PROPOSED CONSTRUCTION OF A TRAFFIC CIRCLE ON BADEN POWELL DRIVE, PORTION OF ERF 547, MACASSAR, CITY OF CAPE TOWN, WESTERN CAPE PROVINCE

ENVIRONMENTAL MANAGEMENT PROGRAMME

PREPARED FOR

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD
Making progress possible. Together.

Civic Centre, 12 Hertzog Boulevard
Cape Town, 8001

ON BEHALF OF

GIBB

19 D. F. Malan Street
Cape Town, 8001

PREPARED BY

The Environmental Partnership

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THE ENVIRONMENTAL PARTNERSHIP
ENVIRONMENTAL CONSULTANTS
5 Summit Way, Constantia, 7806
T: 021 422 0999
www.enviropart.co.za
info@enviropart.co.za

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KEY TERMS AND ABBREVIATIONS

Authorisation Holder	The entity authorised to undertake the approved activity as outlined in the Environmental Authorisation. In this case, the Authorisation Holder will be the City of Cape Town.
DEA&DP	Department of Environment Affairs and Development Planning: The Competent Authority for this project.
EA	Environmental Authorisation: The statutory authorisation for the execution of the development activity, in terms of the National Environmental Management Act (107 of 1998), as amended (not required for this project).
ECO	Environmental Control Officer: The person responsible for ensuring that the requirements of the EMPr are implemented.
EMPr	Environmental Management Programme: A document that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of the proposed development.
Fines	Penalties, which can be imposed on the Contractor and/or his Sub-Contractors in the event of a contravention of this EMPr.
MS	Method Statement: A document describing the scope of the intended work in a step-by-step description in order for the PM and ECO to understand the Contractors' intentions.
PM	Project Manager (referred to as Engineer in this document): The person responsible for coordinating on-site activities, as well as overseeing any transgressions of these activities with the EMPr. During construction, the project manager is likely to be the Engineer.

1. INTRODUCTION

1.1 BACKGROUND

The City of Cape Town (CCT) proposes to upgrade the intersection of Baden Powell Drive, Macassar and Japhta K Masemola Roads, located at the eastern edge of Khayelitsha (the proposed project). See Appendix A1 for Locality Map. The proposed project entails a conversion of the existing stop-controlled intersection to a roundabout. Baden Powel Drive has priority flow, and the traffic circle is intended reduce the delay experienced by current and future development traffic approaching from Japhta K Masemola and Macassar Roads and allow for safer right turn and crossing manoeuvres at this intersection. The project is being undertaken in support of the Macassar Housing Development. A Transport Impact Assessment (ITS Engineers, 2012) was undertaken as part of the Macassar Housing Project, which identified that the Baden Powell / Macassar Road intersection is expected to operate over capacity during the afternoon peak hour. A traffic circle was proposed to alleviate the expected congestion and improve traffic flow at the intersection.

Five erven are affected:

1. Remainder of Erf 18332, Khayelitsha (RE/18332)
2. Remainder of Farm Vergenoegd 547 (RE/547)
3. Portion 2 of Farm 547 Vergenoegd (2/547)
4. Portion 3 of Farm 547 Vergenoegd (3/547)
5. Remainder of Farm 544 Driftsands.

1.2 PROJECT PROPOSAL

The City of Cape Town (CCT) proposes to upgrade the existing priority-controlled intersection of Baden Powell Drive (R310), Macassar Road (M9) and Japhta K Masemola Road, located on the eastern edge of Khayelitsha, to a single-point roundabout (the “proposed project”) (Figure 1). The upgrade replaces the current T-junction configuration with a 44 m – 45 m traffic circle with two circulatory lanes, a truck apron, formalised public-transport stops, and Non-Motorised Transport (NMT) crossings with concrete/asphalt sidewalks on all four approaches.

The two-lane circulatory roundabout will include two-lane approaches on all four legs, tapering back to the current single-lane cross-section beyond the intersection on Baden Powell Drive. Lane widths are generally between approximately 3.7 m and 4.0 m, and the total footprint of the project (including exiting roads) is approximately 20,900 m2. The exits along Macassar Road and Japhta K Masemola Road remain single-lane.

1.2.1 Layout Alternatives

The assessment of alternatives for the proposed project has been undertaken in accordance with Appendix 1 of the NEMA Environmental Impact Assessment Regulations, 2014 (Government Notice R.982 in Government Gazette No. 38282, 4 December 2014, as amended by GN R.326 in GG 40772 of 7 April 2017), read with Regulation 1 which defines "alternatives" in relation to a proposed activity as different means of meeting the general purpose and requirements of the activity. The six categories of alternatives contemplated by the Regulations are the property or location on which the activity is undertaken, the type of activity to be undertaken, the design or layout of the activity, the technology to be used, the operational aspects of the activity, and the option of not implementing the activity (the no-go alternative).

The DEA&DP *Guideline on Need and Desirability* (March 2013) and the companion DEA&DP *Guideline on Alternatives* (March 2013) have been applied in working through each of these six categories, and the feasibility of each has been tested against the project purpose, the engineering constraints of the site, the environmental sensitivities of the surrounding land, and the applicable policy context.

The conclusion of that assessment, set out below, is that only one feasible and reasonable engineering alternative exists for the upgrade of the Baden Powell Drive / Macassar Road intersection, and that the Preferred Alternative has therefore been carried forward into the impact assessment alongside the No-Go Alternative in line with regulatory requirements.

Based on the systematic consideration of all six categories of alternatives defined in Regulation 1 of the 2014 EIA Regulations, only one feasible engineering alternative exists for the upgrade of the Baden Powell Drive / Macassar Road intersection. The three alternatives assessed in this BAR and associated specialist studies, are:

1. **Alternative 1: Preferred Alternative**: **Landscaped Traffic Circle** including two circulatory lanes, with all four approaches to the roundabout upgraded to two lanes per approach.
2. **Alternative 2: Paved Traffic Circle** including two circulatory lanes, with all four approaches to the roundabout upgraded to two lanes per approach.
3. **Alternative 3: No-Go Alternative**.

Location and site alternatives

The need being addressed by the project is intersection-specific: the safety, congestion, public-transport-reliability and emergency-services-routing deficiencies occur at this specific intersection of Baden Powell Drive (R310) with Macassar Road and Japhta K Masemola Road. Relocating the intersection to a different position along the R310 corridor would not address the identified need, would require extensive additional land acquisition, and would introduce new environmental impacts on land that is currently undisturbed. The intersection is also bounded on all four quadrants by committed land uses — the Zandvliet Wastewater Treatment Works to the south-east, informal residential settlement in Khayelitsha to the south-west, and undeveloped Cape Flats Dune Strandveld (classified as CBA 1a under the Western Cape Biodiversity Spatial Plan, CapeNature,

2023) to the north-east and north-west, which eliminates any realistic option of providing a second, parallel intersection nearby. Location alternatives are therefore not feasible for this project.

1.3 ACTIVITIES REQUIRING ENVIRONMENTAL AUTHORISATION

As part of the environmental impact assessment undertaken for the development, specialist studies have been prepared by independent specialists to inform the processes undertaken as per the below legislations. These studies were commissioned to investigate and evaluate associated potential impacts of the proposed development and to provide inputs including mitigation measures, where appropriate. These mitigation measures have been included in this EMPr.

1.3.1 National Environmental Management Act (Act No. 107 of 1998)

The proposed development triggers several listed activities under the National Environmental Management Act (107 of 1998), as amended, and the 2014 Environmental Impact Assessment (EIA) Regulations (GNR No 982), as amended. The listed activities include:

Listing Notice 1 of EIA Regulations (GNR No 983 of 2014, as amended)	
Listed activity	**Description of triggering project activity**
Activity 19 The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.	The proposed activity will result in the infilling of material in excess of 10 cubic metres into portions of some of the wetlands located along the road.

Listing Notice 3 of EIA Regulations (GNR No 985 of 2014, as amended)	
Listed activity	**Description of triggering project activity**
Activity 13 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: 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; Within critical biodiversity areas identified in bioregional plans	

Adherence to an EMPr for the construction and operational phases of the proposed route alignment of the road construction and upgrading activities is a requirement due to the need for Environmental Authorisation under NEMA and the 2014 EIA Regulations, as amended. It is also being undertaken in terms of due diligence and compliance with the general duty of care as per Section 28 of NEMA.

Furthermore, Sections 30 and 30A of NEMA must be adhered to at all times. Any incident that may result in the spillage or leakage of product as specified in Section 2.3.22 of this EMPr, or the accidental release of pollutants from, inter alia, chemical toilets, hazardous waste storage areas, equipment or machinery failure, etc. into the soil and/or water resources, must be reported within fourteen (14) days to all relevant authorities, including the Directorate: Pollution and Chemicals Management of the Department of Environmental Affairs and Development Planning.

Containment, clean-up and remediation must commence immediately, and all necessary documentation must be completed and submitted within the prescribed timeframes.

1.3.2 National Water Act (Act No. 36 of 1998)

The works associated with the proposed construction Of A Traffic Circle On Badel Powell Drive, Portion Of Erf 547, Macassar, City of Cape Town, Western Cape Province will trigger the need for water use authorisation in terms of the National Water Act, 1998 (Act 36 of 1998). As the development on the proposed Construction Of A Traffic Circle On Badel Powell Drive, Portion Of Erf 547, Macassar, City of Cape Town, Western Cape Province will result in the infilling of wetlands, Sections 21 (c) and (i) of the Act are applicable to this activity, referring to the impeding or diverting the flow of water in a watercourse, and altering the bed, banks, course or characteristics of a watercourse, respectively. Whenever a development triggers water use(s) listed in Section 21 of the Act, a water use authorisation must be applied for.

The water use authorisation will form part of this EMPr and must be included as Annexure 2 of this document. The conditions set out in the water use authorisation must be adhered to at all times.

1.4 TERMS OF REFERENCE

An Environmental Management Programme (EMPr) is a document used to advise management and implement methodologies that will assist in preventing negative environmental impacts. This EMPr provides recommendations and guidelines to ensure environmental compliance and monitoring throughout the duration of the construction and operational phases of this project. The mitigation measures identified during the Basic Assessment Process have been incorporated into this EMPr. In addition, this EMPr provides specific environmental guidance to the Engineers and Contractors in terms of responsible environmental management.

This document informs the Project Manager (PM), Contractor, Environmental Control Officer (ECO), and all other staff on site, of their duties in fulfilment of legal requirements with regards to the proposed development.

1.5 DETAILS OF THE EAP

The details of the Environmental Assessment Practitioner (EAP) responsible for this document are noted in Table 1 below.

Table 1: Details of EAP

EAP:	Carmen du Toit		
Postal address:	P O Box 945, Cape Town, 8000		
E-mail:	info@enviropart.co.za	Telephone:	(021) 422 0999
EAP Qualifications:	MPhil Environmental Management (Stell), BHons EGS (UCT)		
EAP Registrations/Associations:	EAPASA registered and SACNASP registered,		
Experience:	28 years of experience in the environmental impact assessment and monitoring		

Please see Annexure 3: Details and expertise of EAP.

2 CONSTRUCTION PHASE ENVIRONMENTAL MANAGEMENT PROGRAMME (CEMPr)

2.1 ENVIRONMENTAL POLICY AND LEGISLATION

This EMPr, which forms part of the Basic Assessment Process currently being undertaken for the abovementioned works, complies with Appendix 4 of the 2014 Environmental Impact Assessment Regulations (GNR No 982 of 4 December 2014), as amended.

2.1.1 Contractual Commitment for Construction Phase

This EMPr is to be included in the contract documents to obtain commitment from the Contractors regarding their activities on site and to make them aware of their environmental responsibilities prior to any commencement of construction activities. Failure by any of the Contractors' or Sub-Contractor's employees to adhere to the EMPr will be considered cause for the offending employees to be potentially removed from the site, penalties to be instated and/or that the damage be repaired at the cost of the Contractor. The Environmental Control Officer (ECO) may require the removal of equipment causing continual environmental damage.

The ECO may require that the Contractors suspend part or all of the works if they fail to comply with the specifications set out in the EMPr and Method Statements supplied by themselves or other responsible parties. The suspension shall be enforced until such time as the offending procedure or equipment is corrected. No extension of time will be granted for such delays and all costs will be borne by the Contractors.

2.1.2 Environmental Policy Statement

The policy statement that follows is formulated specifically to support this EMPr for the proposed development. All construction personnel will be required to commit themselves to this policy.

- Adherence to the requirements of the construction EMPr for the project (including the requirement for on average weekly site inspections by the Environmental Control Officer).
- Management of all construction and associated activities so as to minimise the risk of pollution of ground and surface water, the air and the soil.
- Management of all construction and associated activities so as to minimise the nuisance and disruption to people residing or working in or commuting through the area.
- Adherence to the environmental legislation relevant to the location and nature of the work being conducted.

- Compliance with the monitoring and auditing programmes contained in the EMPr to ensure its accountable and transparent implementation. Under this overarching policy statement, individual impact management outcomes have been outlined in the EMPr, some of which are as follows:
- Management of waste that will be produced as a result of the activity

2.1.3 Environmental Legislation

The following non-exhaustive list of important legislation is of relevance to the project. The Authorisation Holder must be aware of the requirements thereof and must implement all relevant provisions.

- National Environmental Management Act, Act 107 of 1998 (as amended);
- The Environmental Impact Assessment Regulations, 2014 (GNR 325 to 327 of 2017) (as amended);
- The National Environmental Management: Biodiversity Act, 34 of 2004;
- National Water Act, 36 of 1998;
- Nature Conservation Ordinance (19 of 1974, Cape);
- National Environmental Management: Waste Act, Act 59 of 2008;
- DEA Integrated Environmental Management Guideline Series;
- Guideline for Public Participation (GN 807 of 2012)
- Conservation of Agricultural Resources Act (Act 43 of 1983)
- National Environmental Management: Air Quality Act, Act 39 of 2004;

2.2 ORGANISATIONAL STRUCTURE

It is necessary that an organisational structure is established early in the construction phase of the project and that all parties concerned accept the structure. This identifies the responsibilities of the Authorisation Holder (AH), Project Manager (PM), Environmental Control Officer (ECO) and any appointed Contractors and Sub-Contractors. The relationship between the PM, the ECO and the Contractors' site agents are key links in the structure.

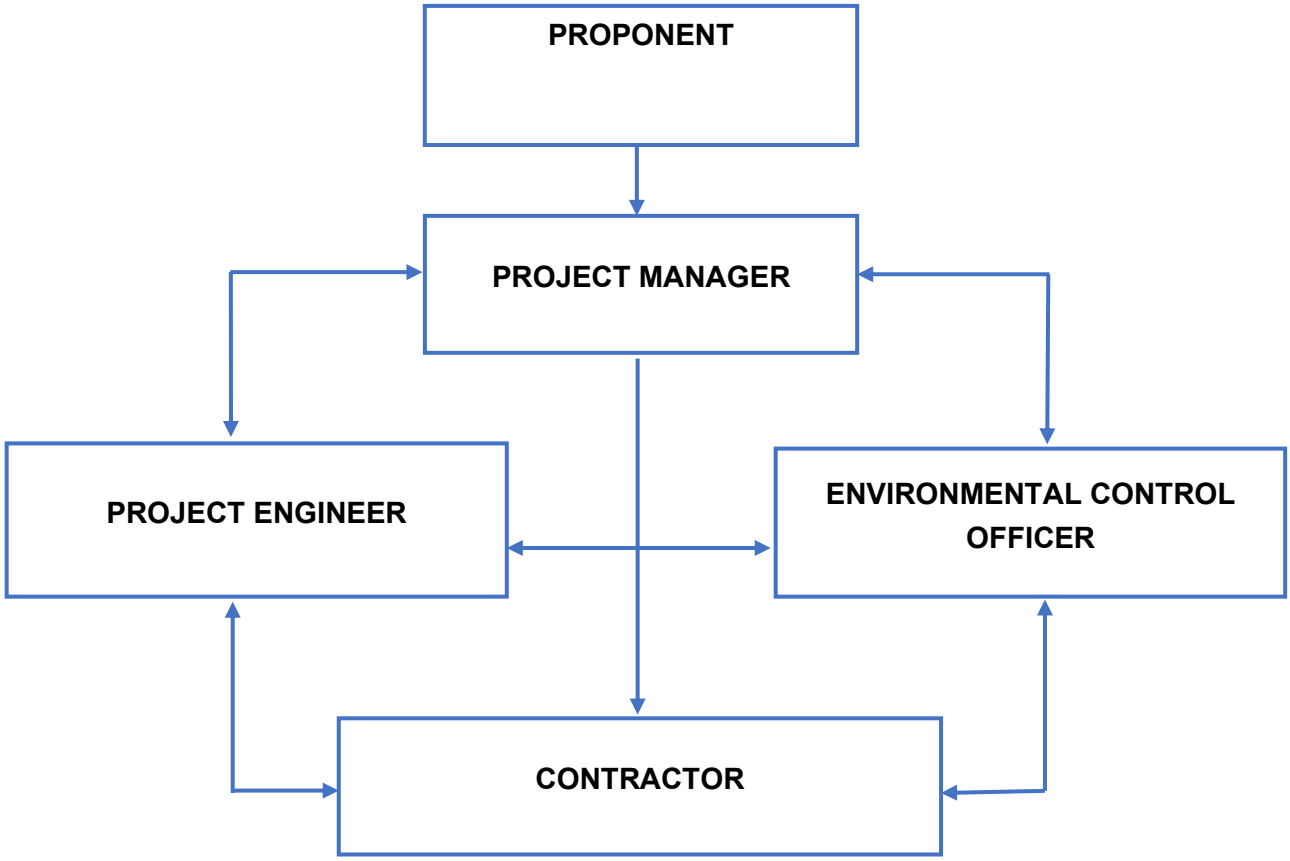
The organisational structure also clarifies the channels to direct instructions and provides the means of interaction between the various groups involved. Good communication is a pre-requisite of maintaining the organisational structure and is vital to the smooth operation of the project.

2.2.1 Responsibilities

The responsibility for the application of this EMPr, along with other conditions of approval outlined in the Environmental Authorisation, lies with the Authorisation Holder. Although the Authorisation Holder, the City of Cape Town, might not directly undertake the necessary construction work, any contractors or subcontractors operating on the site will be contractually required to adhere to the provisions of this document. The responsibility to appoint an ECO may be devolved to a PM, but the

ultimate responsibility of ensuring that an ECO is appointed at all times remains that of the Authorisation Holder.

The ECO will ensure that the requirements of the EMPr and conditions of approval are complied with by monitoring and auditing activities undertaken for the construction phase of the project. The ECO will also provide guidance regarding mitigating environmental impacts and may suggest changes to this document in order to better safeguard the receiving environment from degradation. Any changes to the EMPr must be approved by the Competent Authority. The below organogram highlights the reporting structure of this EMPr.



2.2.2 Role of the Engineer

The Engineer is responsible for coordinating on-site activities and overseeing possible transgressions of the EMPr. The Engineer is to ensure the following:

- The ECO is provided with the necessary information in order to adequately undertake their responsibilities;
- This EMPr is included in the contractual agreements with all Contractors and Sub-Contractors;
- Method Statements requested by the ECO are provided timeously;
- Corrective action is implemented as required;
- Appropriate records and information regarding compliance with the EMPr requirements are maintained and made available to the ECO;
- All site instructions are copied to the ECO; and
- Instructions as required by the ECO are carried out by the relevant Contractors and Sub-Contractors.

2.2.3 Role of the Environmental Control Officer

The Authorisation Holder shall appoint an independent ECO who will ensure that Contractors and Sub-Contractors comply with the measures outlined in this document. The ECO is thus responsible for ensuring that the requirements of the EMPr are implemented. More specifically, the ECO shall:

- Request, review and approve Method Statements (see Section 2.5) from the Contractor and Sub-Contractors for specific activities that could have an environmental impact prior to any construction of that activity commencing;
- Ensure that Contractors have copies of the EMPr, and all approved Method Statements;
- Assist with environmental induction training of the construction workers where necessary (see Section 2.4.23);
- Undertake ongoing monitoring of the construction site and activities through, on average, weekly site inspections;
- Document important findings noted during site inspections and keep a register of incidents (spills, injuries, complaints, legal transgressions, *etc.*);
- Monitor the adherence to the EMPr and approved method statements by Contractors, reporting any problems or complaints related to the implementation of mitigation measures to the Engineer;
- Recommend the issuing of fines where necessary;
- Provide environmentally acceptable solutions to address non-conformances and potentially issue a recommendation to stop work to the Engineer, when required;
- Identify and make amendments to the EMPr, where appropriate, to be approved by the competent authority;
- Provide monthly monitoring reports (see Section 2.7);

- Attend monthly construction project meetings in order to provide feedback on the environmental performance of the site, and discuss issues which require action;
- Compile a final close-our report regarding the EMPr and its implementation during the construction period and submit the report to the Authorisation Holder at project closure.

2.2.4 Role of the Contractor

The role of the Contractor is as follows:

- The Contractor shall ensure that all employees, Sub-Contractors, suppliers, *etc*. are fully aware of the environmental issues and requirements detailed in this EMPr.
- The Contractor shall liaise with the ECO and Engineer and will ensure that works on site are conducted in an environmentally sensitive manner in accordance with this EMPr.
- The Contractor shall meet on site with the ECO and/or Project Manager before commencement of construction activities to confirm no-go areas and the required method statements.
- The Contractor is to have a copy of this EMPr on site and be familiar with its contents.
- In communication with the ECO, the Contractor must ensure that all employees (permanent and temporary) and all Sub-Contractors that work on the site for longer than two days, receive environmental awareness training within one week of being on site.

2.2.5 Role of Site Personnel

The role of site personnel is as follows:

- Any person present on site has a responsibility to ensure that their actions do not result in significant environmental degradation.
- All site personnel must undergo induction training which clearly outlines the environmental risks associated with the proposed project. Persons who receive the induction training will be required to sign a disclaimer indicating that they are aware of the environmental risks in question, and that they will uphold the measures outlined in this document throughout their activities on site.

Site personnel will not be allowed on site if they have not been made aware of the environmental risks at hand and have not signed the aforementioned disclaimer.

2.3 ENVIRONMENTAL SPECIFICATIONS (PLANNING AND DESIGN PHASE)

In the Basic Assessment Process undertaken for the proposed development, potential environmental impacts were outlined and assessed by the following specialists:

Two specialist studies were commissioned for the project: a Freshwater and Wetland Specialist Study, and a Botanical Assessment:

1. Freshwater and Wetland Specialist Study (Aquatic Ecological Study, 2026)

EnviroSwift, 2026. Detailed Freshwater Ecological Assessment: Proposed development of a Roundabout at the intersection of Baden Powell Drive and Macassar Road, Khayelitsha, City of Cape Town, Western Cape. Prepared by Steytler, N. of EnviroSwift for The Environmental Partnership (Pty) Ltd. 31 March 2026. SACNASP Reg. No. 400029/02.

2. Botanical Compliance Statement (2026)

Capensis, 2026. Botanical Statement for a Proposed Traffic Circle at the Intersection of Baden Powell Drive (R310) and Macassar Road (M9) within the City of Cape Town Municipality. Prepared by Nicolson, G. of Capensis Ecological Consulting for The Environmental Partnership (Pty) Ltd. This Study is supported by Full Botanical Assessment undertaken on the adjacent Farm RE/547 (Nicolson, 2022), which included fieldwork in 2014, 2017 and 2021 (Capensis, 2022).

Below is a summary of the impacts identified and assessed in the Basic Assessment Report which are relevant to the planning and design phase.

The following impacts and mitigation measures apply to the planning and design phase of the proposed works

ENVIRONMENTAL SPECIFICATIONS (CONSTRUCTION PHASE)

Mitigation measures were provided by the specialists and have been incorporated into this EMPr and the Basic Assessment Report for which this EMPr was compiled. It is important that the mitigation measures are implemented and adhered to in order to reduce the impact of the proposed works on various aspects of the environment. The mitigation measures listed in this section are relevant to the construction phase and must be adhered to.

Below is a summary of the impacts identified and assessed in the Basic Assessment Report for the construction phase.

PROJECT ACTIVITIES

Activities associated with the proposed project that may result in potential biophysical, socio-economic or heritage impacts are listed below.

Construction phase

1. Site establishment, including the site camp, no-go fencing, relocation or protection of affected service infrastructure.
2. Potential relocation of informal dwellings from the project footprint.
3. Clearing of indigenous vegetation and stripping of topsoil within the approved construction footprint.
4. Bulk earthworks, including cut-to-fill operations and the import of fill material.
5. Demolition of the existing intersection infrastructure (kerbs, channels, signage, markings, traffic signals).
6. Stormwater and wetland-interface works, including installation of pipes, catchpits and culverts and any infilling or reshaping of the wetland edge.
7. Roadworks, including layerworks, asphalt paving, kerbing and construction of the central island, truck apron and pedestrian facilities.
8. Installation of road furniture (signage, street lighting, traffic signals and NMT infrastructure).
9. Operation of construction plant and haulage of materials, together with traffic accommodation (lane closures, detours and pedestrian diversions).
10. Storage, handling and disposal of fuels, chemicals, concrete and construction-and-demolition waste.

Operational phase

11. Routine use of the upgraded intersection and maintenance of the pavement, stormwater system, lighting, signage and verges.

Decommissioning phase

12. Removal of the road infrastructure and rehabilitation of the disturbed footprint (not anticipated within the design life; however, addressed in the EMPr).

POTENTIAL IMPACTS ASSESSED

The following potential impacts have been identified for **Alternative 1 (Preferred): Landscaped Traffic Circle; Alternative 2: Paved traffic Circle and Alternative 3: No-Go Alternative**, all of which may result in potential impacts on the natural biophysical environment, socio-economic and heritage environment, in the three project phases: (1) Demolition and construction phase, (2) operational phase and (3) demolition phase.

Given that Alternative 1 and Alternative 2 are identical in terms of footprint, they have been assessed together. However, in the instances where the impact differs, specification is made in the impact table.

The following impacts have been identified and assessed for the proposed roundabout development at the intersection of Baden Powell Drive, Japhta K. Masemola Road and Macassar Road.

CONSTRUCTION PHASE IMPACTS (13 IMPACTS IDENTIFIED)

Potential Biophysical Impacts - Terrestrial Biodiversity

1. Potential displacement and mortality of fauna
2. Potential loss of degraded / highly-degraded indigenous Strandveld vegetation (construction)
3. Potential spread of invasive alien plants into the CBA

Potential Biophysical Impacts Freshwater Ecology

4. Potential wetland habitat loss (direct infilling and footprint encroachment)
5. Potential wetland habitat disturbance (edge effects)
6. Potential erosion, sedimentation and altered surface-water flow to the wetland
7. Potential water-quality impairment (sediment, cement, hydrocarbons, wastewater)
8. Potential loss of wetland biota

Potential Socio-economic Impacts

9. Potential traffic congestion and non-motorised-transport (NMT) safety risks during construction
10. Potential nuisance to adjacent residents and businesses (dust, noise, vibration, access)
11. Potential short-term employment and SMME procurement opportunities (positive)
12. Potential relocation of informal dwellers from the proposed road reserve

Potential Heritage and palaeontological resources impacts

13. Potential chance-find disturbance to heritage or palaeontological resources

OPERATIONAL PHASE IMPACTS (7 IMPACTS IDENTIFIED)

Potential Biophysical Impacts - Terrestrial Biodiversity

14. Potential fragmentation of ecological connectivity across the CBA
15. Potential nuisance lighting effects on nocturnal biodiversity

Potential Biophysical Impacts Freshwater Ecology

16. Potential alteration of the wetland flow regime from increased impervious surface
17. Potential wetland habitat disturbance

Potential Socio-economic impacts

18. Potential improved road safety for all users (positive)
19. Potential improved traffic flow, travel time and public-transport reliability (positive)
20. Potential stimulation of broader economic activity and investment along the R310 corridor (positive)

DECOMMISSIONING PHASE IMPACTS

Decommissioning of the road facility is not foreseen within its design life; impacts are treated as a single grouped item for completeness and addressed through the rehabilitation provisions of the EMPr.

21. Potential disturbance, waste generation and rehabilitation opportunities associated with eventual decommissioning and site rehabilitation

POTENTIAL IMPACTS	Alternatives 1 and 2: Traffic Circle and Approach Roads		Alternative 3 — No-Go	
	Without mitigation	With mitigation	Without mitigation	With mitigation
CONSTRUCTION PHASE				
BIOPHYSICAL IMPACTS				
Potential Displacement and mortality of fauna during site clearance	Low (-)	Low (-)	Not applicable	Not applicable
Potential Loss and disturbance of Degraded-to-Highly-Degraded Cape Flats Dune Strandveld (indigenous vegetation)	Low (-)	Low (-)	Not applicable	Not applicable
Potential Spread of invasive alien plants from disturbed ground into adjacent CBA 1a	Low (-)	Very Low (-)	Low (-)	Low (-)
Potential Direct wetland habitat loss (approx. 2 000 m²)	Medium (-)	Low (-)	Low (-)	Low (-)
Potential Wetland habitat disturbance during construction	Medium (-)	Low (-)	Not applicable	Not applicable
Potential Erosion and sedimentation into remnant wetland / downstream Kuils River	Low (-)	Very Low (-)	Not applicable	Not applicable
Potential Water-quality impairment (cement, fuels, litter, turbid runoff)	Moderate (-)	Low (-)	Not applicable	Not applicable
Potential Loss of aquatic biota	Low (-)	Very Low (-)	Not applicable	Not applicable
SOCIO-ECONOMIC IMPACTS				
Potential Traffic congestion and NMT safety risk during construction	Medium (-)	Low (-)	Not applicable	Not applicable
Potential Nuisance to adjacent residents and businesses (dust, noise, vibration, access)	Medium (-)	Low (-)	Not applicable	Not applicable
Potential Short-term employment and SMME procurement opportunities (positive)	Low (+)	Medium (+)	Not applicable	Not applicable
Potential Chance-find disturbance to heritage or palaeontological resources	Low (-)	Very Low (-)	Not applicable	Not applicable
Potential Relocation of Informal Dwellers from the Proposed Road Reserve	Medium (-)	Low – Medium (-)	Low (-)	Low (-)
DECOMMISSIONING PHASE				
A traffic circle is permanent road infrastructure. Decommissioning is not foreseen within any assessable timeframe and is therefore not separately assessed. Should decommissioning ever occur, impacts would be similar in nature and significance to those assessed for the construction phase.				

The following impacts and mitigation measures apply to the construction phase of the proposed works:

ASSESSMENT OF CONSTRUCTION PHASE IMPACTS

1. CONSTRUCTION PHASE: Potential displacement and mortality of fauna		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and/ risk	Vegetation clearance and earthworks may displace or kill low-mobility fauna (reptiles, small mammals, invertebrates, ground-nesting birds) within the footprint.	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and short term	Not applicable
Consequence of impact or risk:	Low consequence. Fauna assemblage is limited by existing ecological degradation, traffic and urban pressures.	Not applicable
Probability of occurrence	Probable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss of resource.	Not applicable
Degree to which the impact can be reversed	Partly Reversible. Mobile fauna are expected to re-establish post-construction; killed fauna cannot be recovered.	Not applicable
Cumulative impact prior to mitigation	Low	Not applicable
Significance rating of impact prior to mitigation	**Low (-)**	**Not applicable**
Degree to which the impact can be avoided	Moderate	Not applicable
Degree to which the impact can be managed	Moderate	Not applicable
Degree to which the impact can be mitigated	Moderate	Not applicable
Proposed mitigation	- Undertake pre-clearance walk-through by an ECO or suitably	Not applicable

1. CONSTRUCTION PHASE: Potential displacement and mortality of fauna		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
	qualified ecologist to relocate any fauna found. - Clear vegetation progressively in one direction to allow mobile fauna to move away rather than be trapped. - No night-time construction where feasible, to avoid impacts on nocturnal species. - Implement speed restrictions for construction vehicles when site clearing indigenous vegetation (10-20km/h). - Implement worker training, briefing on prohibiting harming, collecting or feeding of any fauna encountered on site.	
Residual impacts	No significance with mitigation in place.	Not applicable
Cumulative impact post mitigation	Low	Not applicable
Significance rating of impact after mitigation	**Low (-)**	**Not applicable**

2. CONSTRUCTION PHASE: Loss of degraded / highly-degraded indigenous Strandveld vegetation (construction)		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Clearance of road-reserve vegetation classified as Degraded to Highly Degraded Strandveld (>300 m² of nationally Endangered Cape Flats Dune Strandveld). Project footprint is outside of the CoCT Terrestrial Biodiversity Network; adjacent CBA 1a on Farm RE/547.	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and long term	Not applicable

2. **CONSTRUCTION PHASE: Loss of degraded / highly-degraded indigenous Strandveld vegetation (construction)**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Consequence of impact or risk:	Low consequence. Vegetation in the footprint is already Degraded to Highly Degraded and likely to have worsened since 2014–2021 surveys.	Not applicable
Probability of occurrence	Definite	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss of resource. Footprint excluded from CBA; specialist opinion is that no significant impact on ecological functioning is expected.	Not applicable
Degree to which the impact can be reversed	Barely Reversible	Not applicable
Cumulative impact prior to mitigation	Low	Not applicable
Significance rating of impact prior to mitigation	**Low (-)**	**Not applicable**
Degree to which the impact can be avoided	Moderate.	Not applicable
Degree to which the impact can be managed	Moderate.	Not applicable
Degree to which the impact can be mitigated	Moderate	Not applicable
Proposed mitigation	- Pre-construction botanical walk-down by a qualified specialist to confirm no *Erepsia dunensis* or other SCC occur within the final footprint (only recorded SCC on Farm RE/547 has a buffer that does not intersect the works). - Restrict clearance strictly to the demarcated footprint; no clearance in the adjacent CBA 1a on Farm RE/547. - Implement search-and-rescue / relocation of any SCC identified during the walk-down.	Not applicable
Residual impacts	No significance. Residual loss is limited to a small area of already-	Not applicable

2. **CONSTRUCTION PHASE: Loss of degraded / highly-degraded indigenous Strandveld vegetation (construction)**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
	degraded vegetation.	
Cumulative impact post mitigation	Low	Not applicable
Significance rating of impact after mitigation	**Low (-)**	**Not applicable**

3. CONSTRUCTION PHASE: Potential spread of invasive alien plants into the adjacent CBA		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Soil disturbance, imported fill and vehicle movement could introduce or spread declared invasive alien plants (NEMBA Category 1a/1b/2) from the footprint into the adjacent CBA 1a on Farm RE/547 and the remnant wetland edge.	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and long term	Not applicable
Consequence of impact or risk:	Low to medium consequence, dependent on fill sources, housekeeping and follow-up maintenance.	Not applicable
Probability of occurrence	Probable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss of resource. Adjacent CBA is at risk of incremental degradation rather than outright loss	Not applicable
Degree to which the impact can be reversed	Partly Reversible. Invasives can be cleared, but re-infestation is likely without follow-up	Not applicable
Cumulative impact prior to mitigation	Medium	Not applicable
Significance rating of impact prior to mitigation	Low (-)	Not applicable

3. CONSTRUCTION PHASE: Potential spread of invasive alien plants into the adjacent CBA		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Degree to which the impact can be avoided	Moderate	Not applicable
Degree to which the impact can be managed	Moderate	Not applicable
Degree to which the impact can be mitigated	Moderate	Not applicable
Proposed mitigation	- Source imported soil, fill and aggregate from reputable suppliers and inspect loads for visible weed propagules before use. - Clean construction vehicles, plant and boots before entering and leaving site to limit seed transport. - Contractor's Method Statement to include an Invasive Alien Plant management protocol aligned with NEMBA regulations.	Not applicable
Residual impacts	No significance with mitigation in place.	Not applicable
Cumulative impact post mitigation	Low (-)	Not applicable
Significance rating of impact after mitigation	**Very Low (-)**	Not applicable

4. CONSTRUCTION PHASE: Wetland direct habitat loss (~2 000 m²)		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Loss of approximately 2 000 m² of fragmented depression-wetland habitat along the widened northern approach on Baden Powell Drive. PES Category F (critically modified); EIS Low/marginal (EnviroSwift).	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and long term	Not applicable

4. **CONSTRUCTION PHASE: Wetland direct habitat loss (~2 000 m²)**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Consequence of impact or risk:	Low consequence. Wetland is critically modified with almost complete loss of natural habitat and aquatic biota; residual rated Low (-) by EnviroSwift and no biodiversity offset is required.	Not applicable
Probability of occurrence	Definite	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss of resource. The critically modified wetland is unlikely to be associated with irreplaceable biodiversity (EnviroSwift, 2026).	Not applicable
Degree to which the impact can be reversed	Irreversible	Not applicable
Cumulative impact prior to mitigation	High	Not applicable
Significance rating of impact prior to mitigation	**Medium (-)**	**Not applicable**
Degree to which the impact can be avoided	Low	Not applicable
Degree to which the impact can be managed	Low	Not applicable
Degree to which the impact can be mitigated	Low	Not applicable
Proposed mitigation	- Limit clearance strictly to the engineering footprint. - No encroachment beyond demarcated construction limits. - No encroachment beyond construction camp site.	Not applicable
Residual impacts	Low. Loss of ~2 000 m² of critically modified wetland habitat.	Not applicable
Cumulative impact post mitigation	High	Not applicable
Significance rating of impact after mitigation	**Low (-)**	**Not applicable**

5. **CONSTRUCTION PHASE: Wetland habitat disturbance**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Vehicle movement, machinery operation and placement of materials within the immediate catchment cause compaction, vegetation damage and sedimentation risk in the adjacent wetland (EnviroSwift, 2026).	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and short term	Not applicable
Consequence of impact or risk:	Low consequence — wetland is already critically modified with limited natural habitat or aquatic biota remaining.	Not applicable
Probability of occurrence	Probable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	No loss of resource — no irreplaceable biodiversity associated with the disturbed wetland.	Not applicable
Degree to which the impact can be reversed	Reversible	Not applicable
Cumulative impact prior to mitigation	High (-)	Not applicable
Significance rating of impact prior to mitigation	**Medium (-)**	**Not applicable**
Degree to which the impact can be avoided	Moderate — disturbance-causing activities can be located away from sensitive habitat.	Not applicable
Degree to which the impact can be managed	Moderate — activities causing disturbance can be contained.	Not applicable
Degree to which the impact can be mitigated	Moderate — disturbed areas can be partially restored through rehabilitation.	Not applicable
Proposed mitigation	- Declare the wetland area west of Baden Powell Drive a No-Go area for construction personnel, vehicles, machinery and materials.	Not applicable

5. **CONSTRUCTION PHASE: Wetland habitat disturbance**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
	- Access only by written ECO authorisation on the basis of an approved Method Statement. - Daily ECO inspection of the No-Go area — immediate removal of any rubble, spoil or litter that enters it. - Contain upslope run-off and stockpiles so water infiltrates rather than discharging into the wetland.	
Residual impacts	No significance — with mitigation implemented, disturbance is insignificant.	Not applicable
Cumulative impact post mitigation	Moderate (-)	Not applicable
Significance rating of impact after mitigation	**Low (-)**	**Not applicable**

6. CONSTRUCTION PHASE: Potential Erosion and sedimentation		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Exposed soils from clearing, excavation and infilling erode during rainfall and deposit sediment into the inwardly-draining receiving wetland (EnviroSwift, 2026).	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and short term	Not applicable
Consequence of impact or risk:	Low consequence. Small scale of works; wetland is inwardly draining so no off-site sedimentation.	Not applicable
Probability of occurrence	Probable. During winter rains when	Not applicable

6. CONSTRUCTION PHASE: Potential Erosion and sedimentation		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
	cleared areas and stockpiles are most vulnerable.	
Degree to which the impact may cause irreplaceable loss of resources	No loss of resource. No irreplaceable biodiversity at risk.	Not applicable
Degree to which the impact can be reversed	Completely Reversible — sediment can be removed and eroded areas stabilised.	Not applicable
Cumulative impact prior to mitigation	High	Not applicable
Significance rating of impact prior to mitigation	**Low (-)**	**Not applicable**
Degree to which the impact can be avoided	Moderate — undertaking works in the dry summer season would largely avoid the impact.	Not applicable
Degree to which the impact can be managed	Moderate	Not applicable
Degree to which the impact can be mitigated	Moderate	Not applicable
Proposed mitigation	- Schedule earthworks for the dry summer season where practicable. - No stockpiles west of Baden Powell Drive; only use the ECO-approved stockpile sites, protected with tarps / erosion blankets in the wet season. - Install straw bales, silt fences or sediment traps to divert and settle run-off before discharge off-site. - Implement weekly ECO inspection through the wet season plus post-storm inspections after heavy rainfall.	Not applicable
Residual impacts	No significance. With mitigation implemented, erosion and sedimentation is insignificant.	Not applicable
Cumulative impact post	Medium	Not applicable

6. CONSTRUCTION PHASE: Potential Erosion and sedimentation		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
mitigation		
Significance rating of impact after mitigation	**Very low (-)**	**Not applicable**

7. CONSTRUCTION PHASE: Potential Water-quality impairment (cement, fuels, litter, turbid runoff)		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Possible release of cement, bitumen, paints, solvents, fuels or wash-water into run-off that reports to the adjacent wetland. The intersection sits above and close to the wetland (EnviroSwift, 2026).	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and short term	Not applicable
Consequence of impact or risk:	Low consequence. Small scale of works; with mitigation, intensity reduces further.	Not applicable
Probability of occurrence	Probable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	No loss of resource. Critically modified wetland unlikely to be associated with irreplaceable biodiversity.	Not applicable
Degree to which the impact can be reversed	Irreversible. Contaminants entering the wetland cannot be recovered.	Not applicable
Cumulative impact prior to mitigation	High	Not applicable
Significance rating of impact prior to mitigation	**Moderate (-)**	**Not applicable**
Degree to which the impact can be avoided	Moderate	Not applicable
Degree to which the impact can be managed	Moderate	Not applicable
Degree to which the impact can be	Moderate	Not applicable

7. **CONSTRUCTION PHASE: Potential Water-quality impairment (cement, fuels, litter, turbid runoff)**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
mitigated		
Proposed mitigation	- Cement mixing only within bunded, impermeable areas; daily removal of all wet/dry cement residues. - Store fuel, chemicals and hazardous substances in bunded, weather-proof containers located at least 50 m from any wetland. - Daily inspection of storage facilities and vehicles for leaks. - Immediate clean-up of spillages, with contaminated soil removed to a licensed waste facility — no stockpiling of contaminated soil on site. - Portable toilets located at least 10 m from the wetland and regularly serviced. - No discharge of any wash-water, cement slurry or construction effluent into the wetland.	Not applicable
Residual impacts	No significance — with mitigation implemented, water-quality impairment is insignificant.	Not applicable
Cumulative impact post mitigation	Medium	Not applicable
Significance rating of impact after mitigation	**Low (-)**	**Not applicable**

8. **CONSTRUCTION PHASE: Potential Loss of Biota**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Mortality or displacement of aquatic and semi-aquatic biota could occur from infilling, crushing by vehicles, inappropriate placement of machinery/materials, or contaminated run-off (EnviroSwift, 2026).	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable

8. **CONSTRUCTION PHASE: Potential Loss of Biota**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Extent and duration of impact:	Local and short term	Not applicable
Consequence of impact or risk:	Low consequence. Wetland already critically modified; limited surviving biota expected to be present.	Not applicable
Probability of occurrence	Probable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	No loss of resource. No irreplaceable biodiversity associated with the wetland.	Not applicable
Degree to which the impact can be reversed	Irreversible — killed individuals cannot be recovered; mobile biota are expected to return post-construction.	Not applicable
Cumulative impact prior to mitigation	High	Not applicable
Significance rating of impact prior to mitigation	**Low (-)**	**Not applicable**
Degree to which the impact can be avoided	Moderate	Not applicable
Degree to which the impact can be managed	Moderate	Not applicable
Degree to which the impact can be mitigated	Moderate	Not applicable
Proposed mitigation	- Demarcate the wetland west of Baden Powell Drive as a No-Go area prior to site establishment; maintain it for the duration of construction. - Avoid all activity inside the wetland No-Go area. - No parking of construction vehicles, storage of machinery or siting of stockpiles west of Baden Powell Drive.	Not applicable
Residual impacts	No significance. With mitigation implemented, biota loss is insignificant.	Not applicable
Cumulative impact post mitigation	High	Not applicable
Significance rating of impact after mitigation	**Very low (-)**	**Not applicable**

8. **CONSTRUCTION PHASE: Potential Loss of Biota**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
9. CONSTRUCTION PHASE: Potential traffic congestion and NMT safety risks during construction		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Lane closures, detours and construction vehicle movements on a busy arterial (Baden Powell Drive / R310) is expected to cause congestion and potentially pose crash or pedestrian-safety risks during the works. The site carries significant pedestrian volumes from Khayelitsha.	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Regional and short term	Not applicable
Consequence of impact or risk:	Medium consequence. Arterial carries high commuter and school-going pedestrian volumes.	Not applicable
Probability of occurrence	Highly probable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	No loss of resource.	Not applicable
Degree to which the impact can be reversed	Completely Reversible. Restored on project completion.	Not applicable
Cumulative impact prior to mitigation	Medium	Not applicable
Significance rating of impact prior to mitigation	Medium (-)	Not applicable
Degree to which the impact can be avoided	Moderate.	Not applicable
Degree to which the impact can be managed	Moderate.	Not applicable
Degree to which the impact can be mitigated	High	Not applicable

8. **CONSTRUCTION PHASE: Potential Loss of Biota**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Proposed mitigation	- Prepare a Construction Traffic Management Plan (TMP) for approval by the CoCT Transport Directorate prior to site establishment. - Phase works to keep at least one lane open per direction on Baden Powell Drive during peak periods. - Provide clearly marked, illuminated temporary pedestrian bypass routes with traffic marshals at peak times. - Advance public notification (at least 14 days) of lane closures, detours and expected delays through the City and local media. - Liaise with minibus-taxi operators and bus services to ensure temporary stop locations remain usable. - Reduce construction speed limits on site and for haul routes; and implement flagmen at critical points.	Not applicable
Residual impacts	Low — some residual disruption during works.	Not applicable
Cumulative impact post mitigation	Low	Not applicable
Significance rating of impact after mitigation	Low (-)	Not applicable

10. CONSTRUCTION PHASE: Potential nuisance to adjacent residents and businesses (dust, noise, vibration, access)		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Dust, noise, vibration, lights and access disruption from contruction are likey to affect residents of Khayelitsha and Macassar, informal traders along the verges, and businesses dependent on the corridor.	No construction would take place. Status quo retained.

10. CONSTRUCTION PHASE: Potential nuisance to adjacent residents and businesses (dust, noise, vibration, access)		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and short term	Not applicable
Consequence of impact or risk:	Low consequence. Nuisance is localised (typically within 100–200 m) and time-bound.	Not applicable
Probability of occurrence	Probable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	No loss of resource.	Not applicable
Degree to which the impact can be reversed	Completely Reversible. Ends with construction.	Not applicable
Cumulative impact prior to mitigation	Low	Not applicable
Significance rating of impact prior to mitigation	Medium (-)	Not applicable
Degree to which the impact can be avoided	Moderate	Not applicable
Degree to which the impact can be managed	High	Not applicable
Degree to which the impact can be mitigated	High	Not applicable
Proposed mitigation	- Restrict noisy activities to weekdays 07h00–17h00 (SANS 10103 guidance); no night works unless authorised by the City for safety-critical reasons. - Implement dust-suppression measures (wetting, covered loads, wheel-wash) particularly in the dry summer months. - Implement vibration monitoring for any piling or heavy compaction within 50 m of residential structures. - Maintain safe pedestrian and vehicular access to all adjacent properties and informal trading locations at all times.	Not applicable

10. CONSTRUCTION PHASE: Potential nuisance to adjacent residents and businesses (dust, noise, vibration, access)		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
	- Grievance mechanism: signposted hotline for complaints, with a 48-hour response commitment; log all complaints in the ECO register. - Ensure daily site housekeeping and remove construction debris, litter and spoil from public areas promptly.	
Residual impacts	No significance.	Not applicable
Cumulative impact post mitigation	Low (-)	Not applicable
Significance rating of impact after mitigation	**Low (-)**	Not applicable

11. CONSTRUCTION PHASE: Potential short-term employment and SMME procurement opportunities (POSITIVE)		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Construction phase generates semi-skilled and unskilled employment and subcontracting opportunities for local SMMEs, particularly from Khayelitsha and Macassar.	No construction would take place. Status quo retained.
Nature of impact:	Positive (+)	Not applicable
Extent and duration of impact:	Local and short term	Not applicable
Consequence of impact or risk:	Low to medium consequence. Meaningful at the individual / household scale, modest at the metro scale.	Not applicable
Probability of occurrence	Definite.	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	No loss of resource (positive impact).	Not applicable
Degree to which the impact can be reversed	Not applicable (positive impact).	Not applicable
Cumulative impact prior to	Low	Not applicable

11. CONSTRUCTION PHASE: Potential short-term employment and SMME procurement opportunities (POSITIVE)		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
mitigation		
Significance rating of impact prior to mitigation/enhancement	**Low (+)**	**Not applicable**
Degree to which the impact can be avoided	Not applicable (positive impact — to be enhanced).	Not applicable
Degree to which the impact can be managed	High (via procurement conditions and community liaison).	Not applicable
Degree to which the impact can be mitigated/enhanced	Moderate	Not applicable
Proposed mitigation	- Apply the CoCT Preferential Procurement Policy and CIDB subcontracting targets, with preferencing for local labour and SMMEs registered in Khayelitsha / Macassar wards. - Partner with local ward councillors / community liaison officers to publicise recruitment opportunities transparently. - Provide short-course skills training (e.g. plant operation, health and safety) to uplift workers beyond the life of the contract.	Not applicable
Residual impacts	Medium — enhanced via procurement and local-labour conditions.	Not applicable
Cumulative impact post mitigation	Medium	Not applicable
Significance rating of impact after mitigation	**Medium (+)**	**Not applicable**

12. CONSTRUCTION PHASE: Potential chance-find disturbance to heritage or palaeontological resources		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Excavation in previously disturbed road-reserve soils could encounter unrecorded archaeological, burial or	No construction would take place. Status quo retained.

12. CONSTRUCTION PHASE: Potential chance-find disturbance to heritage or palaeontological resources		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
	palaeontological material. The site has been repeatedly disturbed; likelihood is low.	
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Site Specific and permanent (for any disturbed material)	Not applicable
Consequence of impact or risk:	Low consequence	Not applicable
Probability of occurrence	Improbable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss of resource	Not applicable
Degree to which the impact can be reversed	Irreversible	Not applicable
Cumulative impact prior to mitigation	Low	Not applicable
Significance rating of impact prior to mitigation	Low (-)	Not applicable
Degree to which the impact can be avoided	High (through chance-finds protocol and immediate stop-work)	Not applicable
Degree to which the impact can be managed	High	Not applicable
Degree to which the impact can be mitigated	High	Not applicable
Proposed mitigation	- Include a formal Chance-Finds Protocol in the EMPr: stop work immediately; secure the find; notify the ECO and Heritage Western Cape (HWC) within 24 hours. - Implement induction briefing to all site personnel on recognising archaeological, burial, cultural and fossil finds. - On confirmation of a find, suspend work in the affected area until a permit or letter of exemption is issued by HWC / SAHRA, and a specialist has assessed the material.	Not applicable

12. CONSTRUCTION PHASE: Potential chance-find disturbance to heritage or palaeontological resources		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
	- Document and retain all correspondence and permits in the project environmental record.	
Residual impacts	No significance	Not applicable
Cumulative impact post mitigation	Low (-)	Not applicable
Significance rating of impact after mitigation	**Very Low (-)**	Not applicable

1. CONSTRUCTION PHASE: Potential Relocation of Informal Dwellers from the Proposed Road Reserve		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Social disruption associated with relocation of informal dwellers currently occupying the proposed road reserve. This may include temporary loss of shelter, disruption of livelihoods, and psychological stress during the transition period.	No relocation required as the road is not developed and the existing informal settlement remains in place.
Nature of impact:	Negative	No change
Extent and duration of impact:	Medium-term during relocation and settlement process until households are established in alternative accommodation.	No change
Consequence of impact or risk:	Medium – potential disruption to community stability, access to services, and livelihoods if relocation is not adequately planned and supported.	Status quo retained.
Probability of occurrence	Definite	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	Partly reversible through proper resettlement planning, compensation, and/or provision of alternative housing or serviced sites.	Not applicable

1. CONSTRUCTION PHASE: Potential Relocation of Informal Dwellers from the Proposed Road Reserve		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Degree to which the impact can be reversed	Low	Not applicable
Cumulative impact prior to mitigation/enhancement	Medium	Medium
Significance rating of impact prior to mitigation	Medium (-)	Low (-)
Degree to which the impact can be avoided	Low	Not applicable
Degree to which the impact can be managed	Moderate	Not applicable
Degree to which the impact can be mitigated/enhanced	Low	Not applicable
Proposed mitigation	- Implement a fair and transparent relocation plan in consultation with affected households. - Provide adequate alternative accommodation or serviced sites before relocation occurs. - Ensure access to basic services (water, sanitation, electricity) at relocation sites. - Provide livelihood support or transport access where relocation may affect employment opportunities. - Engage in ongoing stakeholder communication with affected residents and community representatives.	Not applicable
Residual impacts	Medium. Realised alongside other corridor investments.	No significance
Cumulative impact post mitigation	Medium	Medium
Significance rating of impact	Low - Medium (-)	Low (-)

1. CONSTRUCTION PHASE: Potential Relocation of Informal Dwellers from the Proposed Road Reserve		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
after mitigation		

2.3.1 Waste Management Impacts

Nature of impact

Waste generated from the construction of the proposed development may accumulate as debris and construction material on the site and surrounds. If not adequately mitigated, the waste poses numerous detrimental impacts on the recipient community especially as it relates to how the waste is generated, handled and stored. If not adequately managed, the waste will result in adverse environmental impacts such as visual discomfort and the contamination of soil and water resources.

Impact Management Objectives

Manage the waste to be produced as a result of the activity.

Impact Management Actions

- Collection of construction waste when required in order to reduce accumulation and overfilling of waste collection points. Regular removal of waste from site to a licensed landfill site.
- The waste management hierarchy, which looks at reducing waste before the need to reuse or recycle such wastes, must be implemented during the construction phase as far as possible. All Contractors on site must try and minimize the production of waste as much as possible, and recycling is highly recommended.
- Regular environmental awareness talks during toolbox talks with employees in order to educate them of the impacts of littering and incorrect waste management
- Sufficient bins placed on site that are tied down with lids that are both weather- and scavenger-proof.
- Waste must be managed to ensure that it does not detract from the receiving environment. The proponent is responsible for ensuring that waste generation, handling, and storage activities associated with the proposal comply with the National Environmental Management: Waste Act, Act 59 of 2008. All waste generated on site must be recycled or disposed of at suitably licensed facilities. These facilities must provide a certificate of acceptance for all waste received.
- Where feasible, selecting of construction systems that do not depend on temporary support, shoring, construction aids, or other materials that will disposed of as debris during the construction phase of the activity.
- Where possible, selection of construction materials that do not depend on the use of adhesives which require containers, and which produce residue and packaging waste. Adhesives are not advised as they hinder salvaging and recycling at the end of the components or building's use.

- Where feasible, avoidance of construction materials sensitive to damage, contamination, environmental exposure or spoilage on site. These factors increase the potential for waste accumulation on the jobsite.
- An Integrated Waste Management Plan for building waste generators must be submitted to the City of Cape Town's Solid Waste Management Department prior to the commencement of construction.
- For the duration of the construction phase, the service provider(s) that will be transporting builder's rubble must be accredited by the City of Cape Town.

The following measures must be undertaken for the respective categories of waste:

The following measures stipulate the classification of waste and the manner in which the waste should be stored on site.

Schedule 3 of the NEMA: Waste Management Act (Act 59 of 2008) defines and identifies the categories and waste types. The Contractor is to be familiarized with this list, and a list placed at the Site office. Proof of safe disposal of all wastes must be provided to the Resident Engineer (RE) and/or Environmental Control Officer (ECO).

The general requirements for the storage of waste is prescribed in section 21 of the NEM: Waste Act (2008) as amended. Section 21 of the Act states the following:

Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that-

a. *the containers in which any waste is stored, are intact and not corroded or in any other way rendered unfit for the safe storage of waste;*
b. *adequate measures are taken to prevent accidental spillage or leaking;*
c. *the waste cannot be blown away;*
d. *nuisances such as odour, visual impacts and breeding of vectors do not arise; and*
e. *pollution of the environment and harm to health are prevented.*

Green Waste

Green waste, vegetation cleared as part of this project, must be stored in a container that is wind, water and scavenger proof and labelled as green waste. This waste must be disposed of at a suitably licensed facility and may not be left on site for more than 72 hours.

General Waste

To ensure that waste generated does not detract from the aesthetics of the surrounding environment, general waste must be stored in containers that are wind, water and scavenger proof. These containers must be located on a level surface that is in excess of 32m from water resources. A general waste receptacle must be located at a convenient location for site personnel and must be

emptied at the end of each day into the container outlined above OR disposed of at a suitably licensed facility.

Building Rubble

Building rubble and spoil material from excavations should be stored in a skip or screened and roofed area, on a level surface that is visually unobtrusive. The Environmental Officer must monitor the skip and ensure that sufficient capacity exists for the waste to be generated by immediate construction activities. Arrangements for the skip to be removed and for the building rubble to be disposed of at a suitably licensed facility must be made in advance to ensure that sufficient capacity for building rubble is always available.

If a skip cannot be provided, the Contractor together with the RE and ECO must decide on a suitable site, located away from environmental sensitivities where a solid waste structure can be built and store building rubble. This structure must be water-, wind- and scavenger-proof, and lined with an impermeable layer to ensure no seepage into the ground of any by-products.

Effluent

A chemical toilet must be provided for every 15 workers on site. This toilet must be secured to the ground on a level surface that is sheltered from wind in order to prevent it from toppling over. A maintenance schedule for the removal and cleaning of these toilets must be established in order to ensure that sufficient ablution facilities for the construction staff are maintained at all times. These toilets must be locked at the end of each day, and every effort must be taken to ensure that animals cannot gain access to these toilets. Sufficient toilet paper must be made available.

The Contractor must ensure that chemicals and/or waste from toilet-cleaning operations do not contaminate the ground at any time. All spills must be cleared up immediately. Contaminated soils due to spills must be removed and stored in a skip and disposed of at a licensed waste disposal facility. The treatment of the contaminated soil and the areas of contamination must be undertaken to the satisfaction of the ECO.

Abluting anywhere other than in the toilets will not be permitted. Use of other areas within the site for ablution purposes and/or disposal of chemicals and/or waste, will result in the Contractor being given a spot fine (by the ECO). The Contractor will also be responsible for cleaning up any waste deposited by his personnel.

A maintenance plan for the servicing of these toilets must be drawn up and strictly adhered to.

Should any spills occur, the Contractor must ensure that waste shall be discarded in a water-, wind- and scavenger-proof container and then taken to a suitably licensed waste disposal facility. The bin must be appropriately labelled and not mixed with any other waste type.

Hazardous Waste

Hazardous waste must be stored on an impermeable bunded surface that is able to accommodate 110% of the waste being stored. This store should be inaccessible to the public or animals and must be locked at all times. The required signage must be erected in terms of the waste being stored. The store must occupy a level surface that is weatherproof and must not be within 50m of a water resource. In the instance that rainwater pools within the store, this water must be sent to a suitably certified waste handling facility.

Any hazardous waste generated during the construction phase must be immediately, and appropriately disposed of. The hazardous waste must be stored in hazardous waste containers for eventual disposal at a hazardous waste facility. Proof of waste disposal certificates must be recorded in a log system and made available to the competent authority upon request.

All waste types identified above must be kept separate at all times. Hazardous waste types must not be stored with non-hazardous waste types. If this should occur, the waste shall be treated as and discarded as hazardous waste.

Materials used to clean spills must be considered as hazardous waste and must, together with the contaminated soil, be disposed of at a licensed hazardous waste disposal facility. It is important to note that if hazardous waste is mixed with general waste, the entire volume will be regarded as hazardous waste in nature, Hazardous and general waste should therefore be stored in separate containers and disposed of separately.

Monitoring

Implementation of the above actions must be monitored during (on average weekly) inspections by the ECO. The above is also to be monitored by the Site Agent on a daily basis.

2.3.2 *Noise Impacts*

Nature of impact

Noise impacts are expected during the construction phase due to the presence of construction vehicles, and construction related activities. This may be a nuisance to surrounding residents, particularly those residing in the vicinity of Macassar Rd and Baden Powell drive.

Since the noise will only occur during working hours and will occur along an existing road, it is not expected that the noise impacts would be of high negative significance.

Impact Management Objectives

To minimise noise from the proposed works.

Impact Management Actions

The developer must be compliant with the Noise Control Regulations P.N. 200/2013 as promulgated under the Environment Conservation Act, 1989 (Act 73 of 1989) by not creating a

disturbing noise and/or noise nuisance to surrounding property owners. As a result, the following measures need to be implemented:

- Normal construction working hours must be enforced for all construction activities.
- Noise levels must be kept at minimum at all times to ensure less disturbance to the nearby residential area and to road users.
- All employees must be given the necessary ear protection gear.
- All machinery used on site during the construction phase should be in good condition to minimise noise levels that may be caused by malfunctioning machinery.
- Speed limits of 20 km/h must be enforced on site.
- Any noise producing plant or equipment must be adequately muffled.
- If work is done over the weekend/after hours, the contractor must apply for a noise exemption certificate.

Monitoring

Regular monitoring of site conditions by the ECO. The above is also to be monitored by the Site Agent on a daily basis.

2.3.3 Dust Impacts

Nature of impact

During the construction phase, dust will emanate from the site due to excavations and windblown sand. This will be generated from open stockpiles or construction vehicles driving over the site. Dust can negatively impact adjacent residents and road users, especially during strong wind conditions.

This impact is deemed to be the same for Alternatives 1 and 2 as the additional dust which may be generated by the loop (Alternative 1) as opposed to the single ramp (Alternative 2) is minimal.

Impact Management Objectives

To limit dust from the proposed works.

Impact Management Actions

- All vehicles transporting sand need to have tarpaulins covering their loads which will assist in any windblown sand occurring off the trucks.
- On windy days, stockpiles must be covered, or they must be wetted.
- The handling and transportation of materials which may generate dust must be avoided during high wind conditions.
- Speed limits of 20 km/h must be enforced on site.
- For dust suppression, the use of waterless methods and non-potable water is encouraged.
- Dust site screening measures should be installed on the site perimeter, at excavations or at areas of high dust generation and the materials used should be capable of reducing the quantity of dust being blown off site to below nuisance levels.

Monitoring
Regular monitoring of site conditions by the ECO.

2.3.4 Vibration Impacts

Nature of impact
The increase in construction vehicles and truck traffic for the duration of the construction phase will contribute to increased vibration in the area. Vibration impacts may also arise as a result of drilling activities. These impacts could result in potential negative impacts on the surrounding community.

Impact Management Objectives
To limit vibration from the proposed works.

Impact Management Actions
- Normal construction working hours must be enforced for all construction activities.
- Speed limits of 20 km/h must be enforced on site.

Monitoring
Regular monitoring of site conditions by the ECO.

2.3.5 Job Creation

Nature of Impact
The construction of the proposed road activity will result in the provision of temporary employment opportunities. This will result in the upliftment of the local community as some of the jobs will accrue to previously disadvantaged individuals providing them with an additional income as well as skills development. This impact is the same for both Alternatives 1 and 2.

Impact Management Actions
It is strongly recommended that local subcontractors and labourers should be prioritised in the construction contract so as to increase as much as possible, the positive impact for the local community in the suburbs of Kensington, Goodwood and Windemere.

2.3.6 Material Handling

Nature of Impact
During the construction phase, it is likely that a number of materials will be required on site in order to undertake the necessary activities. Some of these materials may pose a risk to the receiving environment if they are poorly managed.

These risks include:

- Contamination of soil and water resources;

- Destruction of habitat; and
- Health concerns and loss of life (for both humans and non-humans).

Impact Management Actions

- Cement must be stored in a weatherproof lockable store that is further than 32m from water resources.
- Hydrocarbons kept on site must be stored on a bunded impermeable surface within a weatherproof lockable store that is in excess of 50m from water resources. The volume contained by the bund must be more than 110% of the volume of hydrocarbon stored. Appropriate signage in line with South African National Standard 10089 must be in place.
- Sufficient spill kits must be kept on site for spills associated with the machinery being used. The Environmental Officer must be suitably trained to use these kits.
- All materials on site must be handled and stored in terms of their Material Safety Data Sheet. Gas and fuel should not be stored in the same storage area, and any generators used on the site should also be placed on a bunded surface. The contact information for the Environmental Control Officer, a hazmat team, and the City of Cape Town Disaster Risk Officer for the area must be clearly signposted on the site at all times.
- Any contaminated water and soil must be removed to a treatment facility. A report of spill incidents must be compiled and kept on site for a minimum of five years. The Environmental Control Officer must monitor spill incidents and determine any patterns that may arise. Measures to ameliorate these patterns must be incorporated into the Environmental Management Programme.
- Contractors must identify fuels and hazardous substances to be stored on the site and must ensure that they know the effects of these substances on their staff and the environment. A copy of a fuels and hazardous substance inventory must be supplied to the ECO by the Contractors.
- Contractors must ensure that the quantities of fuels and chemicals on-site are appropriate to the requirements and are stored and handled so as to avoid the risk of spillage. Fuels stored on-site, above ground, must not exceed the threshold volumes stipulated in Environmental Impact Assessment Regulations Listing Notice 1 (GNR No 983 of 2014 as amended); pertaining to the list of Basic Assessment Activities requiring prior environmental authorisation and that came into effect on 4 December 2014. Should the anticipated volumes exceed these specified thresholds, an application must be lodged with the competent authority, in terms of Environmental Impact Assessment Regulations and approval obtained before such activities commence.

2.3.7 Delineation of No-Go and Working Areas

Environmental Management Actions

It is important that activities are conducted within a limited area to facilitate control and to avoid negative environmental impacts. For this reason, the site will be divided into working areas and `no-go' areas.

Working areas are defined as only those areas required by the Contractor to undertake the necessary activities and should not extend beyond the boundaries of the area indicated on the site plan except as agreed. A method statement including a sketch plan of working and no-go areas must be submitted to the ECO for approval prior to construction commencement.

The Contractor must ensure that all labour and materials remain within the boundaries of the working areas. Disturbance must be restricted to development footprints only, with no disturbance to areas outside the development footprint allowed. Areas for eating and resting must also form part of the working area and must be demarcated on the site plan submitted to the ECO for approval.

The Contractor must ensure that the no-go areas are not entered by unauthorised persons. The Contractor must also ensure that no dumping, stockpiling, storage of equipment or spillage of construction material occurs on the no-go areas. No-go areas are to be clearly demarcated making use of orange mesh or danger tape on wooden poles. The demarcation must be maintained by the Contractor for the duration of the construction phase.

Monitoring
Implementation of the above actions must be monitored during inspections by the ECO.

2.3.8 Site Camp Establishment

Environmental Management Actions
The Contractor's Camp and Materials Storage Area must be located in consultation with the ECO. The Contractor must submit a Method Statement for this Site Camp placement 5 (five) working days before establishing the Site Camp. The contents of this Method Statement must include a layout plan showing any offices, stores, vehicle parking, equipment and fuel and oil storage areas, toilet placement, equipment and material stockpiles.

The Contractor will be required to fence off or visually screen the site camp. No site staff other than security personnel must be housed on-site. The Contractor must provide water and/or washing facilities at the camp site for personnel. The Contractor's Camp and Materials Storage Area must be kept neat and tidy and free of litter.

The Contractor must ensure that the site camp complies with the Occupational Health and Safety Act. This includes the provision of first aid and firefighting equipment and external display of emergency contact numbers. The name of the responsible person in terms of safety must be included in the above Method Statement.

2.3.9 Demarcation of Eating Areas

Eating areas must be restricted to the site offices and Contractor's camp. If employees are to eat elsewhere on the site, the Contractors must, in consultation with the ECO, designate places for

eating in the working areas, and must provide adequate water for washing, and toilets, and refuse bins at all these places, which should be cleaned on a regular basis.

2.3.10 Clearing and Stabilisation

Environmental Management Actions

Areas which will be left cleared for longer than one month must be stabilised in a manner agreed upon in consultation with the ECO. No burning or burying of any plant material is permitted on-site.

Vegetation clearing shall be limited to only when and where necessary, with as small as possible patches being cleared at a time.

The following measures are to be adhered to when material is stockpiled on site:

- Soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind and where they will cause minimal disturbance.
- Stockpiles must be kept at a maximum height of 2m and managed so as to prevent the material from being spread over a wide surface, to prevent erosion and compaction of the stockpiles.
- Stockpiles must not be located adjacent to sensitive areas such as rivers and wetlands and may only occur within demarcated working areas.
- Stockpiles must be easily accessible with no environmental damage.
- Topsoil or subsoil material to be used for backfilling must not be contaminated by spoil.

Monitoring

Implementation of the above actions must be monitored by the site agent as well as by the ECO during inspections.

2.3.11 Erosion and Stormwater Management

Nature of Impact

During the construction phase, currently unhardened land will be hardened either by compaction or by impermeable surfaces. This will increase the amount of surface runoff generated. This may cause erosion and sedimentation, which is also associated with construction activities such as excavation and cut and fill on the northern portion of the property. Erosion and sedimentation impacts are most likely to affect the river during the construction of the access road and the laying of the sewer pipeline as this will occur partly below the 1:100 year flood line.

Erosion of exposed areas after vegetation clearing or stockpiled soil by rainfall and overland runoff could also occur, causing sediments to wash into the river.

Environmental Management Actions

- Stabilisation of cleared areas to prevent and control erosion shall be done as soon as the construction activity in the specific area is completed to minimise the chances of erosion and sedimentation occurring.
- Should water flow onto the site from upslope of the construction area, the flows are to be diverted around the construction area.
- Housekeeping and litter clearing of the working area is to be done so as to remove any items which may be washed away into downstream areas.

Monitoring

Implementation of the above actions must be monitored by the site agent as well as by the ECO during inspections.

2.3.12 Protection of Heritage Resources

Nature of Impact

Although the site's archaeological sensitivity is low, heritage resources may nonetheless be unearthed during the construction phase.

Impact Management Objectives

To protect heritage resources which may be unearthed due to construction activities.

Impact Management Actions

Should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay.

Monitoring

Implementation of the above actions must be monitored by the site agent, who is to inform the ECO should any heritage resource be discovered during the execution of construction activities.

2.3.13 Equipment and Machinery

Environmental Management Actions

Equipment and machinery must be maintained in good working order. Any equipment or machinery that is found to be leaking must not be further used until it is appropriately fixed. Contractors must position any equipment that may leak on leak-proof drip trays to contain any pollutants, or immediately remove such equipment from site. The drip trays used for storage of leaking equipment must be of a size that the equipment can be positioned within its perimeter. The equipment must also be protected from rain, where practical, to ensure that rainwater is excluded from the drip trays. Drip trays must be checked and cleaned daily and must not be allowed to overflow. As for the disposal of other hazardous substances, materials collected from drip trays must be disposed of at a hazardous waste disposal site approved by the Engineer and ECO.

Monitoring

Implementation of the above actions must be monitored during inspections by the ECO.

2.3.14 Cement Batching

Nature of impact

Cement powder has a high pH. Spillage of dry cement powder and concrete slurry will affect both soil and water pH adversely. Careless handling of cement products resulting in spillage may have serious detrimental effects on the surrounding environment.

Environmental Management Actions

The following mitigation measures are to be implemented to minimise environmental impact:

- Responsibly used ready-mix concrete and cement is preferred to site batched mixes.
- Cement contaminated equipment is to be washed so that contaminated water does not enter stormwater, groundwater, drainage lines, streams/rivers or dams. A leak-proof sump of a design approved by the ECO should be constructed for the washing of cement-contaminated equipment.
- Contaminated water must either be removed from site or, with the approval of the ECO and the Local Authority, be disposed of into the local sewage system. Where possible, contaminated water should be recycled back into the batching process.
- Cement must be mixed on mixing trays that prevent runoff and spillage. No mixing will be allowed directly on the ground's surface.
- Locations for mixing areas in the site camp are to be approved by the ECO.
- Used cement bags are to be stored in a wind and rainproof container for disposal. Used bags are to be removed from the site on a regular basis and under no circumstances burned as a method of disposal.
- Excess or spilled cement and concrete are to be removed to an approved Municipal waste disposal site.
- Contaminated soil resulting from a cement or concrete spill is to be removed or rehabilitated at the cost of the Contractor and to the satisfaction of the Engineer and the ECO.

Monitoring

Implementation of the above actions must be monitored during inspections by the ECO.

2.3.15 Equipment Servicing and Cleaning

Environmental Management Actions

The following mitigation measures are to be implemented in order to minimise environmental impact with regards to the servicing and cleaning of equipment:

- All vehicles and equipment must be maintained in a good condition in order at all times to minimise the risk of leakage and possible contamination of the soil, groundwater, surface water and/or stormwater by fuels, oils and hydraulic fluids.

- All standing equipment must have drip trays and an approved spill kit must be kept on-site.
- Cleaning or servicing of vehicles must not be undertaken on-site. This should be done offsite at a designated facility when the need arises.

Monitoring

Implementation of the above actions must be monitored during site inspections by the ECO.

2.3.16 Cleanliness of Public Roads

Environmental Management Actions

In order to minimise environmental impact, Contractors must ensure that construction vehicles are not overloaded so as not to spill construction or excavated material onto public roads. Public roads and verges directly impacted by this development must be maintained and swept on a daily basis.

2.3.17 Emergency Procedures

Incident and emergency situations procedure

Section 30 and 30A of the National Environmental Management Act [NEMA] (Act No. 107 of 1998) prescribes a process that would need to be undertaken in case of incidents and emergency situations.

Section 30 and 30A of NEMA states the following:

30. Control of incidents

(1) In this section-

*(a) **"incident"** means an unexpected, sudden and uncontrolled release of a hazardous substance, including from a major emission, fire or explosion, that causes, has caused or may cause significant harm to the environment, human life or property;*

(Section 30(1)(a) substituted by section 13(b) of Act 30 of 2013)

*(b) **"responsible person"** includes any person who-*

(i) is responsible for the incident;
(ii) owns any hazardous substance involved in the incident; or
(iii) was in control of any hazardous substance involved in the incident at the time of the incident;

*(c) **"relevant authority"** means-*

(i) a municipality with jurisdiction over the area in which an incident occurs;
(ii) a provincial head of department or any other provincial official designated for that purpose by the MEC in a province in which an incident occurs;

(iii) the Director-General;
(iv) any other Director-General of a national department.

(2) Where this section authorises a relevant authority to take any steps, such steps may only be taken by-

(a) the person referred to in subsection (1)(c)(iv) if no steps have been taken by any of the other persons listed in subsection (1)(c);
(b) the person referred to in subsection (1)(c)(iii) if no steps have been taken by any of the persons listed in subsection (1)(c)(i) and (c)(ii);
(c) the person referred to in subsection (1)(c)(ii) if no steps have been taken by the person listed in subsection (1)(c)(i):

Provided that any relevant authority may nevertheless take such steps if it is necessary to do so in the circumstances and no other person referred to in subsection (1)(c) has yet taken such steps.

(3) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer must forthwith after knowledge of the incident, report through the most effective means reasonably available-

(a) the nature of the incident;
(b) any risks posed by the incident to public health, safety and property;
(c) the toxicity of substances or by-products released by the incident; and
(d) any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment to-
(i) the Director-General;
(ii) the South African Police Services and the relevant fire prevention service;
(iii) the relevant provincial head of department or municipality; and
(iv) all persons whose health may be affected by the incident.

(4) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer, must, as soon as reasonably practicable after knowledge of the incident-

(a) take all reasonable measures to contain and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;
(b) undertake clean-up procedures;
(c) remedy the effects of the incident;
(d) assess the immediate and long-term effects of the incident on the environment and public health;

(5) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer, must, within 14 days of the incident, report to the Director-General, provincial head of department and municipality such information as is available to enable an initial evaluation of the incident, including-

(a) the nature of the incident;
(b) the substances involved, and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects;

(c) initial measures taken to minimise impacts;

(d) causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and

(e) measures taken and to be taken to avoid a recurrence of such incident.

(6) A relevant authority may direct the responsible person to undertake specific measures within a specific time to fulfil his or her obligations under subsections (4) and (5): Provided that the relevant authority must, when considering any such measure or time period, have regard to the following:

(a) the principles set out in section 2;

(b) the severity of any impact on the environment as a result of the incident and the costs of the measures being considered;

(c) any measures already taken or proposed by the person on whom measures are to be imposed, if applicable;

(d) the desirability of the state fulfilling its role as custodian holding the environment in public trust for the people;

(e) any other relevant factors.

(7) A verbal directive must be confirmed in writing at the earliest opportunity, which must be within seven days.

(8) Should-

(a) the responsible person fail to comply, or inadequately comply with a directive under subsection (6);

(b) there be uncertainty as to who the responsible person is; or

(c) there be an immediate risk of serious danger to the public or potentially serious detriment to the environment, a relevant authority may take the measures it considers necessary to-

(i) contain and minimise the effects of the incident;

(ii) undertake clean-up procedures; and

(iii) remedy the effects of the incident.

(9) A relevant authority may claim reimbursement of all reasonable costs incurred by it in terms of subsection (8) from every responsible person jointly and severally

(10) A relevant authority which has taken steps under subsections (6) or (8) must, as soon as reasonably practicable, prepare comprehensive reports on the incident, which reports must be made available through the most effective means reasonably available to-

(a) the public;

(b) the Director-General;

(b) the South African Police Services and the relevant fire prevention service;

(c) the relevant provincial head of department or municipality; and

(d) all persons who may be affected by the incident.

30A. Emergency situations

(1) The competent authority may on its own initiative or on written or oral request from a person, direct a person verbally or in writing to carry out a listed or specified activity, without obtaining an environmental

authorisation contemplated in section 24(2)(a) or (b), in order to prevent or contain an emergency situation or to prevent, contain or mitigate the effects of the emergency situation.

(2) The request from the person referred to in subsection (1) must at least include, where known—

(a) the nature, scope and possible impact of the emergency situation;

(b) the listed or specified activities that will be commenced with in response to the emergency situation;

(c) the cause of the emergency situation; and

(d) the proposed measures to prevent or to contain the emergency situation or to prevent, contain or mitigate the effects of the emergency situation.

(3) The competent authority may direct the person to undertake specific measures within a specific time period in order to prevent or contain an emergency situation or to prevent, contain or mitigate the effects of the emergency situation.

(4) The verbal directive referred to in subsection (1) must be confirmed in writing at the earliest opportunity, which must be within seven days.

(5) Before making a decision contemplated in subsection (3), the competent authority must at least, where information is available, consider—

(a) the nature of the emergency situation;

(b) the information contained in the request referred to in subsection (2);

(c) whether the emergency situation was caused by or the fault of the person;

(d) the principles in section 2;

(e) the risk of the impact on the environment as a result of the emergency and the costs of the measures considered; and

(f) the risk of the impact on the environment of the emergency situation, prevention, control or mitigation measures and the post-event mitigation or rehabilitation measures that may be required.

(6) If the competent authority decides not to issue a directive provided for in subsection (1), the activity cannot commence or continue in the absence of an environmental authorisation.

(7) In this section 'emergency situation' means a situation that has arisen suddenly that poses an imminent and serious threat to the environment, human life or property, including a 'disaster' as defined in section 1 of the Disaster Management Act (Act No. 57 of 2002), but does not include an incident referred to in section 30 of this Act.

First aid procedures:

Contractors must provide and maintain suitable first aid kits on the site and must ensure that a qualified first aid practitioner is present during working hours, in accordance with the Occupational Health and Safety Act (85 of 1993). They must also ensure that their staff know and can carry out the procedures for dealing with accidents and must clearly define the emergency procedures to be followed for obtaining medical treatment and assistance in the event of serious injury.

Spills of fuels and hazardous substances:

Contractors must keep the necessary materials and equipment on site to deal with ground spills of any hazardous materials present. They must set up a procedure for dealing with such spills, which must be approved by the Engineer and ECO and must include a provision to notify the Engineer of any spills.

The spill kit provided by the Contractor must include, at a minimum:

- 1x 120 litre bin
- 5x 125 cm absorbent socks
- 3x 300 cm absorbent socks
- 2x absorbent cushions
- 50x absorbent 50cm pads
- 1x 65cm x 45 cm drain mat
- 800g clay plugging compound
- 2x heavy duty waste bags with ties
- 1 set of PPE (gloves & goggles)

In the event of soil contamination caused by spillage of hazardous substances onto the ground, the source of the spillage must be isolated, and the spillage must be contained. Contaminated soil must also be removed or in the case of a larger spill, an absorbent material must be applied. Contaminated soils that have been removed must be stored in a skip and disposed of at a licensed hazardous waste disposal facility. The treatment of the contaminated soil and the areas of contamination must be undertaken to the satisfaction of the ECO and RE. The clean-up of spills and any damage caused by a spill will be for the relevant Contractors' account.

Emergency advisory procedure:

Contractors must ensure that there is an emergency advisory procedure on-site before commencing any operations that may endanger the lives of any personnel on-site, or cause damage to the environment.

Contractors must also ensure that all personnel are familiar with emergency procedures to be followed. It must be ensured that lists of all emergency numbers and contact people are regularly updated, and that numbers and names are posted at relevant locations at all times. In addition, the Contractor must ensure that information boards displaying emergency contact details and information at the entrance gate, are installed.

Fire precautions:

Cookers and heaters used on-site should be devices which have been specifically designed for those purposes. Wherever work involves welding, gas cutting or cutting of metal, fire-fighting equipment must be immediately available. A suitably qualified fire watch should also be in attendance.

Contractors must appoint a member of their staff to be responsible for the installation and inspection of fire extinguishers. The Engineer and ECO must receive copies of the inspection reports. A map should be drawn up to indicate the locations of fire extinguishers and they should be clearly visible and demarcated in accordance with legislation. Contractors must also supply site offices, kitchen areas, workshop areas, stores of fuel and hazardous materials, and any other areas identified by the ECO, with fire extinguishers.

No smoking will be permitted on the site except within designated areas demarcated in the Site Camp Establishment Method Statement and approved by the ECO. Suitable firefighting equipment must be readily available in this area. The Contractor will be requested to remove any person from the site who is found lighting a fire or smoking outside of the designated smoking area. Cigarettes must be properly extinguished before disposal. Cigarettes must be disposed of in bins provided on-site and must not be thrown onto the ground.

Fires for heating, cooking or disposal of any material will not be permitted. Heating and cooking will only be allowed on a gas cooker within a designated area of the site camp. Purpose built “braai” areas may be permitted within the site camp and must be well maintained. Suitable firefighting equipment must be readily available. Welding, gas cutting, cutting of metal and heat curing will be permitted within specifically designated and adequately marked areas on the site. These areas, as well as any other areas where on-site welding, gas cutting or cutting of metal is unavoidable, must be approved by the Engineer and the ECO.

In accordance with the City of Cape Town Air Quality Management By-Law (PG 7662 of 17 August 2016), no person may carry out open burning of any material on any land or premises, unless such person has first obtained written authorisation for open burning from the City (Section 19). Air pollution nuisances must be prevented. However, should the actions of the Contractor result in an air pollution nuisance, this is considered an offence (Section 25).

All “hot” work areas must have an operational fire extinguisher readily at hand. The Contractor must ensure that all staff undergoes training on the use of a fire extinguisher when needed. All fire extinguishers must be inspected on a monthly basis to ensure that the devices will work properly if needed. The inspection procedure is detailed below:

Procedure:

The Contractor must ensure that a responsible person is appointed to do the monthly inspection of the fire extinguisher. A monthly inspection spreadsheet must be available to conduct the inspection. This sheet must be submitted to the Engineer and ECO once completed.

The Contractor will be liable for all costs incurred by organisations called to extinguish any fires started by any person(s) under their control. In such an event, the Contractor will be liable for all costs incurred to remediate burnt areas on the site and areas to which the fire has spread. The Contractor must ensure that the contact details of the nearest Fire Department are displayed on-site

(together with other emergency services) and that all persons involved with the project know the location of these numbers on-site.

2.3.18 Safety on Site

Contractors must follow the guidelines of the Occupational Health and Safety Act (85 of 1993), which include:

The wearing of hard hats by -

- All persons entering the site;
- All persons within 10m of any situation where any form of lifting or hoisting equipment is being used; and
- Any personnel working in any other situation where the possibility of head injury is present, e.g. an area where overhead work is taking place.

The wearing of gloves by personnel -

- Handling heavy materials;
- Carrying out maintenance activities within a crusher;
- Engaged in welding or gas cutting activities; and
- Handling materials/equipment with unfinished steel edges.

The wearing of approved safety shoes or safety boots by -

- All persons entering the construction site or workshop, storage and depot areas.

The wearing of safety goggles by -

- Persons operating equipment under dusty conditions;
- Persons engaged in cutting or welding activities; and
- Persons engaged in grinding activities.

The wearing of hearing protection by -

- All persons engaged in rock drilling activities (>85 decibel):
- All crushing operators; and
- Any persons entering into high noise areas (>85 decibel).

These areas should be appropriately marked using a standard National Occupational Safety Association (NOSA) pictogram.

The wearing of safety harnesses by -

- Any person carrying out work 2m above ground level, unless it is being carried out from a safe and protected work platform; and
- All heavy equipment operators.

2.3.19 Environmental Awareness

Training and environmental awareness is fundamental to the successful implementation of the EMPr. All personnel whose work may result in an impact on the environment must receive appropriate training on the environmental procedures to be followed.

Environmental Management Actions

- Contractors shall make allowance for site staff to attend initial environmental awareness training of approximately one (1) hour as conducted by the appointed ECO. Thereafter, environmental training material must be incorporated into the relevant health and safety induction.
- The Contractor shall ensure that all new staff attend an environmental awareness training session within five working days of commencement of work on the site.
- All personnel involved in day-to-day activities that could have an impact on the environment must be given on-the-job training in procedures to be followed. Contractors must ensure that this is done and seek the support if the ECO where the Contractor and his or her staff are not familiar with the procedures to be followed.
- A register is to be kept up to date at all times of personnel attending the environmental awareness training sessions, as well as the on-the-job training detailed above. It is the duty of the Contractor to submit a copy of the updated register to the ECO for record keeping. All new staff that commence work during the course of the contract must attend the training session conducted by the ECO or site agent.

2.4 METHOD STATEMENTS

Contractors shall provide initial Method Statements for approval by the ECO prior to work commencing on aspects of the project deemed or identified to be of potential risk to the environment, when called upon to do so by the ECO. During the course of the construction phase, the ECO will ensure, together with the Contractor, that suitable Method Statements are produced for activities that could have a significant environmental impact and therefore require specified environmental controls.

A Method Statement is a dynamic document that allows for modifications to be negotiated between the Contractors and the ECO, as circumstances dictate. All Method Statements will form part of the EMPr documentation and are subject to all terms and conditions contained in the EMPr. All Method Statements must be submitted and approved five (5) days prior to the commencement of any activities taking place. All Method Statements are to be to the satisfaction of the ECO. A signed copy of all current method statements must be available at the site office for inspection at all times.

A Method Statement is a point of departure for understanding the nature of the intended actions to be carried out and allows for all parties to review and understand the procedures to be followed in order to minimise risk of harm to the environment. Changes to, and adaptations of, Method Statements can be implemented with the prior consent of all parties.

A Method Statement describes the scope of the intended work in a step-by-step description in order for the Engineer and ECO to understand the Contractor's intentions. This will enable them to assist in devising any mitigation measures, which would minimise environmental impact during these tasks. Where it is requested that a Contractor submit a Method Statement to the satisfaction of the Engineer and ECO, the format should clearly indicate the following:

What - a brief description of the work to be undertaken;
How - a detailed description of the process of work, methods and materials;
Where - a description/sketch map of the locality of work (if applicable); and
When - the sequencing of actions with due commencement dates and completion date estimates.

Construction activities which will need a method statement include, but are not limited to:

2.4.1 Contractor's Camp Establishment Illustrating Fuel Storage Area, Toilet Facilities, Eating Areas, and Waste Management On-Site

The location, layout and method of establishment of the construction camp is to be provided. A diagram illustrating any buildings, offices, lay down yards, fuel storage areas, and any other infrastructure required during the construction phase of the project. Included in this method statement is the demarcation of no-go areas.

A method statement will also be required detailing the rehabilitation of the area used to establish the site camp.

2.4.2 Windblown Sand and Dust Control Measures

Detailed methods of how dust will be controlled and managed on site.

2.4.3 Disposal of Contaminated Ground or Surface Water

Detailed methods of how contaminated ground or surface water will be controlled and managed on site.

2.4.4 Hazardous Substances

Details of how hazardous substances or materials to be used, and the transportation, storage, handling and disposal of these substances or materials. The location, layout and fuel storage area are to be provided. This includes potential service areas, and fuel handling areas (dispensing purposes) and management of drip trays and spill kits.

2.4.5 Waste Management

Expected solid waste types and quantities must be provided. Provide details regarding how solid and liquid waste generated on the construction site and site camp will be collected, stored, transported and disposed of. Details of any service provider(s) appointed to manage this task must also be provided.

2.4.6 Water Wastage, Management and Pollution Prevention

Methods of managing water on site, minimising, controlling, collecting and disposing of contaminated water, and pollution prevention of water must be provided. This includes surface water (and ground water if applicable).

2.4.7 Cement and Concrete Handling

Should any cement/concrete work be required – the location of cement storage area and layout must be illustrated. How the area will be prepared, managed and maintained must be provided. Mixing methods must be explained and how cement/concrete will be handled. Containment of runoff water from areas within which cement/concrete works is being undertaken must be provided. Transportation and handling method of cement/concrete must be provided.

2.4.8 Traffic Management

Details of traffic safety measures must be provided. This includes details (or drawings) showing where and how access points and routes will be located and managed.

During construction, public traffic and construction traffic shall be managed using an approved Accommodation of Traffic plan, which includes speed controls and is in accordance with traffic management best practices. This may be included in the Method Statement required, which is also to indicate the use of flag persons when required and appropriate signage along routes used by construction vehicles.

2.4.9 Stormwater and Erosion Control

The following must be provided:

- Details of how stormwater emanating within or adjacent to the construction site may impact on construction activities.
- Details on how the Contractor will deal with stormwater runoff and potential erosion within the construction footprint.
- Details of any service provider(s) appointed to manage this task must also be provided.

2.5 SITE CLEAN UP AND REHABILITATION

2.5.1 Site Clean Up

The Contractor shall ensure that all temporary structures, equipment, materials, waste and facilities used are removed upon completion of the contract. The site clean-up must be to the satisfaction of the ECO. A site closure checklist will only be given once site has been closed.

2.5.2 Rehabilitation

In the event of damage occurring to the environment due to the irresponsible actions of the Contractor, (including non-compliance with the EMPr), rehabilitation may be required as decided upon by the ECO and the Engineer in consultation. The completed rehabilitation is to be to the satisfaction of the ECO.

The cost of such rehabilitation will be for the Contractor's account and no extension of time will be granted. Any damage to the environment caused as a result of non-compliance with the EMPr shall be made good by the Contractors and/or Engineers.

2.6 SITE INSPECTIONS

A site inspection programme will be implemented and will comprise:

- Visual inspections of the site activities by the Contractor's Environmental Officer on a daily basis.
- Visual inspections of the site activities by the ECO on average every week.
- Visual inspections by the ECO will include the following:
    - Physical inspection of the site;
    - Completion of a weekly site inspection checklist;
    - Communication with the site team; and
    - Ongoing follow-up and close-out of non-conformances to ensure that quality is met.
- Review of records and documentation to reconcile these with the construction programme.

Records shall be maintained during the construction phase to enable compliance with the EMPr specifications to be demonstrated. These will typically comprise a daily log of activities that record waste management (documentary proof of type, volume, disposal and transport), fuels and chemicals management (deliveries, spills *etc*.), and other environmental issues such as adverse weather (wind, rain), and surface water runoff.

Monthly environmental monitoring reports will be compiled by the ECO and submitted to the Project Manager/Client, Consulting Engineers and Contractors as an overall performance indicator. The report will capture environmental issues and a number of non-conformances that occurred during the month. The ECO is expected to keep photographic records of construction activities.

2.7 PENALTIES AND BONUSES

2.7.1 Individual Transgressions

Non-compliance with the conditions of the EMPr will constitute a breach of Contract. The ECO can impose spot fines on the Contractor for any contraventions of the EMPr. By imposing spot fines on individuals guilty of contravening the EMPr, the ECO will be able to ensure that the requirements of the EMPr are taken seriously not only by the management personnel on-site, but also by other site staff. Below are ranges of spot fines for different contraventions of the EMPr.

The ECO should use these as a guide and use his/her own judgement in determining the issues of non-compliance and the severity of the contravention and thus the value of the spot fine:

An individual entering the defined no-go boundaries of the site;	R 150 – 500
An individual driving a vehicle into the defined no-go boundaries the site;	R 600 – 3000
An individual driving any earthmoving plant into the defined no-go boundaries of the site;	R 500 – 3000
A plant operator ignoring a verbal warning to have an oil leak from machinery repaired;	R 500 – 2000
An individual littering on site;	R 50 – 500
An individual not making use of the ablution facilities;	R 300 – 500
An individual spilling fuels (non-use of funnels/pumps etc.);	R 300 – 700
An individual eating outside of the defined eating area;	R 50 – 200
Smoking on site other than in the designated site camp;	R 50 – 200

These fines should be revised when the construction phase commences to ensure relevance.

For each subsequent similar offence committed by the same individual, the fine should be doubled in value to a maximum value of R5 000. The ECO will not collect the fines from individuals, but will rather inform the Contractor of the contravention, the individual's identity and the amount of the fine. The fine will be deducted from the Contractors' monthly certificate, or the Engineer will issue a variation order, to the value of the fine, for the Contractor to undertake activities that would in some way enhance the state of the environment or the site. It will be the Contractor's responsibility to reclaim such fines from the guilty individuals.

These fines do not preclude prosecution under any other law.

2.7.2 Contractors Transgressions

The ECO may also issue penalties directly to the Contractor for general non-compliance with the EMPr. The following serves as a guide for such penalties in certain situations.

Excessive litter on the site or in the site camp	R 500 – 3 000
Water wastage, soil contamination, or water contamination	R 500 – 10 000
Spillage of fuels on site	R 500 – 10 000
Inadequate provision of waste bins and toilets;	R 500 – 5 000
Litter or poor waste management practices	R 200 – 10 000
The non-provision of eating areas	R 500 – 1 000
Unnecessary dust generation and inadequate control	R 500 – 5 000
Unnecessary noise generation	R 500 – 5 000
Non-provision of hydrocarbon fuel absorbents	R 1 000 – 5 000
Inadequate erosion controls and prevention	R 500 – 8 000
Failure to report an archaeological/paleontological find	R 2 000 – 50 000
Harm to animals or failure to report animals on site	R 500 – 5 000
Unnecessary impact on sensitive areas identified/or ignoring of no-go areas	R 1 000 – 10 000

These penalties do not preclude prosecution under any other law.

The issuing of a penalty will usually be preceded by a verbal warning by the ECO, during which a timeframe for rectifying the situation, as well as the penalty to be implemented should this not be done within the timeframe, will be agreed on. The value of the penalty will depend on the seriousness of the contravention, and thus the ECO must use his/her judgement in determining the value of the penalty. Penalties issued to the Contractor are to be doubled for each offence, to a maximum penalty of R50 000. Should the Contractor fail to comply, daily penalties may be implemented for the duration of the non-compliance at the discretion of the ECO.

In addition to penalties, the ECO has the power to remove from site any person who is in contravention of the EMPr, and if necessary, the ECO can suspend the relevant part or all of the works, as required.

Note that penalties can be issued over and above costs that are incurred for the repair or rehabilitation of any environmental damage caused by the Contractor and all the parties over which they have responsibility. In this regard costs incurred by the Contractor in repairing or rehabilitating any environmental damage caused by non-compliance with the EMPr cannot be claimed in the Contract Bill, nor can any extension of time be claimed for such works.

Penalty amounts should be deducted from certificate payments made to the Contractor by the proponent, or in the case of a contravention by the proponent's own staff, they should be made

available directly. These funds must be paid into the account of a suitable environmental non-profit organisation working in the area and nominated by the ECO. Proof of payment of the penalties must be provided to the ECO within ten days of the implementation of a fine.

2.8 MEASUREMENT AND PAYMENT

The environmental control measures stipulated in this EMPr are deemed to be included in the rates tendered in the schedule of quantities provided with the tender documentation for the project. The Engineer shall ensure that this EMPr forms part of the Contractor's documentation.

3 OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT PROGRAMME (OEMPr)

This chapter forms part of the Environmental Management Programme (EMPr) for the proposed Construction Of A Traffic Circle On Badel Powell Drive, Portion Of Erf 547, Macassar, City of Cape Town, Western Cape Province.

3.1 ENVIRONMENTAL POLICY AND LEGISLATION

The proposed development is the subject of an Environmental Impact Assessment in terms of the National Environmental Management Act (107 of 1998). This Environmental Management Programme forms part of the Basic Assessment process and its implementation is a condition of the Environmental Authorisation for the project.

3.1.1 Environmental Legislation

The following non-exhaustive list of legislation is of relevance to the project. The Authorisation Holder must be aware of the requirements thereof and implements the relevant provisions.

- National Environmental Management Act, Act 107 of 1998 (as amended);
- The National Environmental Management: Biodiversity Act, 34 of 2004;
- National Water Act, 36 of 1998;
- DEA Integrated Environmental Management Guideline Series;

3.2 ENVIRONMENTAL SPECIFICATIONS (OPERATIONAL PHASE)

This section of the EMPr provides mitigation measures and recommendations which must be implemented during the operational phase of the project to ensure environmental compliance.

During the Basic Assessment Process undertaken for the proposed activity, the following environmental impacts were identified and assessed for the operational phase of the project:

ASSESSMENT OF OPERATIONAL PHASE IMPACTS

OPERATIONAL PHASE				
BIOPHYSICAL IMPACTS				
Potential fragmentation of ecological connectivity across the CBA	Low (-)	Very Low (-)	Not applicable	Not applicable
Potential Nuisance lighting effects on nocturnal biodiversity	Low (-)	Very Low (-)	Not applicable	Not applicable
Potential Alteration of wetland flow regime from raised road prism and stormwater discharge	Low (-)	Low (-)	Not applicable	Not applicable
Potential Ongoing wetland habitat disturbance (operational maintenance, windblown litter)	Low (-)	Low (-)	Not applicable	Not applicable
SOCIO-ECONOMIC IMPACTS				
Potential Improved road safety for all users (positive)	Medium (+)	High (+)	Medium (-)	Medium (-)
Potential Improved traffic flow, travel time and public-transport reliability (positive)	Medium (+)	Medium (+)	Medium (-)	Medium (-)
Potential Stimulation of broader economic activity along the R310 corridor (positive)	Low (+)	Medium (+)	Not applicable	Not applicable
DECOMMISSIONING PHASE				
A traffic circle is permanent road infrastructure. Decommissioning is not foreseen within any assessable timeframe and is therefore not separately assessed. Should decommissioning ever occur, impacts would be similar in nature and significance to those assessed for the construction phase.				

2. **OPERATIONAL PHASE: Potential fragmentation of ecological connectivity across the CBA**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Widening of the Baden Powell Drive / Macassar Road road reserve at the existing intersection will incrementally increase the footprint of the existing linear barrier that lies alongside CBA 1a on Farm RE/547.	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and long term	Not applicable
Consequence of impact or risk:	Low consequence. Fragmentation already exists via the existing roads.	Not applicable
Probability of occurrence	Probable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	Low	Not applicable

2. **OPERATIONAL PHASE: Potential fragmentation of ecological connectivity across the CBA**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Degree to which the impact can be reversed	Low	Not applicable
Cumulative impact prior to mitigation	Moderate	Not applicable
Significance rating of impact prior to mitigation	Low (-)	Not applicable
Degree to which the impact can be avoided	Low	Not applicable
Degree to which the impact can be managed	Low	Not applicable
Degree to which the impact can be mitigated	Low	Not applicable
Proposed mitigation	- Restrict the construction footprint to the existing road reserve on the eastern side. Demarcate the eastern road-reserve boundary with star-pickets and safety webbing before any construction commences; treat as a no-go area. - Prohibit storage of materials, laydown, refuelling, or ablutions within 10 m of the eastern road-reserve boundary (i.e. adjacent to CBA 1a). - Use only indigenous, locally appropriate (non-invasive) species in any post-construction roadside landscaping, in line with the adjacent Cape Flats Dune Strandveld habitat. - Install "Protected Area / CBA / no encroachment" signage at intervals along the eastern roadside to discourage further informal encroachment from the verge into Farm RE/547. - Confirm, via a pre-construction walk-down, the absence of *Erepsia dunensis* and other SCC in the narrow strip closest to the CBA boundary (as per Nicolson, 2026). If present, translocate to the CBA polygon on Farm RE/547. - Environmental Control Officer (ECO) to include the eastern construction edge in every twice-monthly site inspection; non-conformances to be raised immediately.	Not applicable

2. **OPERATIONAL PHASE: Potential fragmentation of ecological connectivity across the CBA**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Residual impacts	Low	Not applicable
Cumulative impact post mitigation	Low (adds marginally to an existing severance caused by the existing Baden Powell Drive)	Not applicable
Significance rating of impact after mitigation	**Very Low (-)**	Not applicable

3. **OPERATIONAL PHASE: Potential nuisance lighting effects on nocturnal species**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Intersection and street lighting may disorient and displace nocturnal fauna (bats, owls, moths, amphibians) and affect pollinator behaviour at the wetland and CBA edge.	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and long term	Not applicable
Consequence of impact or risk:	Low consequence. Area already lit to an extent by existing road lighting and adjacent settlement.	Not applicable
Probability of occurrence	Probable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	No loss of resource.	Not applicable
Degree to which the impact can be reversed	Barely Reversible.	Not applicable
Cumulative impact prior to mitigation	Low	Not applicable
Significance rating of impact prior to mitigation	Low (-)	Not applicable
Degree to which the impact	Moderate	Not applicable

3. **OPERATIONAL PHASE: Potential nuisance lighting effects on nocturnal species**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
can be avoided		
Degree to which the impact can be managed	Moderate	Not applicable
Degree to which the impact can be mitigated	Moderate	Not applicable
Proposed mitigation	- Where possible, utilise downward-shielded, full-cut-off luminaires to minimise light spill outside the road reserve. - Use warm-white or amber LEDs (≤ 3000 K) lighting which is less disruptive to nocturnal biodiversity than cool-white LEDs. - Design to SANS 10098 / relevant CCT lighting standards without exceeding recommended lux levels. - Minimise luminaires directed towards the adjacent wetland and CBA edge; use back-shields or re-aiming where unavoidable.	Not applicable
Residual impacts	No significance to Low	Not applicable
Cumulative impact post mitigation	Low	Not applicable
Significance rating of impact after mitigation	**Very Low (-)**	**Not applicable**

4. **OPERATIONAL PHASE: Potential Alteration of wetland flow regime**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Additional hard surfacing from the widened intersection is expected to increase run-off volume and discharges into the adjacent depression wetland (EnviroSwift, 2026).	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and long term	Not applicable

4. **OPERATIONAL PHASE: Potential Alteration of wetland flow regime**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Consequence of impact or risk:	Low consequence. Small additional impervious area; inwardly-draining wetland.	Not applicable
Probability of occurrence	Probable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	No loss of resource. Critically modified wetland unlikely to be associated with irreplaceable biodiversity.	Not applicable
Degree to which the impact can be reversed	Partly Reversible. Flows can be re-engineered in principle, but not practicable in this context.	Not applicable
Cumulative impact prior to mitigation	Medium	Not applicable
Significance rating of impact prior to mitigation	**Low (-)**	**Not applicable**
Degree to which the impact can be avoided	Low. Increased run-off from hard surfacing is largely unavoidable.	Not applicable
Degree to which the impact can be managed	Moderate. Run-off can, in principle, be contained and attenuated.	Not applicable
Degree to which the impact can be mitigated	Very low. No practicable on-site mitigation (EnviroSwift, 2026): attenuation ponds cannot reasonably be accommodated given space constraints and rapid on-going wetland loss.	Not applicable
Proposed mitigation	- Ensure that waste disposal bin are available at pedestrian crossing and public transport stops to prevent contamination of nearby wetlands.	Not applicable
Residual impacts	Low	Not applicable
Cumulative impact post mitigation	Low	Not applicable
Significance rating of impact after mitigation	**Low (-)**	**Not applicable**

5. **OPERATIONAL PHASE: Potential Wetland habitat disturbance**

	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Ongoing hydrocarbon spills, litter, illegal dumping, traffic noise and wildlife poaching associated with operation of the intersection and pedestrian use along Baden Powell Drive (EnviroSwift, 2026).	No construction would take place. Status quo retained.
Nature of impact:	Negative	Not applicable
Extent and duration of impact:	Local and long term	Not applicable
Consequence of impact or risk:	Low consequence. Wetland already critically modified.	Not applicable
Probability of occurrence	Probable	Not applicable
Degree to which the impact may cause irreplaceable loss of resources	No loss of resource.	Not applicable
Degree to which the impact can be reversed	Barely Reversible. Once disturbance has occurred it cannot readily be reversed.	Not applicable
Cumulative impact prior to mitigation	High	Not applicable
Significance rating of impact prior to mitigation	**Low (-)**	**Not applicable**
Degree to which the impact can be avoided	Low. Habitat disturbance from infrastructure operation is largely unavoidable.	Not applicable
Degree to which the impact can be managed	Moderate	Not applicable
Degree to which the impact can be mitigated	Moderate	Not applicable
Proposed mitigation	- Implement signage and pedestrian-management measures to direct pedestrian movement onto the formalised crossings rather than through wetland remnants. - Install interpretive signage to highlight the ecological value of the adjacent wetlands and CBA 1a indigenous vegetation, promote community stewardship and discourage further degradation.	Not applicable

5. **OPERATIONAL PHASE: Potential Wetland habitat disturbance**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Residual impacts	Low	Not applicable
Cumulative impact post mitigation	High	Not applicable
Significance rating of impact after mitigation	**Low (-)**	**Not applicable**

6. **OPERATIONAL PHASE: Potential improved road safety for all users (POSITIVE)**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Two-lane roundabout with formalised block pedestrian crossings on all four legs, improved stops and public transport (PT) upgrades reduce potential crash severity (particularly right-angle and right-turn crashes) and improve pedestrian crossing safety compared with the existing priority-controlled intersection.	Status quo retained. Existing priority-controlled intersection continues, with associated crash and pedestrian-safety risk profile.
Nature of impact:	Positive	Negative
Extent and duration of impact:	Regional and long term	Regional and long term
Consequence of impact or risk:	Medium to high consequence. Roundabouts consistently reduce fatal and serious-injury crashes relative to priority-controlled intersections.	Ongoing crash and pedestrian-safety risk at a high-volume arterial intersection.
Probability of occurrence	Definite	Definite
Degree to which the impact may cause irreplaceable loss of resources	Not applicable (positive impact).	Not applicable
Degree to which the impact can be reversed	Not applicable (positive impact).	Not applicable
Cumulative impact prior to mitigation/enhancement	Medium	Medium
Significance rating of	Medium (+)	Medium (-)

6. OPERATIONAL PHASE: Potential improved road safety for all users (POSITIVE)		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
impact prior to mitigation/enhancement		
Degree to which the impact can be avoided	Not applicable	Not applicable
Degree to which the impact can be managed	High. Via design standards and on-going maintenance.	Not applicable
Degree to which the impact can be mitigated/enhances	Moderate	Not applicable
Proposed mitigation	- Implement adequate signage, road markings and illumination to support driver recognition and safe negotiation of the roundabout. - Ensure regular maintenance of lane markings, signage and lighting over the design life. - Ensure that pedestrian-crossing lighting meet CCT standards for pedestrian-scale visibility.	Not applicable
Residual impacts	High	Medium. Existing crash/pedestrian-safety risks persist.
Cumulative impact post mitigation	High	Medium
Significance rating of impact after mitigation	High (+)	Medium (-)

7. OPERATIONAL PHASE: Potential improved traffic flow, travel time and Public Transport (PT) reliability (POSITIVE)		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Continuous-flow operation of the roundabout is expected to reduce delays on Japhta K Masemola and Macassar Road approaches, enable safer right turns, and support more reliable minibus-taxi and bus operations via formalised	Existing delays retained; right-turn and crossing movements remain constrained; PT reliability unchanged.

7. **OPERATIONAL PHASE: Potential improved traffic flow, travel time and Public Transport (PT) reliability (POSITIVE)**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
	stops.	
Nature of impact:	Positive	Negative
Extent and duration of impact:	Regional and long term	Regional and long term
Consequence of impact or risk:	Medium consequence. Noticeable reduction in peak-period delay at the intersection.	Continued peak-period delay and constrained movements.
Probability of occurrence	Definite	Definite
Degree to which the impact may cause irreplaceable loss of resources	Not applicable.	Not applicable
Degree to which the impact can be reversed	Low	Not applicable
Cumulative impact prior to mitigation	Medium	Low
Significance rating of impact prior to mitigation	Medium (+)	Medium (-)
Degree to which the impact can be avoided	Low	Not applicable
Degree to which the impact can be managed	Moderate	Not applicable
Degree to which the impact can be mitigated/enhanced	Low	Not applicable
Proposed mitigation	- Implement public transport stop design, pedestrian access and signage fit for purpose and maintain it over the design life.	Not applicable
Residual impacts	Medium. Reliable improvement retained with adequate maintenance.	Medui. Persistent operational inefficiency at the intersection.
Cumulative impact post mitigation	Medium	Medium

7. **OPERATIONAL PHASE: Potential improved traffic flow, travel time and Public Transport (PT) reliability (POSITIVE)**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Significance rating of impact after mitigation	**Medium (+)**	**Medium (-)**

8. **OPERATIONAL PHASE: Potential stimulation of economic activity and investment along the R310 corridor (POSITIVE)**		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
Potential impact and risk	Improved accessibility, safety and travel-time reliability would be realised due to the proposed project, along the R310 corridor. This would support business retention, investment decisions and ease of labour commuting between Khayelitsha, Macassar and surrounding industrial / commercial nodes. This impact will be further enhances with **Alternative 1: Landscaped Traffic Circle**, which includes aesthetically pleasing and attractive landscaping, uplifting the sense of place and economic value of the area.	Corridor continues to operate under current delay and safety conditions.
Nature of impact:	Positive (indirect)	No change
Extent and duration of impact:	Regional and long term	Regional and long term
Consequence of impact or risk:	Medium	Status quo retained.
Probability of occurrence	Probable	Definite
Degree to which the impact may cause irreplaceable loss of resources	Not applicable	Not applicable
Degree to which the impact can be reversed	Low	Not applicable
Cumulative impact prior to	Medium	Medium

8. OPERATIONAL PHASE: Potential stimulation of economic activity and investment along the R310 corridor (POSITIVE)		
	Alternative 1 Landscaped Traffic Circle and Alternative 2 Paved Traffic Circle (both 45 m diameter) with two lane inner circle and two lane approach roads	Alternative 2: No-Go Alternative
mitigation/enhancement		
Significance rating of impact prior to mitigation	Low (+)	Medium (-)
Degree to which the impact can be avoided	Low	Not applicable
Degree to which the impact can be managed	Moderate	Not applicable
Degree to which the impact can be mitigated/enhanced	Low	Not applicable
Proposed mitigation	Coordinate with City economic-development initiatives targeting the R310 / Macassar corridor to ensure the upgrade is leveraged in subsequent planning.	Not applicable
Residual impacts	Medium. Realised alongside other corridor investments.	No significance
Cumulative impact post mitigation	Medium	Medium
Significance rating of impact after mitigation	Medium (+)	Medum (-)

3.2.1 Maintenance Management

During the operational phase of the project, the DEADP Maintenance Management Plan guidelines (2013) provide the following set of guiding principles for maintenance work in water courses that are of relevance to this project:

- After construction, restore any areas within the maintenance footprint that have been degraded from their condition prior to construction, and as a result of the construction activities, to their former condition.
- Rehabilitate and re-vegetate after construction.
- Clear alien plant species.
- Whenever possible, use existing access routes.
- Keep all potential pollutants away from aquatic features.
- Remove spoil material to approved dumping sites.
- Minimise the frequency of, or requirement for, maintenance activities.
- Preferably undertake maintenance activities during the dry season.
- Undertake all reasonable measures to ensure that maintenance activities minimise erosion.
- Minimise the spatial extent of disturbance and maximise physical diversity.
- Minimise upstream/downstream impacts.
- Do not impede the movement of aquatic and riparian biota.
- Minimise alterations to flow- and sediment-capacity.
- Retain valuable biophysical or aesthetic areas, including floodplain habitat.
- Avoid channelization or canalisation as it tends to result in bigger problems than those it was intended to solve.
- Remove cleared woody material from the areas adjacent to the wetlands to prevent it being washed into the wetland area during the wet season.

THE ENVIRONMENTAL PARTNERSHIP
ENVIRONMENTAL CONSULTANTS
P O Box 945, Cape Town 8000
56 Shortmarket Street, Cape Town
T: 021 422 0999
F: 021 422 0998
www.enviropart.co.za
info@enviropart.co.za

DECLARATIONS OF ADHERENCE TO THE ENVIRONMENTAL MANAGEMENT PROGRAMME

Project Name: _____
Project Site: _____
Record of Decision Reference Number: _____
Date of issue of Record of Decision: _____

I, _____ , the undersigned, on behalf of/duly authorised by

_____ declare that:

- the conditions of the authorisation were brought under my attention;
- I have read and understood the contents of the Environmental Management Programme;
- I agree to adhere to all the specified requirements as set out in various documents for the abovementioned project;
- I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications as set out in the various documents for the aforementioned site; and
- I undertake to inform all persons under my supervision of such specifications and contents of the documents.

This declaration is valid until the end of construction of the abovementioned facilities.

Signed: _____

Position/Designation of signatory: _____

Place: _____ Date: _____

Witness 1: _____ Witness 2: _____

Date: _____ Date: _____

ANNEXURE 1:

Locality Map



ANNEXURE 2:
Water Use Authorisation

This annexure will be added once Water Use Authorisation is received.