REVISED BASIC ASSESSMENT REPORT
IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) AND ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 (AS AMENDED)

October 2017

PROJECT TITLE

PROPOSED ERICA DRIVE EXPANSION, BELHAR

REPORT TYPE CATEGORY	REPORT REFERENCE NUMBER	DATE OF REPORT
Pre-Application Basic Assessment Report (if applicable)[1]	16/3/3/6/7/1/A8/13/3302/17	5 March 2018
Draft Basic Assessment Report[2]	16/3/3/1/A8/13/3042/18	7 December 2018
~~Final Basic Assessment Report[3] or, if applicable~~ Revised Basic Assessment Report[4] (strikethrough what is not applicable)	16/3/3/1/A8/13/3042/18	29 May 2019

Notes:

1. In terms of Regulation 40(3) potential or registered interested and affected parties, including the Competent Authority, may be provided with an opportunity to comment on the Basic Assessment Report prior to submission of the application but must again be provided an opportunity to comment on such reports once an application has been submitted to the Competent Authority. The Basic Assessment Report released for comment prior to submission of the application is referred to as the "Pre-Application Basic Assessment Report". The Basic Assessment Report made available for comment after submission of the application is referred to as the "Draft Basic Assessment Report". The Basic Assessment Report together with all the comments received on the report which is submitted to the Competent Authority for decision-making is referred to as the "Final Basic Assessment Report".

2. In terms of Regulation 19(1)(b) if significant changes have been made or significant new information has been added to the Draft Basic Assessment Report , which changes or information was not contained in the Draft Basic Assessment Report consulted on during the initial public participation process, then a Final Basic Assessment Report will not be submitted, but rather a "Revised Basic Assessment Report", which must be subjected to another public participation process of at least 30 days, must be submitted to the Competent Authority together with all the comments received.

DEPARTMENTAL REFERENCE NUMBER(S)

Pre-application reference number:	16/3/3/6/7/1/A8/13/3302/17
File reference number (EIA):	16/3/3/1/A8/13/13/3042/18
NEAS reference number (EIA):	-
File reference number (Waste):	-
NEAS reference number (Waste):	-
File reference number (Air Quality):	-
NEAS reference number (Air Quality):	-
File reference number (Other):	-
NEAS reference number (Other):	-

CONTENT AND GENERAL REQUIREMENTS

Note that:

1. The content of the Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the Environmental Impact Assessment ("EIA") Regulations, 2014 (as amended), any subsequent Circulars, and guidelines must be taken into account when completing this Basic Assessment Report Form.
2. This Basic Assessment Report is the standard report format which, in terms of Regulation 16(3) of the EIA Regulations, 2014 (as amended) must be used in all instances when preparing a Basic Assessment Report for Basic Assessment applications for an environmental authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA")and the EIA Regulations, 2014 (as amended) and/or a waste management licence in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) ("NEM:WA"), and/or an atmospheric emission licence in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) ("NEM:AQA") when the Western Cape Government: Environmental Affairs and Development Planning ("DEA&DP") is the Competent Authority/Licensing Authority.
3. This report form is current as of October 2017. It is the responsibility of the Applicant/ Environmental Assessment Practitioner ("EAP") to ascertain whether subsequent versions of the report form have been released by the Department. Visit the Department's website at **http://www.westerncape.gov.za/eadp** to check for the latest version of this checklist.
4. The required information must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The tables may be expanded where necessary.
5. The use of "not applicable" in the report must be done with circumspection. All applicable sections of this report form must be completed. Where "not applicable" is used, this may result in the refusal of the application.
6. While the different sections of the report form only provide space for provision of information related to one alternative, if more than one feasible and reasonable alternative is considered, the relevant section must be copied and completed for each alternative.
7. Unless protected by law, all information contained in, and attached to this report, will become public information on receipt by the competent authority. If information is not submitted with this report due to such information being protected by law, the applicant and/or EAP must declare such non-disclosure and provide the reasons for believing that the information is protected.
8. Unless otherwise indicated by the Department, one hard copy and one electronic copy of this report must be submitted to the Department at the postal address given below or by delivery thereof to the Registry Office of the Department. Reasonable access to copies of this report must be provided to the relevant Organs of State for consultation purposes, which may, if so indicated by the Department, include providing a printed copy to a specific Organ of State.
9. This Report must be submitted to the Department and the contact details for doing so are provided below.
10. Where this Department is also identified as the Licencing Authority to decide applications under NEM:WA or NEM:AQA, the submission of the Report must also be made as follows, for-
    - Waste management licence applications, this report must also (*i.e.*, another hard copy and electronic copy) be submitted for the attention of the Department's Waste Management Directorate (tel: 021-483-2756 and fax: 021-483-4425) at the same postal address as the Cape Town Office.
    - Atmospheric emissions licence applications, this report must also be (*i.e.*, another hard copy and electronic copy) submitted for the attention of the Licensing Authority or this Department's Air Quality Management Directorate (tel: 021 483 2798 and fax: 021 483 3254) at the same postal address as the Cape Town Office.

DEPARTMENTAL DETAILS

CAPE TOWN OFFICE		GEORGE REGIONAL OFFICE
REGION 1 **(City of Cape Town & West Coast District)**	**REGION 2** **(Cape Winelands District & Overberg District)**	**REGION 3** **(Central Karoo District & Eden District)**
Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 1) Private Bag X 9086 Cape Town, 8000 Registry Office 1st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 1) at: Tel.: (021) 483-5829 Fax: (021) 483-4372	Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 2) Private Bag X 9086 Cape Town, 8000 Registry Office 1st Floor Utilitas Building 1 Dorp Street, Cape Town Queries should be directed to the Directorate: Development Management (Region 2) at: Tel.: (021) 483-5842 Fax: (021) 483-3633	Department of Environmental Affairs and Development Planning Attention: Directorate: Development Management (Region 3) Private Bag X 6509 George, 6530 Registry Office 4th Floor, York Park Building 93 York Street George Queries should be directed to the Directorate: Development Management (Region 3) at: Tel.: (044) 805-8600 Fax: (044) 805 8650

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ACRONYMS USED IN THIS BASIC ASSESSMENT REPORT AND APPENDICES:

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
DEA	National Department of Environmental Affairs
DEA&DP	Western Cape Government: Environmental Affairs and Development Planning
DWS	National Department of Water and Sanitation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
ESA	Ecological Support Area
HWC	Heritage Western Cape
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM:ICMA	National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
PPP	Public Participation Process

DETAILS OF THE APPLICANT

Applicant / Organisation / Organ of State:	City of Cape Town Metropolitan Municipality		
Contact person:	Mark Pinder		
Postal address:	Private Bag X9181, Cape Town		
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E-mail:	mark.pinder@capetown.gov.za		

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

Name of the EAP organisation:	Eco Impact Legal Consulting (Pty) Ltd		
Person who compiled this Report:	Johmandie Pienaar		
EAP Reg. No.:	-		
Contact Person (if not author):	NA		
Postal address:	PO Box 45070		
Telephone:	(021) 671 1660	Postal Code:	7735
Cellular:	072 240 3092	Fax:	(021) 671 9967
E-mail:	admin@ecoimpact.co.za		
EAP Qualifications:	EAP for Eco Impact Legal Consulting since March 2009 Johmandie Pienaar (Giliomee) holds a Baccalaureus Technologiae Degree (Cum Laude) in Nature Conservation from the Cape Peninsula University of Technology and has also completed the following short courses at the Centre for Environmental Management: • Implementing Environmental Management Systems (ISO 14001)(2009); • Occupational Health and Safety Law for Managers (2010); • Implementing an OHS Management System based on OHSAS 18001 (2010) and; • Occupational Health and Safety Management System OHSAS 18001 Audit: A Lead Auditor Course Based on ISO 19011 and ISO 17021 (2011). Short course presented by Executive Coaching & Facilitation: • Conduct Outcome Based Assessments (May 2015).		

Please provide details of the lead EAP, including details on the expertise of the lead EAP responsible for the Basic Assessment process. Also attach his/her Curriculum Vitae to this BAR.

Refer to Appendix K1: EAP CV

EXECUTIVE SUMMARY OF THE PRE-APPLICATION BASIC ASSESSMENT REPORT:

Proposed Project and Site Description:

Project - The proposed Erica Drive / Belhar Main Road extension is approximately 3,24km in length. Erica Road will link to the R300 with an parclo interchange which will give access to the north and in the distant future to the south. The first section of Erica Drive between Belhar Drive and New Nooiensfontein Road will be known as Erica Drive and the section between New Nooiensfontein Road and Highbury Road will be known as Belhar Main Road. The planned road is a dual carriageway with a median that varies in width between 2m and 5m. The planned cross-section comprises of two 3,4m lanes, a 2,4m surfaced shoulder and a 0,3m channel on both the shoulder side and the median side per direction of travel. The road width per direction (kerb to kerb) varies between 9,8m - 5.2m. On either side of the dual carriageway will be a 2m sidewalk. The 2,4m surfaced shoulders will be utilized as cycle ways (both sides of the road).

The dual carriageway will be constructed within a road reserve which varies between 32m and 40m. A section of the road reserve adjacent to Kuils River is 50m wide. On the western end of the proposed road it will tie into the existing Erica Drive at the Belhar Drive intersection. On the eastern end it will tie into the existing Highbury Road Intersection. The existing Highbury Road intersection and Belhar Main Road further to east are being designed by another consultant. The first section of the project between Belhar Drive and the R300 (western side) lies within an open field and are owned by council and zoned as road reserve. The section between the R300 road reserve and the Reuter Street intersection is an open field. As part of the neighbouring development most of the road reserve has been determined and zoned as road reserve. There is however areas which needs to be rezoned as road reserve (current zoning = agricultural). The existing Erica Drive / Belhar Road between the Reuter Street Intersection and Highbury Road crosses Kuils River and falls within an existing road reserve. Duo to site distance requirements splay sizes at intersections do require additional road reserve. The additional road reserve influences a number of residential stands as well as property of the Provincial Government of the Western Cape. The R300 off-ramp is 660m in length and will consist of a 4m lane and 2 x 2m pave shoulders which widens to 2 x 3,7m lanes at the Erica Drive Intersection (terminal). The R300 on-ramp is 890m in length and will consist of a single 4m lane and 2 x 2m paved shoulders. The larger part of the ramps falls within the existing R300 road reserve.

The new Erica Drive / Belhar Drive Intersection will be signalized. The Erica Drive / St Vincent Drive Intersection (T-junction) will have STOP-control on St Vincent Drive. Erica Drive will cross the R300 with a bridge passing over the R300. The R300 Bridge will be widened when Erica Drive becomes a dual carriageway Road. Both interchange terminals (T-junctions) will be signalized. The Erica Drive / Reuter Street Intersection will be signalized. The Erica Drive / Isabel Street/Eland Street Intersection will have STOP-control on Isabel Street and Eland Street. The existing Kuils River Bridge will become the eastbound carriageway bridge and a new second bridge will be constructed for the future westbound carriageway. Minor alterations to the existing Kuils River Bridge will be required for better pedestrian and cycle accommodation. The Erica Drive / Nooiensfontein Road Intersection will be changed into a partial intersection (left-in / left-out) when Erica Drive becomes a dual carriageway road. The Erica Drive / Belhar Main Road / New Nooiensfontein Road Intersection will be changed into a double lane roundabout when Erica Drive / Belhar Main Road become a dual carriageway road. The existing school access in Belhar Main Road will be changed to a partial intersection (left-in / left-out) when Belhar Main Road becomes a dual carriageway road.

As part of the freshwater resources verification undertaken by SAS in September 2018, two natural wetland flats (known as the western wetland flat and the eastern wetland flat) were identified along the proposed route of the Erica Drive expansion, and due to the unavoidable loss of 0.28ha of the western wetland flat habitat it was determined that 0.2 functional hectare equivalents and 0.7 habitat hectare equivalents of wetland area would need to be conserved to offset this residual loss, this will be done on site. Refer to Appendix G9 for details.

Construction phasing - Construction of the road is planned in two phases. The **first phase** is to construct the westbound carriageway of Erica Drive (10,2m kerb to kerb road width) with 2m sidewalks on either side between Belhar Drive and Reuter Street which will include a bridge over the R300. This section of road is approximately 1,75km in length. The **first phase** will include the second carriageway between Reuter Street and New Nooiensfontein as well as a new double lane roundabout at the Erica Road / New Nooiensfontein Road intersection.

The **second phase** will be the construction of the eastbound carriageway between Belhar Drive and Reuter Street including the widening of the R300 Bridge / second bridge over the R300. The **second phase** will include the westbound carriageway of Belhar Main Road up to Highbury Road intersection on the eastern side.

The phasing of the interchange is dependent on the funds available. The northbound ramps might form part of phase 1 or phase 2 or even further future phases. The interchange design makes provision for access to the south as well but because of the excessive cost involved the south bound ramps will not be constructed in the near future.

Footprint - The construction footprint for the full project is estimated to be 162 000 square metres (16.2Ha). The final development footprint is estimated to be 103 000 square metres (10.3Ha) for the

full project.

Site - The development area west and immediately east of the R300 is undulating with sand dunes. These dunes have however been heavily disturbed and are more likely man-made to the most extent due to land excavations and stock piling that occurred while establishing the surrounding urban developments and landfill site. Most of the development area east of the R300 is flat with gradual slopes.

The site is located within dense urban residential areas. The area west of the R300 is also bordered by a landfill site. The channelled Kuils River tributary crosses the eastern half of the development site along Belhar Road and the R300 crosses the western half. As previously mentioned the site has been significantly disturbed and transformed due to urban development. Ongoing illegal waste dumping is taking place at various locations within the area west of the R300 adjacent to the landfill site. Several transformed wetlands also occur throughout the proposed development site. Refer to Botanical and Freshwater Ecosystems Impact Assessments as available under Appendix G for detailed site descriptions.

Summary of Specialist/s Conclusions and Recommendations:

Botanical Impact Assessment, November 2017, Eco Impact:

Concluding Remarks and Recommendations

The vegetation and ecology within the study area has been heavily disturbed for a long time, and no significant patches of intact natural vegetation remain within the non-wetland areas. Terrestrial botanical diversity is generally very low compared to what it was prior to human disturbance.

Two vegetation types would originally have been present in the area, all of which are now regarded as threatened on a national basis (one Critically Endangered and one Endangered).

Of the Critically Endangered Cape Flats Sand Fynbos vegetation mainly none to very little indigenous vegetation remains, therefore these areas have been indicated as Low terrestrial botanical sensitivity, presenting no constraints to the proposed development. Loss of this area would be of negligible botanical significance at a regional scale.

The remaining proposed development area represents significantly disturbed secondary Endangered Cape Flats Dune Strandveld vegetation. Limited indigenous vegetation diversity remains within the areas marked as Medium terrestrial botanical sensitivity areas, with no plant Species of Conservation Concern. The loss of the Medium sensitivity vegetation in the study area is likely to be of Medium to Low negative significance at a regional scale, before and after mitigation.

No specific botanical mitigation is required for this project, other than demarcating and restricting the proposed development area throughout the construction phase and ongoing alien invasive vegetation management and removal in the disturbed areas around the development footprints.

It is expected that the proposed development will lead to the clearance of less than 2ha of homogenous indigenous vegetation species and no species of conservation concern.

Although development of the Medium terrestrial botanical sensitivity area has been rated as having a potential Medium negative significance at a regional scale if other factors such as ongoing human disturbances and urban development, alien plant encroachment, low ecological connectivity etc. are taken into consideration it is believed that the entire proposed development will have a Low negative significance on the terrestrial habitat of the site and surrounds. If is therefore concluded that the proposed development could therefore be authorised without causing significant negative terrestrial botanical impacts.

Summary of recommendations as listed in the report and additional general impact mitigation

measures to be implemented:

Planning considerations and constraints-

- The construction and final development footprints should be demarcated and all proposed activities should be restricted to the proposed development area.

Construction, Operational and Rehabilitation phases -

- The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the construction, operational and decommission/rehabilitation phases.
- Undertake development activities only in identified and specifically demarcated areas as proposed.
- Demarcate no-go areas before any land clearing occurs under the supervision of an ECO. Demarcation must be clearly visible and effective and no-go area must remain demarcated throughout construction phase.
- Personnel should be restricted to the construction camp site and immediate construction areas only.
- Remove and conserve topsoil layer and overburden material for rehabilitation after construction activities have ceased
- No construction related disturbance should be allowed within the remaining adjacent indigenous vegetation and wetland areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance.
- Implement site specific erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the development footprint area and surrounds.
- Rehabilitate impacted indigenous vegetation areas outside of the development areas immediately if disturbed with indigenous vegetation species.
- Proper waste bins to be provided during construction and operation and all waste to be regularly (at least once a week) removed to municipal landfill site.
- If any fuel or hazardous materials is spilled on site it must be treated as according to EMP requirements.
- The cement mixing area must be at least 32m away from the edge of the wetlands and is only to take place within demarcated cement mixing area that is impermeable and has a berm so that no cement mix runoff water escapes from cement mixing area.
- The landowner/s must adhere to his/her legal obligations to actively eradicate and manage alien vegetation infestations present on the applicable and surrounding properties.
- Monitor soil erosion on a regular basis and rehabilitate impacted areas as soon as possible under supervision of appointed ECO.
- Storm water discharge flow must be managed and restricted in such a manner that it does not cause erosion.
- Only use topsoil as derived and conserved from the proposed development areas to be rehabilitated after development activities have ceased on the property.
- Only use vegetation indigenous to the area to rehabilitate impacted/decommissioned areas and implement ongoing monitoring of the rehabilitated areas until successful rehabilitation has taken place.
- After topsoil has been replaced ongoing monitoring and removal of alien vegetation regrowth must be conducted to ensure effective rehabilitation of indigenous vegetation.
- Decommissioned areas must be rehabilitated and planted with indigenous vegetation immediately after built structures have been removed.
- Engineered contour structures reinstated and maintained.
- Monitor rehabilitation of areas impacted outside of the proposed development areas or decommissioned areas on a 6 monthly basis until effective/successful rehabilitation has been obtained.
- If erosion is detected during or after rehabilitation implement erosion rectification and preventions measures as guided by an ECO

Eco Impact is of the opinion, and based on the survey and desk study done, that the proposed development activities; if designed and implemented according to the recommendations as provided in this report, will not have an unacceptable significantly negative impact on the environmental aspects of the site and surrounds as assessed in this report.

Fauna and Avifauna Impact Assessment, November 2017, Eco Impact:

Concluding Remarks and Recommendations

From the botanical and freshwater studies conducted it is evident that the site is highly degraded and extensively transformed leading to a habitat that is not suitable to support viable populations of fauna and avifauna species.

Most of the study area is considered to be of Low terrestrial botanical sensitivity and conservation value, with mainly no to very low indigenous plant diversity remaining. The overall undeveloped but highly degraded site is too small, transformed and isolated as located within a densely developed urban area to support any viable sustainable indigenous fauna or avifauna species of conservation concern and none was recorded during the time of the surveys.

The area west and immediately east of the R300 is considered to be of medium to low fauna and avifauna habitat sensitivity as this is where most of the remaining indigenous vegetation was recorded as well as natural and artificial wetlands, which may support terrestrial and aquatic fauna and avifauna species within the area.

The rest of the site and Kuils River area is considered to be of low fauna and avifauna habitat sensitivity as this area consists mainly of invader grass species with no shrubs and no reeds for shelter or nesting and the Kuils River tributary has been channelized.

No terrestrial or aquatic fauna or avifauna species of conservation concern were recorded during the site surveys, and none are believed to reside on the proposed development site and surrounds.

No specific fauna and avifauna mitigation is required for this project, other than demarcating and restricting the proposed development area throughout the construction phase and ongoing alien invasive vegetation management and removal in the disturbed areas around the development footprints.

Although the proposed development has been rated as having a potential Medium negative significance at a regional scale if other factors such as ongoing human disturbances and urban development, alien plant encroachment, low ecological connectivity etc. are taken into consideration it is believed that the entire proposed development will have a **Low negative significance on the indigenous fauna and avifauna of the site and surrounds.** If is therefore concluded that the proposed development could therefore be authorised without causing significant negative fauna and avifauna impacts.

Summary of recommendations as listed in the report and additional general impact mitigation measures to be implemented:

Planning considerations and constraints-

- The construction and final development footprints should be demarcated and all proposed activities should be restricted to the proposed development area.

Construction, Operational and Rehabilitation phases -

- The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the construction, operational and decommission/rehabilitation phases.
- Undertake development activities only in identified and specifically demarcated areas as

proposed.

- Demarcate no-go areas before any land clearing occurs under the supervision of an ECO. Demarcation must be clearly visible and effective and no-go area must remain demarcated throughout construction phase.
- Personnel should be restricted to the construction camp site and immediate construction areas only.
- Remove and conserve topsoil layer and overburden material for rehabilitation after construction activities have ceased
- No construction related disturbance should be allowed within the remaining adjacent indigenous vegetation and wetland areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance.
- Implement site specific erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the development footprint area and surrounds.
- Rehabilitate impacted indigenous vegetation areas outside of the development areas immediately if disturbed with indigenous vegetation species.
- Proper waste bins to be provided during construction and operation and all waste to be regularly (at least once a week) removed to municipal landfill site.
- If any fuel or hazardous materials is spilled on site it must be treated as according to EMP requirements.
- The cement mixing area must be at least 32m away from the edge of the wetlands and is only to take place within demarcated cement mixing area that is impermeable and has a berm so that no cement mix runoff water escapes from cement mixing area.
- The landowner/s must adhere to his/her legal obligations to actively eradicate and manage alien vegetation infestations present on the applicable and surrounding properties.
- Monitor soil erosion on a regular basis and rehabilitate impacted areas as soon as possible under supervision of appointed ECO.
- Storm water discharge flow must be managed and restricted in such a manner that it does not cause erosion.
- Only use topsoil as derived and conserved from the proposed development areas to be rehabilitated after development activities have ceased on the property.
- Only use vegetation indigenous to the area to rehabilitate impacted/decommissioned areas and implement ongoing monitoring of the rehabilitated areas until successful rehabilitation has taken place.
- After topsoil has been replaced ongoing monitoring and removal of alien vegetation regrowth must be conducted to ensure effective rehabilitation of indigenous vegetation.
- Decommissioned areas must be rehabilitated and planted with indigenous vegetation immediately after built structures have been removed.
- Engineered contour structures reinstated and maintained.
- Monitor rehabilitation of areas impacted outside of the proposed development areas or decommissioned areas on a 6 monthly basis until effective/successful rehabilitation has been obtained.
- If erosion is detected during or after rehabilitation implement erosion rectification and preventions measures as guided by an ECO

Eco Impact is of the opinion, and based on the survey and desk study done, that the proposed development activities; if designed and implemented according to the recommendations as provided in this report, will not have an unacceptable significantly negative impact on the environmental aspects of the site and surrounds as assessed in this report.

Freshwater Ecological Impact Assessment, November 2017, Eco Impact:

POTENTIAL IMPACTS ON THE KUILS RIVER

The affected Kuils River area is significantly degraded/transformed and has been channelled. There is also an existing bridge structure located on and next to the proposed bridge/road development over the Kuils River tributary. The overall significant of the potential impacts on the Kuils River is therefore expected to be of low significance due to the existing transformed state of the affected areas.

Proposed Mitigation Measures during Construction. Operational and Decommissioning Phases:

- The construction disturbance zone must be limited to 10m up- and downstream of the end of the new road footprint and this edge must be demarcated on site.
- No work camps or construction phase stockpiling may be located within 50m of the channel of the River or such that construction associated material or waste will flow, blow or leach into the channel.
- Any activities involving cement must be tightly controlled to prevent its passage into the river – uncured cement will increase pH and thus potentially affect ammonia toxicity.
- All refuelling areas must be adequately bunded.

POTENTIAL IMPACTS ON THE WETLANDS

Expansion and dualling of Erica Drive would have the following definite, permanent and irreversible impacts on the identified aquatic ecosystems:

The project layout would result in the complete and portions infilling of Wetlands 1, 2, 3, 4, 7 and 8 as identified and account for permanent encroachment into an total wetland area of approximately 1.23ha of the larger identified wetlands (out of a total wetland area of approximately 4.12ha).

The affected portions of the wetlands would be permanently destroyed. The ecological significance of this loss is considered of **medium negative significance** – a rating that takes account of the existing level of degradation and fragmentation of the system, but also of the rapid rate of degradation of the identified wetlands.

The following impacts are likely to occur within the wetland depressions in the area:

- Degradation as a result of compaction, excavation, passage of vehicles over wetland areas.
- Dumping of construction waste (old tar, paving, rubble) in wetland area.
- Visual degradation associated with litter (e.g. cement bags, litter from workers).
- Permanent destruction of soil function as a result of spillage of oils, fuels other contaminants from refuelling areas.
- Permanent loss of existing wetland habitat due to proposed road developments.

Without mitigation, these measures would be permanent, and would be of medium negative significance, with a medium cumulative significance rating as well, given that they are additional impacts on wetland areas that have already been shrunken as a result of the proposed layout.

Proposed Mitigation Measures during Construction. Operational and Decommissioning Phases:

- Due to the location of the proposed activities being site specific direct mitigation/prevention of impacts is not possible. It is recommended however that on - or off-site wetland offset mitigation should be implemented, to create seasonally inundated wetland depression habitat of at least the area lost or greater, and of a similar or better quality. The existing wetlands have been completely cut off from all other aquatic ecosystems and are unlikely to play any significant future role in terms of biodiversity conservation. It is therefore recommended that the existing degraded wetland areas that will not be impacted upon be rehabilitated as offset mitigation focus, with allowance made for at least area-for-area wetland replacement and that this be incorporated into the site specific stormwater management structures that must be designed for the proposed development. A wetland ecologist must have input into the final design, extent and landscaping of the recommended wetland offsets and associated stormwater management measures on site.
- The disturbance zone must be kept to a maximum of 10m beyond the edge of the new road – this must be fenced off/demarcated along the full wetland width, using wire fencing and shade cloth and access by personal and machinery beyond the demarcation may not take place, other than for purposes of daily litter collection which must take place on foot.
- Litter must be collected from the abutting wetlands on a daily basis and by foot. All litter must be stored in suitable containers and disposed of at a licensed landfill site on at least a weekly basis.
- No vehicles may be refuelled within 30m of the mapped wetland edges, and any refuelling areas must be appropriately bunded.
- Site camps and areas for the storage of construction equipment and / or waste may not be

located within 30m of the edge of any demarcated wetland.
- Construction that requires infilling of a wetland must take place from the terrestrial edge, and not from the wetland edge, to minimise unnecessary damage;
- At the end of construction, allowance must be made for landscaping the area of disturbed wetland abutting the construction area plus a 10m setback area.

RECOMMENDATIONS AND CONCLUDING REMARKS

The Kuils River flows through the proposed Erica Drive dualling from north to south. The freshwater ecological features on the site have been totally modified and channelled. On the site, surrounding land use, the channelling of the river and the existing constructed bridge has resulted in all of the indigenous riparian vegetation being removed from the river and streams. In terms of the importance and sensitivity of the features, the numerous impacts have greatly reduced their species richness and diversity. In order to maintain what remains of the ecological functioning of the systems on the site, it is recommended that construction methodology be provided by the civil contractor to the freshwater ecologist and approval first be granted before construction commences to ensure that the construction activities are mitigated and to prevent any further degradation of the Kuils River. The construction activities must be monitored by an Environmental Control Officer. The pillars of the expanded bridge must be in line with the existing bridge pillars in order to not affect or impact on the existing hydrology or river flow.

Six of the identified wetlands on site will be impacted upon. The impacted wetlands have largely modified wetland integrity as a large loss of natural habitat, biota and basic ecosystem functions has occurred. The Wetland Health Present Ecological Status of the impacted wetlands was assessed to be largely modified and in a moderate ecological importance state and sensitivity.

It is clear that the route will definitely impact, on a permanent basis, on an extent of depression wetlands. The former impacts are not mitigatable, and this report has recommended offset mitigation to account for wetland loss. A no-development alternative is not considered a necessary or useful recommendation to avoid these impacts, taking into account the level of degradation and fragmentation of the affected wetlands, as well as the opportunity for offset mitigation to create a better quality of habitat than that lost.

Freshwater Resource Verification and Offset Requirements Calculation for the Proposed Extension of Erica Drive from Belhar to Oakdene and Dualling of Erica Drive/Belhar Main Road East of Reuter Street, over the Kuilsriver, Western Cape. October 2018, Scientific Aquatic Services

Key Observations

1. The area surrounding the proposed new portion of Erica Drive, which is to be developed (western portion of the linear development), is considered to be significantly disturbed by anthropogenic activities. Such activities include the development of the Bellville South Industrial waste disposal site (north of the proposed Erica Drive portion), the excavation and shaping of informal roads within the surrounding area and the infilling and the disposal of household refuse.

2. According to the Freshwater Assessment Report (Hanekom, 2017), the western portion of the linear development has eight wetland features (As per Figure 10, numbered 1 – 8). During the field assessment, undertaken in September 2018, only one of the previously identified wetlands in the western portion of the proposed development route (approximating 0,48ha in extent) was considered to be natural and can be classified as a wetland flat (as per Figure 10, wetland number 2).

3. Wetland number 9 (as per Figure 10) located within the eastern portion of the linear development was also identified to be a natural system during the recent field verification (approximating 0,38ha in extent) and was also classified as a wetland flat.

4. The remaining areas previously identified as wetlands (Hanekom, 2017) were confirmed during the recent field verification to be artificially impounded areas or highly disturbed areas, where opportunistic invasive reed species (such as *Arundo donax*) have established due to water ponding within these excavated areas (Figure 11).

Offset Requirements and Investigation

Taking the *offset requirements* into consideration and on reflection of the findings as presented in Table 3 of *the* report, offset requirements were defined for the proposed linear development and an additional 10m buffer (of potential edge effects) which would encroach on 0.28 ha of the wetland flat located along the western portion of the proposed linear development (Figure 13).

The wetland offset calculator was used to calculate the functional hectare equivalents as well as the habitat hectare equivalents for the themes ecosystem services and ecosystem conservation, respectively. These results are presented in Tables 5 and 6. The wetland flat is not considered important in terms of species of conservation concern, therefore, the calculation was not included in the assessment.

From the assessment it is evident that 0,2 functional hectare equivalents and 0,7 habitat hectare equivalents of wetland area need to be conserved to offset the loss of the 0,28 hectares of wetland eco-services and ecosystem conservation value in the catchment.

It is therefore recommended that feasible wetland offset receiving areas be investigated in order to compensate for the 0,2 functional hectare equivalents and 0,7 habitat hectare equivalents of wetland area lost. These targeted wetland should ideally be of the same HGM wetland type and located within the same local catchment as the western wetland flat.

Since the eastern wetland flat (0.38 ha) (not to be impacted upon) is of too small size and not within the same local catchment as the western wetland flat, this wetland is considered to not be feasible to be considered for wetland offsetting, and an offsite alternative should be considered.

Conclusions and Way Forward

Based on the findings of the study, the following can be summarised:
1. Given the findings of this investigation, it was found that only two natural wetlands are located along the proposed linear development. All other wetlands as identified in the Freshwater Assessment Report (Hanekom, 2017), are considered to be artificial;

2. A wetland flat (0.48 ha) is proposed to be traversed by the western portion of the proposed linear development. With the inclusion of an additional 10m buffer from the edge of the linear development that can be assumed will be lost as a result of the linear development and edge effects associated with the construction activities, it was calculated that this would cause a loss of 0.28 ha of wetland area;

3. The wetland flat (0.38 ha) located along the eastern portion of the proposed linear development would be unimpacted by the proposed road upgrade, however, it must be made clear to any contractors that this area may not be utilised for a contractor's camp or any laydown areas;

4. An initial offset investigation was therefore undertaken to ascertain the functional hectare equivalents and the habitat hectare equivalents required to offset the anticipated 0,28 ha loss of the western wetland flat. It was determined that 0,2 functional hectare equivalents and 0,7 habitat hectare equivalents of wetland area need to be conserved to offset this loss;

5. It is, therefore, recommended that feasible wetland offset receiving areas be investigated in order to compensate for the hectare equivalents lost. These targeted wetland should ideally be of the same HGM wetland type and located within the same local catchment as the western wetland flat;

6. As part of the abovementioned assessment, a rehabilitation and implementation plan must be compiled indicating what actions must be undertaken, both during construction and for the operational phase to ensure that the hectare equivalents lost are fully compensated for, and the overall PES of the receiving wetland improved in order to meet the functional hectare equivalent requirements.

Residual Wetland Impact Compensation Plan for the Proposed Extension of Erica Drive from Belhar to Oakdene over the R300 and Dualling of Erica Drive/Belhar Main Road, East of Reuter Street, Over the

Kuilsriver, Western Cape Province. May 2019. Scientific Aquatic Services

Conclusion and Recommendations

Scientific Aquatic Services (SAS) was appointed to compile a Wetland Rehabilitation, Implementation and Management Plan (RWICP) as per the offset guidelines for the wetland that will be impacted by the proposed extension of Erica Drive. As part of the freshwater resource verification undertaken by SAS in September 2018, two natural wetland flats (known as the western wetland flat and the eastern wetland flat) were identified along the proposed route of Erica Drive.

In accordance with the rehabilitation interventions and offset initiative proposed within this document, most aspects will require mechanical inputs and cannot be done by hand. Although the initial impact is significant it must be noted that these activities are only for a short period so as to restore the ecoservice provision and wetland health. These measures stipulated within this report will allow for the recharge of a reinstated wetland footprint area and improve the remaining original extent of wetland habitat, leading to an overall betterment of the wetland and the general environment.

The following table is a summary of the ecoservice provision and ecological health of the western wetland flat prior to rehabilitation and the predicted values post rehabilitation.

Table 11: Summary table of wetland health and ecosystem service provision prior to and post rehabilitation

	Prior to Rehabilitation	**Post Rehabilitation**
Wet-health	Category D (Largely Modified)	Category C/D (Moderately Modified)
Ecoservice Provision	Moderately low	Moderate
Extent of wetland footprint area	0.48 hectares	0.5 hectares

Although the ecological condition is in a higher category, it should be noted that it is a bordering case and will be dependent on long-term management of the wetland. Nevertheless, an improved from a score of 4.8 to 3.9 was identified.

The reinstatement of the wetland footprint allows for relatively the same wetland areas post rehabilitation. Furthermore, the stormwater attenuation facility north of the proposed Erica Drive will contribute an additional 0.63ha of wetland habitat through the careful planning and design that if functions as a constructed wetland.

Although loss of wetland habitat is not considered favourable and should be avoided based on the mitigation hierarchy prescribed by the DEA et al. (2013) based on above provided information, the loss of wetland habitat cannot be avoided and as such the initiative to reinstate the wetland habitat alongside the Erica Drive Road is deemed a feasible rehabilitation/offset, provided all rehabilitation interventions and construction mitigation measure are implemented.

It should be noted that this document will form part of the Environmental Authorisation as well as the Waste Use Authorisation, and on approval, this document becomes binding and all aspects of the proposed rehabilitation and mitigation recommendations made herein must be adhered to by the proponent and appointed Contractor.

Technical Review Memorandum for Freshwater Ecological Impact Assessment: Proposed Extension of Erica Drive, Belhar to Oakdene over the Kuils River, October 2018, Scientific Aquatic Services

Conclusion

Based on the review of this study, overall the study is considered objective, concise, and easy to follow. Some descriptive requirements such as the definition of the PES have not been undertaken using the latest methods and cannot be considered best practice. The recommendations presented in the report are appropriate, relevant/necessary, sensible and achievable. The proposed mitigatory measures are considered the best options available. The wetland verification undertaken by SAS

presents further information on the wetlands including the determination that only two of the originally identified features are natural wetlands that require protection. The assessment undertaken by SAS presents additional construction and operational phase mitigatory measures which should be implemented including offset requirements.

Should the baseline report be considered in conjunction with the peer review report and recommended additions and changes be made, the information available can be considered to be acceptable for decision making purposes and to guide the proposed development which should be considered favourably.

Report on Geotechnical Investigations for the Belhar/Kuilsriver Bridge, Kuilsriver, July 2018, K&T Consulting Engineers

Conclusions

1. The site is underlain by a mantle of reworked soils that overlies naturally deposited transported soils of predominantly alluvial origin. These soils are underlain by residual soils and strata of the Malmesbury Group, which tend to be deeply weathered.

2. The site is characterised by a shallow groundwater system, which was measured between 0.85 to 1.13m below existing ground level. The groundwater levels are directly influenced by the seasonal periods and the levels within the Kuils river. For this bridge, groundwater seepage water is likely to remain present irrespective of the timing of construction and should be allowed for at all times.

3. Given the predominantly non-cohesive nature of the sandy material, conventional earthmoving equipment will satisfactorily remove the alluvium horizons. Excavations deeper than 1.00 metres will require suitable battering or temporary lateral support (especially in winter conditions) to ensure safe working conditions. It is preferable that excavations and the installation of foundations be planned for the drier summer months when the groundwater (and river) levels are far more favourable.

4. In terms of the founding conditions for the bridge site, conventional foundations seated from 2.0m depth are possible for the abutments. Modified foundations incorporating the use of geosynthetic reinforcement seated in high shear strength material to create a reinforced soil raft are required for the pier positions provided the bearing pressures discussed in Section 4.5 can be achieved. If these reduced bearing pressures cannot be met, then piled foundations would be required.

5. Although every effort has been made to ensure the accuracy of the information contained in this report, the results of the investigation are based upon fieldwork which provides a limited view of the subsoil conditions. Natural soil/rock is never uniform. Its properties change from point to point while our knowledge of its properties are limited to those few spots at which the samples have been collected. As a precautionary measure, it is imperative, due to the potential geotechnical variations in the subsoils and Malmesbury rock strength, that pile founding conditions should be inspected and approved by a geotechnical engineer.

Report on Geotechnical Investigations for the proposed new Erica Road Bridge over National Route R300, Kuilsriver, July 2018, K&T Consulting Engineers

Conclusions

1. The site is underlain by naturally deposited sandy transported soils of predominantly alluvial origin. These soils are underlain by residual soils and strata of the Malmesbury Group, which tend to be deeply weathered.

2. The site is characterised by a shallow groundwater system, which was measured between 1.32 to 2.45m below existing ground level. The groundwater levels are directly influenced by the seasonal periods. For this bridge site, groundwater seepage water is likely to remain present irrespective of the timing of construction and should be allowed for at all times.

3. Given the predominantly non-cohesive nature of the sandy material, conventional earthmoving

equipment will satisfactorily remove the sandy horizons. Excavations deeper than 1.50 metres will require suitable battering or temporary lateral support to ensure safe working conditions. It is preferable that excavations and the installation of piled foundations be planned for the drier summer months when the groundwater levels would be more favourable.

4. In terms of the founding conditions for the bridge site and in view of the anticipated heavy structural loading of the ground, conventional foundations are not suitable at shallow depth. In order to construct conventional foundations, pad foundations would need to be taken through the upper subsoils and founded well into the lower dense to very dense transported soils or very stiff residual Malmesbury material at depths greater than 4.0 metres, which is not practically feasible, therefore piled foundations are recommended.

5. Although every effort has been made to ensure the accuracy of the information contained in this report, the results of the investigation are based upon fieldwork which provides a limited view of the subsoil conditions. Natural soil/rock is never uniform. Its properties change from point to point while our knowledge of its properties are limited to those few spots at which the samples have been collected. As a precautionary measure, it is imperative, due to the potential geotechnical variations in the subsoils and Malmesbury rock strength, that pile and founding conditions should be inspected and approved by a geotechnical engineer.

Summary of Need and Desirability

The proposed activity has been included in the City of Cape Town's 2017 - 2018 Service Delivery Implementation Plan as manifested by the Integrated Development Plan 2017 - 2022. The proposed activity has been planned to alleviate traffic congestion of Erica Drive, through expansion of the road network. This is in line with the strategic objectives of the Municipality. Also refer to Appendix K2: Erica Drive Preliminary Design Report –Section 14 Transport Impact Assessment which concludes that currently close to capacity or capacity conditions are being experienced on most of the metropolitan roads in the Kuils River and Belhar areas and that the proposed development will relieve these conditions.

Summary of Alternatives Assessed during Draft Scoping Phase:

Location alternatives – The location of the proposed activity is site specific as it has to link with existing road infrastructure and the purpose of the proposed development is to alleviate traffic congestion on a specific road within a specific area therefore no other feasible or reasonable location alternatives exists.

Activity alternatives- The proposed lengthening and expansion of existing road infrastructure within the Belhar – Kuilsrivier area is the only reasonable and feasible activity alternative assessed as it is what is needed to alleviate traffic congestion within a specific area.

Layout alternatives - Two layout alternatives have been assessed thus far:

Layout Alternative 1 – Entails the development of the proposed Erica Drive/Belhar Main Road extension of approximately 3,24km in length going underneath the R300.
*Reasons why Layout Alternative 1 is **not** preferred:*

- There are existing wetland areas to the east and west of the R300 road and if the proposed new road should be constructed crossing underneath the R300 this will potentially lead to the creation of a "dam" which will require significant stormwater infrastructure developments within the wetland areas.
- Construction underneath the R300 will also cause significant traffic congestion on the R300 during the construction phase.

Layout Alternative 2 - Entails the development of the proposed Erica Drive/Belhar Main Road extension of approximately 3,24km in length going over the R300.
*Reasons why Layout Alternative 1 **is preferred**:*

- There are existing wetland areas to the east and west of the R300 road and constructing the new road over the R300 will have the least significant negative impact on the surrounding wetland areas and associated stormwater management impacts.
- Construction over the R300 will also cause less significant traffic congestion on the R300 during the

construction phase.

Technology alternatives – The most up to date technology alternatives will be incorporated into the approved layout and design of the proposed development during the time of development.

Operational alternatives – No operational alternatives were considered as the proposed activity is for the construction of a road to be maintained by the municipality after construction completion.

The No-Go Option- The No-Go option will result in the site remaining as it is - degraded vacant municipal land. The proposed activity will result in the expansion of the City's road network, thus alleviating congestion and making areas more accessible. The Municipality is mandated in terms of the PSDF to provide and maintain road infrastructure and networks. The activity is therefore in line with the objectives manifested in the PSDF and local Service Delivery Implementation Plan.

Summary of Impact Assessment during Pre-Application Basic Assessment Phase:

LAYOUT ALTERNATIVE 1

CONSTRUCTION PHASE- LAYOUT ALTERNATIVE 1

- Disturbance to subsurface geological layers (high negative impact before mitigation and high negative impact with mitigation measures);
- Disturbance to the Kuils River riverbed and banks (low negative impact before mitigation and low negative impact with mitigation measures);
- Impact of construction work on river hydrology/flow (medium negative impact before mitigation and low negative impact with mitigation measures);
- Disturbance to wetland depressions and hydrology (high negative impact before mitigation and medium negative impact with mitigation measures);
- Soil erosion (high negative impact before mitigation and low negative impact with mitigation measures);
- Impacts of construction activities on the water quality of surface and underground water resources (high negative impact before mitigation and low negative impact with mitigation measures);
- Increase in and accumulation of storm water runoff (high negative impact before mitigation and medium negative impact with mitigation measures);
- Impact of proposed development activities on identified aquatic wetland Critical Ecological Support Areas ("CESA") (high negative impact before mitigation and medium negative impact with mitigation measures);
- Impact on the Kuils River riparian habitat (medium negative impact before mitigation and low negative impact with mitigation measures);
- Impact on the naturally occurring terrestrial and aquatic fauna and avifauna occurring on the site and surrounds (medium negative impact before mitigation and medium negative impact with mitigation measures);
- Impact on the indigenous terrestrial flora present in the area (medium negative impact before mitigation and medium negative impact with mitigation measures);
- Introduction of alien and weed plant species (medium negative impact before mitigation and low negative impact with mitigation measures);
- Increased temporary construction job opportunities (medium positive impact)
- Traffic impacts due to construction on and along urban roads with high traffic volumes (high negative impact before mitigation and medium negative impact with mitigation measures)
- Impact of construction workers on local community safety and security (medium negative impact before mitigation and low negative impact with mitigation measures)
- Impact of litter or waste form the construction site on the surrounding communities (medium negative impact before mitigation and low negative impact with mitigation measures)
- The potential impact of the proposed development on archaeological, palaeontological and heritage remains (low negative impact before mitigation and low negative impact with mitigation measures)
- Noise due to construction machinery (low negative impact before mitigation and low

negative impact with mitigation measures)
- Increased dust levels due to site clearance and construction activities (medium negative impact before mitigation and low negative impact with mitigation measures)
- Impact of construction activities on the surrounding land users/owners and tourist's visual landscape of the area (low negative impact before mitigation and low negative impact with mitigation measures)

OPERATIONAL PHASE- LAYOUT ALTERNATIVE 1

- Increase in stormwater runoff and accumulation due to cleared and transformed/ developed vegetation and wetland areas (high negative impact before mitigation and low negative impact with mitigation measures);
- Impact on hydrology/flow due to impedance (high negative impact before mitigation and low negative impact with mitigation measures);
- Impact of operational and maintenance activities of proposed development on remaining indigenous vegetation and wetland areas (medium negative impact before mitigation and low negative impact with mitigation measures);
- Spread of alien invasive vegetation associated with the soil disturbance caused by construction leading to habitat degradation (medium negative impact before mitigation and low negative impact with mitigation measures)
- Expansion and upgrade of existing road infrastructure within the Belhar – Kuilsrivier area (high positive impact on traffic congestion within the area);
- Noise due to traffic along proposed roads (high negative impact before mitigation and medium negative impact with mitigation measures);
- Impact of development on the surrounding land users / owners and tourists visual landscape of the area (low negative impact before mitigation and low negative impact with mitigation measures);
- Impact of new road on the health of surrounding residents due to increase in traffic emissions (medium negative impact before mitigation and low negative impact with mitigation measures)
- Impact on planning policies (high negative impact before mitigation and high positive impact with mitigation measures);

DECOMMISSIONING AND CLOSURE PHASE- LAYOUT ALTERNATIVE 1

- The decommissioning of the infrastructure developments are not anticipated in the near future. Impacts during this phase will however be similar to that of the construction phase. Mitigation and management measures will be related to the technology of the day and needs to be discussed at such time as decommissioning will occur. All structures must be removed and the area rehabilitated to the state as before construction had commenced (dependent upon the end land use agreement). Waste, where possible must be recycled. All concrete introduced must be removed off site to a licensed waste facility.

LAYOUT ALTERNATIVE 2
CONSTRUCTION PHASE- LAYOUT ALTERNATIVE 2

- Disturbance to subsurface geological layers (high negative impact before mitigation and high negative impact with mitigation measures);
- Disturbance to the Kuils River riverbed and banks (low negative impact before mitigation and low negative impact with mitigation measures);
- Impact of construction work on river hydrology/flow (medium negative impact before mitigation and low negative impact with mitigation measures);
- Disturbance to wetland depressions and hydrology (high negative impact before mitigation and medium negative impact with mitigation measures);
- Soil erosion (high negative impact before mitigation and low negative impact with mitigation measures);
- Impacts of construction activities on the water quality of surface and underground water resources (high negative impact before mitigation and low negative impact with mitigation

measures);

- Increase in and accumulation of storm water runoff (high negative impact before mitigation and medium negative impact with mitigation measures);
- Impact of proposed development activities on identified aquatic wetland Critical Ecological Support Areas ("CESA") (high negative impact before mitigation and medium negative impact with mitigation measures);
- Impact on the Kuils River riparian habitat (medium negative impact before mitigation and low negative impact with mitigation measures);
- Impact on the naturally occurring terrestrial and aquatic fauna and avifauna occurring on the site and surrounds (medium negative impact before mitigation and medium negative impact with mitigation measures);
- Impact on the indigenous terrestrial flora present in the area (medium negative impact before mitigation and medium negative impact with mitigation measures);
- Introduction of alien and weed plant species (medium negative impact before mitigation and low negative impact with mitigation measures);
- Increased temporary construction job opportunities (medium positive impact)
- Traffic impacts due to construction on and along urban roads with high traffic volumes (high negative impact before mitigation and medium negative impact with mitigation measures)
- Impact of construction workers on local community safety and security (medium negative impact before mitigation and low negative impact with mitigation measures)
- Impact of litter or waster form the construction site on the surrounding communities (medium negative impact before mitigation and low negative impact with mitigation measures)
- The potential impact of the proposed development on archaeological, palaeontological and heritage remains (low negative impact before mitigation and low negative impact with mitigation measures)
- Increased dust levels due to site clearance and construction activities (medium negative impact before mitigation and low negative impact with mitigation measures)
- Noise due to construction machinery (low negative impact before mitigation and low negative impact with mitigation measures)
- Impact of construction activities on the surrounding land users/owners and tourist's visual landscape of the area (low negative impact before mitigation and low negative impact with mitigation measures)

OPERATIONAL PHASE- LAYOUT ALTERNATIVE 2

- Increase in stormwater runoff and accumulation due to cleared and transformed/ developed vegetation and wetland areas (high negative impact before mitigation and low negative impact with mitigation measures);
- Impact on hydrology/flow due to impedance (high negative impact before mitigation and low negative impact with mitigation measures);
- Impact of operational and maintenance activities of proposed development on remaining indigenous vegetation and wetland areas (medium negative impact before mitigation and low negative impact with mitigation measures);
- Spread of alien invasive vegetation associated with the soil disturbance caused by construction leading to habitat degradation (medium negative impact before mitigation and low negative impact with mitigation measures)
- Expansion and upgrade of existing road infrastructure within the Belhar – Kuilsrivier area (high positive impact on traffic congestion within the area);
- Noise due to traffic along proposed roads (high negative impact before mitigation and medium negative impact with mitigation measures);
- Impact of development on the surrounding land users / owners and tourists visual landscape of the area (low negative impact before mitigation and low negative impact with mitigation measures);
- Impact of new road on the health of surrounding residents due to increase in traffic emissions (medium negative impact before mitigation and low negative impact with mitigation measures)
- Impact on planning policies (high negative impact before mitigation and high positive impact with mitigation measures);

DECOMMISSIONING AND CLOSURE PHASE- LAYOUT ALTERNATIVE 2

- The decommissioning of the infrastructure developments are not anticipated in the near future. Impacts during this phase will however be similar to that of the construction phase. Mitigation and management measures will be related to the technology of the day and needs to be discussed at such time as decommissioning will occur. All structures must be removed and the area rehabilitated to the state as before construction had commenced (dependent upon the end land use agreement). Waste, where possible must be recycled. All concrete introduced must be removed off site to a licensed waste facility.

NO-GO/NO-DEVELOPMENT ALTERNATIVE

CONSTRUCTION PHASE- NO-GO/NO-DEVELOPMENT ALTERNATIVE

- Increased temporary construction job opportunities (medium negative impact as no temporary construction jobs will be created)

OPERATIONAL PHASE- NO-GO/NO-DEVELOPMENT ALTERNATIVE

- Expansion and upgrade of existing road infrastructure within the Belhar – Kuilsrivier area (high negative significance - ongoing successful services provision and traffic congestion alleviation cannot be ensured/promoted);

SECTION A: PROJECT INFORMATION

1. ACTIVITY LOCATION

Location of all proposed sites:	Erica Drive (M71) runs through the centre of Belhar towards Kuils River Road (R300). Erica Drive is to be extended further east towards the R300, which will run adjacent to the southern boundary of the Bellville South Landfill Site. The road expansion will cross the R300 and connect to Belhar Road and end at the Highbury Rd cross section.
Development footprint size(s) in m^2:	The construction footprint for the full project is estimated to be 162 000 square metres (16.2Ha). The final development footprint is estimated to be 103 000 square metres (10.3Ha) for the full project.

Proposed Development Properties Details

Property No	Landowner	Postal Address	Area m2	SG Code	Zoning
27039	Eskom Holdings SOC Ltd	P O Box 2100 Bellville 7535	19513.91	C0160002000270390000000000	Utility
20880-RE	City of Cape Town	P O Box 60 Kuilsriver 7579	155240.5251	C016000200020880000000000RE	TR2:Road reserve
14791-RE	City of Cape Town	P O Box 60 Kuilsriver 7579	1204516.35	C016000200014791000000000RE	Utility
13106-RE	City of Cape Town	P O Box 25 Kraaifontein 7569	31986.73	C016007300013106000000000RE	TR2:Road reserve
13108-RE	City of Cape Town	P O Box 25 Kraaifontein 7569	84838.18	C016007300013108000000000RE	Agricultural
13109-RE	City of Cape Town	P O Box 25 Kraaifontein 7570	22678.74	C016007300013109000000000RE	TR2:Road reserve
25544	City of Cape Town	P O Box 68 Kuilsriver 7579	19152.83	C016007300025544000000000	Community 1: Local
25545	City of Cape Town	P O Box 68 Kuilsriver 7580	9273.88	C016007300025545000000000	TR2:Road reserve
12483-RE	City of Cape Town		28322.12	C016007300012483000000000RE	TR2:Road reserve
12484-RE	City of Cape Town	62 Keerom Str Kleinvlei Eerster River	26340.6	C016007300012484000000000RE	TR2:Road reserve
25546	City of Cape Town	62 Keerom Str Kleinvlei Eerster River	54258.67	C016007300025546000000000	Public Open Space
12836	Mrs S Chu	Postnet Suite 021 Private Bag X19 Kuilsriver	668.15	C016007300012836000000000	General Business
12797	Mnr JB Hess	20 Magda Str Kalkfontein 7580	331.48	C016007300012797000000000	Single Residential
12796	Mnr LA & Mrs U Christoffels	22 Magda Str Kalkfontein 7580	175.85	C016007300012796000000000	Single Residential

12749	Provincial Government of the Western Cape	9 Dorp Str Cape Town 8000	14894.74	C01600730001274900000000000	Community 1: Local
8179	City of Cape Town		6743.91	C06700130000817900000000000	TR2:Road reserve
7807-RE	City of Cape Town		1228.85	C06700130000780700000000RE	TR2:Road reserve
6266-RE	City of Cape Town		4036.3	C06700130000626600000000RE	TR2:Road reserve
6054	City of Cape Town		2916.71	C06700130000605400000000000	TR2:Road reserve
651	Tanin Trading 89 Pty Ltd	7 Windblom Rd BloubergStrand 7441	6126.86	C06700130000065100000000000	Single Residential
25577	City of Cape Town		9183.46	C06700130002557700000000000	TR2:Road reserve
25576	City of Cape Town		1269.04	C06700130002557600000000000	TR2:Road reserve
9261_RE	City of Cape Town	Private Bag X9083 Cape Town 8000	38458.3	C06700130000926500000000000	TR2:Road reserve

2. PROJECT DESCRIPTION

(a) Is the project a new development? If "NO", explain:

YES	~~NO~~

NA

(b) Provide a detailed description of the scope of the proposed development (project).

Project - The proposed Erica Drive / Belhar Main Road extension is approximately 3,24km in length. Erica Road will link to the R300 with an parclo interchange which will give access to the north and in the distant future to the south. The first section of Erica Drive between Belhar Drive and New Nooiensfontein Road will be known as Erica Drive and the section between New Nooiensfontein Road and Highbury Road will be known as Belhar Main Road. The planned road is a dual carriageway with a median that varies in width between 2m and 5m. The planned cross-section comprises of two 3,4m lanes, a 2,4m surfaced shoulder and a 0,3m channel on both the shoulder side and the median side per direction of travel. The road width per direction (kerb to kerb) varies between 9,8m - 5.2m. On either side of the dual carriageway will be a 2m sidewalk. The 2,4m surfaced shoulders will be utilized as cycle ways (both sides of the road).

The dual carriageway will be constructed within a road reserve which varies between 32m and 40m. A section of the road reserve adjacent to Kuils River is 50m wide. On the western end of the proposed road it will tie into the existing Erica Drive at the Belhar Drive intersection. On the eastern end it will tie into the existing Highbury Road Intersection. The existing Highbury Road intersection and Belhar Main Road further to east are being designed by another consultant. The first section of the project between Belhar Drive and the R300 (western side) lies within an open field and are owned by council and zoned as road reserve. The section between the R300 road reserve and the Reuter Street intersection is an open field. As part of the neighbouring development most of the road reserve has been determined and zoned as road reserve. There is however areas which needs to be rezoned as road reserve (current zoning = agricultural). The existing Erica Drive / Belhar Road between the Reuter Street Intersection and Highbury Road crosses Kuils River and falls within an existing road reserve. Duo to site distance requirements splay sizes at intersections do require additional road reserve. The additional road reserve influences a number of residential stands as well as property of the Provincial Government of the Western Cape. The R300 off-ramp is 660m in length and will consist of a 4m lane and 2 x 2m pave shoulders which widens to 2 x 3,7m lanes at the Erica Drive Intersection (terminal). The R300 on-ramp is 890m in length and will consist of a single 4m lane and 2 x 2m paved shoulders. The larger part of the ramps falls within the existing R300 road reserve.

The new Erica Drive / Belhar Drive Intersection will be signalized. The Erica Drive / St Vincent Drive Intersection (T-junction) will have STOP-control on St Vincent Drive. Erica Drive will cross the R300 with a bridge passing over the R300. The R300 Bridge will be widened when Erica Drive becomes a dual carriageway Road. Both interchange terminals (T-junctions) will be signalized. The Erica Drive / Reuter Street Intersection will be sinalized. The Erica Drive / Isabel Street/Eland Street Intersection will have STOP-control on Isabel Street and Eland Street. The existing Kuils River Bridge will become the

eastbound carriageway bridge and a new second bridge will be constructed for the future westbound carriageway. Minor alterations to the existing Kuils River Bridge will be required for better pedestrian and cycle accommodation. The Erica Drive / Nooiensfontein Road Intersection will be changed into a partial intersection (left-in / left-out) when Erica Drive becomes a dual carriageway road. The Erica Drive / Belhar Main Road / New Nooiensfontein Road Intersection will be changed into a double lane roundabout when Erica Drive / Belhar Main Road become a dual carriageway road. The existing school access in Belhar Main Road will be changed to a partial intersection (left-in / left-out) when Belhar Main Road becomes a dual carriageway road.

As part of the freshwater resources verification undertaken by SAS in September 2018, two natural wetland flats (known as the western wetland flat and the eastern wetland flat) were identified along the proposed route of the Erica Drive expansion, and due to the unavoidable loss of 0.28ha of the western wetland flat habitat it was determined that 0.2 funtional hectare equivalents and 0.7 habitat hectare equivalents of wetland area would need to be conserved to offset this residual loss, this will be done on site. Refer to Appendix G9 for details.

Construction phasing - Construction of the road is planned in two phases. The **first phase** is to construct the westbound carriageway of Erica Drive (10,2m kerb to kerb road width) with 2m sidewalks on either side between Belhar Drive and Reuter Street which will include a bridge over the R300. This section of road is approximately 1,75km in length. The **first phase** will include the second carriageway between Reuter Street and New Nooiensfontein as well as a new double lane roundabout at the Erica Road / New Nooiensfontein Road intersection.

The **second phase** will be the construction of the eastbound carriageway between Belhar Drive and Reuter Street including the widening of the R300 Bridge / second bridge over the R300. The **second phase** will include the westbound carriageway of Belhar Main Road up to Highbury Road intersection on the eastern side.

The phasing of the interchange is dependent on the funds available. The northbound ramps might form part of phase 1 or phase 2 or even further future phases. The interchange design makes provision for access to the south as well but because of the excessive cost involved the south bound ramps will not be constructed in the near future.

Footprint - The construction footprint for the full project is estimated to be 162 000 square metres (16.2Ha). The final development footprint is estimated to be 103 000 square metres (10.3Ha) for the full project.

Site - The development area west and immediately east of the R300 is undulating with sand dunes. These dunes have however been heavily disturbed and are more likely man-made to the most extent due to land excavations and stock piling that occurred while establishing the surrounding urban developments and landfill site. Most of the development area east of the R300 is flat with gradual slopes.

The site is located within dense urban residential areas. The area west of the R300 is also bordered by a landfill site. The channelled Kuils River tributary crosses the eastern half of the development site along Belhar Road and the R300 crosses the western half. As previously mentioned the site has been significantly disturbed and transformed due to urban development. Ongoing illegal waste dumping is taking place at various locations within the area west of the R300 adjacent to the landfill site. Several transformed wetlands also occur throughout the proposed development site. Refer to Botanical and Freshwater Ecosystems Impact Assessments as available under Appendix G for futher detailed site descriptions.

Please note: This description must relate to the listed and specified activities in paragraph (d) below.

(c) Please indicate the following periods that are recommended for inclusion in the environmental authorisation:

(i) the period within which commencement must occur,	Within 5 years of obtaining Environmental Authorisation

(ii)	the period for which the environmental authorisation should be granted and the date by which the activity must have been concluded, where the environmental authorisation does not include operational aspects;	Ongoing maintenance of infrastructure and implementation of EMP until decommissioning.
(iii)	the period that should be granted for the non-operational aspects of the environmental authorisation; and	Within 20 years of obtaining Environmental Authorisation
(iv)	the period that should be granted for the operational aspects of the environmental authorisation.	Ongoing maintenance of infrastructure and implementation of EMP until decommissioning.

Please note: The Department must specify the abovementioned periods, where applicable, in an environmental authorisation. In terms of the period within which commencement must occur, the period must not exceed 10 years and must not be extended beyond such 10 year period, unless the process to amend the environmental authorisation contemplated in regulation 32 is followed.

(d) List all the listed activities triggered and being applied for.

Please note: The onus is on the applicant to ensure that all the applicable listed activities are applied for and assessed as part of the EIA process. Please refer to paragraph (b) above.

EIA Regulations Listing Notices 1 and 3 of 2014 (as amended):

Listed Activity No(s):	Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 1 (GN No. R. 983)	Describe the portion of the development that relates to the applicable listed activity as per the project description.	Identify if the activity is development / development and operational / decommissioning / expansion / expansion and operational.
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	0.28ha of natural wetland flat area (west of the R300) will be lost/infilled during the proposed development which is unavoidable.	Development, expansion and operational/maintenance
Listed Activity No(s):	Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 3 (GN No. R. 985)	Describe the portion of the development that relates to the applicable listed activity as per the project description.	Identify if the activity is development / development and operational / decommissioning / expansion / expansion and operational.
4	The development of a road wider than 4 metres with a reserve less than 13,5 metres. **i. Western Cape** i. Areas zoned for use as public open space or equivalent zoning;	Erf 25546 is zoned as Public Open Space and will be impacted upon by the development of the proposed road infrastructure.	Development
12	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. **Western Cape** i. Within any critically endangered or endangered	Significantly degraded indigenous vegetation remnants of Critically Endangered – Cape Flats Sand Fynbos and Endangered – Cape Flats Dune Strandveld remains within the proposed development area and surrounds. It is expected that the proposed development will lead to the clearance of less than 2ha	Development and expansion

	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	(but more than 300m²) of homogenous indigenous vegetation species and no species of conservation concern.	
18	The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre. **i. Western Cape** i. Areas zoned for use as public open space or equivalent zoning;	Erf 25546 is zoned as Public Open Space and will be impacted upon by the development of the proposed road infrastructure.	Development and expansion

Waste management activities in terms of the NEM: WA (GN No. 921):

Category A Listed Activity No(s):	Describe the relevant Category A waste management activity in writing as per GN No. 921	Describe the portion of the development that relates to the applicable listed activity as per the project description
NA		

Note: If any waste management activities are applicable, the **Listed Waste Management Activities Additional Information Annexure** must be completed and attached to this Basic Assessment Report as **Appendix I.**

Atmospheric emission activities in terms of the NEM: AQA (GN No. 893):

Listed Activity No(s):	Describe the relevant atmospheric emission activity in writing as per GN No. 893	Describe the portion of the development that relates to the applicable listed activity as per the project description.
NA		

(e) Provide details of all components (including associated structures and infrastructure) of the proposed development and attach diagrams (*e.g.,* architectural drawings or perspectives, engineering drawings, process flowcharts, *etc*.).

Buildings Provide brief description below:	~~YES~~	NO
NA		
Infrastructure (*e.g.,* roads, power and water supply/ storage) Provide brief description below:	YES	~~NO~~

The proposed Erica Drive / Belhar Main Road extension is approximately 3,24km in length. Erica Road will link to the R300 with an parclo interchange which will give access to the north and in the distant future to the south. The first section of Erica Drive between Belhar Drive and New Nooiensfontein Road will be known as Erica Drive and the section between New Nooiensfontein Road and Highbury Road will be known as Belhar Main Road. The planned road is a dual carriageway with a median that varies in width between 2m and 5m. The planned cross-section comprises of two 3,4m lanes, a 2,4m surfaced shoulder and a 0,3m channel on both the shoulder side and the median side per direction of travel. The road width per direction (kerb to kerb) varies between 9,8m - 5.2m. On either side of the dual carriageway will be a 2m sidewalk. The 2,4m surfaced shoulders will be utilized as cycle ways (both sides of the road).

The dual carriageway will be constructed within a road reserve which varies between 32m and 40m. A section of the road reserve adjacent to Kuils River is 50m wide. On the western end of the proposed road it will tie into the existing Erica Drive at the Belhar Drive intersection. On the eastern end it will tie into the existing Highbury Road Intersection. The existing Highbury Road intersection and Belhar Main Road further to east are being designed by another consultant. The first section of the project between Belhar Drive and the R300 (western side) lies within an open field and are owned by council and zoned as road reserve. The section between the R300 road reserve and the Reuter Street intersection is an open field. As part of the neighbouring development most of the road reserve has been determined and zoned as road reserve. There is however areas which needs to be rezoned as road reserve (current zoning = agricultural). The existing Erica Drive / Belhar Road between the Reuter Street Intersection and Highbury Road crosses Kuils River and falls within an

existing road reserve. Duo to site distance requirements splay sizes at intersections do require additional road reserve. The additional road reserve influences a number of residential stands as well as property of the Provincial Government of the Western Cape. The R300 off-ramp is 660m in length and will consist of a 4m lane and 2 x 2m pave shoulders which widens to 2 x 3,7m lanes at the Erica Drive Intersection (terminal). The R300 on-ramp is 890m in length and will consist of a single 4m lane and 2 x 2m paved shoulders. The larger part of the ramps falls within the existing R300 road reserve. The new Erica Drive / Belhar Drive Intersection will be signalized. The Erica Drive / St Vincent Drive Intersection (T-junction) will have STOP-control on St Vincent Drive. Erica Drive will cross the R300 with a bridge passing over the R300. The R300 Bridge will be widened when Erica Drive becomes a dual carriageway Road. Both interchange terminals (T-junctions) will be signalized. The Erica Drive / Reuter Street Intersection will be sinalized. The Erica Drive / Isabel Street/Eland Street Intersection will have STOP-control on Isabel Street and Eland Street. The existing Kuils River Bridge will become the eastbound carriageway bridge and a new second bridge will be constructed for the future westbound carriageway. Minor alterations to the existing Kuils River Bridge will be required for better pedestrian and cycle accommodation. The Erica Drive / Nooiensfontein Road Intersection will be changed into a partial intersection (left-in / left-out) when Erica Drive becomes a dual carriageway road. The Erica Drive / Belhar Main Road / New Nooiensfontein Road Intersection will be changed into a double lane roundabout when Erica Drive / Belhar Main Road become a dual carriageway road. The existing school access in Belhar Main Road will be changed to a partial intersection (left-in / left-out) when Belhar Main Road becomes a dual carriageway road.

Processing activities (*e.g.,* manufacturing, storage, distribution) Provide brief description below:	~~YES~~	NO
NA		
Storage facilities for raw materials and products (*e.g.,* volume and substances to be stored) Provide brief description below:	~~YES~~	NO
NA		
Storage and treatment facilities for effluent, wastewater or sewage: Provide brief description below:	~~YES~~	NO
NA		
Storage and treatment of solid waste Provide brief description below:	~~YES~~	NO
NA		
Facilities associated with the release of emissions or pollution. Provide brief description below:	~~YES~~	NO
NA		
Other activities (*e.g.,* water abstraction activities, crop planting activities) – Provide brief description below:	~~YES~~	NO
NA		

3. PHYSICAL SIZE OF THE PROPOSED DEVELOPMENT

(a) Property size(s): Indicate the size of all the properties (cadastral units) on which the development proposal is to be undertaken	Refer to Section A:1 Activity Location Table for sizes of proposed development properties	m^2
(b) Size of the facility: Indicate the size of the facility where the development proposal is to be undertaken	NA	m^2
(c) Development footprint: Indicate the area that will be physically altered as a result of undertaking any development proposal (*i.e.,* the physical size of the development together with all its associated structures and infrastructure)	Construction Footprint 16.2ha	ha
(d) Size of the activity: Indicate the physical size (footprint) of the development proposal	Final Development Footprint 10 .3ha	ha
(e) For linear development proposals: Indicate the length (L) and width (W) of the development proposal	(L) 3.24km	km
	(W) 32-40m	m

(f) For storage facilities: Indicate the volume of the storage facility	NA	m^3
(g) For sewage/effluent treatment facilities: Indicate the volume of the facility (Note: the maximum design capacity must be indicated	NA	m^3

4. SITE ACCESS

(a) Is there an existing access road?	YES	~~NO~~
(b) If no, what is the distance in (m) over which a new access road will be built?		m

(c) Describe the type of access road planned:

NA

Please note: The position of the proposed access road must be indicated on the site plan.

5. DESCRIPTION OF THE PROPERTY(IES) ON WHICH THE LISTED ACTIVITY(IES) ARE TO BE UNDERTAKEN AND THE LOCATION OF THE LISTED ACTIVITY(IES) ON THE PROPERTY

5.1 Provide a description of the property on which the listed activity(ies) is/are to be undertaken and the location of the listed activity(ies) on the property, as well as of all alternative properties and locations (duplicate section below as required).

Erica Drive (M71) runs through the centre of Belhar towards Kuils River Road (R300). Erica Drive is to be extended further east towards the R300, which will run adjacent to the southern boundary of the Bellville South Landfill Site. The road expansion will cross the R300 and connect to Belhar Road and end at the Highbury Rd cross section.

	Latitude (S): (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec.)		
Coordinates of all the proposed activities on the property or properties (sites):	33°	56'	29.78"	18°	38‘	52.03“
	33°	56‘	27.8“	18°	39‘	07.86“
	33°	56‘	24.71“	18°	39‘	25.16“
	33°	56‘	25.84“	18°	39‘	40.80“
	33°	56‘	28.95“	18°	39‘	58.48“
	33°	56‘	30.92“	18°	40‘	12.42“
	33°	56‘	33.48“	18°	40‘	26.45“
	33°	56‘	33.8“	18°	40‘	36.51“
	33°	56‘	35.78“	18°	40‘	44.08“
	33°	56‘	39.20“	18°	40‘	49.82“
	33°	56‘	43.31“	18°	40‘	53.12“

Note: For land where the property has not been defined, the coordinates of the area within which the development is proposed must be provided in an addendum to this report.

5.2 Provide a description of the area where the aquatic or ocean-based activity(ies) is/are to be undertaken and the location of the activity(ies) and alternative sites (if applicable).

NA

	Latitude (S): (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec)		
Coordinates of the boundary /perimeter of all proposed aquatic or ocean-based activities (sites) (if applicable):	°	'	"	°	'	"
	°	'	"	°	'	"
	°	'	"	°	'	"
	°	'	"	°	'	"

5.3 For a linear development proposal, please provide a description and coordinates of the corridor in which the proposed development will be undertaken (if applicable).

Refer to Appendix A: Locality Map for location of GPS co-ordinates as taken every 250m along the proposed route –

Point Nr:	**Latitude (S):** (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec)		
1	E 18°	38‘	43.357“	S 33°	56‘	30.470“
2	E 18°	38‘	52.950“	S 33°	56‘	29.092“

3	E 18°	39‘	2.544“	S 33°	56‘	27.715“
4	E 18°	39‘	12.138“	S 33°	56‘	26.337“
5	E 18°	39‘	21.731“	S 33°	56‘	24.959“
6	E 18°	39‘	31.397“	S 33°	56‘	24.382“
7	E 18°	39‘	40.963“	S 33°	56‘	25.879“
8	E 18°	39‘	50.518“	S 33°	56‘	27.433“
9	E 18°	40‘	0.073“	S 33°	56‘	28.986“
10	E 18°	40‘	9.628“	S 33°	56‘	30.539“
11	E 18°	40‘	19.184“	S 33°	56‘	32.091“
12	E 18°	40‘	28.754“	S 33°	56‘	33.574“
13	E 18°	40‘	38.412“	S 33°	56‘	34.76“
14	E 18°	40‘	47.397“	S 33°	56‘	37.438“
15	E 18°	40‘	53.539“	S 33°	56‘	43.658“
16	E 18°	40‘	54.964“	S 33°	56‘	45.499“

For linear activities:	**Latitude (S):** (deg.; min.; sec)			**Longitude (E):** (deg.; min.; sec)		
• Starting point of the activity	°	‘	“	°	‘	“
• Middle point of the activity	°	‘	“	°	‘	“
• End point of the activity	°	‘	“	°	‘	“

Note: For linear development proposals longer than 1000m, please provide an addendum with co-ordinates taken every 250m along the route. All important waypoints must be indicated and the GIS shape file provided digitally.

5.4 Provide a location map (see below) as **Appendix A** to this report that shows the location of the proposed development and associated structures and infrastructure on the property; as well as a detailed site development plan / site map (see below) as **Appendix B** to this report; and if applicable, all alternative properties and locations. The GIS shape files (.shp) for maps / site development plans must be included in the electronic copy of the report submitted to the competent authority.

Locality Map:	The scale of the locality map must be at least 1:50 000. For linear development proposals of more than 25 kilometres, a smaller scale *e.g.*, 1:250 000 can be used. The scale must be indicated on the map. The map must indicate the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; • a linear scale; • the prevailing wind direction (during November to April and during May to October); and • GPS co-ordinates (to indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection). For an ocean-based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken. Coordinates must be provided in degrees, minutes and seconds using the Hartebeesthoek94; WGS84 co-ordinate system.

Site Plan:	Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following: • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be indicated on the site plan. • The position of each element of the application as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of

	the development must be indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): o Watercourses / Rivers / Wetlands - including the 32 meter set back line from the edge of the bank of a river/stream/wetland; o Flood lines (*i.e.,* 1:100 year, 1:50 year and 1:10 year where applicable; o Ridges; o Cultural and historical features; o Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas. The GIS shape file for the site development plan(s) must be submitted digitally.

6. SITE PHOTOGRAPHS

Colour photographs of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached as **Appendix C** to this report. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.

SECTION B: DESCRIPTION OF THE RECEIVING ENVIRONMENT

Site/Area Description

For linear development proposals (pipelines, *etc*.) as well as development proposals that cover very large sites, it may be necessary to complete copies of this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area that is covered by each copy on the Site Plan.

1. GRADIENT OF THE SITE

Indicate the general gradient of the sites (highlight the appropriate box).

~~Flat~~	Flatter than 1:10	~~1:10 – 1:4~~	~~Steeper than 1:4~~

2. LOCATION IN LANDSCAPE

(a) Indicate the landform(s) that best describes the site (highlight the appropriate box(es).

~~Ridgeline~~	~~Plateau~~	~~Side slope of hill / mountain~~	~~Closed valley~~	~~Open valley~~	Plain	Undulating plain/low hills/inland dunes	~~Dune~~	~~Sea front~~

(b) Provide a description of the location in the landscape.

The development area west and immediately east of the R300 is undulating with sand dunes. These dunes have however been heavily disturbed and are more likely man-made to the most extent due to land excavations and stock piling that occurred while establishing the surrounding urban developments and landfill site. Most of the development area east of the R300 is flat with gradual slopes. The highest elevation of the area west of the R300 is 64m and the lowest 54m, the highest elevation of the area east of the R300 is 54m (dune immediately west of R300) and lowest 40m (the Kuils River tributary).

The site is located within dense urban residential areas. The area west of the R300 is also bordered by a landfill site. The channelled Kuils River tributary crosses the eastern half of the development site

along Belhar Road and the R300 crosses the western half. As previously mentioned the site has been significantly disturbed and transformed due to urban development. Ongoing illegal waste dumping is taking place at various locations within the area west of the R300 adjacent to the landfill site. Several transformed and degraded wetlands also occur throughout the proposed development site.

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

(a) Is the site(s) located on or near any of the following (highlight the appropriate boxes)?

Shallow water table (less than 1.5m deep)	YES	~~NO~~	~~UNSURE~~
Seasonally wet soils (often close to water bodies)	YES	~~NO~~	~~UNSURE~~
Unstable rocky slopes or steep slopes with loose soil	YES	~~NO~~	~~UNSURE~~
Dispersive soils (soils that dissolve in water)	~~YES~~	NO	~~UNSURE~~
Soils with high clay content	~~YES~~	NO	~~UNSURE~~
Any other unstable soil or geological feature	~~YES~~	NO	~~UNSURE~~
An area sensitive to erosion	YES	~~NO~~	~~UNSURE~~
An area adjacent to or above an aquifer.	~~YES~~	NO	~~UNSURE~~
An area within 100m of a source of surface water	YES	~~NO~~	~~UNSURE~~
An area within 500m of a wetland	YES	~~NO~~	~~UNSURE~~
An area within the 1:50 year flood zone	YES	~~NO~~	~~UNSURE~~
A water source subject to tidal influence	~~YES~~	NO	~~UNSURE~~

(b) If any of the answers to the above is "YES" or "UNSURE", specialist input may be requested by the Department. (Information in respect of the above will often be available at the planning sections of local authorities. The 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

(c) Indicate the type of geological formation underlying the site.

Granite	~~Shale~~	~~Sandstone~~	Quartzite	~~Dolomite~~	~~Dolerite~~	Other (describe)

Provide a description.

Soil:
Grey regic sands and other soils.

Geology:
Mainly Quaternary calcareous coastal dune sand of the Witzand Formation covering Quaternary quartz sand of the Springfontein.

The geology of the area is characterised by loose and gravelly grey sandy top soil highly erodible; and mottled, highly weathered subsoil with signs of wetness within lower lying depressions where wetlands occurs. The soils at Kuils River are underlain by the Kuils River-Helderberg Granite pluton (Theron *et al.,* 1992).

4. SURFACE WATER

(a) Indicate the surface water present on and or adjacent to the site and alternative sites (highlight the appropriate boxes)?

Perennial River	YES	~~NO~~	~~UNSURE~~
Non-Perennial River	~~YES~~	NO	~~UNSURE~~
Permanent Wetland	YES	~~NO~~	~~UNSURE~~
Seasonal Wetland	YES	~~NO~~	~~UNSURE~~
Artificial Wetland	YES	~~NO~~	~~UNSURE~~
Estuarine / Lagoon	~~YES~~	NO	~~UNSURE~~

(b) Provide a description.

The site is located within the G22E quaternary catchment. The primary aquatic features on the site are the Kuils River and a wetland west of the R300 road and two wetlands east of the R300 road.

The study area lies within the Kuils-Eerste River sub-catchment of the Berg Water Management Area and within the City of Cape Town boundaries in the Western Cape Province. The affected properties are located within the urban area of Kuils River, adjacent to Belhar and Oakdene. The Kuils River, which originates in the hills of the Durbanville area, flows in a southerly direction to the urban area of Kuils River where it is joined by the Bottelary River. This river system continues in a southerly direction until its confluence with the Eerste River. The upper to middle reaches of the Kuils River are completely canalised through the Kuils River urban area and are, in general, in a poor condition within the urbanised and industrial areas of the town. At the proposed Erica Drive crossing, the river is completely canalised with all indigenous riparian vegetation removed, and is deemed to be in a severely modified ecological state.

N. Hanekom identified nine wetlands within close proximity (100m) of the proposed development of which six of these wetlands as identified on site will be impacted upon. The impacted wetlands have largely modified wetland integrity as a large loss of natural habitat, biota and basic ecosystem functions has occurred. The Wetland Health Present Ecological Status of the impacted wetlands was assessed to be largely modified and in a moderate ecological importance state and sensitivity.

There are two conservation mapping initiatives of relevance to the project, the Freshwater Ecosystem Priority Areas (FEPA) map which is available for the entire South Africa and the 2017 City of Cape Town Biodiversity Network Map. FEPAs are strategic spatial priorities for conserving freshwater ecosystems and associated biodiversity that were determined through a process of systematic biodiversity planning and were identified using a range of criteria for serving ecosystems and associated biodiversity of rivers, wetlands and estuaries. These rivers should be kept in their current condition, should not be degraded any further than its current moderately modified condition and it should be considered for rehabilitation.

The Kuils River at the study area is mapped as a FEPA River that is considered to be largely modified and should not be allowed to be degraded or modified further. However the areas to be impacted upon by the proposed development have been completely transformed due to canalisation and an existing bridge structure. The impacted area of the Kuils River is not classified as a wetland or CESA in the City of Cape Town Biodiversity Network (2017).

There are no FEPA wetlands mapped within the study area. The proposed road alignment will impact on six wetlands (five artificial and one natural). Wetlands 1, 2, 3, 4, 7 and 8 which were originally mapped as part of three larger wetlands in the City of Cape Town Biodiversity Network (2017). According to the freshwater resource verification study conducted, by Scientific Aquatic Services ("SAS") during September 2018, of the nine wetlands delineated by N. Hanekom within the study area only two is considered to be natural and can be classified as a wetland flat. The wetlands were all also classified as a CESA in the City of Cape Town Biodiversity Network (2017). In the CoCT Biodiversity Network report the mapping confidence for these wetlands is however indicated as Low Confidence and from the assessments conducted it is therefore clear that the mapping was not groundtruthed.

The area surrounding the proposed new portion of Erica Drive, which is to be developed (western portion of the linear development), is considered to be significantly disturbed by anthropogenic activities. Such activities include the development of the Bellville South Industrial waste disposal site (north of the proposed Erica Drive portion), the excavation and shaping of informal roads within the surrounding area and the infilling and the disposal of household refuse.

According to the Freshwater Assessment Report (Hanekom, 2017), the western portion of the linear development has eight wetland features (numbered 1 – 8). During the field assessment, undertaken in September 2018 by SAS, only one of the previously identified wetlands in the western portion of the proposed development route (approximating 0,48ha in extent) was considered to be natural and can be classified as a wetland flat (wetland number 2).

Wetland number 9 located within the eastern portion of the linear development was also identified to be a natural system during the recent field verification by SAS (approximating 0,38ha in extent) and was also classified as a wetland flat.

The remaining areas previously identified as wetlands (Hanekom, 2017) were confirmed during the recent field verification to be artificially impounded areas or highly disturbed areas, where opportunistic invasive reed species (such as *Arundo donax*) have established due to water ponding within these excavated areas.

The wetland flat (0.48 ha) (nr. 2) is proposed to be traversed by the western portion of the proposed linear development. With the inclusion of an additional 10m buffer from the edge of the linear development that can be assumed will be lost as a result of the linear development and edge effects associated with the construction activities, it was calculated that this would cause a loss of 0.28 ha of wetland area.

The wetland flat (0.38 ha) (nr. 9) located along the eastern portion of the proposed linear development would be un-impacted by the proposed road upgrade, however, it must be made clear to any contractors that this area may not be utilised for a contractor's camp or any laydown areas.

5. THE SEAFRONT / SEA

(a) Is the site(s) located within any of the following areas? (highlight the appropriate boxes).
If the site or alternative site is closer than 100m to such an area, please provide the approximate distance in (m).

AREA	YES	NO	UNSURE	If "YES": Distance to nearest area (m)
An area within 100m of the high water mark of the sea	~~YES~~	NO	~~UNSURE~~	
An area within 100m of the high water mark of an estuary/lagoon	~~YES~~	NO	~~UNSURE~~	
An area within the littoral active zone	~~YES~~	NO	~~UNSURE~~	
An area in the coastal public property	~~YES~~	NO	~~UNSURE~~	
Major anthropogenic structures	~~YES~~	NO	~~UNSURE~~	
An area within a Coastal Protection Zone	~~YES~~	NO	~~UNSURE~~	
An area seaward of the coastal management line	~~YES~~	NO	~~UNSURE~~	
An area within the high risk zone (20 years)	~~YES~~	NO	~~UNSURE~~	
An area within the medium risk zone (50 years)	~~YES~~	NO	~~UNSURE~~	
An area within the low risk zone (100 years)	~~YES~~	NO	~~UNSURE~~	
An area below the 5m contour	~~YES~~	NO	~~UNSURE~~	
An area within 1km from the high water mark of the sea	~~YES~~	NO	~~UNSURE~~	
A rocky beach	~~YES~~	NO	~~UNSURE~~	
A sandy beach	~~YES~~	NO	~~UNSURE~~	

(b) If any of the answers to the above is "YES" or "UNSURE", specialist input may be requested by the Department. (The 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

6. BIODIVERSITY

Note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed development. To assist with the identification of the biodiversity occurring on site and the ecosystem status, consult http://bgis.sanbi.org or BGIShelp@sanbi.org . Information is also available on compact disc ("cd") from the Biodiversity-GIS Unit, Tel.: (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) must be provided as an overlay map on the property/site plan as **Appendix D** to this report.

(a) Highlight the applicable biodiversity planning categories of all areas on preferred and alternative sites and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category. Also describe the prevailing level of protection of the Critical Biodiversity Area ("CBA") and Ecological Support Area ("ESA") (how many hectares / what percentages are formally protected).

Systematic Biodiversity Planning Category	~~CBA~~	ESA	~~Other Natural Area ("ONA")~~	~~No Natural Area Remaining ("NNR")~~
If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan and the	The City of Cape Town ("CoCT") regularly updates and revises			

conservation management objectives	its Biodiversity Network as sites are lost and new information becomes available (Holmes et al 2008), and the latest map (dated 2017) indicates that no mapped terrestrial vegetation CBAs or ESAs occurs on the proposed development site. However approximately 5.7ha of the proposed development site is mapped as aquatic/wetland Critical Ecological Support Area. The natural to semi-natural wetland CESAs are essential in maintaining ecological functioning of ecosystems found on the site and surrounds. Management objective/s is to maintain current ecological functioning.
Describe the site's CBA/ESA quantitative values (hectares/percentage) in relation to the prevailing level of protection of CBA and ESA (how many hectares / what percentages are formally protected locally and in the province)	The demarcation of the CESA wetlands as mapped for the specific site was not groundtruthed for the compilation of the City of Cape Town's Biodiversity Network (2017) report. A freshwater ecosystem specialist was appointed to conduct a freshwater ecological impact assessment and also delineate the actual remaining natural wetland areas on the proposed development site and concluded that a total wetland area of approximately 0.28ha in total will be filled during the proposed development.

(b) Highlight and describe the habitat condition on site.

Habitat Condition	**Percentage of habitat condition class (adding up to 100%) and area of each in square metre (m^2)**		**Description and additional comments and observations (including additional insight into condition, *e.g.* poor land management practises, presence of quarries, grazing/harvesting regimes, *etc.*)**
Natural	0%	m^2	
Near Natural (includes areas with low to moderate level of alien invasive plants)	0%	m^2	
Degraded (includes areas heavily invaded by alien plants)	80%	10ha	The study site has a long history (centuries) of disturbance, and consequently there is no remaining natural vegetation in good condition (with viable populations of threatened or localised plant species) remaining within the study area. All ecological processes on the site have been significantly impacted by soil disturbance (excavations, stock piling, site clearance etc.), inappropriate fire regimes, loss of pollinators and seed dispersers, alien-, weed- and garden plant invasion, habitat fragmentation due to urban development, canalisation of the Kuils River and artificial wetland creation due to above mentioned impacts as well as required storm water management measures implemented on the site and surrounds. The heavily disturbed remnant habitats also present a very difficult conservation challenge. Essentially the whole study site can be considered transformed habitat. The transformed terrestrial (i.e. non wetland) areas support less than 20% of their likely original plant communities.
Transformed (includes cultivation, dams, urban, plantation, roads, *etc.*)	20%	2.5ha	

(c) Complete the table to indicate:
(i) the type of vegetation present on the site, including its ecosystem status; and
(ii) whether an aquatic ecosystem is present on/or adjacent to the site.

Terrestrial Ecosystems		**Description of Ecosystem, Vegetation Type, Original Extent, Threshold (ha, %), Ecosystem Status**
Ecosystem threat status as per the	Critically	The vegetation map of South Africa (Mucina and

National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	Endangered	Rutherford 2012) indicates that the western half of the study area would have originally been covered with Cape Flats Dune Strandveld (Endangered) and the eastern half with Cape Flats Sand Fynbos (Critically Endangered). Cape Flats Sand Fynbos occurs on lowland acid sands, and is one of the most threatened habitat types in the country and is listed as Critically Endangered on a national basis (DEA 2011), with less than 20% of its original total extent remaining, less than 1% conserved, and an unachievable conservation target of 30% (Rouget et al 2004). Cape Flats Dune Strandveld is generally found on alkaline sands of marine origin, and although fairly well conserved within the Table Mountain National Park (notably at Cape Point) it is rapidly disappearing from its former stronghold – the Cape Flats. The unit is listed as Endangered on a national basis (DEA 2011), with less than 58% of its original total extent remaining, about 5% conserved (mostly within the Table Mountain National Park), and a conservation target of 24% (Rouget et al 2004). It should be noted that the City of Cape Town regards the Cape Flats form of this vegetation type as Critically Endangered, and regards it as distinct from the (more intact) form on the west coast between Cape Town and Silwerstroomstrand (Holmes et al 2013). The study site however has a long history (centuries) of disturbance, and consequently there is no remaining natural vegetation in good condition (with viable populations of threatened or localised plant species) remaining within the study area. All ecological processes on the site have been significantly impacted by soil disturbance (excavations, stock piling, site clearance etc.), inappropriate fire regimes, loss of pollinators and seed dispersers, alien-, weed- and garden plant invasion, habitat fragmentation due to urban development, canalisation of the Kuils River and artificial wetland creation due to above mentioned impacts as well as required storm water management measures implemented on the site and surrounds. The heavily disturbed remnant habitats also present a very difficult conservation challenge. Essentially the whole study site can be considered transformed habitat. The transformed terrestrial (i.e. non wetland) areas support less than 20% of their likely original plant communities. The whole study site is significantly invaded by alien invasive, weed and garden plants, notably *Eucalyptus sp., Acacia saligna, Bromus grass sp., Ramnus sp., Echium plantagineum, Pennisetum clandestinum, Lupinus sp, Raphanus rapistrum, Brassica tournefortii, Erodium moschatum* and *Conyza bonariensis*. The overall average alien, weed and garden plant cover within the development area is 70% to 100%. It

		appears that no attempt has been made by the landowner/s to eradicate any alien invasive or weed plant species nor has the area been burnt within the past couple of years. Overall indigenous non-wetland plant species diversity on site is fairly low, being about 20% of what would be expected in a pristine example of this habitat. The areas west of and immediately adjacent to the R300 are where most of the remaining indigenous vegetation species occur. This is a result of previous and ongoing disturbance of the site, and the fact that only about 30 - 40% of the whole study site has any indigenous vegetation remaining which include recorded species such as *Oxalis pes caprae (geel suuring), Cynodon dactylon (fynkweek), Carpobrotus edulis, Metalasia densa, Thamnocortus sp, Muraltia spinosa, Arctotheca calendula, Ehrharta villosa, Trachyandra divaricata, Searsia glauca, Rhus sp, Searsia laevigata, Pelargonium capitatum, Lyperia lychnidea.* No significant populations (or individual) plant or animal Species of Conservation Concern (SCC) were recorded nor are likely to occur on site, given the previous and ongoing disturbance and state of the habitat concerned. (Refer to specialist assessments under Appendix G)
	~~Vulnerable~~	NA
	~~Least Threatened~~	NA

Aquatic Ecosystems						
Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
YES	~~NO~~	~~UNSURE~~	~~YES~~	NO	~~YES~~	NO

(d) Provide a description of the vegetation type and/or aquatic ecosystem present on the site, including any important biodiversity features/information identified on the site (e.g. threatened species and special habitats). Clearly describe the biodiversity targets and management objectives in this regard.

The vegetation and ecology within the study area has been heavily disturbed for a long time, and no significant patches of intact natural vegetation remain within the non-wetland areas. Terrestrial botanical diversity is generally very low compared to what it was prior to human disturbance.

Two vegetation types would originally have been present in the area, all of which are now regarded as threatened on a national basis (one Critically Endangered and one Endangered).

Of the Critically Endangered Cape Flats Sand Fynbos vegetation mainly none to very little indigenous vegetation remains, therefore these areas have been indicated as **Low terrestrial botanical sensitivity**, presenting no constraints to the proposed development. Loss of this area would be of **negligible botanical significance at a regional scale**.

The remaining proposed development area represents significantly disturbed secondary Endangered Cape Flats Dune Strandveld vegetation. Limited indigenous vegetation diversity remains within the areas marked as Medium terrestrial botanical sensitivity areas, with no plant

Species of Conservation Concern. The loss of the **Medium sensitivity vegetation** in the study area is likely to be of **Medium to Low negative significance** at a regional scale, before and after mitigation.

It is expected that the proposed development will lead to the clearance of less than 2ha of homogenous indigenous vegetation species and no species of conservation concern.

Although development of the Medium terrestrial botanical sensitivity area has been rated as having a potential Medium negative significance at a regional scale if other factors such as ongoing human disturbances and urban development, alien plant encroachment, low ecological connectivity etc. are taken into consideration it is believed that the entire proposed development will have a Low negative significance on the terrestrial habitat of the site and surrounds. If is therefore concluded that the proposed development could therefore be authorised without causing significant negative terrestrial botanical impacts.

These areas also have a low to moderate rehabilitation potential. Rehabilitation will be intensive and would have to involve reintroduction of specimens, alien and weed clearance and maintenance and dune stabilisation with indigenous vegetation etc. and due to the location within the urban area, low ecological connectivity value and small size of the site this will not be a viable site for rehabilitation efforts.

This botanical assessment is informed by:

- The fact that the study area is not mapped as a terrestrial CBA or ESA in the City of Cape Town Biodiversity Network.
- The low indigenous plant species diversity in the study area
- The high infestation of alien and weed plant species
- Existing infrastructure and developments on the site and surrounds
- No plant or animal Species of Conservation Concern recorded on site nor are they expected to breed/occur on the proposed development site
- A complete lack of any significant indigenous vegetation species diversity or presence in at least 60% of the study area, suggesting low rehabilitation potential
- The heavily disturbed soils, suggesting low rehabilitation potential
- The limited ecological connectivity of the site with ongoing disturbances such as urban development, waste and soil dumping, site clearance, storm water management, excavations etc.

The Kuils River flows through the proposed Erica Drive dualling from north to south. The freshwater ecological features on the site have been totally modified and channelled. On the site, surrounding land use, the channelling of the river and the existing constructed bridge has resulted in all of the indigenous riparian vegetation being removed from the river and streams. In terms of the importance and sensitivity of the features, the numerous impacts have greatly reduced their species richness and diversity.

N. Hanekom identified nine wetlands within close proximity (100m) of the proposed development of which six of these wetlands as identified on site will be impacted upon. The impacted wetlands have largely modified wetland integrity as a large loss of natural habitat, biota and basic ecosystem functions has occurred. The Wetland Health Present Ecological Status of the impacted wetlands was assessed to be largely modified and in a moderate ecological importance state and sensitivity.

There are two conservation mapping initiatives of relevance to the project, the Freshwater Ecosystem Priority Areas (FEPA) map which is available for the entire South Africa and the 2017 City of Cape Town Biodiversity Network Map. FEPAs are strategic spatial priorities for conserving freshwater ecosystems and associated biodiversity that were determined through a process of systematic biodiversity planning and were identified using a range of criteria for serving ecosystems and associated biodiversity of rivers, wetlands and estuaries. These rivers should be kept in their current condition, should not be degraded any further than its current moderately modified condition and it should be considered for rehabilitation.

The Kuils River at the study area is mapped as a FEPA River that is considered to be largely modified and should not be allowed to be degraded or modified further. However the areas to be impacted

upon by the proposed development have been completely transformed due to canalisation and an existing bridge structure. The impacted area of the Kuils River is not classified as a wetland or CESA in the City of Cape Town Biodiversity Network (2017).

There are no FEPA wetlands mapped within the study area. The proposed road alignment will impact on six wetlands (five artificial and one natural). Wetlands 1, 2, 3, 4, 7 and 8 which were originally mapped as part of three larger wetlands in the City of Cape Town Biodiversity Network (2017). According to the freshwater resource verification study conducted, by Scientific Aquatic Services ("SAS") during September 2018, of the nine wetlands delineated by N. Hanekom within the study area only two is considered to be natural and can be classified as a wetland flat. The wetlands were all also classified as a CESA in the City of Cape Town Biodiversity Network (2017). In the CoCT Biodiversity Network report the mapping confidence for these wetlands is however indicated as Low Confidence and from the assessments conducted it is therefore clear that the mapping was not groundtruthed.

The area surrounding the proposed new portion of Erica Drive, which is to be developed (western portion of the linear development), is considered to be significantly disturbed by anthropogenic activities. Such activities include the development of the Bellville South Industrial waste disposal site (north of the proposed Erica Drive portion), the excavation and shaping of informal roads within the surrounding area and the infilling and the disposal of household refuse.

According to the Freshwater Assessment Report (Hanekom, 2017), the western portion of the linear development has eight wetland features (numbered 1 – 8). During the field assessment, undertaken in September 2018 by SAS, only one of the previously identified wetlands in the western portion of the proposed development route (approximating 0,48ha in extent) was considered to be natural and can be classified as a wetland flat (wetland number 2).

Wetland number 9 located within the eastern portion of the linear development was also identified to be a natural system during the recent field verification by SAS (approximating 0,38ha in extent) and was also classified as a wetland flat.

The remaining areas previously identified as wetlands (Hanekom, 2017) were confirmed during the recent field verification to be artificially impounded areas or highly disturbed areas, where opportunistic invasive reed species (such as *Arundo donax*) have established due to water ponding within these excavated areas.

The wetland flat (0.48 ha) (nr. 2) is proposed to be traversed by the western portion of the proposed linear development. With the inclusion of an additional 10m buffer from the edge of the linear development that can be assumed will be lost as a result of the linear development and edge effects associated with the construction activities, it was calculated that this would cause a loss of 0.28 ha of wetland area.

The wetland flat (0.38 ha) (nr. 9) located along the eastern portion of the proposed linear development would be un-impacted by the proposed road upgrade, however, it must be made clear to any contractors that this area may not be utilised for a contractor's camp or any laydown areas.

An initial offset investigation was undertaken to ascertain the functional hectare equivalents and the habitat hectare equivalents required to offset the anticipated 0,28 ha loss of the western wetland flat nr. 2. It was determined that 0,2 functional hectare equivalents and 0,7 habitat hectare equivalents of wetland area need to be conserved to offset this loss.

It is, therefore, recommended that feasible wetland offset receiving areas be investigated in order to compensate for the hectare equivalents lost. These targeted wetland should ideally be of the same HGM wetland type and located within the same local catchment as the western wetland flat. As part of the abovementioned assessment, a rehabilitation and implementation plan must be compiled indicating what actions must be undertaken, both during construction and for the operational phase to ensure that the hectare equivalents lost are fully compensated for, and the overall PES of the receiving wetland improved in order to meet the functional hectare equivalent

requirements.

Refer to Appendix G: Specialist Report for further detailed descriptions of the terrestrial botanical and freshwater ecosystems as assessed.

7. LAND USE OF THE SITE

Note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed development.

~~Untransformed area~~	~~Low density residential~~	~~Medium density residential~~	~~High density residential~~	~~Informal residential~~
~~Retail~~	~~Commercial & warehousing~~	~~Light industrial~~	~~Medium industrial~~	~~Heavy industrial~~
~~Power station~~	~~Office/consulting room~~	~~Military or police base/station/compound~~	~~Casino/entertainment complex~~	~~Tourism and Hospitality facility~~
~~Open cast mine~~	~~Underground mine~~	~~Spoil heap or slimes dam~~	Quarry, sand or borrow pit	~~Dam or reservoir~~
~~Hospital/medical centre~~	~~School~~	~~Tertiary education facility~~	~~Church~~	~~Old age home~~
~~Sewage treatment plant~~	~~Train station or shunting yard~~	~~Railway line~~	~~Major road (4 lanes and more)~~	~~Airport~~
~~Harbour~~	~~Sport facilities~~	~~Golf course~~	~~Polo fields~~	~~Filling station~~
~~Landfill or waste treatment site~~	~~Plantation~~	~~Agriculture~~	River, stream or wetland	~~Nature conservation area~~
~~Mountain, koppie or ridge~~	~~Museum~~	~~Historical building~~	~~Graveyard~~	~~Archaeological site~~
Other land uses (describe):	Existing formal and informal roads, sand dunes, transformed indigenous vegetation areas, illegal waste dumping areas, artificial and natural wetlands, Kuilsriver tributary.			

(a) Provide a description.

Currently the 16.2ha area identified for the road extension is unused vacant land mainly zoned as street parcels and transformed due to previous and ongoing urban developments.

The development area west and immediately east of the R300 is undulating with sand dunes. These dunes have however been heavily disturbed and are more likely man-made to the most extent due to land excavations and stock piling that occurred while establishing the surrounding urban developments and landfill site. Most of the development area east of the R300 is flat with gradual slopes. The highest elevation of the area west of the R300 is 64m and the lowest 54m, the highest elevation of the area east of the R300 is 54m (dune immediately west of R300) and lowest 40m (the Kuils River tributary).

The site is located within dense urban residential areas. The area west of the R300 is also bordered by a landfill site. The channelled Kuils River tributary crosses the eastern half of the development site along Belhar Road and the R300 crosses the western half. As previously mentioned the site has been significantly disturbed and transformed due to urban development. Ongoing illegal waste dumping is taking place at various locations within the area west of the R300 adjacent to the landfill site. Several wetlands (7 artificial and 2 natural) also occur throughout the proposed development site.

8. LAND USE CHARACTER OF THE SURROUNDING AREA

(a) Highlight the current land uses and/or prominent features that occur within +/- 500m radius of the site and neighbouring properties if these are located beyond 500m of the site.

Note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed development.

~~Untransformed area~~	~~Low density residential~~	Medium density residential	High density residential	Informal residential
Retail	~~Commercial & warehousing~~	Light industrial	~~Medium industrial~~	~~Heavy industrial~~

~~Power station~~	~~Office/consulting room~~	~~Military or police base/station/compound~~	~~Casino/entertainment complex~~	~~Tourism and Hospitality facility~~
~~Open cast mine~~	~~Underground mine~~	~~Spoil heap or slimes dam~~	~~Quarry, sand or borrow pit~~	~~Dam or reservoir~~
~~Hospital/medical centre~~	School	~~Tertiary education facility~~	~~Church~~	~~Old age home~~
~~Sewage treatment plant~~	~~Train station or shunting yard~~	~~Railway line~~	Major road (4 lanes and more)	~~Airport~~
~~Harbour~~	~~Sport facilities~~	~~Golf course~~	~~Polo fields~~	~~Filling station~~
Landfill or waste treatment site	~~Plantation~~	~~Agriculture~~	River, stream or wetland	~~Nature conservation area~~
~~Mountain, koppie or ridge~~	~~Museum~~	~~Historical building~~	~~Graveyard~~	~~Archaeological site~~
Other land uses (describe):	NA			

(b) Provide a description, including the distance and direction to the nearest residential area, industrial area, agri-industrial area.

The western half of the development site is surrounded by informal and medium to high density residential areas of Belhar, a landfill site, Bellville South industrial area and transformed wetland and indigenous vegetation areas. The R300 road crosses the middle of the site. The eastern half of the site is surrounded by medium to high density residential areas of Kalkfontein and Gersham, transformed wetland and indigenous vegetation areas and the Kuils River tributary crosses the site. Various retail/business and school facilities also occurs within the surrounding areas.

9. SOCIO-ECONOMIC ASPECTS

a) Describe the existing social and economic characteristics of the community in the vicinity of the proposed site, in order to provide baseline information (for example, population characteristics/demographics, level of education, the level of employment and unemployment in the area, available work force, seasonal migration patterns, major economic activities in the local municipality, gender aspects that might be of relevance to this project, *etc.*).

Municipal Area

Erika Drive is located 20km east of Cape Town and falls within the jurisdiction of the Cape Town Metropolitan Municipality (CTMM). CTMM covers an approximate area of 2.461km^2.

Population Size:

The population size of CTMM is approximately 4.004.793 and it includes the towns of Athlone, Atlantis, Belhar, Bellville, Blackheath, Blouberg and Kuils River as well as the rural areas adjacent to and between these towns. 67.7% of the persons in the Cape Town area are English speaking and 22.5% Afrikaans speaking.

Household Income

In 2011, households with an annual income of R20, 000 – R40, 000 accounted for the largest concentration of households (16%).

Cape Town Municipality has a large number of people receiving some or other form of grant. Some people receive more than one grant, for example a disability or old age grant and a child support grant.

Socio-Economics:

The Cape Town Municipality is committed to the social and economic development of the people in the area. Housing for the poor continues to be one of the biggest problems faced in the Cape Town area. As reported in the Cape Town Municipality Annual Report 2015/16 the Municipal Council has made provision in its budgets to develop capitalize on housing opportunities.

Cape Town households receive very good municipal services and most of the households use electricity for heating, cooking and lighting. Service delivery to the poor in informal settlements or households living in backyards of the City's rental stock continues to be a major challenge for the municipality. If this is to be addressed meaningfully, location of some settlements must be relative to bulk infrastructure, increasing capacity especially electricity supply where infrastructure does exist.

Employment
In 2016, The average unemployment rate in Cape Town was 26.5% according to the Quarterly Labour Force Survey 2017.

The labour force is classified into four main categories namely, high skilled, skilled, low skilled and unspecified. Low skill occupations are defined as individuals employed in elementary occupations; skilled occupations include clerks, service workers, skilled agricultural and fishery workers, craft and related trades workers as well as plant and machine operators and assemblers. The high skilled category includes legislators, senior officials and managers, professionals, technicians and associate professionals.

Employment Industries
Various types of economic activities can be found within the Theewaterskloof Local Municipality area of which the biggest sector is finance, insurance, business services (36.1%) followed by manufacturing (16.1%). The smallest sectors include agriculture (9.7%) and construction (4.15)

Tourism Opportunities:
Cape Town Tourism is based on the city's exceptional, internationally renowned natural systems, including Table Mountain, local nature reserves, species-rich fynbos, extensive coastline, cultural heritage and the winelands. Cape Town is also the gateway to the West Coast and its spectacular spring flowers. In 2015, the City received a silver award for "Best Destination for Responsible Tourism".

Service Delivery and Infrastructure Opportunities and Challenges
A major concern for most cities is mobility, as it affects urban efficiency. The ability to move smoothly and timeously between work, home and recreation is what helps make cities and city living efficient. Apartheid urban planning has manifested in urban inefficiencies in South African cities. The City's Transport Development Index (TDI) has shown that the low-income segment of the population spends on average 43% of their household income on access – more than four times the acceptable international average. Transport challenges experienced by Capetonians include the duration of peak-hour travel on the city's public roads, and the failure of the public transport system, particularly of the Metrorail service, which is outside the City's jurisdiction. Maintenance of the city's roads becomes extremely challenging, as any interruption to the traffic flow further exacerbates peak-hour traffic.

Cape Town has consistently been able to provide residents, including those in informal settlements and backyard dwellings, with high levels of access to basic municipal services. As soon as urban residents enjoy secure access to basic services, they can tackle the other factors that affect their quality of life. This is clearly illustrated by the responses in the 2016 Community Survey, where the five top concerns raised by households – violence and crime, the cost of electricity, a lack of employment opportunities, inadequate housing, and drug abuse – included only one that falls within the local government mandate (housing). Nevertheless, Cape Town is challenged by expanding informal settlements and the escalating number of households living in backyard structures. Although the City provides services to informal settlements, and increasingly also to backyard dwellings, it is challenging to keep pace with service delivery demands. The City is examining how to improve service delivery to backyard structures as part of a broader strategy to provide increased housing opportunities for Cape Town residents.

AN EFFICIENT, INTEGRATED TRANSPORT SYSTEM

Integrated transport relates to integration in the transport environment, namely across road and rail modes, as well as the integration of public transport with the urban fabric so that it becomes a catalyst for safe and functional communities. In the past five years, the City developed and approved its Integrated Public Transport Network (IPTN). The IPTN forms the basis for integrated transport planning, infrastructure, systems, operations, and public transport industry transition interventions. It is also critical for transport interventions to be coupled with urban development interventions. Transportation essentially represents the operating cost of the city. The more efficient the city, the lower the transportation costs for the City and its residents. In Cape Town, apartheid

spatial planning has resulted in transport inefficiencies, with many residents living far from places of work and leisure.

By prioritising an efficient, integrated transport system, the City seeks to transform the transport system to be integrated across different modes, and to lead developmental transformation through TOD, starting with the 40 bus rapid transit and 98 rail stations. To achieve this, the City will continue with its programme to ensure that Cape Town has an efficient, high-quality public transport system (including rail), with more frequent public transport services for longer hours. This will enable residents to live car-independent lifestyles and enhance access to opportunities so that residents' future is not determined by where they live.

More specifically, the City will:
• continue to roll out MyCiTi as an integrated system that includes bus rapid transit (BRT), scheduled buses and minibus taxis;
• work towards an integrated ticketing and timetable system across scheduled road and rail transport;
• **implement targeted programmes to reduce congestion, which will include investment in road capacity and infrastructure, as well as initiatives to change commuter choices and behaviour through interventions such as travel demand management**;
• upgrade and rehabilitate the road network, especially focusing on those roads that have been categorised as very poor or poor quality;
• roll out a unified system of bus shelters and stops across Cape Town;
• design, invite tenders for and roll out a bike-share system for Cape Town; and
• direct human settlement development along transit corridors to be within 500 m of a rail and bus rapid transit station.

Road congestion relief project

Congestion on Cape Town roads is at an all-time high and is costly for motorists in terms of both time and money, and harmful to the environment. This requires a comprehensive strategy, looking beyond infrastructure interventions alone. Therefore, the road congestion relief project entails an operational, behavioural and infrastructure component. In terms of operations, the City will continue to strategically manage public transport, including the setting of different tariffs for peak and off-peak periods in a bid to encourage more people to travel outside peak times. The further implementation of transitoriented development will also help shorten the morning and afternoon peaks. Behavioural change will be introduced through travel demand management (TDM). The City's approved TDM strategy will over the next five years see the introduction of flexitime, starting with the City's own staff, carpooling and similar initiatives. **Finally, the City has made capital funding available to address major pressure points by way of infrastructure projects over the next five years. Work is planned for, among others, the Kuils River area around Bottelary, Amandel and Saxdown roads;** Kommetjie around Ou Kaapse Weg and Kommetjie Road; the Blaauwberg area around Plattekloof, Blaauwberg and Sandown roads; the M3, M5, N1 and N2 freeways, as well as the V&A Waterfront and foreshore.

Source: City of Cape Town latest Five-year integrated development plan July 2017 – June 2022

10. HISTORICAL AND CULTURAL ASPECTS

(a) Please be advised that if section 38 of the NHRA is applicable to your proposed development, you are requested to furnish this Department with written comment from Heritage Western Cape as part of your public participation process. Heritage Western Cape must be given an opportunity, together with the rest of the I&APs, to comment on any Pre-application BAR, a Draft BAR, and Revised BAR.

Section 38 of the NHRA states the following:
"*38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-*
(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site-
(i) exceeding 5 000m² in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or
(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000m² in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development".

(b) The impact on any national estate referred to in section 3(2), excluding the national estate contemplated in section 3(2)(i)(vi) and (vii), of the NHRA, must also be investigated, assessed and evaluated. Section 3(2) states the following:
"*3(2) Without limiting the generality of subsection (1), the national estate may include—*
(a) places, buildings, structures and equipment of cultural significance;
(b) places to which oral traditions are attached or which are associated with living heritage;
(c) historical settlements and townscapes;
(d) landscapes and natural features of cultural significance;
(e) geological sites of scientific or cultural importance;
(f) archaeological and palaeontological sites;
(g) graves and burial grounds, including—
(i) ancestral graves;
(ii) royal graves and graves of traditional leaders;
(iii) graves of victims of conflict;
(iv) graves of individuals designated by the Minister by notice in the Gazette;
(v) historical graves and cemeteries; and
(vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
(h) sites of significance relating to the history of slavery in South Africa;
(i) movable objects, including—
(i) objects recovered from the soil or waters of South Africa, including archaeological and paleontological objects and material, meteorites and rare geological specimens;
(ii) objects to which oral traditions are attached or which are associated with living heritage;
(iii) ethnographic art and objects;
(iv) military objects;
(v) objects of decorative or fine art;
(vi) objects of scientific or technological interest; and
(vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996)".

Is Section 38 of the NHRA applicable to the proposed development?	YES	~~NO~~	~~UNCERTAIN~~
If YES or UNCERTAIN, explain:	The proposed activity is for the construction of a road longer than 300 m. Erica Drive will be extended in an easterly direction toward the R300. Erica Drive will extend over the R300 and continue east where it will connect to Belhar Road. Belhar Road will be upgraded to a multi-lane dual traffic road. A Notice of Intent to Develop was submitted to the HWC and the following record of decision was received – *You are hereby notified that, since there is no reason to believe that the proposed expansion and upgrade of Eric Drive, Belhar, Cape Town, will impact on heritage resources, no further action under Section 38 of the National Heritage Resources Act (Act 25 of 1999) is required.* *However 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 HWC must be notified without delay.*		
Will the development impact on any national estate referred to in Section 3(2) of the NHRA?	~~YES~~	NO	~~UNCERTAIN~~
If YES or UNCERTAIN, explain:	NA		
Will any building or structure older than 60 years be affected in any way?	~~YES~~	NO	~~UNCERTAIN~~
If YES or UNCERTAIN, explain:	NA		
Are there any signs of culturally or historically significant elements, as defined in section 2 of the NHRA, including Archaeological or paleontological sites, on or close (within 20m) to the site?	~~YES~~	NO	~~UNCERTAIN~~

If YES or UNCERTAIN, explain:	NA

Note: If uncertain, the Department may request that specialist input be provided **and** Heritage Western Cape must provide comment on this aspect of the proposal. (Please note that a copy of the comments obtained from the Heritage Resources Authority must be appended to this report as Appendix E1).

11. APPLICABLE LEGISLATION, POLICIES, CIRCULARS AND/OR GUIDELINES

(a) Identify all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to the development proposal and associated listed activity(ies) being applied for and that have been considered in the preparation of the BAR.

LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	**ADMINISTERING AUTHORITY and how it is relevant to this application**	**TYPE Permit/license/authorisation/comment / relevant consideration** (*e.g.* rezoning or consent use, building plan approval, Water Use License and/or General Authorisation, License in terms of the SAHRA and CARA, coastal discharge permit, *etc.*)	**DATE** (if already obtained)**:**
Western Cape Land Use Planning Act, 2014 ("LUPA")	City of Cape Town	Consent use	NA
National Water Act, 1998 (Act No. 36 of 1998) [NWA] and relevant regulations	Department of Water And Sanitation	Water Use Licence	Application in progress
National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA] and relevant regulations	Western Cape Department of Environmental Affairs and Development Planning	Environmental Authorisation Application	Application in progress
National Heritage Resources Act 25 of 1999 [NHRA]	Heritage Western Cape South African Heritage Resource Agency	NID Submission of a Heritage Impact Assessment	Final Comment Received – No HIA to be conducted
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) [NEMWA] and relevant regulations	Western Cape Department of Environmental Affairs and Development Planning	NA	NA
National Environmental Management: Biodiversity Act 10 of 2004 [NEMBA]	Western Cape Department of Environmental Affairs and Development Planning and Cape Nature	Comments to be obtained	All comments received available in Appendix F
National Environmental Management: Air Quality Act, 39 Of 2004 [NEMAQA] and Relevant Regulations	Western Cape Department of Environmental Affairs and Development Planning	NA	NA
Conservation of Agricultural Resources Act, 43 Of 1983 [CARA]	National Department of Agriculture, forestry and Fisheries Western Cape Department of Agriculture	NA	NA
National Health Act, 61 of 2003 [NHA]	Department of Health	NA	NA

Constitution of the Republic of South Africa, 1996		General application to individual rights of all on and adjacent to the sites.	Public Participation Process conducted
Fencing Act, 31 of 1963		NA	NA
National Building Regulations and Building Standards Act 103 of 1977 [NBRBSA] and relevant regulations		NA	NA
National Veld and Forest Fire Act 101 of 1998 [NVFFA]		NA	NA
Fertilizers, Farm Feeds, Agricultural Remedies And Stock Remedies Act, 36 Of 1947 [FFFARSRA] and Relevant Regulations	National Department of Agriculture, forestry and Fisheries Western Cape Department of Agriculture	NA	NA
2017 City of Cape Town Biodiversity Network	City of Cape Town and CapeNature	Comments to be obtained	All comments received available in Appendix F
City of Cape Town Spatial Development Framework	City of Cape Town	Proposed road developments already included in planned infrastructure in local SDF	NA
City of Cape Town's 2017-2018 Service Delivery Implementation Plan	City of Cape Town	Proposed road developments already included in planned infrastructure in service delivery plan	NA
City of Cape Town's Integrated Development Plan 2017-2022	City of Cape Town	Proposed road developments already included in planned infrastructure in local IDP	NA

POLICY/ GUIDELINES/BY-LAWS	ADMINISTERING AUTHORITY
Guideline on Public Participation	Western Cape Department of Environmental Affairs and Development Planning
Guidelines on Alternatives	Western Cape Department of Environmental Affairs and Development Planning
Guideline on Need and desirability	Western Cape Department of Environmental Affairs and Development Planning
Guideline for Environmental Management Plans (EMP's)	Western Cape Department of Environmental Affairs and Development Planning
Guideline of Specialist Reports	Western Cape Department of Environmental Affairs and Development Planning
Air Quality Management, 2016	City of Cape Town
Community Fire Safety, 2002	City of Cape Town
Constitution of the Transport and Urban Development Authority for Cape Town, 2017	City of Cape Town
Constitution of Transport for Cape Town, 2013	City of Cape Town
Electricity Supply, 2010	City of Cape Town
Environmental Health, 2003	City of Cape Town
Immovable Property, 2015	City of Cape Town
Integrated Waste Management, 2009	City of Cape Town
Municipal Planning, 2015	City of Cape Town
Outdoor Advertising and Signage, 2001	City of Cape Town
Parking, 2010	City of Cape Town
Stormwater Management, 2005	City of Cape Town
Street, Public Places and the Prevention of Noise Nuisances, 2007	City of Cape Town
Traffic, 2011	City of Cape Town
Treated Effluent, 2010	City of Cape Town
Waste Management, 2000	City of Cape Town
Wastewater and Industrial Effluent, 2014	City of Cape Town
Water, 2010	City of Cape Town

(b) Describe how the proposed development **complies with and responds** to the legislation and policy context, plans, guidelines, spatial tools, municipal development planning frameworks and instruments.

LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	**Describe how the proposed development complies with and responds to:**
NEMA	Basic Assessment Process conducted to assess potential environmental impacts and apply for Environmental Authorisation
NEMWA	If applicable all waste management activities to be conducted during the proposed development to adhere to the NEMWA requirements
NEMBA	If applicable potential impacts on biodiversity features of the site and surrounds to be assessed and mitigation measures proposed during the basic assessment process.
NEMAQA	If applicable potential impacts on air quality on site and surrounds to be assessed and mitigation measures proposed during the basic assessment process.
NWA	If applicable potential impacts on ground- and surface water resources assessed during basic assessment process and if required a water use authorisation under section 21 will be applied for.
CARA	If applicable the landowner/applicant is reminded of his/her responsibility to manage and eradicated certain weed and alien plant vegetation on his/her property and requirements are incorporated into the EMP.
National Health Act	If applicable potential impacts on the health and wellbeing of human population on the site and surrounds are assessed and mitigation measure are proposed during the basic assessment process.
Constitution of the RSA	General application to individual rights of all on and adjacent to the sites.
Fencing Act	If applicable potential impacts and requirements concerning fencing of the site and surrounds to be assessed and mitigation measures proposed during the basic assessment process.
National Building Regulations and Building Standards Act	If applicable potential impacts and requirements concerning erection of building on the site and surrounds to be assessed and mitigation measures proposed during the basic assessment process.
NHRA	If applicable potential impacts on graves and burial sites and any structures older than 60 years are assessed and mitigation measures proposed during the basic assessment process.
NVFFA	If applicable any activities that could result in the start of veld fires are assessed and mitigated during the basic assessment process.
FFFARSRA	If applicable any potential impacts of activities associated with pest control, the use of agricultural remedies and with providing / manufacturing fertiliser are assessed and mitigated during the basic assessment process.
Guideline on Public Participation	The public participation guideline is used to determine the requirements in terms of implementing the public participation process during the basic assessment process to be conducted. The guideline was also used to determine the most effective communication strategies for public participation.
Guidelines on Alternatives	The guidelines for alternatives assessment was used to develop a methodology for alternatives assessment. This methodology was applied to determine and assess the most viable alternatives to the project. The assessment was undertaken against the baseline environment (i.e. the no-go option).
Guideline on Need and desirability	The guideline was taken into account to determine whether the project complied according to the concept of Best Practicable Environmental Option as well as environmental and social sustainability.

LEGISLATION, POLICIES, PLANS, GUIDELINES, SPATIAL TOOLS, MUNICIPAL DEVELOPMENT PLANNING FRAMEWORKS, AND INSTRUMENTS	Describe how the proposed development complies with and responds to:
Guideline for EMP's	The guideline for EMP's was taken into account to determine the most effective minimize, mitigation and management measures to minimise or prevent the potential environmental impacts identified during the basic assessment process

Note: Copies of any comments, permit(s) or licences received from any other Organ of State must be attached to this report as **Appendix E**.

Section C: PUBLIC PARTICIPATION

The PPP must fulfil the requirements outlined in the NEMA, the EIA Regulations, 2014 (as amended) and if applicable, the NEM: WA and/or the NEM: AQA. This Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, any subsequent Circulars, and guidelines must also be taken into account.

1. Please highlight the appropriate box to indicate whether the specific requirement was undertaken or whether there was an exemption applied for.

In terms of Regulation 41 of the EIA Regulations, 2014 (as amended) -			
(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of -			
(i) the site where the activity to which the application relates, is or is to be undertaken; and	YES	~~EXEMPTION~~	
(ii) any alternative site	YES	~~EXEMPTION~~	N/A
(b) giving written notice, in any manner provided for in Section 47D of the NEMA, to –			
(i) the occupiers of the site and, if the applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	YES	~~EXEMPTION~~	~~N/A~~
(ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;	YES	~~EXEMPTION~~	
(iii) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;	YES	~~EXEMPTION~~	
(iv) the municipality (Local and District Municipality) which has jurisdiction in the area;	YES	~~EXEMPTION~~	
(v) any organ of state having jurisdiction in respect of any aspect of the activity; and	YES	~~EXEMPTION~~	
(vi) any other party as required by the Department;	YES	~~EXEMPTION~~	~~N/A~~
(c) placing an advertisement in -			
(i) one local newspaper; or	YES	~~EXEMPTION~~	
(ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;	~~YES~~	~~EXEMPTION~~	N/A
(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken	~~YES~~	~~EXEMPTION~~	N/A
(e) using reasonable alternative methods, as agreed to by the Department, in those instances where a person is desirous of but unable to participate in the process due to— (i) illiteracy; (ii) disability; or (iii) any other disadvantage.	YES	~~EXEMPTION~~	~~N/A~~
If you have indicated that "EXEMPTION" is applicable to any of the above, proof of the exemption decision must be appended to this report.			
Please note that for the NEM: WA and NEM: AQA, a notice must be placed in at least two newspapers circulating in the area where the activity applied for is proposed.			
If applicable, has/will an advertisement be placed in at least two newspapers?	~~YES~~	~~NO~~	
If "NO", then proof of the exemption decision must be appended to this report.			

2. Provide a list of all the State Departments and Organs of State that were consulted:

State Department / Organ of State	Date request was sent:	Date comment received:	Support / not in support
Cape Nature	Pre-application	25/04/2018	In support of specialist

	BAR – 12/08/2018		conclusions concerning terrestrial impacts, requested additional information concerning freshwater ecosystem impacts , stormwater management etc. which has been provided in the Draft BAR.
DEA&DP: Development Management	Pre-application BAR – 13/08/2018	23/03/2018	Requested additional information, which has been included in the Draft BAR
DEA&DP: Waste Management	Pre-application BAR – 13/08/2018	11/04/2018	Recommended mitigation measures to be included in the EMP which has been done.
DEA&DP: Pollution and Chemicals Management	Pre-application BAR – 13/08/2018	05/04/2018	Not in support due to wetlands being affected, however this impact is unavoidable due to the location alternative being site specific.
Department of Water and Sanitation	Pre-application meeting held on 30/01/2017 Pre-application BAR – 13/03/2018	16/03/2018	Water Use Authorisation Application in progress
Heritage Western Cape	Notice of Intent to Develop submitted 03/11/2017	03/11/2017	Record of Decision states that, "*since there is no reason to believe that the proposed expansion and upgrade of Erica Drive, Belhar, Cape Town, will impact on heritage resources, no further action under Seciton 38 of the National Heritage Resources Act (Act 25 of 1999) is required*".
SANRAL	Pre-application BAR – 12/03/2018	28/03/2018	Requested additional information to be provided and indicated that approval must be obtained from SANRAL before commencement. Information has been provided in the Draft BAR and recommendations included in the EMP requirements.
Department of Transport:	Pre-application	12/03/2018	Neutral – seeing that

Western Cape	BAR – 12/03/2018		there is no proclaimed roads affected by this proposal, there is no reason for this Branch to be involved. Requested to be removed from the commenting authorities address list.
Eskom	Pre-application BAR – 12/03/2018	23/04/2018	In support of the proposed development if recommended mitigation measures are implemented. Provided planning and mitigation measures have been included in the EMP requirements.
City of Cape Town Municipality – Environmental Department	Pre-application BAR – 13/08/2018	13/04/2018	Requested additional information which has been provided in the Draft BAR

3. Provide a summary of the issues raised by I&APs and an indication of the manner in which the issues were incorporated, or the reasons for not including them.
   (The detailed outcomes of this process, including copies of the supporting documents and inputs must be included in a Comments and Response Report to be attached to the BAR (see note below) as **Appendix F**).

Main issues/concerns raised by I&APs:

- Traffic calming measures to be implemented – Engineer company ITS addressed traffic calming measures to be implemented also refer to Appendix K2: Preliminary Design Report
- Details of proposed stormwater management to be implemented – Refer to Appendix B for detailed stormwater site development plans and Appendix K3 for stormwater management plan
- Wetland offset requirements to be implemented – Refer to Appendix G3: Erica Road Wetland Verification and Offset study conducted
- Pedestrian accommodation along proposed route - Engineer company ITS addressed traffic calming measures to be implemented also refer to Appendix K2: Preliminary Design Report
- Approval from SANRAL and Eskom to be obtained prior to construction commencement – requirements have been included in the EMP requirements under pre-construction requirements to be adhered to.
- Water Use Authorisation to be obtained – water use authorisation application process in progress.
- Information provided in BAR must be complete and sufficient to comment upon – Draft BAR has been sufficiently completed.
- Peer review of freshwater ecosystem impact assessment – refer to Appendices G3 and G4 as attached.

Refer to Appendix F: Public Participation Process – Table 3 for complete list (and evidence) of all comments received and responses provided.

4. Provide a summary of any conditional aspects identified / highlighted by any Organs of State, which have jurisdiction in respect of any aspect of the relevant activity.

To be included in Final BAR.

Note:
Even if pre-application public participation is undertaken as allowed for by Regulation 40(3), it must be undertaken in accordance with the requirements set out in Regulations 3(3), 3(4), 3(8), 7(2), 7(5), 19, 40, 41, 42, 43 and 44.

If the "exemption" option is selected above and no proof of the exemption decision is attached to this BAR, the application will be refused.

A list of all the potential I&APs, including the Organs of State, notified and a list of all the registered I&APs must be submitted with the BAR. The list of registered I&APs must be opened, maintained and made available to any person requesting access to the register in writing.

The BAR must be submitted to the Department when being made available to I&APs, including the relevant Organs of State and State Departments which have jurisdiction with regard to any aspect of the activity, for a commenting period of at least 30 days. Unless agreement to the contrary has been reached between the Competent Authority and the EAP, the EAP will be responsible for the consultation with the relevant State Departments in terms of Section 24O and Regulation 7(2) – which consultation must happen simultaneously with the consultation with the I&APs and other Organs of State.

All the comments received from I&APs on the BAR must be recorded, responded to and included in the Comments and Responses Report included as **Appendix F** of the BAR. If necessary, any amendments made in response to comments received must be effected in the BAR itself. The Comments and Responses Report must also include a description of the PPP followed.

The minutes of any meetings held by the EAP with I&APs and other role players wherein the views of the participants are recorded, must also be submitted as part of the public participation information to be attached to the final BAR as **Appendix F.**

Proof of all the notices given as indicated, as well as notice to I&APs of the availability of the Pre-Application BAR (if applicable), Draft BAR, and Revised BAR (if applicable) must be submitted as part of the public participation information to be attached to the BAR as **Appendix F**. In terms of the required "proof" the following must be submitted to the Department:

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

SECTION D: NEED AND DESIRABILITY

Note: Before completing this section, first consult this Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, 2014 (as amended), any subsequent Circulars, and guidelines available on the Department's website: **http://www.westerncape.gov.za/eadp**). In this regard, it must be noted that the *Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010* published by the national Department of Environmental Affairs on 20 October 2014 (GN No. 891 on Government Gazette No. 38108 refers) (available at: http://www.gov.za/sites/www.gov.za/files/38108_891.pdf) also applied to EIAs in terms of the EIA Regulations, 2014 (as amended).

1. Is the development permitted in terms of the property's existing land use rights?	YES & NO	-	Please explain
Most of the proposed development is located on existing road reserves, but some of the affected properties are not zoned road reserve therefore rezoning will be required.			
2. Will the development be in line with the following?			
(a) Provincial Spatial Development Framework ("**PSDF**").	YES	~~NO~~	Please explain
The proposed activity will result in the expansion of the City's road network, thus alleviating congestion and making areas more accessible. The Municipality is mandated in terms of the PSDF to provide and maintain road infrastructure and networks. The activity is therefore in line with the objectives manifested in the PSDF.			
(b) Urban edge / edge of **built environment** for the area.	YES	~~NO~~	Please explain
The activity is located within the built environment.			
(c) Integrated Development Plan and Spatial Development Framework of the Local Municipality (*e.g.*, would the approval of this application compromise the integrity of the existing approved and credible municipal **IDP and SDF**?).	YES	~~NO~~	Please explain
The proposed activity has been included in the City of Cape Town's 2017 - 2018 Service Delivery Implementation Plan as manifested by the Integrated Development Plan 2017 - 2022. The proposed			

activity has been planned to alleviate traffic congestion of Erica Drive, through expansion of the road network. This is in line with the strategic objectives of the Municipality.			
(d) An Environmental Management Framework ("**EMF**") adopted by this Department. (*e.g.,* Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	~~YES~~	~~NO~~	~~Please explain~~
No EMF adopted by the Department for the applicable area.			
(e) Any **other** Plans (*e.g.,* Integrated Waste Management Plan (for waste management activities), *etc.*)).	~~YES~~	NO	~~Please explain~~
NA			
3. Is the land use (associated with the project being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (in other words, is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	~~NO~~	Please explain
The proposed activity has been included in the City of Cape Town's 2017 - 2018 Service Delivery Implementation Plan as manifested by the Integrated Development Plan 2017 - 2022. The proposed activity has been planned to alleviate traffic congestion of Erica Drive, through expansion of the road network. This is in line with the strategic objectives of the Municipality.			
4. Should development, or if applicable, expansion of the town/area concerned in terms of this land use (associated with the activity being applied for) occur on the proposed site at this point in time?	YES	~~NO~~	Please explain
Current land use of the proposed development site is vacant transformed indigenous vegetation and wetland areas surrounding with urban developments and with low ecological connectivity value. It is required to alleviate traffic congestion of Erica Drive, through expansion of the road network. This is in line with the strategic objectives of the Municipality.			
5. Does the community/area need the project and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (*e.g.,* development is a National Priority, but within a specific local context it could be inappropriate.)	YES	~~NO~~	Please explain
It is required to alleviate traffic congestion of Erica Drive, through expansion of the road network. This is in line with the strategic objectives of the Municipality.			
6. Are the necessary **services** available together with adequate unallocated municipal capacity (at the time of application), or must additional capacity be created to cater for the project? (Confirmation by the relevant municipality in this regard must be attached to the BAR as **Appendix E**.)	YES	~~NO~~	Please explain
The proposed development will only make use of municipal services temporarily during the construction phase. i.e. water will be required for cement mixing and waste handling facilities for the disposal of construction waste.			
7. Is this project provided for in the **infrastructure planning** of the municipality and if not, what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant municipality in this regard must be attached to the BAR as **Appendix E**.)	YES	~~NO~~	Please explain
This is a municipal project – The proposed activity has been included in the City of Cape Town's 2017 – 2018 Service Delivery Implementation Plan as manifested by the Integrated Development Plan 2017 – 2022. The proposed activity has been planned to alleviate traffic congestion of Erica Drive, through expansion of the road network. This is in line with the strategic objectives of the Municipality.			
8. Is this project part of a **national programme** to address an issue of national concern or importance?	~~YES~~	NO	~~Please explain~~
-			
9. Do location factors favour this land use (associated with the development proposal and associated listed activity(ies) applied for) at this place? (This relates to the contextualisation of the proposed land use on the proposed site within its broader context.)	YES	~~NO~~	Please explain
The proposed activities are site specific to alleviate traffic congestion within a specific area to link in with existing road infrastructure.			
10. Will the development proposal or the land use associated with the development proposal applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	YES	~~NO~~	Please explain
The proposed development will not impact on any sensitive cultural areas, but will impact on sensitive natural areas such as wetlands.			
11. Will the development impact on people's health and well-being (*e.g.,* in terms of noise, odours, visual character and 'sense of place', *etc.*)?	YES	~~NO~~	Please explain
Construction of the proposed infrastructure will lead to temporary construction noise impacts and permanent visual impacts.			
12. Will the proposed development or the land use associated with the proposed development applied for, result in unacceptable opportunity costs?	~~YES~~	NO	~~Please explain~~

-

13. What will the **cumulative impacts** (positive and negative) of the proposed land use associated with the development proposal and associated listed activity(ies) applied for, be?

Definite Positive Cumulative Impacts:

- Temporary employment opportunities (construction)
- Infrastructure provision - alleviating traffic congestion within the affected area.

Potential Negative Cumulative Impacts mainly associated with the Construction Phase:

- Disturbance to subsurface geological layers
- Soil erosion
- Hardening of surfaces leading to storm water accumulation and increase in amount and runoff speed
- Dust
- Surface and ground water resources pollution
- Emissions and air quality
- Impact on sensitive environments (rivers, wetlands. Indigenous vegetation areas etc.)
- Increase in traffic
- Noise
- Impact of the proposed development on archaeological, paleontological and heritage remains
- Visual/sense of place

14. Is the development the **best practicable environmental option** for this land/site?	YES	~~NO~~	Please explain

As per the findings of the terrestrial botanical and freshwater ecosystems impact assessments conducted the sensitive natural features remaining on the site have been isolated, transformed and degraded to such an extent that rehabilitation and conservation is not a feasible or reasonable option for the affected areas. The location factors of the site in terms of connectivity value to existing road infrastructure also favours the proposed development.

15. What will the benefits be to society in general and to the local communities?	Please explain

Definite Positive Cumulative Impacts:

- Temporary employment opportunities (construction)
- Infrastructure provision - alleviating traffic congestion within the affected area.

16. Any **other** need and desirability considerations related to the proposed development?	Please explain

NA

17. Describe how the **general objectives of Integrated Environmental Management** as set out in Section 23 of the NEMA have been taken into account:

- All involved in the planning and design identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage. The risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in Section 23 were taken in consideration and used in the assessments, mitigations and recommendations throughout this report.

INTEGRATED ENVIRONMENTAL MANAGEMENT

23. General objectives

(1) The purpose of this Chapter is to promote the application of appropriate environmental management tools in order to ensure the integrated environmental management of activities.

(2) The general objective of integrated environmental management is to

(a) promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment;
Refer to point 18 below.

(b) identify, predict and evaluate the actual and potential impact on the environment, socioeconomic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in section 2;
The potential impacts for both the construction and the operational phase have been identified

and assessed in this report – this allows for the appropriate management and mitigation measures to be identified and implemented where and when necessary to prevent (and if prevention is not possible to mitigate) environmental degradation and promote sustainability.

(c) ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;
All decisions during the planning and assessment by all involved for the activity promote the integration of the principles of environmental management set out in Section 2 to minimize and mitigate any significant effect on the environment. All these mitigations and management measures are proposed to be included as EA conditions and included in the EMP requirements.

(d) ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;
Adequate and appropriate opportunity for public participation was provided and proof thereof included in Appendix F as per the guidelines and regulations in decisions that may affect the environment.

(e) ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and
All involved in the planning and design identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage. The risks and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management set out in Section 2 were taken in consideration and used in the assessments, mitigations and recommendations throughout this report

(f) identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2.
Refer to point 18 below.

(3) The Director-General must coordinate the activities of organs of state referred to in section 24(1) and assist them in giving effect to the objectives of this section and such assistance may include training, the publication of manuals and guidelines and the co-ordination of procedures.

18 Describe how the **principles of environmental management** as set out in Section 2 of the NEMA have been taken into account:

NATIONAL ENVIRONMENTAL MANAGEMENT PRINCIPLES

2. Principles

(1) The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and

(a) shall apply alongside all other appropriate and relevant considerations, including the State's responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination;

(b) serve as the general framework within which environmental management and implementation plans must be formulated;

(c) serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provision concerning the protection of the environment;

(d) serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and

(e) guide the interpretation, administration and implementation of this Act, and any other law concerned with the protection or management of the environment.

(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
The proposed environmental management requirements have been determined by assessing all potential impacts that the development may have on people and their needs and aims to prevent or if prevention is not possible to mitigate any potential negative impacts on the environment and people.

(3) Development must be socially, environmentally and economically sustainable.
The proposed development has been planned, designed and assessed in such as manner as to ensure that it is socially, environmentally and economically sustainable.

(4)

(a) Sustainable development requires the consideration of all relevant factors including the following:

(i) That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;

(ii) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;

(iii) that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;

(iv) that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;

(v) that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;

(vi) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;

(vii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and

(viii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

The assessment conducted aimed to identify all potential negative impacts on the environment and on people's environmental rights (as listed above and more), and where such potential negative impacts as identified and assessed could not be altogether prevented/avoided mitigation measures were recommended and incorporated into the Environmental Management Programme to minimise the significance of the potential negative impacts as far as possible. The assessment also aimed to determine whether or not the proposed development will lead to the unacceptable exploitation of renewable and non-renewable resources and associated ecosystems.

(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.
An integrated environmental assessment approach was followed acknowledging that all elements of the environment are linked and interrelated and realising that effects of decisions may have cumulative impacts on the environment and people and that the best practicable environmental option must therefore be selected.

(c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.
Environmental justice was pursued to prevent discrimination against any person, particularly vulnerable and disadvantage persons.

(d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.
Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being was pursued and special measures implemented if required ensure access.

(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.
As per the recommended EMP requirements the Applicant (as per the EA stipulations) remains responsible for the environmental health and safety consequences of the proposed activity/ies throughout its life cycle.

(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.
Adequate and appropriate opportunity for public participation was provided and proof thereof included in Appendix F as per the guidelines and regulations in decisions that may affect the environment.

(g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.
All decision regarding the proposed activity/ies took into account the interests, needs and values of all potential interested and affected parties.

(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.
Depending on the scope of the proposed activity community awareness campaigns will be conducted as and if required.

(i) The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
All potential negative and positive impacts associated with the proposed development are assessed and mitigated during the assessment process.

(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.
As per standard EMP requirements all relevant health and safety legislation must be adhered to during the implementation of the proposed activities.

(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.
As per public participation process regulations all information relating to the proposed activities are public knowledge and available to the public for perusal and comments during the assessment process.

(l) There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.

(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.
Comments from all relevant organs of state are requested, recorded and addressed during assessment process.

(n) Global and international responsibilities relating to the environment must be discharged in the national interest.
Applied as and when relevant to the proposed activities.

(o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.
All potential impacts on environmental resources are assessed and mitigated to prevent unacceptable exploitation of renewable and non-renewable resources and associated ecosystems.

(p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.
As per standard EMP requirements the applicant, as per the EA issued, will remain financially responsible for remedying any negative environmental and health effects cause by or due to the proposed activities.

(q) The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.
If applicable the role of women and youth in environmental management and development related to the proposed activities will be assessed and incorporated into EMP requirements during the assessment process.

(r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.
All sensitive, vulnerable, highly dynamic or stressed ecosystems must be identified during the assessment process and the significance of any potential impacts on these systems must be determined and appropriate prevention, or if prevention is not possible mitigation measures must be incorporated into the EMP requirements.

SECTION E: DETAILS OF ALL THE ALTERNATIVES CONSIDERED

Note: Before completing this section, first consult this Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "One Environmental Management System" and the EIA Regulations, 2014 (as amended), any subsequent Circulars, and guidelines available on the Department's website **http://www.westerncape.gov.za/eadp**.

The EIA Regulations, 2014 (as amended) defines "*alternatives*" as " *in relation to a proposed activity, means different means of fulfilling the general purpose and requirements of the activity, which may include alternatives to the—*
(a) property on which or location where the activity is proposed to be undertaken;
(b) type of activity to be undertaken;
(c) design or layout of the activity;
(d) technology to be used in the activity; or
(e) operational aspects of the activity;
(f) and includes the option of not implementing the activity;"

The NEMA (section 24(4)(a) and (b) of the NEMA, refers) prescribes that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, *inter alia*, with respect to every application for environmental authorisation –

- ensure that the general objectives of integrated environmental management laid down in the NEMA and the National Environmental Management Principles set out in the NEMA are taken into account; and
- include an investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity.

The general objective of integrated environmental management (section 23 of NEMA, refers) is, *inter alia*, to "*identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks*

and consequences and alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising benefits, and promoting compliance with the principles of environmental management" set out in the NEMA.

The identification, evaluation, consideration and comparative assessment of alternatives directly relate to the management of impacts. Related to every identified impact, alternatives, modifications or changes to the activity must be identified, evaluated, considered and comparatively considered to:

- in terms of negative impacts, firstly avoid a negative impact altogether, or if avoidance is not possible alternatives to better mitigate, manage and remediate a negative impact and to compensate for/offset any impacts that remain after mitigation and remediation; and
- in terms of positive impacts, maximise impacts.

1. DETAILS OF THE IDENTIFIED AND CONSIDERED ALTERNATIVES AND INDICATE THOSE ALTERNATIVES THAT WERE FOUND TO BE FEASIBLE AND REASONABLE

Note: A full description of the investigation of alternatives must be provided and motivation if no reasonable or feasible alternatives exists.

(a) Property and **location/site** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

Location alternatives – The location of the proposed activity is site specific as it has to link with existing road infrastructure and the purpose of the proposed development is to alleviate traffic congestion on a specific road within a specific area therefore no other feasible or reasonable location alternatives exists.

(b) **Activity** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

Activity alternatives- The proposed lengthening and expansion of existing road infrastructure within the Belhar – Kuilsrivier area is the only reasonable and feasible activity alternative assessed as it is what is needed to alleviate traffic congestion within a specific area.

(c) **Design or layout** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

Layout alternatives - Two layout alternatives have been assessed thus far:

Layout Alternative 1 – Entails the development of the proposed Erica Drive/Belhar Main Road extension of approximately 3,24km in length going underneath the R300.
*Reasons why Layout Alternative 1 is **not** preferred:*

- There are existing wetland areas to the east and west of the R300 road and if the proposed new road should be constructed crossing underneath the R300 this will potentially lead to the creation of a "dam" which will require significant stormwater infrastructure developments within the wetland areas.
- Construction underneath the R300 will also cause significant traffic congestion on the R300 during the construction phase.

Layout Alternative 2 - Entails the development of the proposed Erica Drive/Belhar Main Road extension of approximately 3,24km in length going over the R300.
*Reasons why Layout Alternative 1 **is preferred**:*

- There are existing wetland areas to the east and west of the R300 road and constructing the new road over the R300 will have the least significant negative impact on the surrounding wetland areas and associated stormwater management impacts.
- Construction over the R300 will also cause less significant traffic congestion on the R300 during the construction phase.

(d) **Technology** alternatives (*e.g.,* to reduce resource demand and increase resource use efficiency) to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

Technology alternatives – The most up to date technology alternatives will be incorporated into the approved layout and design of the proposed development during the time of development.

(e) **Operational** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

Operational alternatives – No operational alternatives were considered as the proposed activity is for the construction of a road to be maintained by the municipality after construction completion.

(f) The option of **not implementing** the activity (the '*No-Go*' Option):

The No-Go Option- The No-Go option will result in the site remaining as it is - degraded vacant municipal land. The proposed activity will result in the expansion of the City's road network, thus alleviating congestion and making areas more accessible. The Municipality is mandated in terms of the PSDF to provide and maintain road infrastructure and networks. The activity is therefore in line with the objectives manifested in the PSDF and local Service Delivery Implementation Plan.

(g) **Other** alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts, or detailed motivation if no reasonable or feasible alternatives exist:

NA

(h) Provide a **summary** of all alternatives investigated and the outcome of each investigation:

Location alternatives – The location of the proposed activity is site specific as it has to link with existing road infrastructure and the purpose of the proposed development is to alleviate traffic congestion on a specific road within a specific area therefore no other feasible or reasonable location alternatives exists.

Activity alternatives- The proposed lengthening and expansion of existing road infrastructure within the Belhar – Kuilsrivier area is the only reasonable and feasible activity alternative assessed as it is what is needed to alleviate traffic congestion within a specific area.

Layout alternatives - Two layout alternatives have been assessed thus far:

Layout Alternative 1 – Entails the development of the proposed Erica Drive/Belhar Main Road extension of approximately 3,24km in length going underneath the R300.
*Reasons why Layout Alternative 1 is **not** preferred:*

- There are existing wetland areas to the east and west of the R300 road and if the proposed new road should be constructed crossing underneath the R300 this will potentially lead to the creation of a "dam" which will require significant stormwater infrastructure developments within the wetland areas.
- Construction underneath the R300 will also cause significant traffic congestion on the R300 during the construction phase.

Layout Alternative 2 - Entails the development of the proposed Erica Drive/Belhar Main Road extension of approximately 3,24km in length going over the R300.
*Reasons why Layout Alternative 1 **is preferred**:*

- There are existing wetland areas to the east and west of the R300 road and constructing the new road over the R300 will have the least significant negative impact on the surrounding wetland areas and associated stormwater management impacts.
- Construction over the R300 will also cause less significant traffic congestion on the R300 during the construction phase.

Technology alternatives – The most up to date technology alternatives will be incorporated into the approved layout and design of the proposed development during the time of development.

Operational alternatives – No operational alternatives were considered as the proposed activity is for the construction of a road to be maintained by the municipality after construction completion.

The No-Go Option- The No-Go option will result in the site remaining as it is - degraded vacant municipal land. The proposed activity will result in the expansion of the City's road network, thus alleviating congestion and making areas more accessible. The Municipality is mandated in terms of the PSDF to provide and maintain road infrastructure and networks. The activity is therefore in line

with the objectives manifested in the PSDF and local Service Delivery Implementation Plan.

(i) Provide a detailed **motivation for not further considering** the alternatives that were found not feasible and reasonable, including a description and proof of the investigation of those alternatives:

Refer to points (a) – (f) above.

2. PREFERRED ALTERNATIVE

(a) Provide a **concluding statement** indicating the preferred alternative(s), including preferred location, site, activity and technology for the development.

Layout Alternative 2 - Entails the development of the proposed Erica Drive/Belhar Main Road extension of approximately 3,24km in length going over the R300.
Reasons why Layout Alternative 1 ***is preferred****:*

- There are existing wetland areas to the east and west of the R300 road and constructing the new road over the R300 will have the least significant negative impact on the surrounding wetland areas and associated stormwater management impacts.
- Construction over the R300 will also cause less significant traffic congestion on the R300 during the construction phase.

SECTION F: ENVIRONMENTAL ASPECTS ASSOCIATED WITH THE ALTERNATIVES

Note: The information in this section must be DUPLICATED for all the feasible and reasonable ALTERNATIVES.

1. DESCRIBE THE ENVIRONMENTAL ASPECTS ASSOCIATED WITH THE PROPOSED DEVELOPMENT AND ITS ALTERNATIVES, FOCUSING ON THE FOLLOWING:

(a) Geographical, geological and physical aspects:

The proposed development will lead to the hardening of surfaces and transformation of geographical aspects such as transformed indigenous vegetation areas, wetlands, river tributary and inland sand dunes.

The development area west and immediately east of the R300 is undulating with sand dunes. These dunes have however been heavily disturbed and are more likely man-made to the most extent due to land excavations and stock piling that occurred while establishing the surrounding urban developments and landfill site. Most of the development area east of the R300 is flat with gradual slopes. The highest elevation of the area west of the R300 is 64m and the lowest 54m, the highest elevation of the area east of the R300 is 54m (dune immediately west of R300) and lowest 40m (the Kuils River tributary).

The geology of the area is characterised by loose and gravelly grey sandy top soil highly erodible; and mottled, highly weathered subsoil with signs of wetness within lower lying depressions where wetlands occurs. The soils at Kuils River are underlain by the Kuils River-Helderberg Granite pluton (Theron *et al.,* 1992).

The site is located within dense urban residential areas. The area west of the R300 is also bordered by a landfill site. The channelled Kuils River tributary crosses the eastern half of the development site along Belhar Road and the R300 crosses the western half. As previously mentioned the site has been significantly disturbed and transformed due to urban development. Ongoing illegal waste dumping is taking place at various locations within the area west of the R300 adjacent to the landfill site. Several artificial and natural wetlands also occur throughout the proposed development site that are unavoidable and will be impacted upon.

(b) Ecological aspects:

Will the proposed development and its alternatives have an impact on CBAs or ESAs? If yes, please explain: Also include a description of how the proposed development will influence the quantitative values (hectares/percentage) of the categories on the CBA/ESA map.	YES	~~NO~~

The City of Cape Town ("CoCT") regularly updates and revises its Biodiversity Network as sites are lost and new information becomes available (Holmes et al 2008), and the latest map (dated 2017) indicates that no mapped terrestrial vegetation CBAs or ESAs occurs on the proposed development site. However approximately 5.7ha of the proposed development site is mapped as aquatic/wetland Critical Ecological Support Area.

The natural to semi-natural wetland CESAs are essential in maintaining ecological functioning of ecosystems found on the site and surrounds. Management objective/s is to maintain current ecological functioning.

However it is clear from the site investigations conducted that the current demarcation of the CESA wetlands as mapped for the specific site was not groundtruthed for the compilation of the City of Cape Town's Biodiversity Network (2017) report. Freshwater ecosystem specialists were appointed to conduct a freshwater ecological impact assessment and also delineate the actual remaining wetland areas on the proposed development site and concluded that a natural wetland flat area of approximately 0.28ha in total will be permanently transformed/filled during the proposed development for which an offset is required. An initial offset investigation was undertaken to ascertain the functional hectare equivalents and the habitat hectare equivalents required to offset the anticipated 0,28 ha loss of the western wetland flat. It was determined that 0,2 functional hectare equivalents and 0,7 habitat hectare equivalents of wetland area need to be conserved off site to offset this loss.

The Kuils River flows through the proposed Erica Drive dualling from north to south. The freshwater ecological features on the site have been totally modified and channelled. On the site, surrounding land use, the channelling of the river and the existing constructed bridge has resulted in all of the indigenous riparian vegetation being removed from the river and streams. In terms of the importance and sensitivity of the features, the numerous impacts have greatly reduced their species richness and diversity. There is an existing bridge structure located on and next to the proposed bridge/road development over the Kuils River tributary and the tributary has been completely transformed due to canalisation. The overall significance of the potential negative impacts on the Kuils River is therefore expected to be of low significance due to the existing transformed state of the affected areas.

The 2017 City of Cape Town Biodiversity Network map indicates that none of the proposed development areas or directly adjacent areas has been mapped as terrestrial CBAs nor ESAs.

Refer to Appendix G: Specialist Report for more detailed descriptions of the potential impacts on the terrestrial botanical and freshwater ecosystems as assessed.

	YES	~~NO~~

The vegetation and ecology within the study area has been heavily disturbed for a long time, and no significant patches of intact natural vegetation remain within the non-wetland areas. Terrestrial botanical diversity is generally very low compared to what it was prior to human disturbance.

Two vegetation types would originally have been present in the area, all of which are now regarded as threatened on a national basis (one Critically Endangered and one Endangered).

Of the Critically Endangered Cape Flats Sand Fynbos vegetation mainly none to very little indigenous vegetation remains, therefore these areas have been indicated as **Low terrestrial botanical sensitivity**, presenting no constraints to the proposed development. Loss of this area would be of **negligible botanical significance at a regional scale**.

The remaining proposed development area represents significantly disturbed secondary Endangered Cape Flats Dune Strandveld vegetation. Limited indigenous vegetation diversity remains within the areas marked as Medium terrestrial botanical sensitivity areas, with no plant Species of Conservation Concern. The loss of the **Medium sensitivity vegetation** in the study area is likely to be of **Medium to Low negative significance** at a regional scale, before and after mitigation.

It is expected that the proposed development will lead to the clearance of less than 2ha of homogenous indigenous vegetation species and no species of conservation concern.

Although development of the Medium terrestrial botanical sensitivity area has been rated as having a potential Medium negative significance at a regional scale if other factors such as ongoing human disturbances and urban development, alien plant encroachment, low ecological connectivity etc. are taken into consideration it is believed that the entire proposed development will have a Low negative significance on the terrestrial habitat of the site and surrounds. If is therefore concluded that the proposed development could therefore be authorised without causing significant negative terrestrial botanical impacts.

These areas also have a low to moderate rehabilitation potential. Rehabilitation will be intensive and would have to involve reintroduction of specimens, alien and weed clearance and maintenance and dune stabilisation with indigenous vegetation etc. and due to the location within the urban area, low ecological connectivity value and small size of the site this will not be a viable site for rehabilitation efforts.

This botanical assessment is informed by:

- The fact that the study area is not mapped as a terrestrial CBA or ESA in the City of Cape Town Biodiversity Network.
- The low indigenous plant species diversity in the study area
- The high infestation of alien and weed plant species
- Existing infrastructure and developments on the site and surrounds

- No plant or animal Species of Conservation Concern recorded on site nor are they expected to breed/occur on the proposed development site
- A complete lack of any significant indigenous vegetation species diversity or presence in at least 60% of the study area, suggesting low rehabilitation potential
- The heavily disturbed soils, suggesting low rehabilitation potential
- The limited ecological connectivity of the site with ongoing disturbances such as urban development, waste and soil dumping, site clearance, storm water management, excavations etc.

The City of Cape Town ("CoCT") regularly updates and revises its Biodiversity Network as sites are lost and new information becomes available (Holmes et al 2008), and the latest map (dated 2017) indicates that no mapped terrestrial vegetation CBAs or ESAs occurs on the proposed development site. However approximately 5.7ha of the proposed development site is mapped as aquatic/wetland Critical Ecological Support Area.

The Kuils River flows through the proposed Erica Drive dualling from north to south. The freshwater ecological features on the site have been totally modified and channelled. On the site, surrounding land use, the channelling of the river and the existing constructed bridge has resulted in all of the indigenous riparian vegetation being removed from the river and streams. In terms of the importance and sensitivity of the features, the numerous impacts have greatly reduced their species richness and diversity.

N. Hanekom identified nine wetlands within close proximity (100m) of the proposed development of which six of these wetlands as identified on site will be impacted upon. The impacted wetlands have largely modified wetland integrity as a large loss of natural habitat, biota and basic ecosystem functions has occurred. The Wetland Health Present Ecological Status of the impacted wetlands was assessed to be largely modified and in a moderate ecological importance state and sensitivity.

There are two conservation mapping initiatives of relevance to the project, the Freshwater Ecosystem Priority Areas (FEPA) map which is available for the entire South Africa and the 2017 City of Cape Town Biodiversity Network Map. FEPAs are strategic spatial priorities for conserving freshwater ecosystems and associated biodiversity that were determined through a process of systematic biodiversity planning and were identified using a range of criteria for serving ecosystems and associated biodiversity of rivers, wetlands and estuaries. These rivers should be kept in their current condition, should not be degraded any further than its current moderately modified condition and it should be considered for rehabilitation.

The Kuils River at the study area is mapped as a FEPA River that is considered to be largely modified and should not be allowed to be degraded or modified further. However the areas to be impacted upon by the proposed development have been completely transformed due to canalisation and an existing bridge structure. The impacted area of the Kuils River is not classified as a wetland or CESA in the City of Cape Town Biodiversity Network (2017).

There are no FEPA wetlands mapped within the study area. The proposed road alignment will impact on six wetlands (five artificial and one natural). Wetlands 1, 2, 3, 4, 7 and 8 which were originally mapped as part of three larger wetlands in the City of Cape Town Biodiversity Network (2017). According to the freshwater resource verification study conducted, by Scientific Aquatic Services ("SAS") during September 2018, of the nine wetlands delineated by N. Hanekom within the study area only two is considered to be natural and can be classified as a wetland flat. The wetlands were all also classified as a CESA in the City of Cape Town Biodiversity Network (2017). In the CoCT Biodiversity Network report the mapping confidence for these wetlands is however indicated as Low Confidence and from the assessments conducted it is therefore clear that the mapping was not groundtruthed.

The area surrounding the proposed new portion of Erica Drive, which is to be developed (western portion of the linear development), is considered to be significantly disturbed by anthropogenic activities. Such activities include the development of the Bellville South Industrial waste disposal site (north of the proposed Erica Drive portion), the excavation and shaping of informal roads within the surrounding area and the infilling and the disposal of household refuse.

According to the Freshwater Assessment Report (Hanekom, 2017), the western portion of the linear development has eight wetland features (numbered 1 – 8). During the field assessment, undertaken in September 2018 by SAS, only one of the previously identified wetlands in the western portion of the proposed development route (approximating 0,48ha in extent) was considered to be natural and can be classified as a wetland flat (wetland number 2).

Wetland number 9 located within the eastern portion of the linear development was also identified to be a natural system during the recent field verification by SAS (approximating 0,38ha in extent) and was also classified as a wetland flat.

The remaining areas previously identified as wetlands (Hanekom, 2017) were confirmed during the recent field verification to be artificially impounded areas or highly disturbed areas, where opportunistic invasive reed species (such as *Arundo donax*) have established due to water ponding within these excavated areas.

The wetland flat (0.48 ha) (nr. 2) is proposed to be traversed by the western portion of the proposed linear development. With the inclusion of an additional 10m buffer from the edge of the linear development that can be assumed will be lost as a result of the linear development and edge effects associated with the construction activities, it was calculated that this would cause a loss of 0.28 ha of wetland area.

The wetland flat (0.38 ha) (nr. 9) located along the eastern portion of the proposed linear development would be un-impacted by the proposed road upgrade, however, it must be made clear to any contractors that this area may not be utilised for a contractor's camp or any laydown areas.

An initial offset investigation was undertaken to ascertain the functional hectare equivalents and the habitat hectare equivalents required to offset the anticipated 0,28 ha loss of the western wetland flat nr. 2. It was determined that 0,2 functional hectare equivalents and 0,7 habitat hectare equivalents of wetland area need to be conserved to offset this loss.

It is, therefore, recommended that feasible wetland offset receiving areas be investigated in order to compensate for the hectare equivalents lost. These targeted wetland should ideally be of the same HGM wetland type and located within the same local catchment as the western wetland flat. As part of the abovementioned assessment, a rehabilitation and implementation plan must be compiled indicating what actions must be undertaken, both during construction and for the operational phase to ensure that the hectare equivalents lost are fully compensated for, and the overall PES of the receiving wetland improved in order to meet the functional hectare equivalent requirements.

Refer to Appendix G: Specialist Report for further detailed descriptions of the terrestrial botanical and freshwater ecosystems as assessed.

Will the proposed development and its alternatives have an impact on any populations of threatened plant or animal species, and/or on any habitat that may contain a unique signature of plant or animal species? If yes, please explain:	YES and NO	

Refer to information as available in the columns above.

Although some indigenous vegetation (originally part of critically endangered and endangered vegetation types) and wetland habitats remains on site no terrestrial or aquatic plant or animal species of conservation concern were recorded at the time of the survey nor are expected to breed or "stay" on the proposed development site.

Describe the manner in which any other biological aspects will be impacted:
NA

Will the proposed development also trigger section 63 of the NEM: ICMA?	~~YES~~	NO

If yes, describe the following:
(i) the extent to which the applicant has in the past complied with similar authorisations;
(ii) whether coastal public property, the coastal protection zone or coastal access land will be affected, and if so, the extent to which the proposed development proposal or listed activity is consistent with the purpose for establishing and protecting those areas;
(iii) the estuarine management plans, coastal management programmes, coastal management lines and coastal

management objectives applicable in the area; (iv) the likely socio-economic impact if the listed activity is authorised or is not authorised; (v) the likely impact of coastal environmental processes on the proposed development; (vi) whether the development proposal or listed activity— (a) is situated within coastal public property and is inconsistent with the objective of conserving and enhancing coastal public property for the benefit of current and future generations; (b) is situated within the coastal protection zone and is inconsistent with the purpose for which a coastal protection zone is established as set out in section 17 of NEM: ICMA; (c) is situated within coastal access land and is inconsistent with the purpose for which coastal access land is designated as set out in section 18 of NEM: ICMA; (d) is likely to cause irreversible or long-lasting adverse effects to any aspect of the coastal environment that cannot satisfactorily be mitigated; (e) is likely to be significantly damaged or prejudiced by dynamic coastal processes; (f) would substantially prejudice the achievement of any coastal management objective; or (g) would be contrary to the interests of the whole community; (vii) whether the very nature of the proposed activity or development requires it to be located within coastal public property, the coastal protection zone or coastal access land; (viii) whether the proposed development will provide important services to the public when using coastal public property, the coastal protection zone, coastal access land or a coastal protected area; and (ix) the objects of NEM: ICMA, where applicable.
NA

(c) Social and Economic aspects:

What is the expected capital value of the project on completion?	Unknown	
What is the expected yearly income or contribution to the economy that will be generated by or as a result of the project?	R0	
Will the project contribute to service infrastructure?	YES	~~NO~~
Is the project a public amenity?	YES	~~NO~~
How many new employment opportunities will be created during the development phase?	Unknown	
What is the expected value of the employment opportunities during the development phase?	Unknown	
What percentage of this will accrue to previously disadvantaged individuals?	As much as possible	
How will this be ensured and monitored (please explain):		
Employment opportunities to be allocated as according to municipal policy/guidelines which promote the employment and appointment of previously disadvantaged individuals.		
How many permanent new employment opportunities will be created during the operational phase of the project?	0	
What is the expected current value of the employment opportunities during the first 10 years?	Unknown	
What percentage of this will accrue to previously disadvantaged individuals?	Unknown	
How will this be ensured and monitored (please explain):		
Employment opportunities to be allocated as according to municipal policy/guidelines which promote the employment and appointment of previously disadvantaged individuals.		
Any other information related to the manner in which the socio-economic aspects will be impacted:		
-		

(d) Heritage and Cultural aspects:

Notice of Intent to Develop has been submitted to Heritage Western Cape to determine impacts and specialist studies required in terms of cultural and historical aspects potentially to be impacted upon. HWC commented: "*You are hereby notified that since there is no reason to believe that the proposed development will impact on heritage resources, no further action under section 38 of the National Heritage Resources Act (act 25 of 1999) is required. However, should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the excavation of the activities above, all works must be stopped immediately and Heritage Western cape must be notified without delay*."

2. WASTE AND EMISSIONS

(a) Waste (including effluent) management

Will the development proposal produce waste (including rubble) during the development phase?	YES	~~NO~~

If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type?	Unknown
Waste is mainly expected to be produced during the construction phase. Types of "construction phase waste" may include: • Overburden material from land clearing including plant materials and sand. • Waste oils i.e. from construction machinery and vehicles. • Sewage from portable toilets. • General domestic waste i.e. food waste and packaging from construction workers. • Construction packing materials i.e. empty cement bags, plastic ties and wrapping etc. • Illegally dumped domestic waste as already present on proposed development site which will have to be removed before construction can commence. • Runoff waste water i.e. from cement mixing areas. There is no reasonable or feasible method to calculate the estimated quantities that will be produced for each of these waste types due to the amount of potential variables which exists i.e. amount of total staff to be employed, amount and type of construction materials to be used etc.	

Will the development proposal produce waste during its operational phase?	~~YES~~	NO
If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type?	NA m^3	
NA		

Will the development proposal require waste to be treated / disposed of on site?	~~YES~~	NO
If yes, indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type per phase of the proposed development to be treated/disposed of?	NA m^3	
NA		
If no, where and how will the waste be treated / disposed of? Please explain. Indicate the types of waste (actual type of waste, *e.g.* oil, and whether hazardous or not) and estimated quantity per type per phase of the proposed development to be treated/disposed of?	Unknown	
All non-hazardous and hazardous waste to be suitably and temporarily stored at the construction camp and disposed of at a licensed landfill and/or hazardous waste handling facility at least once a week.		
Has the municipality or relevant authority confirmed that sufficient capacity exists for treating / disposing of the waste to be generated by the development proposal? If yes, provide written confirmation from the municipality or relevant authority.	~~YES~~	NO
Will the development proposal produce waste that will be treated and/or disposed of at another facility other than into a municipal waste stream?	Potentially – Yes (it is the applicant's prerogative to decide whether or not he/she wants to appoint a private waste handling company who might dispose of/treat the collected waste elsewhere outside of the municipal waste stream)	
If yes, has this facility confirmed that sufficient capacity exists for treating / disposing of the waste to be generated by the development proposal? Provide written confirmation from the facility.	~~YES~~	~~NO~~
Does the facility have an operating license? (If yes, please attach a copy of the licence.)	~~YES~~	~~NO~~
Facility name:		
Contact person:		
Cell:	Postal address:	
Telephone:	Postal code:	
Fax:	E-mail:	

Describe the measures that will be taken to reduce, reuse or recycle waste:
As per standard EMP waste management requirements to reduce, reuse or recycle waste must be promoted and implemented as far as feasibly and reasonable practical and financially possible.

(b) Emissions into the atmosphere

Will the development proposal produce emissions that will be released into the atmosphere?	YES	~~NO~~
If yes, does this require approval in terms of relevant legislation?	~~YES~~	NO
If yes, what is the approximate volume(s) of emissions released into the atmosphere?	Unknown	
Describe the emissions in terms of type and concentration and how these will be avoided/managed/treated/mitigated:		
Potential construction vehicle emission to be produced during the construction phase. Amounts to be produced unknown – will depend on type, amount and condition of construction vehicles used.		

3. WATER USE

(a) Indicate the source(s) of water for the development proposal by highlighting the appropriate box(es).

~~Municipal~~	~~Water board~~	~~Groundwater~~	~~River, Stream, Dam or Lake~~	~~Other~~	~~The project will not use water~~

Note: Provide proof of assurance of water supply (e.g. Letter of confirmation from the municipality / water user associations, yield of borehole)

(b) If water is to be extracted from a groundwater source, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	NA	m^3

(c) Does the development proposal require a water use permit / license from DWS?	YES	~~NO~~
If yes, please submit the necessary application to the DWS and attach proof thereof to this application as an Appendix.		

The activity involves the infill/removal of material from a watercourse i.e wetlands and tribury. Thus triggering a listed activity in terms of section 21 (c) and (i) of the National Water Act. As such a water use licence is required prior to the commencement of the activity.

Proof of pre-application meeting held with DWS will be submitted with the application as per the SOP and "one environmental system" requirements.

(d) Describe the measures that will be taken to reduce water demand, and measures to reuse or recycle water:

Water to be used during the construction phase i.e. for cement mixing to be sourced from non-potable water resources as far as possible.

4. POWER SUPPLY

(a) Describe the source of power *e.g.* municipality / Eskom / renewable energy source.

NA

(b) If power supply is not available, where will power be sourced?

NA

5. ENERGY EFFICIENCY

(a) Describe the design measures, if any, that have been taken to ensure that the development proposal will be energy efficient:

NA

(b) Describe how alternative energy sources have been taken into account or been built into the design of the project, if any:

NA

6. TRANSPORT, TRAFFIC AND ACCESS

Describe the impacts in terms of transport, traffic and access.

The objective of the proposed development is to alleviate traffic congestion within the Belhar – Kuilsrivier area therefore the operational phase of the proposed activity will have a positive impact on transport, traffic and access infrastructure.

During the construction phase the proposed activities will have temporary negative impacts on the

traffic flow within the relevant Belhar – Kuilsrivier areas leading to additional traffic congestion. A traffic management plan for the construction phase must be compiled by the construction company (still to be appointed) and approved by the engineers and the CoCT officials before construction commences.

7. NUISANCE FACTOR (NOISE, ODOUR, etc.)

Describe the potential nuisance factor or impacts in terms of noise and odours.

Noise

Noise due to construction machinery and activities during the construction/development phase noise disturbance to the directly adjacent land users/ owners are expected to occur. It is not anticipated that the noise will be considerable and will only be temporary. Noise levels produced during the construction phase must not exceed the allowable maximum urban noise levels and must be regulated by the requirements of the EMP.

Odour

No odours are expected to be produced during the proposed construction and/or operational phases.

Note: Include impacts that the surrounding environment will have on the proposed development.

8. OTHER

Refer to Section G below for summary of potential positive and negative impacts as assessed.

SECTION G: IMPACT ASSESSMENT, IMPACT AVOIDANCE, MANAGEMENT, MITIGATION AND MONITORING MEASURES

1. METHODOLOGY USED IN DETERMINING AND RANKING ENVIRONMENTAL IMPACTS AND RISKS ASSOCIATED WITH THE ALTERNATIVES

(a) Describe the **methodology** used in determining and ranking the nature, significance consequences, extent, duration and probability of potential environmental impacts and risks associated with the proposed development and alternatives.

The assessment criteria were developed based on the Department of Environmental Affair's Integrated Environmental Management Series guideline documents.

Criteria	**Description**		
Nature	a description of what causes the effect, what will be affected, and how it will be affected.		
	Type	**Score**	**Description**
Extent (E)	None (No)	1	Footprint
	Site (S)	2	On site or within 100 m of the site
	Local (L)	3	Within a 20 km radius of the centre of the site
	Regional (R)	4	Beyond a 20 km radius of the site
	National (Na)	5	Crossing provincial boundaries or on a national / land wide scale
Duration (D)	Short term (S)	1	0 – 1 years
	Short to medium (S-M)	2	2 – 5 years
	Medium term (M)	3	5 – 15 years
	Long term (L)	4	> 15 years
	Permanent(P)	5	Will not cease
Magnitude (M)	Small (S)	0	will have no effect on the environment
	Minor (Mi)	2	will not result in an impact on processes
	Low (L)	4	will cause a slight impact on processes
	Moderate (Mo)	6	processes continuing but in a modified way
	High (H)	8	processes are altered to the extent that they temporarily cease
	Very high (VH)	10	results in complete destruction of patterns and permanent cessation of processes.
Probability (P) the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned	Very improbable (VP)	1	probably will not happen
	Improbable (I)	2	some possibility, but low likelihood
	Probable (P)	3	distinct possibility
	Highly probable (HP)	4	most likely
	Definite (D)	5	impact will occur regardless of any prevention measures
Significance (S)	Determined through a synthesis of the characteristics described above: **S = (E+D+M) x P** Significance can be assessed as low, medium or high		
Low: < 30 points:	The impact would not have a direct influence on the decision to develop in the area		
Medium: 30 – 60 points:	The impact could influence the decision to develop in the area unless it is effectively mitigated		
High: > 60 points:	The impact must have an influence on the decision process to develop in the area		
No significance	When no impact will occur or the impact will not affect the environment		
Status	Positive (+)		Negative (-)
The degree to which the impact can be reversed	Completely reversible (R)	90-100%	The impact can be mostly to completely reversed with the implementation of the correct mitigation and rehabilitation measures.
	Partly reversible (PR)	6-89%	The impact can be partly reversed providing that mitigation measures as stipulated in the EMP are implemented and rehabilitation measures are undertaken
	Irreversible (IR)	0-5%	The impact cannot be reversed, regardless of the mitigation or rehabilitation measures taking place
The degree to which the impact may cause irreplaceable loss of resources	Resource will not be lost (R)	1	The resource will not be lost or destroyed provided that mitigation and rehabilitation measures as stipulated in the EMP are implemented
	Resource may be partly destroyed (PR)	2	Partial loss or destruction of the resources will occur even though all management and mitigation measures as stipulated in the EMP are implemented
	Resource cannot be replaced (IR)	3	The resource cannot be replaced no matter which management or mitigation measures are implemented.
The degree to which the impact can be mitigated	Completely mitigatable (CM)	1	The impact can be completely mitigated providing that all management and mitigation measures as stipulated in the EMP are implemented
	Partly mitigatable (PM)	2	The impact cannot be completely mitigated even though all management and mitigation measures as stipulated in the EMP are implemented. Implementation of these measures will provide

			a measure of mitigatibility
	Un-mitigatable (UM)	3	The impact cannot be mitigated no matter which management or mitigation measures are implemented.

(b) Please describe any gaps in knowledge.

EAP is only knowledgeable with regards to the potential environmental and ecosystems aspects. Limited knowledge with regard to the potential negative impacts on traffic during the construction phase.

(c) Please describe the underlying assumptions.

In undertaking the investigation and compiling this report, the following has been assumed:
- The information provided by the client, specialists and engineers is accurate and unbiased;
- The scope of this investigation is to assess the direct and cumulative environmental impacts associated with the development; and
- Should the proposed project be authorised, the applicant will incorporate the recommendations and mitigation measures outlined in this BAR, the EMP and the EA into the detailed design and construction contract specifications and operational management system for the proposed project.

(d) Please describe the uncertainties.

None at this stage.

(e) Describe adequacy of the assessment methods used.

Based on the EAP's assessment information was provided to address the concerns and assess the impacts of the proposed development on the environment. Information as provided by the applicant, specialist, engineers and as collected by the EAP during site surveys etc. has been used to inform the current development proposal and impact assessment.

2. IDENTIFICATION, ASSESSMENT AND RANKING OF IMPACTS TO REACH THE PROPOSED ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE WITHIN THE SITE

Note: In this section the focus is on the identified issues, impacts and risks that influenced the identification of the alternatives. This includes how aspects of the receiving environment have influenced the selection.

(a) List the identified impacts and risks for each alternative.

Alternative 1:	**CONSTRUCTION PHASE- LAYOUT ALTERNATIVE 1** • Disturbance to subsurface geological layers (high negative impact before mitigation and high negative impact with mitigation measures); • Disturbance to the Kuils River riverbed and banks (low negative impact before mitigation and low negative impact with mitigation measures); • Impact of construction work on river hydrology/flow (medium negative impact before mitigation and low negative impact with mitigation measures); • Disturbance to wetland depressions and hydrology (high negative impact before mitigation and medium negative impact with mitigation measures); • Soil erosion (high negative impact before mitigation and low negative impact with mitigation measures); • Impacts of construction activities on the water quality of surface and underground water resources (high negative impact before mitigation and low negative impact with mitigation measures); • Increase in and accumulation of storm water runoff (high negative impact before mitigation and medium negative impact with mitigation measures); • Impact of proposed development activities on identified aquatic wetland Critical Ecological Support Areas ("CESA") (high negative impact before mitigation and medium negative impact with mitigation measures); • Impact on the Kuils River riparian habitat (medium negative impact before

	mitigation and low negative impact with mitigation measures); • Impact on the naturally occurring terrestrial and aquatic fauna and avifauna occurring on the site and surrounds (medium negative impact before mitigation and medium negative impact with mitigation measures); • Impact on the indigenous terrestrial flora present in the area (medium negative impact before mitigation and medium negative impact with mitigation measures); • Introduction of alien and weed plant species (medium negative impact before mitigation and low negative impact with mitigation measures); • Increased temporary construction job opportunities (medium positive impact) • Traffic impacts due to construction on and along urban roads with high traffic volumes (high negative impact before mitigation and medium negative impact with mitigation measures) • Impact of construction workers on local community safety and security (medium negative impact before mitigation and low negative impact with mitigation measures) • Impact of litter or waste form the construction site on the surrounding communities (medium negative impact before mitigation and low negative impact with mitigation measures) • The potential impact of the proposed development on archaeological, palaeontological and heritage remains (low negative impact before mitigation and low negative impact with mitigation measures) • Noise due to construction machinery (low negative impact before mitigation and low negative impact with mitigation measures) • Increased dust levels due to site clearance and construction activities (medium negative impact before mitigation and low negative impact with mitigation measures) • Impact of construction activities on the surrounding land users/owners and tourist's visual landscape of the area (low negative impact before mitigation and low negative impact with mitigation measures) **<u>OPERATIONAL PHASE- LAYOUT ALTERNATIVE 1</u>** • Increase in stormwater runoff and accumulation due to cleared and transformed/ developed vegetation and wetland areas (high negative impact before mitigation and low negative impact with mitigation measures); • Impact on hydrology/flow due to impedance (high negative impact before mitigation and low negative impact with mitigation measures); • Impact of operational and maintenance activities of proposed development on remaining indigenous vegetation and wetland areas (medium negative impact before mitigation and low negative impact with mitigation measures); • Spread of alien invasive vegetation associated with the soil disturbance caused by construction leading to habitat degradation (medium negative impact before mitigation and low negative impact with mitigation measures) • Expansion and upgrade of existing road infrastructure within the Belhar – Kuilsrivier area (high positive impact on traffic congestion within the area); • Noise due to traffic along proposed roads (high negative impact before mitigation and medium negative impact with mitigation measures); • Impact of development on the surrounding land users / owners and tourists visual landscape of the area (low negative impact before mitigation and low negative impact with mitigation measures);

	• Impact of new road on the health of surrounding residents due to increase in traffic emissions (medium negative impact before mitigation and low negative impact with mitigation measures) • Impact on planning policies (high negative impact before mitigation and high positive impact with mitigation measures); **DECOMMISSIONING AND CLOSURE PHASE- LAYOUT ALTERNATIVE 1** • The decommissioning of the infrastructure developments are not anticipated in the near future. Impacts during this phase will however be similar to that of the construction phase. Mitigation and management measures will be related to the technology of the day and needs to be discussed at such time as decommissioning will occur. All structures must be removed and the area rehabilitated to the state as before construction had commenced (dependent upon the end land use agreement). Waste, where possible must be recycled. All concrete introduced must be removed off site to a licensed waste facility.
Alternative 2:	**CONSTRUCTION PHASE- LAYOUT ALTERNATIVE 2** • Disturbance to subsurface geological layers (high negative impact before mitigation and high negative impact with mitigation measures); • Disturbance to the Kuils River riverbed and banks (low negative impact before mitigation and low negative impact with mitigation measures); • Impact of construction work on river hydrology/flow (medium negative impact before mitigation and low negative impact with mitigation measures); • Disturbance to wetland depressions and hydrology (high negative impact before mitigation and medium negative impact with mitigation measures); • Soil erosion (high negative impact before mitigation and low negative impact with mitigation measures); • Impacts of construction activities on the water quality of surface and underground water resources (high negative impact before mitigation and low negative impact with mitigation measures); • Increase in and accumulation of storm water runoff (high negative impact before mitigation and medium negative impact with mitigation measures); • Impact of proposed development activities on identified aquatic wetland Critical Ecological Support Areas ("CESA") (high negative impact before mitigation and medium negative impact with mitigation measures); • Impact on the Kuils River riparian habitat (medium negative impact before mitigation and low negative impact with mitigation measures); • Impact on the naturally occurring terrestrial and aquatic fauna and avifauna occurring on the site and surrounds (medium negative impact before mitigation and medium negative impact with mitigation measures); • Impact on the indigenous terrestrial flora present in the area (medium negative impact before mitigation and medium negative impact with mitigation measures); • Introduction of alien and weed plant species (medium negative impact before mitigation and low negative impact with mitigation measures); • Increased temporary construction job opportunities (medium positive impact) • Traffic impacts due to construction on and along urban roads with high traffic volumes (high negative impact before mitigation and medium negative impact with mitigation measures) • Impact of construction workers on local community safety and security (medium negative impact before mitigation and low negative impact with mitigation measures) • Impact of litter or waster form the construction site on the surrounding communities (medium negative impact before mitigation and low negative impact with mitigation measures)

	• The potential impact of the proposed development on archaeological, palaeontological and heritage remains (low negative impact before mitigation and low negative impact with mitigation measures) • Increased dust levels due to site clearance and construction activities (medium negative impact before mitigation and low negative impact with mitigation measures) • Noise due to construction machinery (low negative impact before mitigation and low negative impact with mitigation measures) • Impact of construction activities on the surrounding land users/owners and tourist's visual landscape of the area (low negative impact before mitigation and low negative impact with mitigation measures) **OPERATIONAL PHASE- LAYOUT ALTERNATIVE 2** • Increase in stormwater runoff and accumulation due to cleared and transformed/ developed vegetation and wetland areas (high negative impact before mitigation and low negative impact with mitigation measures); • Impact on hydrology/flow due to impedance (high negative impact before mitigation and low negative impact with mitigation measures); • Impact of operational and maintenance activities of proposed development on remaining indigenous vegetation and wetland areas (medium negative impact before mitigation and low negative impact with mitigation measures); • Spread of alien invasive vegetation associated with the soil disturbance caused by construction leading to habitat degradation (medium negative impact before mitigation and low negative impact with mitigation measures) • Expansion and upgrade of existing road infrastructure within the Belhar – Kuilsrivier area (high positive impact on traffic congestion within the area); • Noise due to traffic along proposed roads (high negative impact before mitigation and medium negative impact with mitigation measures); • Impact of development on the surrounding land users / owners and tourists visual landscape of the area (low negative impact before mitigation and low negative impact with mitigation measures); • Impact of new road on the health of surrounding residents due to increase in traffic emissions (medium negative impact before mitigation and low negative impact with mitigation measures) Impact on planning policies (high negative impact before mitigation and high positive impact with mitigation measures) **DECOMMISSIONING AND CLOSURE PHASE- LAYOUT ALTERNATIVE 2** • The decommissioning of the infrastructure developments are not anticipated in the near future. Impacts during this phase will however be similar to that of the construction phase. Mitigation and management measures will be related to the technology of the day and needs to be discussed at such time as decommissioning will occur. All structures must be removed and the area rehabilitated to the state as before construction had commenced (dependent upon the end land use agreement). Waste, where possible must be recycled. All concrete introduced must be removed off site to a licensed waste facility.
No-go Alternative:	**CONSTRUCTION PHASE- NO-GO/NO-DEVELOPMENT ALTERNATIVE** • Increased temporary construction job opportunities (medium negative impact as no temporary construction jobs will be created) **OPERATIONAL PHASE- NO-GO/NO-DEVELOPMENT ALTERNATIVE** • Expansion and upgrade of existing road infrastructure within the Belhar – Kuilsrivier area (high negative significance - ongoing successful services

	provision and traffic congestion alleviation cannot be ensured/promoted);

(b) Describe the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts can be reversed; may cause irreplaceable loss of resources; and can be avoided, managed or mitigated.

The following table serves as a guide for summarising each alternative. The table should be repeated for each alternative to ensure a comparative assessment. (The EAP has to select the relevant impacts identified in blue in the table below for each alternative and repeat the table for each impact and risk).

Note: The EAP may decide to include this section as Appendix J to the BAR.

Refer to Appendix J for Impact Assessment Tables.

(c) Provide a summary of the site selection matrix.

Layout Alternative 1 – Entails the development of the proposed Erica Drive/Belhar Main Road extension of approximately 3,24km in length going underneath the R300.
*Reasons why Layout Alternative 1 is **not preferred**:*

- There are existing wetland areas to the east and west of the R300 road and if the proposed new road should be constructed crossing underneath the R300 this will potentially lead to the creation of a "dam" which will require significant stormwater infrastructure developments within the wetland areas.
- Construction underneath the R300 will also cause significant traffic congestion on the R300 during the construction phase.

Layout Alternative 2 - Entails the development of the proposed Erica Drive/Belhar Main Road extension of approximately 3,24km in length going over the R300.
*Reasons why Layout Alternative 1 **is preferred**:*

- There are existing wetland areas to the east and west of the R300 road and constructing the new road over the R300 will have the least significant negative impact on the surrounding wetland areas and associated stormwater management impacts.
- Construction over the R300 will also cause less significant traffic congestion on the R300 during the construction phase.

(d) Outcome of the site selection matrix.

Refer to (c) above.

3. SPECIALIST INPUTS/STUDIES, FINDINGS AND RECOMMENDATIONS

Note: Specialist inputs/studies must be attached to this report as **Appendix G** and must comply with the content requirements set out in Appendix 6 of the EIA Regulations, 2014 (as amended). Also take into account the Department's Circular EADP 0028/2014 (dated 9 December 2014) on the "*One Environmental Management System*" and the EIA Regulations, 2014, any subsequent Circulars, and guidelines available on the Department's website (**http://www.westerncape.gov.za/eadp**).

Provide a summary of the findings and impact management measures identified in any specialist report and an indication of how these findings and recommendations have been included in the BAR.

Botanical Impact Assessment, November 2017, Eco Impact:

Concluding Remarks and Recommendations

The vegetation and ecology within the study area has been heavily disturbed for a long time, and no significant patches of intact natural vegetation remain within the non-wetland areas. Terrestrial botanical diversity is generally very low compared to what it was prior to human disturbance.

Two vegetation types would originally have been present in the area, all of which are now regarded as threatened on a national basis (one Critically Endangered and one Endangered).

Of the Critically Endangered Cape Flats Sand Fynbos vegetation mainly none to very little indigenous vegetation remains, therefore these areas have been indicated as Low terrestrial

botanical sensitivity, presenting no constraints to the proposed development. Loss of this area would be of negligible botanical significance at a regional scale.

The remaining proposed development area represents significantly disturbed secondary Endangered Cape Flats Dune Strandveld vegetation. Limited indigenous vegetation diversity remains within the areas marked as Medium terrestrial botanical sensitivity areas, with no plant Species of Conservation Concern. The loss of the Medium sensitivity vegetation in the study area is likely to be of Medium to Low negative significance at a regional scale, before and after mitigation.

No specific botanical mitigation is required for this project, other than demarcating and restricting the proposed development area throughout the construction phase and ongoing alien invasive vegetation management and removal in the disturbed areas around the development footprints.

It is expected that the proposed development will lead to the clearance of less than 2ha of homogenous indigenous vegetation species and no species of conservation concern.

Although development of the Medium terrestrial botanical sensitivity area has been rated as having a potential Medium negative significance at a regional scale if other factors such as ongoing human disturbances and urban development, alien plant encroachment, low ecological connectivity etc. are taken into consideration it is believed that the entire proposed development will have a Low negative significance on the terrestrial habitat of the site and surrounds. If is therefore concluded that the proposed development could therefore be authorised without causing significant negative terrestrial botanical impacts.

Summary of recommendations as listed in the report and additional general impact mitigation measures to be implemented:

Planning considerations and constraints-

- The construction and final development footprints should be demarcated and all proposed activities should be restricted to the proposed development area.

Construction, Operational and Rehabilitation phases -

- The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the construction, operational and decommission/rehabilitation phases.
- Undertake development activities only in identified and specifically demarcated areas as proposed.
- Demarcate no-go areas before any land clearing occurs under the supervision of an ECO. Demarcation must be clearly visible and effective and no-go area must remain demarcated throughout construction phase.
- Personnel should be restricted to the construction camp site and immediate construction areas only.
- Remove and conserve topsoil layer and overburden material for rehabilitation after construction activities have ceased
- No construction related disturbance should be allowed within the remaining adjacent indigenous vegetation and wetland areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance.
- Implement site specific erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the development footprint area and surrounds.
- Rehabilitate impacted indigenous vegetation areas outside of the development areas immediately if disturbed with indigenous vegetation species.
- Proper waste bins to be provided during construction and operation and all waste to be regularly (at least once a week) removed to municipal landfill site.

- If any fuel or hazardous materials is spilled on site it must be treated as according to EMP requirements.
- The cement mixing area must be at least 32m away from the edge of the wetlands and is only to take place within demarcated cement mixing area that is impermeable and has a berm so that no cement mix runoff water escapes from cement mixing area.
- The landowner/s must adhere to his/her legal obligations to actively eradicate and manage alien vegetation infestations present on the applicable and surrounding properties.
- Monitor soil erosion on a regular basis and rehabilitate impacted areas as soon as possible under supervision of appointed ECO.
- Storm water discharge flow must be managed and restricted in such a manner that it does not cause erosion.
- Only use topsoil as derived and conserved from the proposed development areas to be rehabilitated after development activities have ceased on the property.
- Only use vegetation indigenous to the area to rehabilitate impacted/decommissioned areas and implement ongoing monitoring of the rehabilitated areas until successful rehabilitation has taken place.
- After topsoil has been replaced ongoing monitoring and removal of alien vegetation regrowth must be conducted to ensure effective rehabilitation of indigenous vegetation.
- Decommissioned areas must be rehabilitated and planted with indigenous vegetation immediately after built structures have been removed.
- Engineered contour structures reinstated and maintained.
- Monitor rehabilitation of areas impacted outside of the proposed development areas or decommissioned areas on a 6 monthly basis until effective/successful rehabilitation has been obtained.
- If erosion is detected during or after rehabilitation implement erosion rectification and preventions measures as guided by an ECO

Eco Impact is of the opinion, and based on the survey and desk study done, that the proposed development activities; if designed and implemented according to the recommendations as provided in this report, will not have an unacceptable significantly negative impact on the environmental aspects of the site and surrounds as assessed in this report.

Fauna and Avifauna Impact Assessment, November 2017, Eco Impact:

Concluding Remarks and Recommendations

From the botanical and freshwater studies conducted it is evident that the site is highly degraded and extensively transformed leading to a habitat that is not suitable to support viable populations of fauna and avifauna species.

Most of the study area is considered to be of Low terrestrial botanical sensitivity and conservation value, with mainly no to very low indigenous plant diversity remaining. The overall undeveloped but highly degraded site is too small, transformed and isolated as located within a densely developed urban area to support any viable sustainable indigenous fauna or avifauna species of conservation concern and none was recorded during the time of the surveys.

The area west and immediately east of the R300 is considered to be of medium to low fauna and avifauna habitat sensitivity as this is where most of the remaining indigenous vegetation was recorded as well as natural and artificial wetlands, which may support terrestrial and aquatic fauna and avifauna species within the area.

The rest of the site and Kuils River area is considered to be of low fauna and avifauna habitat sensitivity as this area consists mainly of invader grass species with no shrubs and no reeds for shelter or nesting and the Kuils River tributary has been channelized.

No terrestrial or aquatic fauna or avifauna species of conservation concern were recorded during the site surveys, and none are believed to reside on the proposed development site and surrounds.

No specific fauna and avifauna mitigation is required for this project, other than demarcating and

restricting the proposed development area throughout the construction phase and ongoing alien invasive vegetation management and removal in the disturbed areas around the development footprints.

Although the proposed development has been rated as having a potential Medium negative significance at a regional scale if other factors such as ongoing human disturbances and urban development, alien plant encroachment, low ecological connectivity etc. are taken into consideration it is believed that the entire proposed development will have a **Low negative significance on the indigenous fauna and avifauna of the site and surrounds.** If is therefore concluded that the proposed development could therefore be authorised without causing significant negative fauna and avifauna impacts.

Summary of recommendations as listed in the report and additional general impact mitigation measures to be implemented:

Planning considerations and constraints-

- The construction and final development footprints should be demarcated and all proposed activities should be restricted to the proposed development area.

Construction, Operational and Rehabilitation phases -

- The project implementation process should be subject to standard Environmental Management Programme (EMP) prescripts and conditions and only proceed under supervision of a competent and diligent Environmental Control Officer, both during the construction, operational and decommission/rehabilitation phases.
- Undertake development activities only in identified and specifically demarcated areas as proposed.
- Demarcate no-go areas before any land clearing occurs under the supervision of an ECO. Demarcation must be clearly visible and effective and no-go area must remain demarcated throughout construction phase.
- Personnel should be restricted to the construction camp site and immediate construction areas only.
- Remove and conserve topsoil layer and overburden material for rehabilitation after construction activities have ceased
- No construction related disturbance should be allowed within the remaining adjacent indigenous vegetation and wetland areas. This includes no dumping of fill, no roads, and all forms of temporary disturbance.
- Implement site specific erosion and storm water runoff management measures as according to EMP requirements to prevent (or if prevention is not possible limit) any erosion from occurring on the development footprint area and surrounds.
- Rehabilitate impacted indigenous vegetation areas outside of the development areas immediately if disturbed with indigenous vegetation species.
- Proper waste bins to be provided during construction and operation and all waste to be regularly (at least once a week) removed to municipal landfill site.
- If any fuel or hazardous materials is spilled on site it must be treated as according to EMP requirements.
- The cement mixing area must be at least 32m away from the edge of the wetlands and is only to take place within demarcated cement mixing area that is impermeable and has a berm so that no cement mix runoff water escapes from cement mixing area.
- The landowner/s must adhere to his/her legal obligations to actively eradicate and manage alien vegetation infestations present on the applicable and surrounding properties.
- Monitor soil erosion on a regular basis and rehabilitate impacted areas as soon as possible under supervision of appointed ECO.
- Storm water discharge flow must be managed and restricted in such a manner that it does not cause erosion.
- Only use topsoil as derived and conserved from the proposed development areas to be rehabilitated after development activities have ceased on the property.
- Only use vegetation indigenous to the area to rehabilitate impacted/decommissioned areas

and implement ongoing monitoring of the rehabilitated areas until successful rehabilitation has taken place.

- After topsoil has been replaced ongoing monitoring and removal of alien vegetation regrowth must be conducted to ensure effective rehabilitation of indigenous vegetation.
- Decommissioned areas must be rehabilitated and planted with indigenous vegetation immediately after built structures have been removed.
- Engineered contour structures reinstated and maintained.
- Monitor rehabilitation of areas impacted outside of the proposed development areas or decommissioned areas on a 6 monthly basis until effective/successful rehabilitation has been obtained.
- If erosion is detected during or after rehabilitation implement erosion rectification and preventions measures as guided by an ECO

Eco Impact is of the opinion, and based on the survey and desk study done, that the proposed development activities; if designed and implemented according to the recommendations as provided in this report, will not have an unacceptable significantly negative impact on the environmental aspects of the site and surrounds as assessed in this report.

Freshwater Ecological Impact Assessment, November 2017, Eco Impact:

POTENTIAL IMPACTS ON THE KUILS RIVER

The affected Kuils River area is significantly degraded/transformed and has been channelled. There is also an existing bridge structure located on and next to the proposed bridge/road development over the Kuils River tributary. The overall significant of the potential impacts on the Kuils River is therefore expected to be of low significance due to the existing transformed state of the affected areas.

Proposed Mitigation Measures during Construction. Operational and Decommissioning Phases:

- The construction disturbance zone must be limited to 10m up- and downstream of the end of the new road footprint and this edge must be demarcated on site.
- No work camps or construction phase stockpiling may be located within 50m of the channel of the River or such that construction associated material or waste will flow, blow or leach into the channel.
- Any activities involving cement must be tightly controlled to prevent its passage into the river – uncured cement will increase pH and thus potentially affect ammonia toxicity.
- All refuelling areas must be adequately bunded.

POTENTIAL IMPACTS ON THE WETLANDS

Expansion and dualling of Erica Drive would have the following definite, permanent and irreversible impacts on the identified aquatic ecosystems:

The project layout would result in the complete and portions infilling of Wetlands 1, 2, 3, 4, 7 and 8 as identified and account for permanent encroachment into an total wetland area of approximately 1.23ha of the larger identified wetlands (out of a total wetland area of approximately 4.12ha).

The affected portions of the wetlands would be permanently destroyed. The ecological significance of this loss is considered of **medium negative significance** – a rating that takes account of the existing level of degradation and fragmentation of the system, but also of the rapid rate of degradation of the identified wetlands.

The following impacts are likely to occur within the wetland depressions in the area:

- Degradation as a result of compaction, excavation, passage of vehicles over wetland areas.
- Dumping of construction waste (old tar, paving, rubble) in wetland area.
- Visual degradation associated with litter (e.g. cement bags, litter from workers).
- Permanent destruction of soil function as a result of spillage of oils, fuels other contaminants from refuelling areas.
- Permanent loss of existing wetland habitat due to proposed road developments.

Without mitigation, these measures would be permanent, and would be of medium negative significance, with a medium cumulative significance rating as well, given that they are additional impacts on wetland areas that have already been shrunken as a result of the proposed layout.

Proposed Mitigation Measures during Construction. Operational and Decommissioning Phases:

- Due to the location of the proposed activities being site specific direct mitigation/prevention of impacts is not possible. It is recommended however that on - or off-site wetland offset mitigation should be implemented, to create seasonally inundated wetland depression habitat of at least the area lost or greater, and of a similar or better quality. The existing wetlands have been completely cut off from all other aquatic ecosystems and are unlikely to play any significant future role in terms of biodiversity conservation. It is therefore recommended that the existing degraded wetland areas that will not be impacted upon be rehabilitated as offset mitigation focus, with allowance made for at least area-for-area wetland replacement and that this be incorporated into the site specific stormwater management structures that must be designed for the proposed development. A wetland ecologist must have input into the final design, extent and landscaping of the recommended wetland offsets and associated stormwater management measures on site.
- The disturbance zone must be kept to a maximum of 10m beyond the edge of the new road – this must be fenced off/demarcated along the full wetland width, using wire fencing and shade cloth and access by personal and machinery beyond the demarcation may not take place, other than for purposes of daily litter collection which must take place on foot.
- Litter must be collected from the abutting wetlands on a daily basis and by foot. All litter must be stored in suitable containers and disposed of at a licensed landfill site on at least a weekly basis.
- No vehicles may be refuelled within 30m of the mapped wetland edges, and any refuelling areas must be appropriately bunded.
- Site camps and areas for the storage of construction equipment and / or waste may not be located within 30m of the edge of any demarcated wetland.
- Construction that requires infilling of a wetland must take place from the terrestrial edge, and not from the wetland edge, to minimise unnecessary damage;
- At the end of construction, allowance must be made for landscaping the area of disturbed wetland abutting the construction area plus a 10m setback area.

RECOMMENDATIONS AND CONCLUDING REMARKS

The Kuils River flows through the proposed Erica Drive dualling from north to south. The freshwater ecological features on the site have been totally modified and channelled. On the site, surrounding land use, the channelling of the river and the existing constructed bridge has resulted in all of the indigenous riparian vegetation being removed from the river and streams. In terms of the importance and sensitivity of the features, the numerous impacts have greatly reduced their species richness and diversity. In order to maintain what remains of the ecological functioning of the systems on the site, it is recommended that construction methodology be provided by the civil contractor to the freshwater ecologist and approval first be granted before construction commences to ensure that the construction activities are mitigated and to prevent any further degradation of the Kuils River. The construction activities must be monitored by an Environmental Control Officer. The pillars of the expanded bridge must be in line with the existing bridge pillars in order to not affect or impact on the existing hydrology or river flow.

Six of the identified wetlands on site will be impacted upon. The impacted wetlands have largely modified wetland integrity as a large loss of natural habitat, biota and basic ecosystem functions has occurred. The Wetland Health Present Ecological Status of the impacted wetlands was assessed to be largely modified and in a moderate ecological importance state and sensitivity.

It is clear that the route will definitely impact, on a permanent basis, on an extent of depression wetlands. The former impacts are not mitigatable, and this report has recommended offset mitigation to account for wetland loss. A no-development alternative is not considered a necessary or useful recommendation to avoid these impacts, taking into account the level of degradation and fragmentation of the affected wetlands, as well as the opportunity for offset mitigation to create a better quality of habitat than that lost.

Freshwater Resource Verification and Offset Requirements Calculation for the Proposed Extension of Erica Drive from Belhar to Oakdene and Dualling of Erica Drive/Belhar Main Road East of Reuter Street, over the Kuilsriver, Western Cape. October 2018, Scientific Aquatic Services

Key Observations

1. The area surrounding the proposed new portion of Erica Drive, which is to be developed (western portion of the linear development), is considered to be significantly disturbed by anthropogenic activities. Such activities include the development of the Bellville South Industrial waste disposal site (north of the proposed Erica Drive portion), the excavation and shaping of informal roads within the surrounding area and the infilling and the disposal of household refuse.

2. According to the Freshwater Assessment Report (Hanekom, 2017), the western portion of the linear development has eight wetland features (As per Figure 10, numbered 1 – 8). During the field assessment, undertaken in September 2018, only one of the previously identified wetlands in the western portion of the proposed development route (approximating 0,48ha in extent) was considered to be natural and can be classified as a wetland flat (as per Figure 10, wetland number 2).

3. Wetland number 9 (as per Figure 10) located within the eastern portion of the linear development was also identified to be a natural system during the recent field verification (approximating 0,38ha in extent) and was also classified as a wetland flat.

4. The remaining areas previously identified as wetlands (Hanekom, 2017) were confirmed during the recent field verification to be artificially impounded areas or highly disturbed areas, where opportunistic invasive reed species (such as *Arundo donax*) have established due to water ponding within these excavated areas (Figure 11).

Offset Requirements and Investigation

Taking the *offset requirements* into consideration and on reflection of the findings as presented in Table 3 of *the* report, offset requirements were defined for the proposed linear development and an additional 10m buffer (of potential edge effects) which would encroach on 0.28 ha of the wetland flat located along the western portion of the proposed linear development (Figure 13).

The wetland offset calculator was used to calculate the functional hectare equivalents as well as the habitat hectare equivalents for the themes ecosystem services and ecosystem conservation, respectively. These results are presented in Tables 5 and 6. The wetland flat is not considered important in terms of species of conservation concern, therefore, the calculation was not included in the assessment.

From the assessment it is evident that 0,2 functional hectare equivalents and 0,7 habitat hectare equivalents of wetland area need to be conserved to offset the loss of the 0,28 hectares of wetland eco-services and ecosystem conservation value in the catchment.

It is therefore recommended that feasible wetland offset receiving areas be investigated in order to compensate for the 0,2 functional hectare equivalents and 0,7 habitat hectare equivalents of wetland area lost. These targeted wetland should ideally be of the same HGM wetland type and located within the same local catchment as the western wetland flat.

Since the eastern wetland flat (0.38 ha) (not to be impacted upon) is of too small size and not within the same local catchment as the western wetland flat, this wetland is considered to not be feasible to be considered for wetland offsetting, and an offsite alternative should be considered.

Conclusions and Way Forward

Based on the findings of the study, the following can be summarised:
1. Given the findings of this investigation, it was found that only two natural wetlands are located along the proposed linear development. All other wetlands as identified in the Freshwater

Assessment Report (Hanekom, 2017), are considered to be artificial;

2. A wetland flat (0.48 ha) is proposed to be traversed by the western portion of the proposed linear development. With the inclusion of an additional 10m buffer from the edge of the linear development that can be assumed will be lost as a result of the linear development and edge effects associated with the construction activities, it was calculated that this would cause a loss of 0.28 ha of wetland area;

3. The wetland flat (0.38 ha) located along the eastern portion of the proposed linear development would be unimpacted by the proposed road upgrade, however, it must be made clear to any contractors that this area may not be utilised for a contractor's camp or any laydown areas;

4. An initial offset investigation was therefore undertaken to ascertain the functional hectare equivalents and the habitat hectare equivalents required to offset the anticipated 0,28 ha loss of the western wetland flat. It was determined that 0,2 functional hectare equivalents and 0,7 habitat hectare equivalents of wetland area need to be conserved to offset this loss;

5. It is, therefore, recommended that feasible wetland offset receiving areas be investigated in order to compensate for the hectare equivalents lost. These targeted wetland should ideally be of the same HGM wetland type and located within the same local catchment as the western wetland flat;

6. As part of the abovementioned assessment, a rehabilitation and implementation plan must be compiled indicating what actions must be undertaken, both during construction and for the operational phase to ensure that the hectare equivalents lost are fully compensated for, and the overall PES of the receiving wetland improved in order to meet the functional hectare equivalent requirements.

Technical Review Memorandum for Freshwater Ecological Impact Assessment: Proposed Extension of Erica Drive, Belhar to Oakdene over the Kuils River, October 2018, Scientific Aquatic Services

Conclusion

Based on the review of this study, overall the study is considered objective, concise, and easy to follow. Some descriptive requirements such as the definition of the PES have not been undertaken using the latest methods and cannot be considered best practice. The recommendations presented in the report are appropriate, relevant/necessary, sensible and achievable. The proposed mitigatory measures are considered the best options available. The wetland verification undertaken by SAS presents further information on the wetlands including the determination that only two of the originally identified features are natural wetlands that require protection. The assessment undertaken by SAS presents additional construction and operational phase mitigatory measures which should be implemented including offset requirements.

Should the baseline report be considered in conjunction with the peer review report and recommended additions and changes be made, the information available can be considered to be acceptable for decision making purposes and to guide the proposed development which should be considered favourably.

Residual Wetland Impact Compensation Plan for the Proposed Extension of Erica Drive from Belhar to Oakdene over the R300 and Dualling of Erica Drive/Belhar Main Road, East of Reuter Street, Over the Kuilsriver, Western Cape Province. May 2019. Scientific Aquatic Services

Conclusion and Recommendations

Scientific Aquatic Services (SAS) was appointed to compile a Wetland Rehabilitation, Implementation and Management Plan (RWICP) as per the offset guidelines for the wetland that will be impacted by the proposed extension of Erica Drive. As part of the freshwater resource verification undertaken by SAS in September 2018, two natural wetland flats (known as the western wetland flat and the eastern wetland flat) were identified along the proposed route of Erica Drive.

In accordance with the rehabilitation interventions and offset initiative proposed within this document, most aspects will require mechanical inputs and cannot be done by hand. Although the

initial impact is significant it must be noted that these activities are only for a short period so as to restore the ecoservice provision and wetland health. These measures stipulated within this report will allow for the recharge of a reinstated wetland footprint area and improve the remaining original extent of wetland habitat, leading to an overall betterment of the wetland and the general environment.

The following table is a summary of the ecoservice provision and ecological health of the western wetland flat prior to rehabilitation and the predicted values post rehabilitation.

Table 11: Summary table of wetland health and ecosystem service provision prior to and post rehabilitation

	Prior to Rehabilitation	**Post Rehabilitation**
Wet-health	Category D (Largely Modified)	Category C/D (Moderately Modified)
Ecoservice Provision	Moderately low	Moderate
Extent of wetland footprint area	0.48 hectares	0.5 hectares

Although the ecological condition is in a higher category, it should be noted that it is a bordering case and will be dependant on long-term management of the wetland. Nevertheless, an improved from a score of 4.8 to 3.9 was identified.

The reinstatement of the wetland footprint allows for relatively the same wetland areas post rehabilitation. Furthermore, the stormwater attenuation facility north of the proposed Erica Drive will contribute an additional 0.63ha of wetland habitat through the careful planning and design that if functions as a constructed wetland.

Although loss of wetland habitat is not considered favourable and should be avoided based on the mitigation hierarchy prescribed by the DEA et al. (2013) based on above provided information, the loss of wetland habitat cannot be avoided and as such the initiative to reinstate the wetland habitat alongside the Erica Drive Road is deemed a feasible rehabilitation/offset, provided all rehabilitation interventions and construction mitigation measure are implemented.

It should be noted that this document will form part of the Environmental Authorisation as well as the Waste Use Authorisation, and on approval, this document becomes binding and all aspects of the proposed rehabilitation and mitigation recommendations made herein must be adhered to by the proponent and appointed Contractor.

Report on Geotechnical Investigations for the Belhar/Kuilsriver Bridge, Kuilsriver, July 2018, K&T Consulting Engineers

Conclusions

1. The site is underlain by a mantle of reworked soils that overlies naturally deposited transported soils of predominantly alluvial origin. These soils are underlain by residual soils and strata of the Malmesbury Group, which tend to be deeply weathered.

2. The site is characterised by a shallow groundwater system, which was measured between 0.85 to 1.13m below existing ground level. The groundwater levels are directly influenced by the seasonal periods and the levels within the Kuils river. For this bridge, groundwater seepage water is likely to remain present irrespective of the timing of construction and should be allowed for at all times.

3. Given the predominantly non-cohesive nature of the sandy material, conventional earthmoving equipment will satisfactorily remove the alluvium horizons. Excavations deeper than 1.00 metres will require suitable battering or temporary lateral support (especially in winter conditions) to ensure safe working conditions. It is preferable that excavations and the installation of foundations be planned for the drier summer months when the groundwater (and river) levels are far more favourable.

4. In terms of the founding conditions for the bridge site, conventional foundations seated from 2.0m depth are possible for the abutments. Modified foundations incorporating the use of geosynthetic

reinforcement seated in high shear strength material to create a reinforced soil raft are required for the pier positions provided the bearing pressures discussed in Section 4.5 can be achieved. If these reduced bearing pressures cannot be met, then piled foundations would be required.

5. Although every effort has been made to ensure the accuracy of the information contained in this report, the results of the investigation are based upon fieldwork which provides a limited view of the subsoil conditions. Natural soil/rock is never uniform. Its properties change from point to point while our knowledge of its properties are limited to those few spots at which the samples have been collected. As a precautionary measure, it is imperative, due to the potential geotechnical variations in the subsoils and Malmesbury rock strength, that pile founding conditions should be inspected and approved by a geotechnical engineer.

Report on Geotechnical Investigations for the proposed new Erica Road Bridge over National Route R300, Kuilsriver, July 2018, K&T Consulting Engineers

Conclusions

1. The site is underlain by naturally deposited sandy transported soils of predominantly alluvial origin. These soils are underlain by residual soils and strata of the Malmesbury Group, which tend to be deeply weathered.

2. The site is characterised by a shallow groundwater system, which was measured between 1.32 to 2.45m below existing ground level. The groundwater levels are directly influenced by the seasonal periods. For this bridge site, groundwater seepage water is likely to remain present irrespective of the timing of construction and should be allowed for at all times.

3. Given the predominantly non-cohesive nature of the sandy material, conventional earthmoving equipment will satisfactorily remove the sandy horizons. Excavations deeper than 1.50 metres will require suitable battering or temporary lateral support to ensure safe working conditions. It is preferable that excavations and the installation of piled foundations be planned for the drier summer months when the groundwater levels would be more favourable.

4. In terms of the founding conditions for the bridge site and in view of the anticipated heavy structural loading of the ground, conventional foundations are not suitable at shallow depth. In order to construct conventional foundations, pad foundations would need to be taken through the upper subsoils and founded well into the lower dense to very dense transported soils or very stiff residual Malmesbury material at depths greater than 4.0 metres, which is not practically feasible, therefore piled foundations are recommended.

5. Although every effort has been made to ensure the accuracy of the information contained in this report, the results of the investigation are based upon fieldwork which provides a limited view of the subsoil conditions. Natural soil/rock is never uniform. Its properties change from point to point while our knowledge of its properties are limited to those few spots at which the samples have been collected. As a precautionary measure, it is imperative, due to the potential geotechnical variations in the subsoils and Malmesbury rock strength, that pile and founding conditions should be inspected and approved by a geotechnical engineer.

4. ENVIRONMENTAL IMPACT STATEMENT

Provide an environmental impact statement of the following:

(i) A summary of the key findings of the EIA.
Definite Positive Impacts: • Temporary employment opportunities (construction) • Infrastructure provision - alleviating traffic congestion within the affected area. Potential Negative Impacts: • Disturbance to subsurface geological layers • Disturbance to Kuils River riverbed and bank

- Impact of construction work on river hydrology/flow
- Disturbance to wetland depressions and hydrology
- Surface and ground water resources pollution
- Soil erosion
- Impacts of construction activities on the water quality of surface and underground water resources
- Increase in and accumulation of storm water runoff
- Impact of proposed development activities on identified aquatic wetland Critical Ecological Support Areas ("CESA")
- Impact on the Kuils River riparian habitat
- Impact on the naturally occurring terrestrial and aquatic fauna and avifauna occurring on the site and surrounds
- Impact on the indigenous terrestrial flora present in the area
- Introduction of alien and weed plant species
- Traffic impacts due to construction on and along urban roads with high traffic volumes
- Impact of construction workers on local community safety and security
- Impact of litter or waste from the construction site on the surrounding communities
- The potential impact of the proposed development on archaeological, paleontological and heritage remains
- Noise due to construction machinery
- Impact of construction activities on the surrounding land users / owners and tourists visual landscape of the area
- Impact of operational and maintenance activities of proposed development on remaining indigenous vegetation and wetland areas
- Noise due to traffic along proposed roads

The No-Go option will result in the site remaining as it is - degraded vacant municipal land. The proposed activity will result in the expansion of the City's road network, thus alleviating congestion and making areas more accessible. The Municipality is mandated in terms of the PSDF to provide and maintain road infrastructure and networks. The activity is therefore in line with the objectives manifested in the PSDF and local Service Delivery Implementation Plan.

(ii) Has a map of appropriate scale been provided, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers?	YES	~~NO~~

(iii) A summary of the positive and negative impacts that the proposed development and alternatives will cause in the environment and community.

Refer to Section G: 2(a) above.

5. IMPACT MANAGEMENT, MITIGATION AND MONITORING MEASURES

(a) Based on the assessment, describe the impact management, mitigation and monitoring measures as well as the impact management objectives and impact management outcomes included in the EMPr. The EMPr must be attached to this report as Appendix H.

The key mitigation measures recommended should be impact avoidance. Where adverse impacts cannot reasonably be avoided, the activities should be managed through the effective implementation of the EMP with a strong emphasis on post-construction rehabilitation where required.

Refer to the Impact Assessment tables under Appendix J for list of mitigation measures as proposed for each potential impact assessed as well as the EMP under Appendix H in which all of the proposed mitigation measures have been incorporated.

(b) Describe any provisions for the adherence to requirements that are prescribed in a Specific Environmental Management Act relevant to the listed activity or specified activity in question.

The proposed activities will require a Water Use License for Section 21 (c) and (i) activities triggered under the National Water Act which will contain additional requirements to be adhered to during the implementation of the proposed activities. These requirements will only be known once the Water Use License have been issued by the Department of Water and Sanitation.

(c) Describe the ability of the applicant to implement the management, mitigation and monitoring measures.

The applicant is ultimately responsible for the implementation of the EA and EMP and the financial cost related thereto. In accordance with the requirements of the EA and EMP, the applicant must ensure that any person acting on their behalf complies with the conditions / specifications contained in this EA, EMP and any other relevant permits/licences/legislation etc. related to the activities. In addition, an Environmental Control Officer must be appointed to review, monitor and report on compliance with the relevant requirements. Thus, if the applicant intends to commence with the proposed and authorised activities he/she must ensure that he/she is able to implement the required management, mitigation and monitoring measures throughout the lifespan of the project.

(d) Provide the details of any financial provisions for the management of negative environmental impacts, rehabilitation and closure of the proposed development.

Unknown at his stage.

(e) Describe any assumptions, uncertainties, and gaps in knowledge which relate to the impact management, mitigation and monitoring measures proposed.

EAP is only knowledgeable with regards to the potential environmental and ecosystems aspects.

Limited knowledge with regard to the potential negative impacts on traffic during the construction phase.

Additional wetland offset investigation to be conducted by an appropriate specialist to determine suitable wetland offset area on a feasible site, and provide wetland rehabilitation and management plan to be implemented during the construction and operational phases.

In undertaking the investigation and compiling this report, the following has been assumed:
•The information provided by the client, specialists and engineers is accurate and unbiased;
•The scope of this investigation is to assess the direct and cumulative environmental impacts associated with the development; and
•Should the proposed project be authorised, the applicant will incorporate the recommendations and mitigation measures outlined in this BAR, the EMP and the EA into the detailed design and construction contract specifications and operational management system for the proposed project.

SECTION H: RECOMMENDATIONS OF THE EAP AND SPECIALISTS

(a) In my view as the appointed EAP, the information contained in this BAR and the documentation attached hereto is sufficient to make a decision in respect of the listed activity(ies) applied for.	~~YES~~	~~NO~~

(b) If the documentation attached hereto is sufficient to make a decision, please indicate below whether, in your opinion, the listed activity(ies) should or should not be authorised:		
Listed activity(ies) should be authorised:	~~YES~~	~~NO~~
Provide reasons for your opinion		
This report is only a draft basic assessment report and still has to go through another 30 day commenting period to incorporate and address all comments received from relevant I&APs and organs of state for the decision making authority to take into consideration during its final decision making process.		
(c) Provide a description of any aspects that were conditional to the findings of the assessment by the EAP and Specialists which are to be included as conditions of authorisation.		
Project specific aspects and recommendations to be included as conditions of the authorisation will be included here during the final basic assessment report phase.		
(d) If you are of the opinion that the activity should be authorised, please provide any conditions, including mitigation measures that should in your view be considered for inclusion in an environmental authorisation.		
Will be addressed and included within the final basic assessment report		
(e) Please indicate the recommended periods in terms of the following periods that should be specified in the environmental authorisation:		

i.	the period within which commencement must occur;	Within 5 years of obtaining Environmental Authorisation
ii.	the period for which the environmental authorisation is granted and the date on which the development proposal will have been concluded, where the environmental authorisation does not include operational aspects;	Ongoing maintenance of infrastructure and implementation of EMP until decommissioning.
iii.	the period for which the portion of the environmental authorisation that deals with non-operational aspects is granted; and	Within 20 years of obtaining Environmental Authorisation
iv.	the period for which the portion of the environmental authorisation that deals with operational aspects is granted.	Ongoing maintenance of infrastructure and implementation of EMP until decommissioning.

SECTION I: APPENDICES

The following appendices must be attached to this report:

APPENDIX			Confirm that Appendix is attached
Appendix A:	**Locality map**		Y
Appendix B:	**Site development plan(s)**		Y
	A map of appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffer areas;		Y
Appendix C:	**Photographs**		Y
Appendix D:	**Biodiversity overlay map**		Y
Appendix E:	**Permit(s) / license(s) from any other Organ of State, including service letters from the municipality.**		
	Appendix E1:	**Copy of comment from HWC.**	Y
	Appendix E2:	**Water Use Authorisation Application Process**	Y
Appendix F:	**Public participation information: including a copy of the register of I&APs, the comments and responses report, proof of notices, advertisements and any other public participation information as is required in Section C above.**		Y
Appendix G:	**Specialist Report(s)**		
	Appendix G1: Erica Drive Terrestrial Botanical Impact Assessment		Y
	Appendix G2: Erica Drive Freshwater Impact Assessment		Y
	Appendix G3: Erica Road Wetland Verification and Offset		Y
	Appendix G4: Technical Review for Freshwater Ecological Impact Assessment		Y
	Appendix G5: Geotechnical Investigation Kuilsriver Bridge		Y
	Appendix G6: Geotechnical Investigation R300 Bridge		Y
	Appendix G7: Geotechnical Investigation Laboratory Work Results for Erica Drive		Y
	Appendix G8: Fauna and Avifauna Impact Assessment for Proposed Erica Drive Expansion in Belhar and Kuilsriver Area		Y
	Appendix G9: Residual Wetland Impact Compensation Plan for the Proposed Extension of Erica Drive		Y
Appendix H :	**EMPr**		Y

Appendix I:	**Additional information related to listed waste management activities (if applicable)**	NA
Appendix J:	**If applicable, description of the impact assessment process followed to reach the proposed preferred alternative within the site.**	Y
Appendix K:	**Any Other (if applicable).**	
	AppendixK1: EAP CV	Y
	Appendix K2: Erica Drive Preliminary Design Report October 2018	Y
	Appendix K3: Stormwater Management Plan and associated Stormwater Layout Designs	Y
	Appendix K4: Landscaping Plan	Y
	Appendix K5: Bridge Drawing	Y

SECTION J: DECLARATIONS

Original signed copies of the declarations to be provided with the Final Basic Assessment Report to be submitted to the Department of Environmental Affairs and Development Planning for a final decision.