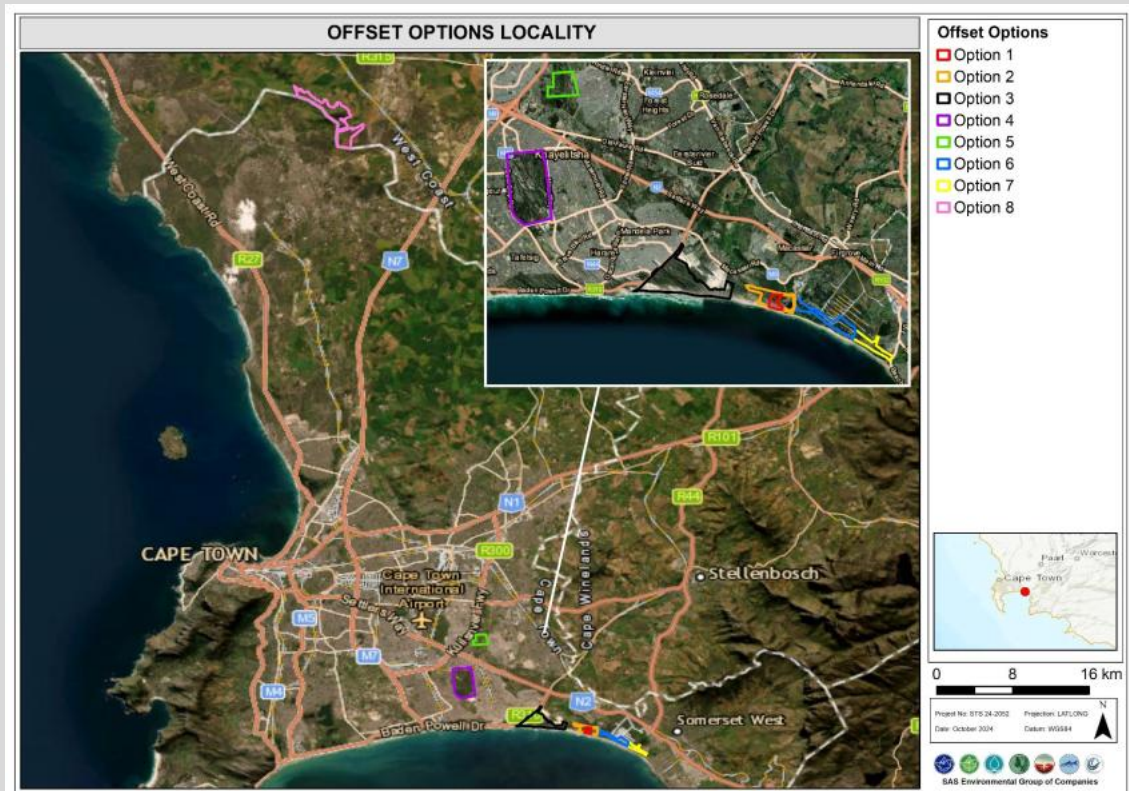


Figure 21: Map illustrating the candidate offset sites investigated for potential use as offset

(Refer to page 15 and onwards of Appendix G.8.2 for individual maps of each potential site).

Option 1 is located within the WWTW property thus negating the need for additional purchasing of property. Options 7 and 8 are both state-owned, making them ideal for long-term stewardship agreements. State-owned land presents fewer challenges compared to privately owned land, where high asking prices and reluctance to enter into stewardship agreements often hinder progress. Options 1, 7 and 8 were identified as the best options for offset purposes. By selecting these options, habitat within the EN Cape Flats Dune Strandveld and EN Swartland Granite Renosterveld can be safeguarded.

The offset strategy proposed for the Macassar WWTW ensures that the residual impacts from the project are not only mitigated but compensated for through meaningful biodiversity gains. By securing and managing high-priority conservation areas, this strategy contributes to the broader regional conservation objectives and ensures the long-term sustainability of critical biodiversity in the False Bay area and the greater COCT.

Results:

The sections below provide the results pertaining to the Biodiversity Offset Strategy component. For the purposes of the offset determination SCC were assessed in this process and not the wetland offset determination to align to the National Biodiversity Offset Guidelines of 2023.

Residual Impact Assessment & Biodiversity Offset Target Ratios

Within the WWTW Area of Influence, the following extents are available within each sensitivity class:

- High Sensitivity areas (7.14 ha);
- Medium Sensitivity areas (2.23 ha); and
- Low Sensitivity areas (9.05 ha).

Areas of high sensitivity generally included sections with higher habitat integrity, while medium sensitivity areas were characterized by intermediate levels of ecological integrity. Low sensitivity areas encompassed historically altered sites (e.g., settling ponds) that have lower ecological integrity.

Following initial investigation and options analyses, a comprehensive Biodiversity Offset Report will be prepared, in which the following key aspects will be addressed:

Develop and agreement) between the relevant parties to establish stewardship of the associated offset sites;

- Development of a Rehabilitation and Management Plan for the Target Offset Site detailing the actions necessary (where applicable) to restore and maintain ecological functions, mitigate potential risks, and ensure alignment with biodiversity targets; and
- Compilation of a final detailed report outlining the findings and recommendations for the Offset Strategy. This report will include an assessment of potential offset sites, an evaluation of biodiversity losses and potential gains, proposed measures to meet offset targets, and a robust rehabilitation and management plan to ensure the long-term success and sustainability of the offset initiative.

Biodiversity Offset Strategy Report (December 2024) – Refer Appendix G.8.3

The Biodiversity Offset Strategy developed for the Macassar WWTW expansion aligns with the principles and requirements of the 2023 Biodiversity Offset Guidelines. This strategy addresses the residual impacts on the EN Cape Flats Dune Strandveld, a threatened vegetation type. Comprehensive offset ratio calculations, adjusted for habitat sensitivity and functionality (e.g., presence of functioning CBA habitat), determined that 176.3 ha habitat is required to achieve compliance with biodiversity offset standards and ensure the long-term viability of the affected ecosystems.

The selected Offset Areas (Options 1, 7 and 8) offer substantial opportunities for achieving conservation gains through targeted management actions, such as AIP control, erosion control, and the rehabilitation of degraded areas. These Offset Areas, especially Option 8, also provide suitable habitat to support various SCC and enhance ecological connectivity within the region, contributing to broader conservation priorities. Although Option 8 is not located within the same vegetation type as the WWTW (Cape Flats Dune Strandveld), its use as an offset is considered acceptable due to its alignment with "trading up" principles. While this does not involve trading up to a vegetation type with a higher threat status, it constitutes an improvement in terms of ecosystem conservation value due to the significantly lower REE % of the proposed vegetation.

The specialist has provided the proponent, the CoCT, with a comprehensive and detailed budget for the implementation, management, and long-term sustainability of the Biodiversity Offset Strategy (including management activities as highlighted in the Rehabilitation and Management Plan). The proponent has reviewed and acknowledged the budget, demonstrating a clear understanding and acceptance of the associated financial commitment. CoCT has committed to allocating the necessary resources to ensure the successful implementation of the offset strategy, thereby supporting its long-term ecological and conservation goals in alignment with the 2023 Biodiversity Offset Guidelines.

1.2.	Provide a map that that superimposes the preferred activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. (Attach map to this BAR as Appendix B2)
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Please refer to **Appendix B2**

1.3.	Provide a summary of the positive and negative impacts and risks that the proposed activity or development and alternatives will have on the environment and community.
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Positive Impacts

- The proposed upgrade to the existing WWTW will result in an improvement in the final effluent quality, and as such, one could expect that the proposed upgrade would at least improve the existing water quality situation in the Eerste River Estuary.
1. **Ensure Sanitation Provision:** In terms of Section 3 of the National Water Services Act (NWSA), 1997 and the National Water Act (NWA), 1998, the Municipality as a WSA has a duty to its consumers in its area of jurisdiction to ensure adequate provision of universal access to sanitation and wastewater services. The main objective of this project is to ensure that the City of Cape Town can meet the current and future sanitation demands by creating additional wastewater capacity in terms of service provision to ensure the following:
 - a) The eradication of the Municipality's sanitation and housing backlog. This will increase the number of houses (i.e., 8,291 social housing opportunities which include informal structures which need to be relocated and serviced within the catchment area) connected to the sewerage network and as a result, will require an upgrade to the WWTW.
 - b) The accommodation of all additional developments in the catchment area which will cater for future demand and therefore benefit 49,056 households (including social housing) for 220,752 beneficiaries. There is significant planned development in the catchment area, which includes social housing, residential and commercial development. This increased development would place pressure on the already stressed Macassar WWTW. A lack of capacity in the sanitation infrastructure of the Macassar sewage catchment area could hamper this development and economic growth.
 2. **Ensure Effluent Compliance and Improve the Health of the Eerste River:** In terms of the NWA, the City of Cape Town, as a WSA, needs to ensure that the effluent discharged by its WWTW complies with the prescribed effluent quality standards when being discharged into receiving bodies. The Macassar WWTW discharges into the environmentally sensitive Eerste River and as such, it is crucial that it can adequately treat the incoming flow (in terms of the future demand) to prevent the risk of polluting the Eerste River. This is vital for the health of the Eerste River, which flows into False Bay (a hub for local anglers in the Macassar area and the broader tourism sector). The False Bay beach is also open to the public and used recreationally. This intervention will upgrade the Macassar WWTW to ensure compliance with the prescribed effluent quality standards. The threat of river pollution posed by the current Macassar WWTW is covered under **Section 2.3.5**.

3. **Support Social and Economic Development:** The project will support future development, which will trigger economic and socio-economic benefits and be most impactful on the most vulnerable communities in the Municipal area. The project will support social and economic development as follows:
- The maximisation of local labour (expected to be approximately 600 construction job opportunities over four years) during the construction phase of the project. The use of small and emerging contractors will be specified in the construction contracts which will further include training and skills development.
 - Improvement of the ecological state of the Eerste River mitigating pollution to the False Bay Ocean through improved effluent quality.
 - The potential subsidisation of the water demands of various users (specifically industries and irrigation users) with high-quality treated effluent from the upgraded Macassar WWTW.
4. **Increase Resilience, Sustainability and Promote Green Energy Production:**
- The upgrade of the Macassar WWTW will enforce resilience and sustainability as follows:
 - Protection of the environment, through improved treated effluent quality, which will improve the quality of the Eerste River.
 - Opportunity for reuse of treated effluent for both on-site and off-site use.
 - Advanced sludge treatment to reduce the impact of disposing untreated sludge at the landfill sites (comply with the liquid ban to landfill as well as the organic diversion from landfill).
 - In terms of energy efficiency, the installation of primary settling tanks (PSTs) would contribute towards reducing energy consumption (i.e., 15 – 20% reduction) of the overall WWTW. LED lighting for streetlights and in buildings and solar energy for buildings will improve energy efficiency. These technologies will also result in a reduction of greenhouse gas emissions.
 - The sludge treatment facility will produce green energy (i.e., sludge to biogas) which will also reduce the high energy demand of the Macassar WWTW which aligns with the vision of the City of Cape Town's Climate Change Response. The wider benefit of the green energy produced from the plant will result in more power being available for other users within the City of Cape Town

Negative Impacts

- Negative impacts relate to the environmental impacts assessed by the specialists and **with** mitigation measures the impacts were found to be within acceptable limits and summarised in the table below.

Aspect	Impact	Pre-mitigation	Post-mitigation
Pre-construction			
No impacts have been identified for the pre-construction phase.			
Construction			
Botanical/Terrestrial Proposed Upgrade of WWTW	Loss of 6.8ha of High and 2.1ha of Medium sensitivity vegetation	Major (-)/ High	Major (-)/ High
	Loss of High and Medium sensitivity faunal habitat and associated animal species	Major (-)/ High	Major (-)/ High
Proposed cable trench	Loss of approx. between 2600m ² – 6000m ² of High sensitivity vegetation	Moderate (-)/ Medium (-)	Minor (-)/Low (-)
Freshwater Inclusive of cable	Loss of artificial wetland areas associated with the existing WWTW as well as potential estuarine wetland habitat loss as a result of alteration to volumes of wastewater discharged	Minor (-)/Low (-)	Negligible(-)/ Very low (-)
Heritage Inclusive of cable	Intrusion into the cultural landscape of incompatible structures/features	Minor (-)/Low (-)	Minor (-)/Low (-)
Palaeontology Inclusive of cable	Destruction of palaeontological resources	Moderate (-)/ Medium (-)	Negligible(-)/ Very low (-)
No-go	Inclusive of all the above aspects.	Neutral	Neutral
Operation			
Botanical/Terrestrial	Loss of ecological connectivity, habitat fragmentation, loss of CBA1b	Moderate (-)/ Medium (-)	Moderate (-)/ Medium (-)
Freshwater	Flow modification	Moderate (-)/ Medium (-)	Minor (-)/Low (-)
	Water quality impairment	Moderate (-)/	Minor (-)/Low (-)

			Medium (-)	
	Heritage	Intrusion into the cultural landscape of incompatible structures/features	Moderate (-)/ Medium (-)	Moderate (-)/ Medium (-)

2. Recommendation of the Environmental Assessment Practitioner ("EAP")

2.1.	Provide Impact management outcomes (based on the assessment and where applicable, specialist assessments) for the proposed activity or development for inclusion in the EMP
All of the mitigation measures and recommendations provided by the specialists will be included in the EMP. They have been broadly summarised below as outcomes. (Please note: The proposed revision to the design upgrades will require the clearance of more than 1ha of indigenous vegetation, which includes Endangered Cape Flats Dune Strandveld vegetation. Therefore, Listing Notice 1, and 27 and Listing Notice 3 Activity 12 is being applied for. However, all mitigation measures proposed by the specialists have been captured below and in the EMP). Construction phase - The construction activities should be limited to the already disturbed areas within the footprint of the WWTW and immediately to the west of the WWTW and away from the estuary. - Disturbed areas should be rehabilitated as far as possible after the construction activities are complete and monitored and managed after rehabilitation to prevent the growth of invasive alien plants. - It is essential that there is ongoing monitoring to ensure that the WWTW is designed and operated to achieve the final treated wastewater quality indicated. - The use of the treated wastewater during the drier summer months should be encouraged to reduce the volumes that need to be discharged to the estuary, particularly during the low flow period when seawater intrusion and tidal exchange within the estuary may have naturally occurred. A portion of the treated effluent will be assigned for Re-use, namely 18.3 ML/day of the 80 ML/day during the summer months. This is based on the current projected demand for treated effluent in the catchment area based on a practical approach and could increase over time based on future requirements. - It is recommended that the ecological flow requirement for the estuary be determined at a rapid or intermediate level and considered in terms of the future volumes to be discharged to the estuary. - Any boundary fencing used must be permeable to small animals at ground level, with regular gaps of 200mm wide and 150mm high. This will not be applicable to the Main Security Fencing surrounding the build area of the WWTW. The Main Security Fencing needs to be secure to prevent theft and vandalism. Secondly, with continuous large vehicle movement, various open tanks and structures which contain wastewater or sludge, and mechanical and electrical equipment, which is live and operational, we need to ensure animals do not enter the plant due to their safety and well-being. - The authorised overall development boundary should be surveyed and pegged out and fenced on site prior to any site development. - No areas of natural or partly natural vegetation should be disturbed outside the pegged/fenced out and authorised site. No vehicular activity or dumping of material may take place outside the authorised site. - Search and rescue of Cape Dwarf Chameleons (<i>Bradypodion pumilum</i>) and all other translocatable fauna should take place on site prior to any site disturbance, as well as during site establishment (site clearing). This should be undertaken by authorised and experienced faunal experts. - Search and Rescue of all usable plant material should be undertaken on site prior to any site disturbance, as well as during site establishment (site clearing). Neither of the two plant SoCC recorded can be easily translocated, although this should be attempted. This should be undertaken by authorised and experienced horticultural experts, and in this regard the Stellenbosch Botanical Garden is recommended. - Stabilisation of any cut sand dunes and slopes outside the approved development site should be undertaken using only the rescued plant material from site and should be undertaken by the appointed plant Search and Rescue contractor. - Any trenches or excavations created during construction should be examined for trapped animals twice a day, and these should be removed and released in suitable natural habitat. - The proposed installation of the powerline within the western extent within the disturbed road reserve and attaching the cable to the bridge crossing the Eerste River is supported. - Open trenching for the cable would be acceptable provided the works is undertaken during the low rainfall period (November to April) and the duration of the construction works is limited as far as possible. - The relevant permits will have to be sourced for removal of Protected Species such as milkwoods (<i>Sideroxylon inerme</i>). - The applicant must ensure that there is adequate budget for all required mitigation. - Sediments accumulated in stilling ponds should be utilized so that the ponds remain viable and do not fill up. - An alien vegetation management plan is required, which includes the control of herbaceous weeds, and the development of cover of indigenous species in any dysfunctional sediment ponds. Before the construction activities, suitable indigenous wetland plants within the proposed trenching and construction areas could be identified and set aside for revegetating the disturbed areas immediately after construction is complete. It is essential that the clearing of invasive alien plants and in particular Port Jackson willows be undertaken during and after construction activities. - The soil and cover vegetation removed to excavate the trench in which the cable is to be laid should be replaced over the line at the same level as the existing level.	

- Use of machinery in the wetland areas should be limited as far as possible. Use of an excavator on tracks that can be driven along the excavated trench, excavating and backfilling as the pipeline is laid is recommended. The minimum area for the construction and lying of the cable in the eastern extent of the route should be demarcated and the wetland areas outside of the construction areas treated as no-go areas. Any areas significantly compacted by machinery will need to be ripped and revegetated following construction.
- All rubble associated with construction activities should be removed after the construction phase is complete.
- Control of invasive alien vegetation within the disturbed areas will need to continue for at least 5 years.
- A management plan to ensure the survival of the important vegetation and protected flora on site is implicit to the expansion development of the WWTW. This plan should include control over movement through the dunes by humans and their stock. The area should have a carefully designed system of paths (and guides) for educational access.
- Any destruction of the Endangered Cape Flats Dune Strandveld vegetation, which is found on the site examined here, is subject to an Offset ratio of 30:1 in the area (ratio for outside an urban area) if its destruction cannot be avoided (refer to Department of Environment Affairs & Development Planning (DEA&DP), 2015; Government Gazette 2022a & 2022b). The precise area of the Dune Scrub to be impacted would need to be measured as part of an independent offset determination. For the Macassar project the following was determined: The proposed offset is adequate to compensate for the 176.3 hectares of residual impact, which was calculated using a 10:1 ratio, adjusted by factors of 2:1 or 1.5:1 based on habitat sensitivity. This results in an average offset ratio of 18.8:1, effectively offsetting 176.3 hectares for the 9.3 hectares lost. The precise area of the Dune Scrub to be impacted would need to be measured as part of an independent offset determination.
- The Fossil Chance Finds Procedure must be included in the EMPr for the project. Should any heritage remains be exposed during excavations or any actions on the site, these must immediately be reported to the Provincial Heritage Resources Authority of the Western Cape, Heritage Western Cape (in accordance with the applicable legislation). Heritage remains uncovered or disturbed during earthworks must not be further disturbed until the necessary approval has been obtained from Heritage Western Cape ("HWC"). Heritage remains include: archaeological remains (including fossil bones and fossil shells); coins; indigenous and/or colonial ceramics; any articles of value or antiquity; marine shell heaps; stone artifacts and bone remains; structures and other built features; rock art and rock engravings and graves or unmarked human burials. Reporting chance finds as early as possible to HWC or an archaeologist / palaeontologist, protect *in situ* and stop work in immediate area. Implement Fossil Chance Finds Procedure if relevant.
- A palaeontologist must be contracted to monitor the excavation work on site.
- A Workplan should be in place so that collection of fossils can commence immediately as and if required.
- An archaeologist must be contracted to monitor the grubbing with a focus on WWTW site and Paardevlei precinct.
- Disturbance of the dunes outside the project footprint must be minimised.
- The gravel road from the entrance to the coast must be placed adjacent to the edge of the facility to avoid fragmentation of the dune landscape. *(This mitigation has been applied by the Engineers and is captured in the final layout).*
- A decision will need to be taken during the monitoring process as to whether enough material is present to warrant retention of a collection, as well as the analysis, curation and reporting of the finds.
- At minimum a photographic record and description of the material and its context should be captured
- If any fossils, archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.
- Monitoring of construction excavations must take place. A protocol to ensure recovery of any fossils, and possible further mitigation must be included in the project Environmental Management Plan (EMP).
- Application to Heritage Western Cape for a Workplan permit, before construction is initiated, is advisable since this would enable removal of any palaeo-material to be made with minimal delay.
- Any fossil material encountered during the course of construction must be retained and will be deposited in the Quaternary collection of Iziko South African Museum.
- Palaeontological awareness training is a useful way to stimulate worker interest and facilitate their recognition and reporting of fossil material if encountered. This could be in the form of an illustrated online (Zoom or other digital format) lecture showing examples of what the fossils might look like and explaining why they are important elements of our heritage.
- The translocation of Species of Conservation Concern (SoCC) from the development site into the offset receiving area should be conducted should this be deemed feasible by the CCT Biodiversity Management Branch (the offset implementing agent) based on the suitability of the translocation environment and competition considerations.
- Where areas have been cleared, sand trapping methods should be implemented to minimise the movement of sand to nearby offsite roads, residential areas, other properties, developments and land uses. Sand trapping methods could include:
 - Fencing the work area using screen mesh material;
 - Covering exposed surfaces with screen material;
 - Implementing wind rows using cleared plant material from site;
 - Planting of indigenous vegetation (in accordance with Section 3.38);
 - Other methods recommended by the Contractor upon approval from the Engineer and ECO.
- The waste generated on site must be efficiently managed in accordance with the waste hierarchy and disposal must be seen as the last option.
- An alien vegetation management plan is required, which includes the control of herbaceous weeds, and the development of cover of indigenous species in any dysfunctional sediment ponds.

- Where alien vegetation clearing occurs, mature alien trees/ bushes on site should first be removed by hand (i.e. brush cut). If the seed content of the removed trees is high the plant material should be disposed of at a landfill site, or burnt at an appropriate facility, or given to the local community for use/ re-sale as firewood. If the seed content of the removed trees is low, then the removed plant matter should be chipped and used for mulch during rehabilitation of disturbed areas on site, or used as mulch elsewhere in the municipality, or taken to a municipal compost heap. The ECO should be consulted for guidance in this regard.
- Where possible, soil stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding, (or application of herbicides if agreed with the ECO).
- Any significant event resulting in the spill or leak of hydrocarbons (e.g. petrol, diesel or oil) or any other hazardous solvents into the ground and/or watercourses must be reported to all relevant authorities, including the Directorate: Pollution and Chemicals Management, within 14 (fourteen) days. This requirement is in terms of section 30 (10) of the NEMA, that pertains to the control of emergency incidents and should include the reporting, containment and clean-up procedure of such incident and the remediation of the affected area. All necessary documentation must be completed and submitted within the prescribed timeframes. Containment, clean-up and remediation must commence immediately in the case of NEMA section 30 incidents.
- The CCT's Air Quality Officer (AQO) reserves the right to call for the implementation of dust fallout monitoring during all phases of construction of the project, in the event that it becomes evident that the dust nuisances are not effectively managed. The Dustfall Monitoring Programme may include the submission of monthly or quarterly dust fall reports.
- An emergency response plan specific to potential leaks of chlorine gas shall be developed that has alarms with appropriate level of redundancies built in. Such a plan should be developed in the event of an emergency release and in consultation with the CCT's Disaster Management, Fire and Life Safety Units.
- If an existing service/s is damaged as part of construction activities associated with the upgrade of the WWTW, the services will be reinstated immediately.
- Identify specialised habitat within the Offset Areas that can be used to enhance biodiversity (over time). Specialised habitat can include any rocky areas, freshwater features, etc., within the Offset Areas. Once identified, ensure appropriate management plans are developed so that these features are maintained in a good ecological condition and thus have the propensity to create habitat for additional species and, in time, act as source populations for the surrounding area.
- Several threatened species occur within Offset Option 8 and/or suitable habitat for such species is present within the Target Offset Areas. As such, minimisation of disturbance to these species must be prioritised. Improved security measures will be required to reduce the risk of illegal access by poachers to the properties.

Operation Phase

- The stipulated water quality requirement of the DWS (particularly for phosphates as the limiting nutrient to plant growth) to be achieved in the final effluent is supported to reduce eutrophication of the lower Eerste River and Estuary.
- It is recommended that the Special Limit for Ammonia of 2 mg/l or at least the General Limit of 6mg/l also be specified for the final treated wastewater as this is also a variable of concern within the current treated wastewater.
- Reuse of the treated wastewater rather than discharging it to the estuary is worth consideration, considering the treatment costs, the quality of the final treated effluent as well as the growing water demand. A portion of the treated effluent will be assigned for Re-use, namely 18.3 Ml/day of the 80 Ml/day during the summer months. This is based on the current projected demand for treated effluent in the catchment area based on a practical approach and could increase over time based on future requirements.
- The 'no-go' areas of the development property must be clearly demarcated and excluded from the final layout plan.
- Where birdwatchers currently have access to the existing maturation ponds, these areas will be fenced off to accommodate the expansion development and access to the new site footprint will no longer be permissible. Birdwatchers interested in accessing the maturation ponds will need to liaise directly with the WWTW's operational staff for permission to access areas within the new WWTW; the details of this agreement and arrangements (i.e., health and safety inductions, being accompanied by plant staff, hours which birding is accessible) falls outside of the purview of the upgrade of the development as this will be dealt with at an operational level.
- Care must be taken to avoid the re-introduction and spread of alien invasive species.
- Within the Offset Areas, any erosion concerns that are evident will require management to ensure such features do not worsen in the future. To address the erosion concerns within the landscape, the following management actions can be considered (however, a specialist would be required to address specific erosion concerns and make suitable recommendations based on specific examples):
 - Brush packing: brush packing involves placing cut branches or natural organic material (from indigenous species) over eroded areas. This helps slow down surface runoff, trap sediments, and facilitate seed retention.
 - Revegetation with indigenous species: use indigenous, drought-resistant plants and grasses to revegetate the eroded areas. These plants should have strong root systems that will stabilize the soil and reduce surface runoff.
 - Grazing management: implement controlled grazing practices or a temporary grazing exclusion zone around vulnerable area(s) (e.g., grazing camps). Fencing off badly eroded areas can prevent further trampling and disturbance.
 - Erosion control structures: install small check dams or gabions (wire mesh filled with rocks) in active erosion channels to trap sediment and slow down water flow.
 - Mulching: apply mulch (such as straw or other organic matter) over bare patches to improve moisture retention and protect the soil from direct sun and wind exposure. If mulch is the only option for erosion control, it should be

	chipped on site from indigenous plant material only, to avoid introducing further invasive species. This indigenous plant material could be obtained from firebreak maintenance brush-cut material. No foreign material should be brought into the offset sites. - Water harvesting: install small-scale water harvesting structures (e.g., swales, bunds) to direct water to areas where it can infiltrate the soil instead of flowing through the erosion gullies. - A fire management plan for each offset Area should developed on approval of the offset (if approved). The fire management plans must be developed and routinely updated by a suitably trained individual. Ideally, management efforts should also be continuously implemented to ensure that the targeted areas remain in good ecological condition. - For Offset Areas where wildlife (e.g., antelope, etc.) will be present, e.g., Option 8, a wildlife management plan should be developed and routinely updated by a trained ecologist or land manager. Management efforts should be continuously implemented to ensure the target areas remain in good ecological condition, supporting optimal fynbos health and biodiversity; Developed wildlife management plans will need to align with stipulations as guided by the NEMPAA. - To allow for coherent management interventions, an Alien and Invasive Plant Species Clearing (AIPCP) for each Offset Area must be developed on approval of the Offset Strategy (if approved) and updated on a regular basis. Control of AIPs within the Offset Areas is important as infested areas can act as a source for AIPs to spread if left uncontrolled.
2.2.	Provide a description of any aspects that were conditional to the findings of the assessment either by the EAP or specialist that must be included as conditions of the authorisation.
Open trenching for the cable would be acceptable provided the works is undertaken during the low rainfall period (November to April) and the duration of the construction works is limited as far as possible.	
2.3.	Provide a reasoned opinion as to whether the proposed activity or development should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be included in the authorisation.
Please refer to Appendix K for the need and desirability of the proposed upgrade as well as section 1.3 of the BAR. The development will have a Low impact on the environment overall, taken mitigation measures into account, with the exemption of the impact on the vegetation. The overall ecological significance of this direct vegetation and faunal habitat loss for the proposed layout (including cable trenching) is High negative before mitigation. Mitigation in this case needs to invoke the mitigation hierarchy - viz. avoidance first, then minimising of impact, and then mitigation. Avoidance is the first step and means no loss of habitat within High sensitivity areas. If this is done, the direct impacts could be reduced to an acceptable Low negative impact. However, given the probable physical requirements of the project for a certain minimum area this avoidance of impact is deemed unlikely. The likelihood of being able to minimise the impact (i.e. reduce the footprint in the High sensitivity areas) is also unlikely, as that would require substantial redesign and shrinking of the new facility. This leaves a biodiversity offset as the only real way to try and reduce the unavoidable High negative residual impact to an acceptable level. (Refer to Appendix G.8.2 for the most recent and updated Biodiversity Offset Report). It is the EAPs opinion that the recommended mitigation measures proposed by the specialists and contained in the EMPr, will sufficiently reduce the negative impacts to an acceptable level and recommends that the proposed upgrade be authorised. There is no reason that it should not be authorised. Special Conditions to the EA: - Search and rescue of Cape Dwarf Chameleons (<i>Bradypodion pumilum</i>) and all other translocatable fauna should take place on site prior to any site disturbance, as well as during site establishment (site clearing). This should be undertaken by authorised and experienced faunal experts. - A botanical and faunal Search & Rescue must be conducted before any land-clearing or earth moving activities may commence. - Prior to land clearing, the Applicant must appoint a suitably qualified individual (botanist, terrestrial ecologist or other suitably qualified person) to undertake Search & Rescue and translocation of rescued flora to the offset area. The relevant permits will have to be sourced for removal of Protected Species such as Milkwoods (<i>Sideroxylon inerme</i>) before construction starts. - Should any heritage remains be exposed during excavations or any actions on the site, these must immediately be reported to the Provincial Heritage Resources Authority of the Western Cape, Heritage Western Cape (in accordance with the applicable legislation). Heritage remains uncovered or disturbed during earthworks must not be further disturbed until the necessary approval has been obtained from Heritage Western Cape ("HWC"). Heritage remains include archaeological remains (including fossil bones and fossil shells); coins; indigenous and/or colonial ceramics; any articles of value or antiquity; marine shell heaps; stone artifacts and bone remains; structures and other built features; rock art and rock engravings and graves or unmarked human burials. Reporting chance finds as early as possible to HWC or an archaeologist / palaeontologist, protect <i>in situ</i> and stop work in immediate area. Implement Fossil Chance Finds Procedure if relevant. - The commitment of the Biodiversity Offset Agreement (Appendix G.8.4) must form part of the EA. - A Dust Management Plan and an operational Odour Management Plan must be submitted to the Air Quality Management Unit of the City of Cape Town for approval prior to the commencement of the construction of the refurbishment of the Macassar WWTW. - If any modifications to the layout submitted with the Final BAR are required, these must be submitted to the DEA&DP for record-keeping, along with an updated layout. Such modifications will only be permissible provided they remain within the assessed footprint of the Final BAR and do not result in an increase in the negative impacts identified in the assessment. It is	

recommended that the DEA&DP be consulted regarding the proposed changes to ensure it is in agreement that the proposed change/s.	
2.4.	Provide a description of any assumptions, uncertainties and gaps in knowledge that relate to the assessment and mitigation measures proposed.
1.	It is assumed that the information on which this report is based (project information as well as existing information) is correct, factual and truthful.
2.	The proposed development is in line with the statutory planning vision for the area and thus it is assumed that issues such as the cumulative impact of development in terms of character of the area and its resources, have been taken into account during the strategic planning for the area.
3.	It is assumed that all the relevant mitigation measures and agreements specified in this report will be implemented in order to ensure minimal negative impacts and maximum environmental benefits.
4.	It is assumed that Stakeholders and Interested and Affected Parties notified during the public participation process will submit all relevant comments within the designated review and comment period.
2.5.	The period for which the EA is required, the date the activity will be concluded and when the post construction monitoring requirements should be finalised.
1.	Construction should commence within five years from date of authorisation.
2.	Construction should be concluded at least six (6) years from commencement.
3.	Construction Completion Statement on handover of the site back to the applicant,
4.	Twelve (12) months post construction.

3. Water

Since the Western Cape is a water scarce area explain what measures will be implemented to avoid the use of potable water during the development and operational phase and what measures will be implemented to reduce your water demand, save water and measures to reuse or recycle water.

Where possible non-potable water will be used for construction purposes.

4. Waste

Explain what measures have been taken to reduce, reuse or recycle waste.

During construction, waste must be separated at source into recyclable and non-recyclable materials and distributed for recycling where applicable. During the construction phase, construction waste rubble should be re-used as fill material, erosion protection and gabion construction where applicable. The re-use of construction waste materials will minimize the amount of waste that will need to be disposed of at registered municipal waste facilities. In addition, there will be extensive earthworks, but import and export of material will be minimised by balancing cut and fill requirements as far as possible.

5. Energy Efficiency

8.1. Explain what design measures have been taken to ensure that the development proposal will be energy efficient.

The following energy saving can be implemented where applicable.

- Energy efficient lighting and solar cooling systems for site offices.
- Machinery must only be running when necessary.
- Energy Efficient technology for the main process units, namely the bioreactor aeration system and associated pumps.
- The collection and treatment of biogas which will be converted to energy (combined heat and power process) for onsite energy consumption.
- An efficient hydraulic design which will limiting pumping across the entire site.

SECTION K: DECLARATIONS

DECLARATION OF THE APPLICANT

Note: Duplicate this section where there is more than one Applicant.

I....., ID numberin my personal capacity or duly authorised thereto hereby declare/affirm that all the information submitted or to be submitted as part of this application form is true and correct, and that:

- I am fully aware of my responsibilities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), the Environmental Impact Assessment ("EIA") Regulations, and any relevant Specific Environmental Management Act and that failure to comply with these requirements may constitute an offence in terms of relevant environmental legislation;
- I am aware of my general duty of care in terms of Section 28 of the NEMA;
- I am aware that it is an offence in terms of Section 24F of the NEMA should I commence with a listed activity prior to obtaining an Environmental Authorisation;
- I appointed the Environmental Assessment Practitioner ("EAP") (if not exempted from this requirement) which:
 - meets all the requirements in terms of Regulation 13 of the NEMA EIA Regulations; or
 - meets all the requirements other than the requirement to be independent in terms of Regulation 13 of the NEMA EIA Regulations, but a review EAP has been appointed who does meet all the requirements of Regulation 13 of the NEMA EIA Regulations;
- I will provide the EAP and any specialist, where applicable, and the Competent Authority with access to all information at my disposal that is relevant to the application;
- I will be responsible for the costs incurred in complying with the NEMA EIA Regulations and other environmental legislation including but not limited to –
 - costs incurred for the appointment of the EAP or any legitimately person contracted by the EAP;
 - costs in respect of any fee prescribed by the Minister or MEC in respect of the NEMA EIA Regulations;
 - Legitimate costs in respect of specialist(s) reviews; and
 - the provision of security to ensure compliance with applicable management and mitigation measures;
- I am responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority, hereby indemnify, the government of the Republic, the Competent Authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which I or the EAP is responsible in terms of the NEMA EIA Regulations and any Specific Environmental Management Act.

Note: If acting in a representative capacity, a certified copy of the resolution or power of attorney must be attached.

Signature of the Applicant:

Date:

Name of company (if applicable):

DECLARATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

I, EAP Registration number as the appointed EAP hereby declare/affirm the correctness of the:

- Information provided in this BAR and any other documents/reports submitted in support of this BAR;
- The inclusion of comments and inputs from stakeholders and I&APs;
- The inclusion of inputs and recommendations from the specialist reports where relevant; and
- Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties, and that:
- In terms of the general requirement to be independent:
 - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
 - am not independent, but another EAP that meets the general requirements set out in Regulation 13 of NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review EAP must be submitted);
- In terms of the remainder of the general requirements for an EAP, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- I have disclosed, to the Applicant, the specialist (if any), the Competent Authority and registered interested and affected parties, all material information that have or may have the potential to influence the decision of the Competent Authority or the objectivity of any report, plan or document prepared or to be prepared as part of this application;
- I have ensured that information containing all relevant facts in respect of the application was distributed or was made available to registered interested and affected parties and that participation will be facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments;
- I have ensured that the comments of all interested and affected parties were considered, recorded, responded to and submitted to the Competent Authority in respect of this application;
- I have ensured the inclusion of inputs and recommendations from the specialist reports in respect of the application, where relevant;
- I have kept a register of all interested and affected parties that participated in the public participation process; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations;

Signature of the EAP:

Date:

Name of company (if applicable):

DECLARATION OF THE REVIEW EAP

I, EAP Registration number as the appointed Review EAP hereby declare/affirm that:

- I have reviewed all the work produced by the EAP;
- I have reviewed the correctness of the information provided as part of this Report;
- I meet all of the general requirements of EAPs as set out in Regulation 13 of the NEMA EIA Regulations;
- I have disclosed to the applicant, the EAP, the specialist (if any), the review specialist (if any), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.

Signature of the EAP:

Date:

Name of company (if applicable):

DECLARATION OF THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that:

- In terms of the general requirement to be independent:
 - other than fair remuneration for work performed in terms of this application, have no business, financial, personal or other interest in the development proposal or application and that there are no circumstances that may compromise my objectivity; or
 - am not independent, but another specialist (the "Review Specialist") that meets the general requirements set out in Regulation 13 of the NEMA EIA Regulations has been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- In terms of the remainder of the general requirements for a specialist, have throughout this EIA process met all of the requirements;
- I have disclosed to the applicant, the EAP, the Review EAP (if applicable), the Department and I&APs all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared or to be prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the EIA Regulations.

Signature of the EAP:

Date:

Name of company (if applicable):

DECLARATION OF THE REVIEW SPECIALIST

I, as the appointed Review Specialist hereby declare/affirm that:

- I have reviewed all the work produced by the Specialist(s):
- I have reviewed the correctness of the specialist information provided as part of this Report;
- I meet all of the general requirements of specialists as set out in Regulation 13 of the NEMA EIA Regulations;
- I have disclosed to the applicant, the EAP, the review EAP (if applicable), the Specialist(s), the Department and I&APs, all material information that has or may have the potential to influence the decision of the Department or the objectivity of any Report, plan or document prepared as part of the application; and
- I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.

Signature of the EAP:

Date:

Name of company (if applicable):