# Draft Impact Assessment Report

## Application for Amendment of the existing Environmental Authorisation (Part 2 Amendment):

## Tongaat Hulett Developments Ntshongweni Mixed-Use Development (Urban Core Precinct), eThekwini Municipality, KwaZulu-Natal.

*AMENDMENT OF EA DM/0003/2012*

**NOVEMBER 2022**


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| | |
|---|---|
| **DEPARTMENT REFERENCE NUMBER** | |

## PROJECT TITLE

**Application for Amendment of the existing Environmental Authorisation (DM/0003/2012) for the proposed changes to the Ntshongweni Mixed-Use Development (Urban Core Precinct), eThekwini Municipality, KwaZulu-Natal.**

## DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

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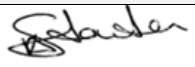
| Kerry Stanton<br>Director | November 2022 |  |

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## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| BAR | Basic Assessment Report |
| BID | Background Information Document |
| DWS | Department of Water and Sanitation |
| EA | Environmental Authorisation |
| EAP | Environmental Assessment Practitioner |
| ECO | Environmental Control Officer |
| EIA | Environmental Impact Assessment |
| EKZNW | Ezemvelo KwaZulu-Natal Wildlife |
| EPCPD | eThekwini Environmental Planning and Climate Protection Department |
| ESR | Engineering Services Report |
| EMPr | Environmental Management Programme |
| EPCPD | Environmental Planning and Climate Protection Department |
| GLV | General Limit Value |
| HGM | Hydrogeomorphic |
| I & AP | Interested and Affected Party |
| LAP | Local Area Plan |
| LOS | Level of Service |
| NEMA | National Environmental Management Act 107 of 1998 as amended |
| NFEPA | National Freshwater Ecosystem Priority Areas |
| PTP | Package Treatment Plant |
| RQO | Resource Quality Objective |
| SANRAL | South African National Road Agency Limited |
| S & EIR | Scoping and Environmental Impact Reporting |
| SDP | Spatial Development Plan |
| SLV | Special Limit Values |
| SWMP | Stormwater Management Plan |
| TIA | Traffic Impact Assessment |
| THD | Tongaat Hulett Developments Pty Ltd |
| TPC | Threshold of Potential Concern |
| UVB | Unchannelled Valley Bottom Wetland |
| WWTW | Wastewater Treatment Works |

# 1. INTRODUCTION

## 1.1 Project Background

Tongaat Hulett Developments Pty Ltd (THD) obtained Environmental Authorisation (EA) from the Department of Economic Development, Tourism and Environmental Affairs (EDTEA) for construction of the Ntshongweni Mixed-Use Development (Urban Core Precinct now branded as Westown) and associated infrastructure on 11 November 2015 (EA Reference DM/0003/2012). The scope of the Development and activities authorised are listed in the existing EA (Appendix A). The development site is approximately 106.54 hectares (ha) in extent and will comprise of various land uses, including mixed-use (21.361ha), commercial/ business (24.89ha), the primary shopping precinct (14.38ha), road (17.954ha) and green open space (27.152ha) land uses. The provision of green open space has been incorporated into the development design to minimise potential impacts on the receiving environment, with specific reference to the drainage line and wetlands situated on site. Please refer to Figure 1 (as well as Appendix A), for the layout of the Development that was authorised under the existing EA.

KSEMS Environmental Consulting (Pty) Ltd (KSEMS) undertook the original Application for EA on behalf of the Applicant by means of a full Scoping and Environmental Impact Reporting (EIR) process for the proposed development in 2015 (see EIR report in Appendix G1). KSEMS had investigated three (3) site alternatives, including Site 2, and Site 3, as shown below (Figure 2), to determine which of the Alternatives would have the lowest impact on the receiving environment, whilst still meeting the objectives of the development. Various specialists were appointed to assess the different components associated with the Activity, including wetland, riparian, heritage, vegetation, faunal, and socio-economic assessments. Based on the findings of the respective specialists and the outcome of the Environmental Impact Assessment (EIA), it was concluded that Site 2 was the preferred, and now authorised Ntshongweni Mixed-Use Development (Urban Core Precinct) site (Figure 2).

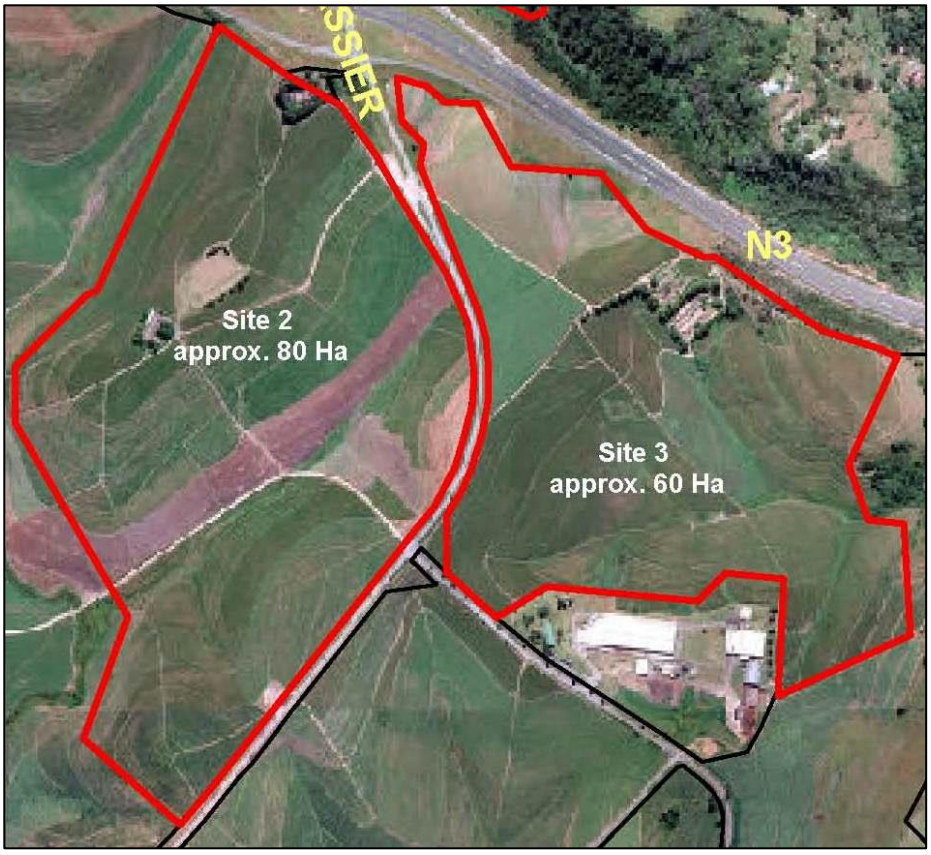
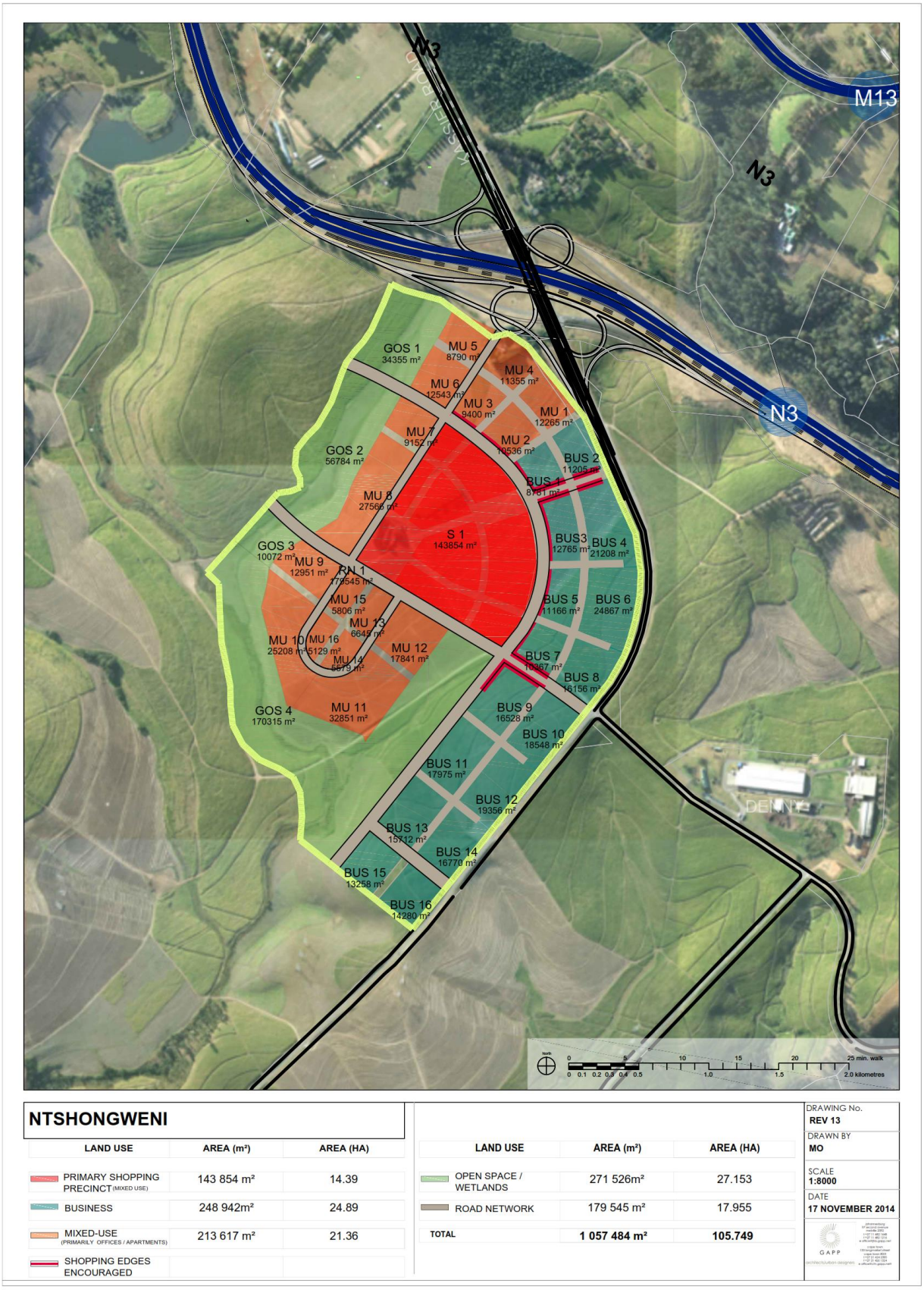



***Figure 2: Sites assessed during the original EIA process (KSEMS, 2015).***




**NTSHONGWENI**

| LAND USE | AREA (m²) | AREA (HA) |
|---|---|---|
| PRIMARY SHOPPING PRECINCT (MIXED USE) | 143 854 m² | 14.39 |
| BUSINESS | 248 942m² | 24.89 |
| MIXED-USE (PRIMARILY OFFICES / APARTMENTS) | 213 617 m² | 21.36 |
| SHOPPING EDGES ENCOURAGED | | |

| LAND USE | AREA (m²) | AREA (HA) |
|---|---|---|
| OPEN SPACE / WETLANDS | 271 526m² | 27.153 |
| ROAD NETWORK | 179 545 m² | 17.955 |
| **TOTAL** | **1 057 484 m²** | **105.749** |

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***Figure 1 Authorised Shongweni Mixed-Use Development (Urban Core Precinct) Layout (GAPP Architects/ Urban Designers, 2012).***

THD propose to incorporate changes to the already authorised development scope and design, and as such, are now applying for an amendment to the existing EA for changes to the electricity, sewage and road infrastructure aspects associated with the Development. THD will now obtain an interim supply of 8MVA (Megavolt amperes) of electricity from the eThekwini Municipality as opposed to 5MVA that was initially available, until such time that the Municipality has sufficient capacity to meet the ultimate electricity demands of the entire Ntshongweni Development (which has already been authorised under the EA). THD also propose to include a temporary on-site Sewage Treatment Plant to meet the interim sewage requirements associated with the Ntshongweni Mixed-Use Development (Urban Core Precinct). The sewage treatment plant will be located in the same position as the previously assessed and authorised sewage pump station, and so roughly falls along the same Development footprint as that already authorised. As the plant will not process more than 2 Mega Litres (ML) of effluent per day, it does not trigger Activity 25 of Listing Notice 1 of the EIA Regulations, 2014 as amended.

There will also be changes to the layout of the approved road network, as provided for in the final Traffic Impact assessment reports in that the Development will now include the construction of a new loop ramp, relocated southern access road, as well as a new Public Transport holding facility. The loop ramp and public transport holding facility do not fall within the authorised development footprint (Site 2) but the loop ramp does fall within the previously investigated "Site 3" (Figure 2), and as such, the condition of the site was also assessed by the various specialists (copies of the original specialist reports can be made available upon request). These new aspects do not trigger any additional listing notice activities, as although the footprint is greater, both the loop ramp and public transport facility are situated on sugar cane fields, on the same property as the approved development (on the Farm Kirkfalls No. 14227, owned by THD), and so will not result in the clearance of indigenous vegetation, and which will not be situated within 32m of a watercourse.

A pre-application meeting was held with EDTEA on 23 September 2021 via Microsoft Teams, where it was confirmed that the proposed changes do not trigger any additional listing notice activities as all activities will remain below the triggering thresholds listed under the EIA Regulations (2014, as amended). It was, however, requested that the amendment application include Activity 28 of Listing Notice 1 (GNR 327 of 2017), as this Activity was not listed under the EA due to an internal error, but which was applied for and assessed during the original EIA process in 2015 (see proof of this correspondence in the pre-application meeting minutes in Appendix F, and in Appendix I). The Department further advised that as the application constitutes a Part 2 amendment process, a full Public Participation Process (PPP) must be conducted. It was also requested that the original specialist assessment reports that were prepared in 2012, be verified to ensure that the findings thereof remain valid, and that the changes being proposed to the development, do not increase the risk of impact on the receiving environment.

THD has again appointed KSEMS as the independent Environmental Assessment Practitioner (EAP) to undertake the application process for amendment of the existing EA (DM/0003/2012), as described above, to comply with the EIA Regulations, 2014 as amended, published under the National Environmental Management Act, 1998 (Act No. 107 of 1998).

Please refer to Figure 3 below, and Appendix B, for the layout of the Ntshongweni Mixed-Use Development (Urban Core Precinct), as being applied for under this amendment application.

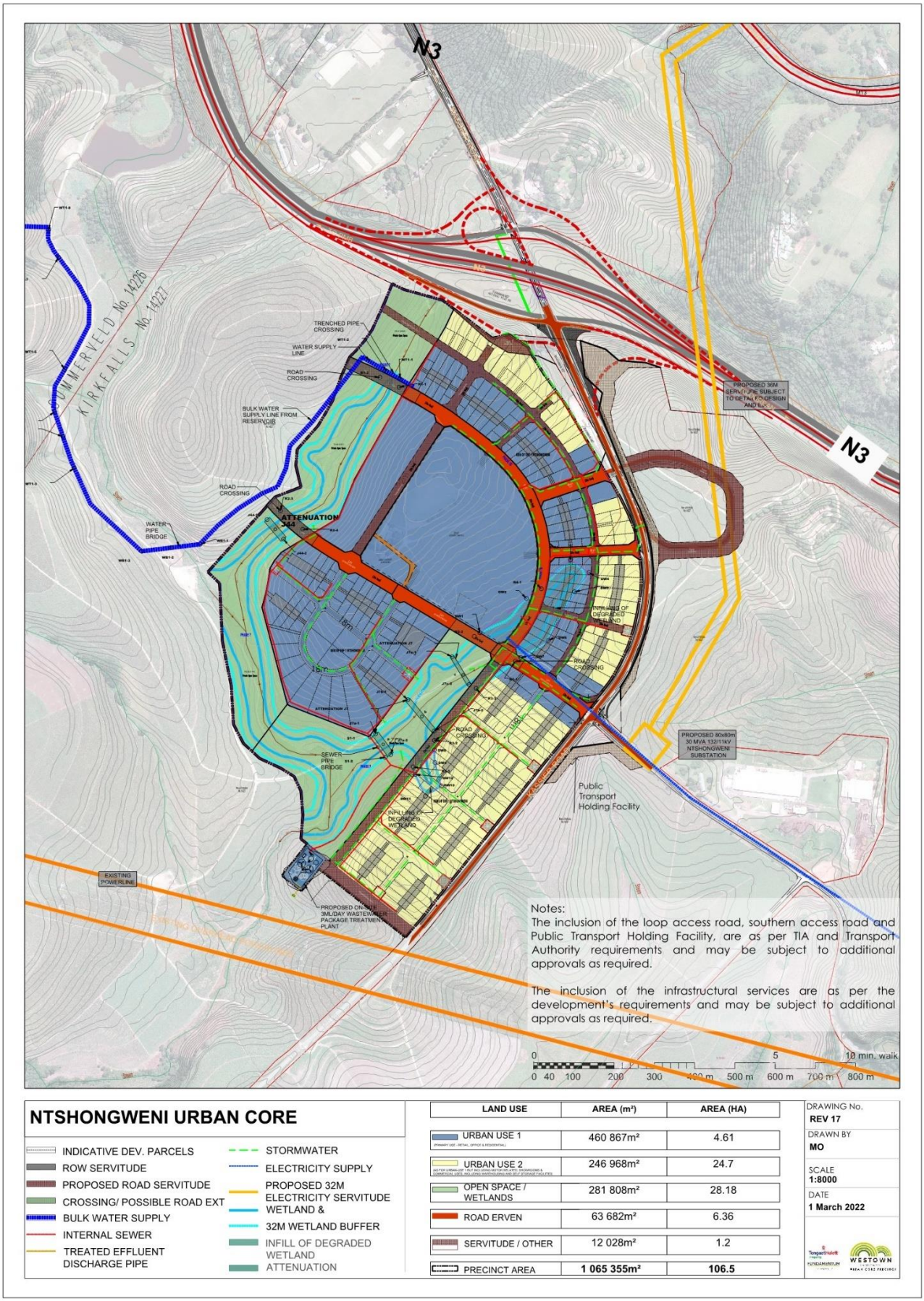


***Figure 2: Layout of the proposed Ntshongweni Mixed-Use Development: Urban Core Precinct (THD.2022).***

## 1.2 Details of the Environmental Assessment Practitioner (EAP)

KSEMS Environmental Consulting (KSEMS) was appointed by THD to fulfil the role of the independent EAP to undertake the application process in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and associated EIA Regulations (2014, as amended). See EAP contact details below (Table 1). KSEMS is a KwaZulu-Natal based environmental consultancy established in 1998, operating throughout South Africa, and has a record of undertaking various independent environmental processes for a range of clients in compliance with the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and associated legislation. In this respect, we reiterate the declaration of independence made in the application form for this project assented to and lodged with the competent authority (EDTEA).

***Table 1: EAP Contact Details***

| **Contact Details** | **EAP** |
|---|---|
| Business Name of EAP: | KSEMS Environmental Consulting Pty Ltd (KSEMS) |
| Name of EAP: | Kerry Stanton / Simone Lewis |
| Physical Address: | 4 Woodville Lane, Summerveld, Assagay |
| Postal Address: | P.O Box 396, Assagay |
| Postal Code: | 3606 |
| Telephone: | 063 684 9195 |
| E-mail: | stanton@ksems.co.za/ simone@ksems.co.za/ ksems@ksems.co.za |
| Cell: | 082 823 1844 |
| Fax: | 086 535 5281 |

The names and details of the expertise of each representative of the EAP involved in the preparation of this report are provided in Table 2 below. Curricula vitae of the EAP representatives are available in Appendix C of this report.

***Table 2: Names and Details of the Expertise of each Representative of the EAP***

| **Name of Representative of the EAP** | **Educational Qualifications** | **Professional Affiliations** | **Environmental Assessment Experience (Years)** |
|---|---|---|---|
| Kerry Stanton | MSc awarded cum laude Environmental Management and Open Space Planning Thesis "Developing an Open Space System for the Queensburgh Municipal Area" | Environmental Assessment Practitioners of South Africa (EAPSA) and SACNASP Registered (400167/12). | 23 |
| Simone Lewis | MSc in Environmental Management awarded *cum laude* | Registered EAP with the Environmental Assessment Practitioners of South Africa (EAPSA); and Professional Natural Scientist (121521) registered with the South African Council for Natural Scientific Professions. (SACNASP). | 5 |

## 1.3 Assumptions and Limitations

All information regarding the proposed development was provided by the project proponent Tongaat Hulett Developments (THD), which includes the project description and layout information. Where data was supplied by THD, it has been assumed that the information is correct and accurate to the relevant site. No responsibility is accepted by KSEMS for incomplete or inaccurate data supplied by external parties.

KSEMS has prepared this report based on the findings of the updated specialist verification statements, which were provided in response to their review of the original specialist assessments that were undertaken as part of the original application, as the development has already been authorised based on these findings. The site is still under sugar cane production and therefore it is not anticipated that there have been any changes to the conditions thereof. The specialist verification statements can be found in Appendix G1 of this report.

It should also be noted that no sampling has been undertaken as part of the assessment. The information and data included in this report is based upon information that existed at the time of the compilation of the report. It is KSEMS's professional opinion that the adopted predictive methods are sufficient and adequate for rating the significance of the impacts as guided by the EIA Regulations (2014 as amended) published under the NEMA (Act No. 107 of 1998).

## 1.4 Location of the proposed Activity

The Ntshongweni Mixed-Use Development (Urban Core Precinct) and associated infrastructure as being applied for, is located on the Remainder of Kirkfalls Farm No. 14227 (owned by THD) in the eThekwini Municipality, KwaZulu-Natal (Figures 4 and 5). The locality map can be found in Appendix D of this report.

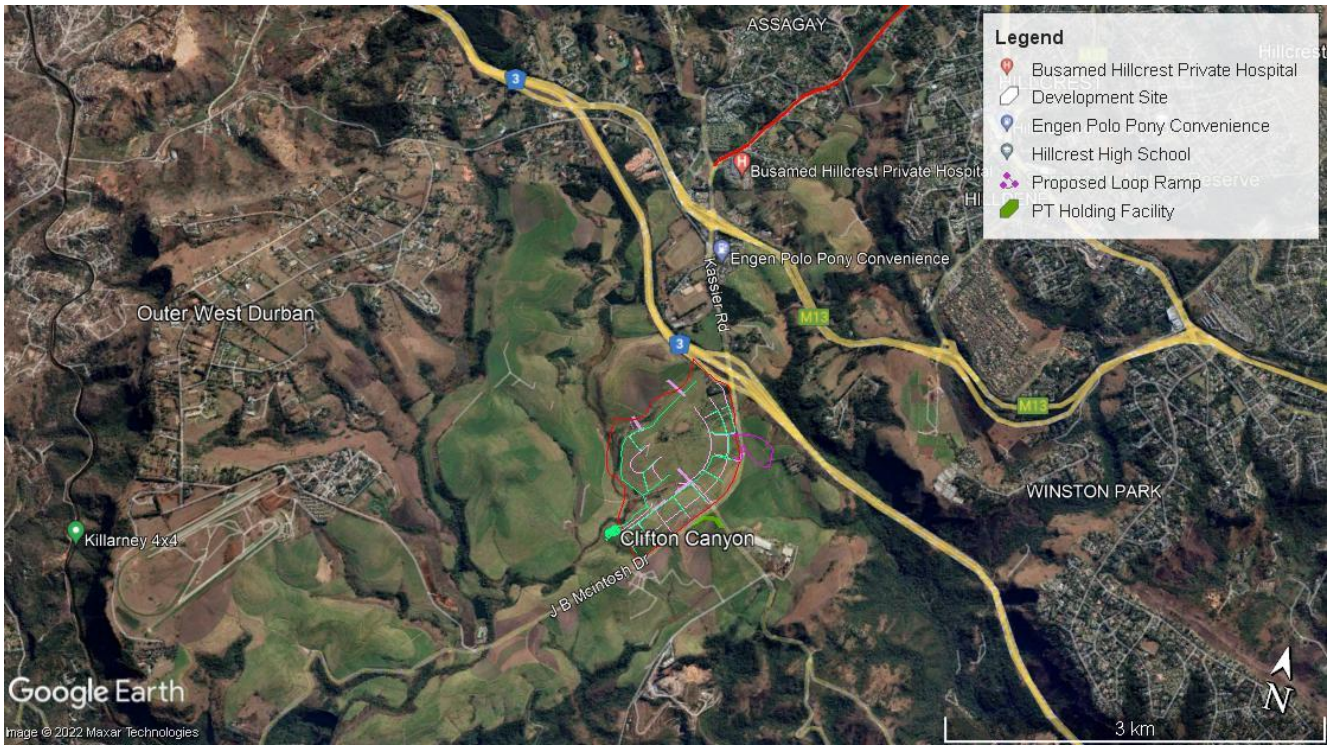


***Figure 3: Locality of the proposed Ntshongweni Mixed-Use Development (Urban Core Precinct) Site (Google Earth, 2022).***

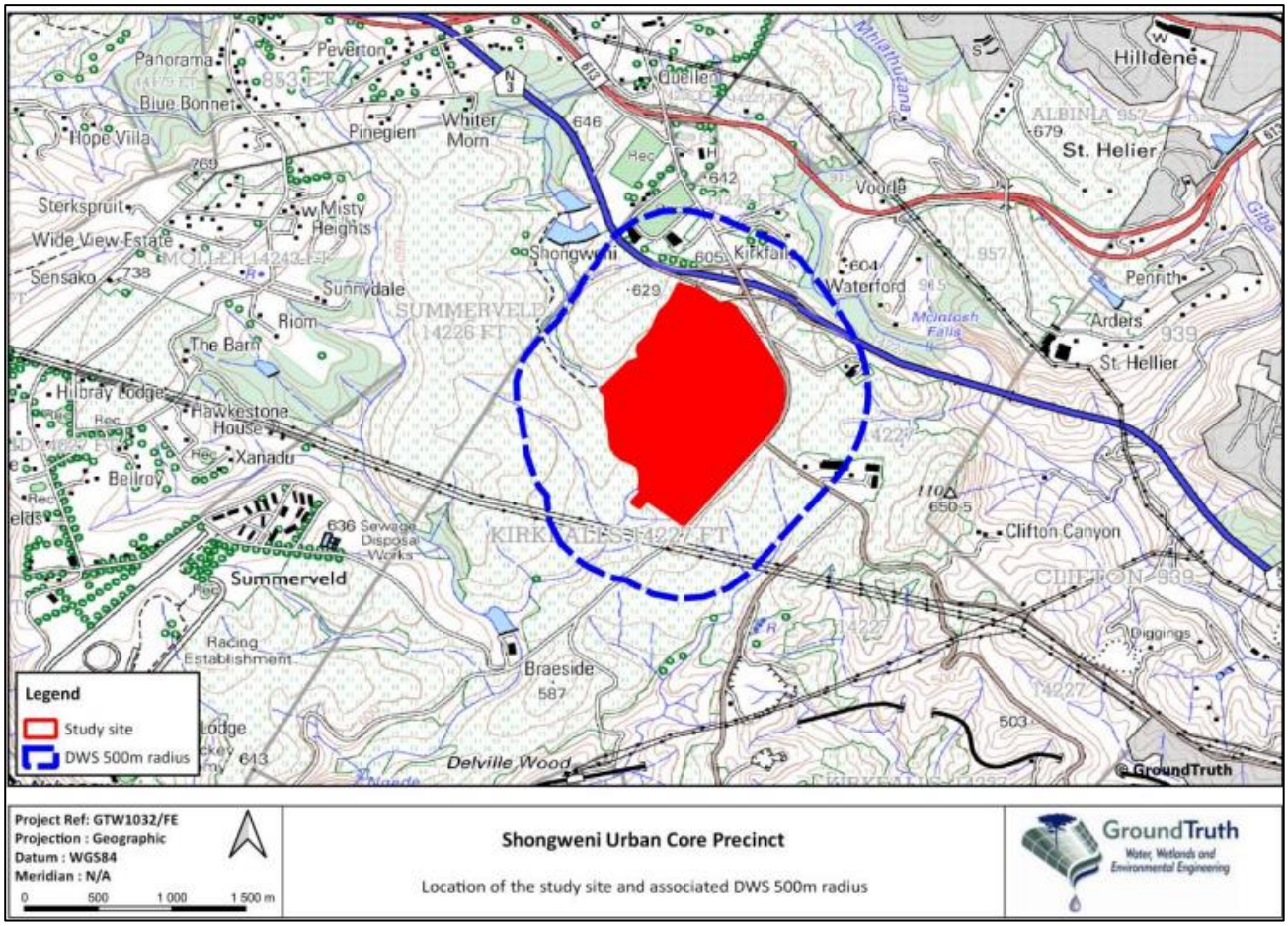


***Figure 4: Topographic map showing the location of the Ntshongweni Mixed-Use Development Site (GroundTruth, 2022).***

The site is located on the southern side of the N3 Highway and is bounded on the east by J.B. McIntosh Drive (extension of Kassier Road). The centre point coordinates of the Development site are 29°48'39.05"S, 30°44'38.99"E. The coordinates of the development site boundary and associated infrastructure/ activities forming part of this application, are shown in the table below (Table 3).

**Table 3: Geographic co-ordinates associated with the development site and associated activities being applied for.**

| REFERENCE POINT | GEOGRAPHIC CO-ORDINATES | |
|---|---|---|
| **NTSHONGWENI URBAN CORE DEVELOPMENT SITE BOUNDARY** | | |
| Point 1 (Northern corner) | 29°48'15.48"S | 30°44'36.15"E |
| Point 2 | 29°48'19.28"S | 30°44'47.84"E |
| Point 3 (Eastern corner) | 29°48'36.49"S | 30°44'56.39"E |
| Point 4 | 29°48'44.29"S | 30°44'55.18"E |
| Point 5 (Southern corner) | 29°49'7.52"S | 30°44'35.14"E |
| Point 6 | 29°48'58.85"S | 30°44'26.10"E |
| Point 7 | 29°48'50.20"S | 30°44'25.51"E |
| Point 8 | 29°48'48.39"S | 30°44'20.39"E |
| Point 9 (Western corner) | 29°48'35.71"S | 30°44'17.64"E |
| Point 10 | 29°48'32.66"S | 30°44'24.97"E |
| Point 11 | 29°48'26.93"S | 30°44'27.58"E |
| Point 12 | 29°48'22.05"S | 30°44'34.53"E |

| PROPOSED NEW LOOP RAMP | | |
|---|---|---|
| Start (Point 1) | 29°48'29.94"S | 30°44'55.47"E |
| Point 2 | 29°48'29.35"S | 30°45'0.31"E |
| Point 3 | 29°48'31.49"S | 30°45'5.09"E |
| Point 4 | 29°48'35.93"S | 30°45'4.88"E |
| Point 5 | 29°48'36.12"S | 30°45'2.63"E |
| End (Point 6) | 29°48'31.87"S | 30°44'56.39"E |
| **PROPOSED ON-SITE SEWAGE TREATMENT PLANT** | | |
| Centre point | 29°49'1.99"S | 30°44'25.81"E |
| Point 1 | 29°49'2.31"S | 30°44'23.90"E |
| Point 2 | 29°49'0.27"S | 30°44'25.85"E |
| Point 3 | 29°49'0.80"S | 30°44'26.56"E |
| Point 4 | 29°49'1.09"S | 30°44'27.91"E |
| Point 5 | 29°49'1.64"S | 30°44'27.93"E |
| Point 6 | 29°49'3.94"S | 30°44'25.14"E |
| Point 7 | 29°49'3.25"S | 30°44'24.22"E |
| **PROPOSED PUBLIC TRASNPORT HOLDING FACILITY** | | |
| Centre point | 29°48'52.42"S | 30°44'52.52"E |
| Point 1 | 29°48'55.09"S | 30°44'47.88"E |
| Point 2 | 29°48'52.20"S | 30°44'50.47"E |
| Point 3 | 29°48'51.89"S | 30°44'54.19"E |
| Point 4 | 29°48'53.78"S | 30°44'56.90"E |
| Point 5 | 29°48'54.06"S | 30°44'55.72"E |
| Point 6 | 29°48'52.70"S | 30°44'53.85"E |
| Point 7 | 29°48'53.00"S | 30°44'50.94"E |
| Point 8 | 29°48'55.02"S | 30°44'48.73"E |

# 2. DESCRIPTION OF THE SCOPE OF THE PROPOSED ACTIVITY

## 2.1 Proposed Activity

THD intends to apply for an amendment to their existing EA (DM/0003/2012) that was issued by EDTEA for the Ntshongweni Mixed-Use Development (Urban Core Precinct), to implement changes to the authorized development design and scope.

The Applicant intends to make changes to the following aspects associated with the Development and EA:

- Inclusion of an on-site sewage treatment plant to act as a temporary sewage solution associated with construction of the Development, until such time that the eThekwini Municipality upgrades either the Umhlatazana or Dassenhoek Waste Water Treatment Plants, and obtains the required Water Use License (WUL) to service the ultimate sewage requirements associated with the entire Ntshongweni Mixed-Use Development (Urban Core Precinct). The temporary Sewage Treatment plant is intended to process between 1.95 Mega Litres (ML) and 2ML of effluent per day. The sewage solution is being proposed to fulfil Condition 2.6 of the EA which requires that a sewer with sufficient capacity be found prior to construction commencing.
- Utilization of an increased capacity of electricity supply to service the initial requirements associated with construction of the Urban Core Precinct. The original EA speaks to a 5MVA supply from the eThekwini Municipality

who have now confirmed that they are able to supply 8MVA electricity to the development (see correspondence in Appendix I). The 8MVA supply will just be an interim supply to allow for construction of the Urban Core Precinct, whilst the Municipality will service the ultimate electricity supply (29.6 MVA), as approved under the existing EA.

- Construction of a new loop ramp near the entrance of the development site. The proposed loop ramp is anticipated to result in the clearing of approximately 5.2 hectares (ha) of vegetation (sugar cane).
- Construction of a Public Transport (PT) holding facility along the intersection of Kassier Road and the P559 Road. The PT holding area will have a footprint of approximately 6.5 ha, but which is situated on land that is also currently under sugarcane production.
- Relocation of the southern access road off Kassier Road at the southern end of the precinct which will also provide access to the treatment plant.
- Condition 3.24.6 of the EA requires that a wetland offset plan be prepared for the loss of wetland habitat associated with the development. It must be noted that the Wetland Specialist (GroundTruth, 2015) prepared a rehabilitation plan which in the specialist's opinion, is sufficient to mitigate against any loss in wetland habitat, and which will actually result in an increase in functional wetland habitat, post-development. As such, KSEMS have engaged with the Departments to obtain approval of the wetland rehabilitation plan, to be used as the on-site offset plan, and so to fulfil Conditions 3.24.6 and 3.24.8 of the EA.

Please see the proposed Development layout in Figure 3 and Appendix B of this report, which depicts the aspects listed above. The above-mentioned aspects are discussed in further detail below, as well as in the Engineering Services Report (Addendum No. 2) prepared by Bosch Project (2021), presented within Appendix G1 of this report.

**Electricity:**

The existing EA does already account for the ultimate electricity demand of 29.6MW of electricity that will be required to support the Development in its entirety. However, the EA also references the initial 5MVA that the eThekwini Municipality had available at the time of the original application, that will supply the initial development requirements. The proposed amendment for the electricity infrastructure is just to make a note that there is now 8MVA available from the eThekwini Municipality to service the initial development requirements, as opposed to the previously referenced 5MVA (see 'eThekwini Electricity SLA' in Appendix I). This is a minor amendment, that does not trigger any additional activities, or have any further impact on the receiving environment.

The Applicant and engineers also confirmed that there will not be any changes to the layouts of the electrical infrastructure as applied for under the original EA, only to the amount of electricity required (8MVA) – which stills falls under the authorised Activity 11 of Listing Notice 1 (GNR 327):

Development of infrastructure for the transmission and distribution of electricity

a) Outside urban areas – with a capacity of more than 33 kilovolts but less than 275 kilovolts

b) Inside urban areas – with a capacity of 275 kilovolts or more.

The development falls within an area classified as urban, and so the increase from 5MVA to 8MVA will not trigger additional activities (it is still below 20 MW as per Listing Notice 2), as confirmed by EDTEA during the pre-application meeting (see minutes attached in Appendix F).

Please refer to Appendix B for the layout of the Authorised Electricity Infrastructure.

**Sewage:**

The Ntshongweni Mixed-Use Development (Urban Core Precinct) will generate between approximately 0.4 Mega Litres (ML) and 1.4ML of effluent per day. During the original EIA process in 2015, the Applicant initially proposed for the Development to be serviced by the Umhlatazana Waste Treatment Works of the eThekwini Municipality. However, the Umhlatazana Treatment Plant did not have sufficient capacity to meet the demands of the development and so it was required that the plant be upgraded before the development proceed. Condition 2.6 of the EA therefore stated that the project was not able to commence until a sewage solution with sufficient capacity was found.

Although the Umhlatazana Waste Water Treatment Works (WWTW) has still not been upgraded, the Applicant has noted that the Municipality will be responsible for servicing the ultimate sewage requirements once either the WWTW, or the Dassenhoek Waste Water Treatment Works has been upgraded to increase its capacity. However, to meet the interim sewage requirements associated with the Development (for construction thereof to commence), the Applicant proposes to include an on-site sewage treatment package plant. The Water Use License (WUL) for the proposed sewage treatment plant was already issued by the Department of Water and Sanitation (DWS) in 2019 (see WUL in Appendix A) and provides for a 2ML/day treatment plant. The WUL noted that a maximum capacity of 3ML/day may be required to support the full Development, however, it is anticipated that eThekwini Water and Sanitation (EWS) Department will have by that time constructed the gravity outfall main to ensure sufficient capacity within their Treatment Works for the final bulk service as described in the approved Engineering Services Report (ESR) that was submitted with the Final EIR in 2015.

As per the ESR prepared by Bosch (2021) the proposal is to include an on-site domestic sewage package plant measuring 76m x 49m, in the same location as the previously assessed and authorised sewage pump station (Appendix G1). The proposal is to phase the implementation, starting with between a 0.5ML/day and 1 ML/day plant (depending on technology accepted by eThekwini Water and Sanitation (EWS) Department) and increasing the capacity to between 1.95 and 2 ML/day to match the development take-up, using Sequencing Batch Reactor (SBR) technology or other similar approved technology.

The treated effluent will, unless re-cycled and re-used within the development, be discharged into an existing valley line south of the plant, that drains into the Wekeweke River. The proposed amendment to the EA is, however, limited to between 1.95 and 2 ML of effluent per day, which will thus only discharge between 1950$m^3$ - 2000 $m^3$ of treated effluent per day. The effluent will be discharged via a standard headwall with appropriate spreader blocks to dissipate the flow to not exceed 1,5 metres per second (m/sec). A 6m x 3m reno mattress will be installed directly downstream of the headwall to further dissipate the flow and thus prevent erosion. The proposal is to plant suitable riparian vegetation below and around the reno mattress to further enhance the quality of the discharge. The ESR (Bosch, 2021) also notes that the discharge point for the treated effluent is located more than 32m away from the delineated watercourses, and outside of the identified wetland buffer zones.

The effluent will be treated in accordance with the Department of Water and Sanitation's General Standards / Limits for discharge to stream or watercourse, as noted in terms of Section 21(f) of the National Water Act (Act No. 36 of 1998) unless otherwise required by the eThekwini Municipality. The on-site Wastewater Package Treatment Plant will be designed and constructed in accordance eThekwini M'nicipality's standards. Discharge of treated effluent will be downstream of the development and any stormwater facilities, as outlined in the Stormwater Management Plan for the Urban Core Precinct.

Any waste sludge that may be generated shall need to be appropriately managed onsite and, unless recycled and re-used as appropriate, will need to be disposed of at a licensed waste disposal facility.

It should be noted that the position of the proposed package plant will be situated in the same location as the previously assessed and authorised sewage pump station. The footprint of the sewage treatment plant is, however, greater (76m x

49m) than that of the pump station (26m x 25m). The proposed sewage treatment plant does not, however, trigger any additional Listing Notice activities as the processing capacity will not exceed 2ML/ day and so, remains below the triggering threshold of Activity 25 of Listing Notice 1, GNR 327 (2014, as amended in 2017).

Please refer to Appendix B for the layout of the proposed Sewage Package Plant, or to Annexure B: drawing 243/192/018 Rev 04a and 2020 Rev 0 of the Engineering Services Report prepared by Bosch presented within Appendix G1.

**Roads:**

The existing EA has authorised the development, along with the proposed upgrades to the surrounding road network (as referenced in the Traffic Impact Assessment Report submitted with the EIR in 2015). In addition to the upgrades already authorised, and as provided for in the final Traffic Impact Assessment Reports, the Applicant is now required to construct a new loop ramp, southern access road, and Public Transport Holding Facility. The loop ramp and public transport holding facility does not fall within the authorised development footprint but the loop ramp does fall within the previously investigated "Site 3", and as such, was also assessed by the various specialists (copies of the original specialist reports can be made available upon request). These new aspects do not trigger any additional listing notice activities, as although the footprint is greater, both the loop ramp and public transport facility are situated on sugar cane fields, on the same property as the approved development (on the Farm Kirkfalls No. 14227, owned by THD), and so will not result in the clearance of indigenous vegetation, and which will not be situated within 32m of a watercourse. The proof of this correspondence can be found in the EDTEA pre-application meeting minutes in Appendix F.

***Loop Ramp***

The land on which the loop ramp will be situated is located on the previously assessed "Site 3" – one of the Alternatives considered during the initial EIA process, and which also falls on the Remainder of Kirkfalls Farm No. 14227. The site was assessed by the specialists, whereby it was noted that the portion of the site in question, is also currently being used for sugar cane production and therefore does not contain any features of conservation significance. Although the loop ramp will result in the clearing of 5.2 ha of vegetation, the site is comprised of sugar cane plantations.

***Public Transport Holding Facility***

The new Public Transport holding facility is proposed to be constructed along the intersection of Kassier Road and the P559 Road. The PT holding area will have a footprint of approximately 6.5 ha, but which is also situated on land that is currently under sugarcane production. The layout of the proposed public transport facility can be found in Appendix B.

It must be noted that the proposed inclusion of the new loop ramp and Public Transport Holding facility, are as per the Traffic Impact Assessment (TIA) and Transport Authority requirements. Please refer to Appendix I for the relevant approvals of the TIA by the Department of Transport (DOT), eThekwini Transport Authority (ETA) and South African National Roads Agency (SANRAL).

**Relocation of the Southern Access Road**

The southern access road off Kassier Road, has been relocated to the southern perimeter of the development due to the fact that the original southern access off Kassier Road was too close to the MR559 intersection and hence had to be moved southwards. The road also provides required access to the treatment plant.

**Fulfilment of Conditions 3.24.6 and 3.24.8 of the existing EA:**

Condition 3.24.6 of the EA states: "The off-set plan for the direct loss of wetland area must be developed in consultation with EPCPD and EKZNW and approved by both stakeholders prior to implementation". Condition 3.24.8 further lists what must be covered in the offset plan, as follows:

- Feasibility study
- Offset mitigation measures
- Opportunity loss
- Implementation timelines
- Monitoring programmes
- Budget framework
- Committee (representative from EPCPD, EKZNW and DWS) to oversee implementation of the rehab and offset plans.

The findings of the wetland specialist assessment report and rehabilitation plan (GroundTruth, 2015) makes note of the following with regards to the two (2) affected watercourses on site:

*Wetland 1 (Hydrogeomorphic (HGM) Unit 1):*

This system is comprised of 4 Hectares (ha) of wetland habitat, but which due to disturbance of the system that has resulted from the sugarcane plantations and surrounding developments, equates to 1.62ha of intact wetland habitat. After construction of the Development, the extent of the wetland habitat will be reduced to around 1.56ha of intact habitat (loss of 0.06ha of wetland habitat).

*Wetland 2/ HGM 2:*

This system is comprised of 2.65ha of wetland habitat, equivalent to 1.08ha of intact wetland habitat. Following the implementation of mitigation and rehabilitation measures outline in the specialist report and Environmental Management Programme (EMPr), the intact habitat will be increased to 1.94ha (gain of 0.86ha), post-development.

The increase in functional wetland habitat (0.86ha) thus exceeds the loss of habitat (0.06ha). As such, the specialist concludes that the recommended rehabilitation measures will be sufficient to offset the impacts on wetland habitat associated with the development (no-net loss),

Upon engaging with the EPCPD (As per the request of EDTEA during the pre-application meeting), the Department reviewed the existing wetland rehabilitation plan (GroundTruth, 2015) and confirmed that the rehabilitation measures outlined in the reports are sufficient to offset the impacts associated with the development, but requested that the rehabilitation plan be amended to still include the following aspects, in which case the plan can be considered as an on-site offset plan, to fulfil these Conditions of the EA:

- Implementation timelines
- Monitoring programmes (existing monitoring plans attached)
- Budget framework
- Committee (representative from EPCPD, EKZNW and DWS) to oversee implementation of the rehab and offset plans.

The proof of this correspondence can be found in Appendix F (stakeholder engagement).

The proposed changes being applied for under this amendment application, are also summarized below (Table 4), in comparison to the scope that was authorized under the EA in 2015:

***Table 4: Summary of changes being applied for compared to the scope authorised under the existing EA.***

| **Description extracted from the Final EIR (KSEMS, 2015) authorised under the EA DM/0003/2012** | **Proposed Amendment to be applied for under the current application** |
|---|---|
| **Electricity** | |
| The interim electrical supply will be from two MV underground cables from Marianridge major substation and ultimately a proposed new 46m servitude for a new 132kV overhead transmission line from Eskom Gorgedale substation (south of the site).<br><br>The EA notes that the project will require the expansion of existing infrastructure from the Marian Ridge substation for the initial distribution of electricity. The Marian Ridge substation is located 9.4km away from the site, and is the only sub-station that had 5MVA spare to service the initial electricity requirements of the development, as the ultimate supply required for the development. Once new 132/11kV, 60MVA major substation will be required adjacent to the site, to cater for the ultimate development requirements. System strengthening may also require 275kV transmission line infrastructure.<br><br>Two alternative options were proposed in the Engineering Services Report (Bosch, 2015) that was submitted during the original EIA process:<br><br>• Temporary Supply: 5 MVA from Marianridge Major Substation.<br>• Permanent Supply: New Major substation (132/11 kV 60 MVA) to supply the Urban Core Precinct and future precincts within the proposed Ntshongweni Urban Development. | The eThekwini Municipality has since indicated that a temporary supply of 8 MVA (as opposed to 5MVA) can be made available from the Marianridge Major Substation to supply the proposed Ntshongweni Urban Development (see correspondence in Appendix I).<br><br>This will be sufficient to service the initial electricity requirements for construction of the Urban Core Precinct. The Applicant, will, however, liaise with the eThekwini Municipality regarding the ultimate electrical supply for the development in its entirety – which has already been authorised under the existing EA. A signed service level agreement will be obtained. |
| **Sewage** | |
| It is anticipated that the Shongweni Retail/ Mixed Use Development will generate between approximately 0.4Ml/day and 1.4Ml/day of effluent.<br><br>The bulk sewage proposal that was included in the original application, was based on the Hillcrest Wate Water Treatment Works (WWTW) decommissioning, and pumping/gravitating the sewer down to the Umhlatuzana Sewage Treatment Works. Associated infrastructure has been approved as part of a separate EIA (DM/0024/10), which considered potential sewage for the proposed development. The environmental authorisation includes;<br>• Potentially replacing the Hillcrest Sewerage Treatment Works with a 6Ml/day pump station | At the time of the original EIA submission eThekwini Municipality Water and Sanitation (EWS) unit had confirmed that the Mhlatuzana WWTW would be upgraded to support this Development. However, due to circumstances outside of the control of the Applicant, the upgrade has not yet taken place, and the Municipality has not yet obtained the required environmental approvals within the timeframes needed to support this Development (ESR prepared by Bosch, 2021).<br><br>The Applicant is now proposing to treat the wastewater generated by the Urban Core Precinct on site, using a conventional sewer package treatment plant. The proposal is to phase the implementation, starting with between a 0.5 and 1 ML/day plant and increasing the capacity to 2 ML/day to match the development take-up. |

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| • The construction of a 6Ml new pump station and rising main in order to cross the N3 to a point where it can gravitate.<br>• Gravity main from this point down to the existing outfall gravity main feeding the Umhlatuzana Sewerage Treatment Works.<br><br>It was, however, noted that the Umhlatazana Treatment works would need to be upgraded in order to service the development, prior to construction commencing. | The effluent will be treated in accordance with the DWS standards, and the treated effluent will be discharged into a downstream watercourse. The Water Use License (WUL) for the package plant was already issued by the DWS in 2019 (Appendix 1).<br><br>The proposed on-site Wastewater Package Treatment Plant is only proposed as an interim solution to allow for the Development to proceed until the Mhlatuzana WWTW is upgraded. The relevant specialists have also been appointed to prepare the necessary rehabilitation and monitoring programmes, to ensure that the Activity is adequately monitored, and to prevent negative impacts on the receiving environment. |
| **Roads** | |
| The EA notes that the project will include upgrades to the existing road networks. The Traffic Assessment conducted by Arup (2015) that was submitted to the Department when the EA was granted, considered two potential scenarios for the development.<br><br>**Scenario 1** comprised of the following upgrades to Kassier Road and the MR551 (currently a single lane in each direction):<br>• Four lanes between the R103 and Alverstone Road and between the northern access point and the MR559 respectively<br>• Five lane cross section with two northbound lanes between Alverstone Road and the M13 interchange<br>• Seven lane cross section with three northbound lanes between the M13 interchange and Cliffdale Road<br>• Six lane cross section with three lanes in each direction between Cliffdale road and the N3 interchange<br>• Seven lane cross section with four northbound lanes between the N3 interchange and the northern access point<br>• Widening of the N3/Kassier Road interchange bridge to six lanes (three lanes per direction) and adding an additional northbound lane along Shongweni Road between the M13 interchange and Hospital Road.<br><br>**Scenario 2**: the road upgrades along Kassier Road and MR551 are the same as scenario 1, however, the section between M13 interchange and Cliffdale Road requires an eight-lane cross section, and the N3 interchange bridge requires a seven lane cross section, with four lanes northbound. Localised intersection widening for Scenario 2 is similar to scenario 1 with a major difference being the N3/Kassier Road interchange. At the northern terminal, a south-to-east on ramp loop is required and the southern terminal a continuous left slip lane, is required from the off-ramp. These road upgrades align to an extent, with the upgrades proposed by KZN DoT and SANRAL, for Kassier Road and the N3/ Kassier Road interchange. | In addition to the road upgrades that were authorised under the existing EA, the Applicant is now required to include the construction of a new loop road near the entrance of the Urban Core precinct, to move the additional original southern access off Kassier Road further south and to also change the location of the public transport holding facilities associated with the road upgrades.<br><br>It should be noted that although the loop road is a new structure, it will be located on the site that was assessed by the various specialists and EAP during the initial EIA process (Site 3 Alternative). The proposed loop ramp is anticipated to result in approximately 5.2ha of vegetation (sugar cane) being cleared.<br><br>THD also propose to construct a new Public Transport holding facility along the intersection of Kassier Road and the P559 Road. The PT holding area will have a footprint of approximately 6500 square metres, but which is situated on land that is currently under sugarcane production. The public transport facility is being proposed in line with the Department of Transport's (DoT) comments on the Traffic Impact Assessment Report.<br><br>The findings of the various specialist assessments (verified in 2021 and 2022) concluded that the western boundary of the site, is being used for sugarcane farming, and so does not increase the risk of impact, from a wetland, vegetation, faunal, agricultural, or heritage perspective. |
| **Condition 3.24.6 and 3.24.8 of the EA: Wetland Offsets** | |

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|---|---|
| The EA stipulates that an offset plan must be developed for the direct loss of wetland, in consultation with EPCPD and EKZNW and which must be approved by both stakeholders prior to implementation. | The findings of the wetland specialist assessment report and rehabilitation plan (GroundTruth, 2015) makes note of the following with regards to the two (2) affected watercourses on site:<br><br>*Wetland 1 (Hydrogeomorphic (HGM) Unit 1):*<br><br>This system is comprised of 4 Hectares (ha) of wetland habitat, but which due to disturbance of the system that has resulted from the sugarcane plantations and surrounding developments, equates to 1.62ha of intact wetland habitat. After construction of the Development, the extent of the wetland habitat will be reduced to around 1.56ha of intact habitat (loss of 0.06ha of wetland habitat).<br><br>*Wetland 2/ HGM 2:*<br><br>This system is comprised of 2.65ha of wetland habitat, equivalent to 1.08ha of intact wetland habitat. Following the implementation of mitigation and rehabilitation measures outline in the specialist report and Environmental Management Programme (EMPr), the intact habitat will be increased to 1.94ha (gain of 0.86ha), post-development.<br><br>The increase in functional wetland habitat (0.86ha) thus exceeds the loss of habitat (0.06ha). As such, the specialist concludes that the recommended rehabilitation measures will be sufficient to offset the impacts on wetland habitat associated with the development.<br><br>Upon engagement with the EPCPD, the Department reviewed the existing specialist assessment and rehabilitation plan, and confirmed that the rehabilitation measures outlined in the reports are sufficient to offset the impacts associated with the development, but requested that the rehabilitation plan be amended to still include the following aspects, in which case the plan can be considered as an on-site offset plan, to fulfil this Condition of the EA:<br>• Implementation timelines<br>• Monitoring programmes (existing monitoring plans attached)<br>• Budget framework<br>• Committee (representative from EPCPD, EKZNW and DWS) to oversee implementation of the rehab and offset plans.<br><br>The wetland rehabilitation plan has been amended accordingly, to be considered the on-site wetland offset plan, to fulfil this condition of the EA. |

## 2.2 Listed and Specified Activities Triggered

The table below (Table 5) provides details on the Activities authorised under the existing EA (DM/0003/2012) in terms of the NEMA EIA Regulations (2010 and 2014, as amended). A copy of the EA can be found in Appendix A of this report.

***Table 5: Activities authorised under the existing EA.***

| Project component | Listing Notice and Activity No. of the EIA Regulations, 2010 as applied for | Activity similarly listed in 2014 Listing Notices and Activity No: |
|---|---|---|
| Construction of water pipelines linking to the surrounding reticulation, sewer line and stormwater attenuation within 32m of a watercourse. | **GNR 544 Activity 9 –**<br><br>The construction of facilities or infrastructure exceeding the 1000 metres in length for the bulk transportation of water, sewage or stormwater<br>(i) with an internal diameter of 0.36 metres or more; or<br>(ii) with a peak throughput of 120 litres per second or more,<br><br>Excluding where:<br>a. such facilities or infrastructure are for bulk transportation of water, sewage or stormwater drainage inside a road reserve; or<br>b. where such construction will occur with urban areas but further than 32 metres from a watercourse, measured from the edge of the watercourse.<br><br>Infrastructure relating to stormwater control and management of sewage will be required to support the proposed development. | **GNR 983 Activity 9 –**<br><br>The development of infrastructure exceeding 1000m in length for the bulk transportation of water or stormwater,<br>(i) with an internal diameter of 0.36 metres or more; or<br>(ii) with a peak throughput of 120 litres per second or more,<br><br>Excluding where such development occurs<br>(a) within a road reserve<br>(b) inside an urban area |
| Construction of facilities or infrastructure for the transmission and distribution of electricity | **GNR 544 Activity 10-**<br><br>The construction of facilities or infrastructure for the transmission and distribution of electricity<br>i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or<br>ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more. | **GNR 983 Activity 11 –**<br><br>The development of facilities or infrastructure for the transmission and distribution of electricity |
| Construction of infrastructure within 32m of a watercourse | **GNR 544 Activity 11 -**<br><br>The construction of:<br>i) canals;<br>ii) channels;<br>iii) bridges;<br>iv) dams;<br>v) weirs;<br>vi) bulk stormwater outlet structures;<br>vii) marinas;<br>viii) jetties exceeding 50 square metres in size;<br>ix) slipways exceeding 50 square metres in size;<br>x) building exceeding 50 square metres in size;<br>xi) infrastructure or structures covering 50 square metres or more<br>Where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the | **GNR 983 Activity 12 –**<br><br>The development of (iv) dams where the dam including infrastructure and water surface area exceeds 100 square metres in size, where such a development occurs (a) within a watercourse or (c) within 32m of a watercourse. |

| | | |
|---|---|---|
| | edge of a watercourse, excluding where such construction will occur behind the development setback line. The proposed development will require the construction of infrastructure within 32 metres of a watercourse, namely the wetlands on the site. | |
| Construction of a reservoir | **GNR 544 Activity 12 -**<br><br>The construction of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more, unless such storage falls within the ambit of activity 19 of Notice 545 of 2010. | **GNR 983 Activity 13 –**<br><br>The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs with a combined capacity of 50 000 cubic metres or more. |
| Storage of dangerous goods | **GNR 544 Activity 13 -**<br><br>The construction of facilities or infrastructure for the storage and handling, of dangerous good, where such storage occurs in containers with a combined capacity of 80 but not exceeding 500 cubic metres.<br><br>Depending on the tenant composition, there is the potential for the storage of "dangerous goods" such as oils and paints. | **GNR 983 Activity 14 –**<br><br>Development of facilities or infrastructure for the storage or handling of dangerous goods where storage occurs in containers with a capacity of 80 cubic metres or more but less than 500 cubic metres. |
| Infilling or removal of materials from wetlands | **GNR 544 Activity 18 -**<br><br>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock from:<br>i) a watercourse;<br>ii) the sea;<br>iii) the seashore;<br>iv) the littoral active zone, an estuary or a distance of 100m inland of the high-water mark of the sea or an estuary, whichever distance is the greater<br>but excluding where such infilling, depositing, dredging, excavation, removal or moving<br>a) is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority;<br>b) occurs behind the development setback line.<br><br>The construction phase of the development will require the infilling/ depositing of material of more than 5 cubic metres into a watercourse, namely the wetlands identified on the site. | **GNR 983 Activity 19 –**<br><br>The infilling or depositing of material of more than 5 cubic metres or excavation or removal of soil of more than 5 cubic metres from<br>(i) a watercourse |
| Construction of access roads | **GNR 544 Activity 22 -**<br><br>The construction of a road, outside urban areas,<br>i) with a reserve wider than 13.5 metres or,<br>ii) where no reserve exists where the road is wider than 8 metres, or<br>iii) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Notice 545 of 2010.<br><br>Access roads will be required to service the proposed development. | **GNR 983 Activity 24 –**<br><br>Development of (i) a road with a reserve wider than 13.5m but excluding where such roads occur within (b) an urban area |

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|---|---|---|
| Expansion of water pipelines, and sewer lines | **GNR 544 Activity 37 -**<br><br>The expansion of facilities or infrastructure for the bulk transportation if water, sewage or stormwater where:<br>a) the facility or infrastructure is expanded by more than 1000 metres in length; or<br>b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more<br>Excluding where such expansion:<br>i) relates to transportation of water, sewage, or stormwater within a road reserve; or<br>ii) where such expansion will occur within urban areas but further than 32 metres from a watercourse, measured from the edge of the watercourse.<br><br>The expansion of infrastructure for the bulk transportation of water, sewage and stormwater is required for this development. | **GNR 983 Activity 45 –**<br><br>Th expansion of infrastructure for the bulk transportation of water or stormwater (i) with an internal diameter of 0.36m, or (ii) a peak throughput of 120 seconds per litre |
| Expansion of infrastructure from the Marian Ridge substation for the initial distribution of electricity | **GNR 544 Activity 38 -**<br><br>The expansion of facilities for the transmission and distribution of electricity where the expanded capacity will exceed 275 kilovolts and the development footprint will increase.<br><br>The proposed development will require the expansion of existing infrastructure from the Marian Ridge major substation for the initial distribution of electricity. | **GNR 983 Activity 47 –**<br><br>Expansion of facilities for the transmission and distribution of electricity that exceeds 275 kilovolts and an increase in the development footprint |
| Upgrades to the existing road network | **GNR 544 Activity 47 -**<br><br>The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre-<br>(i) where the existing reserve is wider than 13.5 metres; or<br>(ii) where no reserve exists, where the existing road is wider than 8 metres excluding widening or lengthening occurring inside urban areas. | **GNR 983 Activity 56 –**<br><br>Widening of a road by more than 6 metres or lengthening by more than 1km (iii) where the existing road reserve is wider than 13.5m or (iv) where no road reserve exists, where the road is wider than 8m, excluding roads in urban areas. |
| The road and interchange infrastructure will be wider than 30 metres and may involve upgrades to roads administered by national or provincial authorities | **GNR 545 Activity 18 -**<br><br>The route determination of roads and design of associated physical infrastructure, including roads that have not yet been built for which routes have been determined before 03 July 2006 and which have not being authorized by a competent authority in terms of the Environmental Impact Assessment Regulations, 2006 or 2009, made under section 24(5) of the Act and published in Government Notice No. R.385 of 2006,-<br>(i) it is a national road as defined in section 40 of the South African National Roads Agency Limited and National Roads Act, 1998 (Act NO.7 of 1998);<br>(ii) it is a road administered by a provincial authority;<br>(iii) the road reserve is wider than 30 metres; or<br>(iv) the road will cater for more than one lane of traffic in both directions. | **GNR 984 Activity 27 –**<br><br>The development of<br>(i) a national road<br>(ii) road administered by a provincial authority<br>(iii) with a reserve wider than 30m<br>(iv) road catering for more than one lane of traffic per direction |

A pre-application meeting was held with EDTEA on 23 September 2021 to determine the requirements of the proposed application, during which it was confirmed that the proposed Activity will not trigger any additional listing notice activities. EDTEA has, however, requested that the application include Activity 28 of Listing Notice 1 (GNR 327, 2017) of the EIA Regulations (2014, as amended) due to this Activity being left out of the original EA in error, as the Activity had already been applied for and assessed in the original EA process (see meeting minutes in Appendix F). Proof of this correspondence can also be found in Appendix F. The listed activity being applied for in this amendment application, is shown below (Table 6).

***Table 6: Activities being applied for in this Amendment Application in terms of the Listing Notices Activities published under the EIA Regulations, 2014 as amended.***

| Government Notice No. | Activity No. | Description |
|---|---|---|
| GNR 327 of April 2017 | 28 | Residential, mixed, retail, commercial or industrial developments where such land was used for agriculture purposes on or after 1998, where such development (i) occurs inside an urban area where the land to be developed is bigger than 5ha or (ii) outside an urban area, where the land to be developed is bigger than 1 ha.<br><br>**The proposed development will comprise of the construction of the Ntshongweni Mixed-Use Development (Urban Core Precinct) and associated infrastructure (bulk water, sewage, and electricity supply services, as well as upgrades to the external road network). The development site is approximately 106.54 hectares in extent and is currently being used for sugar cane agricultural production. This land will thus be transformed, and will comprise of various land uses, including business (24.89ha; 248942m2), the primary Urban Core Shopping Precinct (14.38ha 143854m2), mixed-use (21.361ha, 213 617m2), road networks (17.954ha; 179545m2) and green open space (27.152ha; 271526m2). The development will also include the construction of a temporary on-site sewage treatment plant (76m x 49m) with a processing capacity of 1.95Ml/day; the construction of a new loop ramp that will result in clearing of 5.2ha; as well as the construction of a new Public Transport Holding Facility (6200 square metres footprint) on the site which is currently under sugarcane production.**<br><br>**It should, however, be noted that the site has already been rezoned from Agricultural land use.** |

## 2.3 Need and Desirability

The proposed Ntshongweni Mixed-Use Development (Urban Core Precinct, now branded as Westown) will be located on a property owned by the Applicant, on land which is currently being used for sugar cane production. The Development will comprise of a retail centre along with supporting logistics, light industry, business, residential and mixed-use land uses. Green open space has also been incorporated into the development design as the no-development ecological corridor, based on the assessments and recommendations of the various specialists, to limit intrusion into the sensitive wetland habitat and drainage lines located on site, to promote a more sustainable development (Figure 3).

The development is aligned with the eThekwini Municipality Spatial Development Plan (2009) for the Outer West region to aid development along the proposed tourism/ recreation corridor along Kassier Road, as well as with the Shongweni Local Area Plan (LAP) for the Central-Eastern Precinct which aims to promote the establishment of a new Town Centre with several supporting economic nodes. The retail sector has been noted to play an important role in contributing to the economy

of urban areas (Urban Econ, 2021), as it provides services to local residents, and also acts as an attraction to visitors from surrounding areas, as well as investors which further contributes to the local economy of an area. Developers, investors, and tenants will be able to purchase freehold stands within the precincts upon which they can develop retail facilities, offices or warehousing etc. for their various business activities, or to lease buildings/portions of buildings that could be constructed by the Developer.

In addition to being aligned with national, provincial, and municipal planning policies, the proposed development has the potential to provide socio-economic benefit in terms of job creation, economic growth, and poverty alleviation, and is therefore deemed to be necessary and desirable for the Shongweni area and the eThekwini Municipality as a whole. The proposed mixed-use development is likely to result in the creation of approximately 3726 temporary jobs during the construction phase, and 359 permanent employment opportunities during the operational phase, thereby making a meaningful contribution to economic activity in the region. Job opportunities will be available to the local community thereby reducing commuting time and costs (a key objective of national and provincial government). The proposed development will also be positive due to the increased convenience for surrounding shoppers and residents to access the shopping centre in closer proximity to their households, as opposed to having to travel to Hillcrest, Pinetown, or Waterfall. It is also likely that there will be an increase in the value of surrounding properties which will be favourable to residents.

As previously indicated, the development has already been granted Environmental Authorisation (EA), whereby this amendment report has been prepared for the proposed changes to the Development and existing EA. The proposed changes to the development design for which the amendment of the EA is required, is needed to ensure that the service infrastructure associated with the development will have adequate capacity to support the development, so that the Applicant can proceed with construction of the Ntshongweni Mixed-Use Development (Urban Core Precinct) which in turn will help realise some of the objectives of the development, and for the benefits associated with the proposal to be set in motion whilst the municipality upgrades their electricity and sewage infrastructure that will support the ultimate requirements of the Development.

At the time of the original EIA submission, eThekwini Water and Sanitation (EWS) had confirmed that the WWTW would be upgraded to support the Development, however due to circumstances outside the control of the Ntshongweni Development, the upgrade of the treatment works has still not been done. The proposed on-site Sewage Treatment Plant is thus proposed as an interim solution to allow for the Development to proceed, and which will be situated outside of the 1:100-year floodline and wetland buffer zone. The wastewater will be treated in accordance with the Department of Water and Sanitations (DWS) General Standards / Limits for discharge to stream or watercourse, as noted in terms of Section 21(f) of the National Water Act (Act No. 36 of 1998), and will also be designed and constructed in accordance eThekwini Municipalities standards. This will allow for the Development to proceed, and to alleviate pressure on the Municipality, so that the upgrades can be undertaken as required.

It must also be noted that the Applicant invested in the services of several specialists (engineers, architects, EAP, and wetland, aquatic, agricultural and heritage specialists, to design the proposed Development, and to assess the impacts thereof, and to apply for EA (which was issued in 2015 and which is valid for 10 years). If the Applicant is required to put development on hold until such time that the Municipal infrastructure is upgraded – the timeframes of which are unknown, then the economic impact on the EA becoming invalid, will be significant. The Applicant has further appointed the specialists to verify the original assessments, and to apply for an amendment to the EA, to meet the requirements of the various authorities, so that the development can proceed, and so that socio-economic growth can be promoted.

The changes proposed to the road network, to include the new loop ramp and public transport holding areas, are as per the comments made by the relevant authorities, in response to the findings of the Traffic Impact Assessment (Arup, 2021).

## 2.4 Legislation applicable to the project

The section below provides a description of all legislation, policies and/or guidelines that are applicable to the application as contemplated in the EIA regulations (2014, as amended).

| Title of legislation, policy or guideline | Applicability to the project |
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| The Constitution of South Africa (No. 108 of 1996) | The Constitution is the supreme law of South Africa which lays the foundation for protecting the rights of its citizens and for providing guidance on how associated legislation is to be promulgated. Section 24 of the Constitution states that everyone has the right to:<br>• an environment that is not harmful to their health or well-being; and<br>• to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that —prevent pollution and ecological degradation;<br>• promote conservation; and<br>• secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.<br><br>The Constitution cannot manage environmental resources as a stand-alone piece of legislation, hence, additional legislation has been promulgated in order to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld on an on-going basis throughout the country.<br><br>**KSEMS and other specialists have been appointed to help ensure that the proposed development is conducted in a manner that promotes sustainable socio-economic development whilst maintaining the integrity of the environment.** |
| National Environmental Management Act, 1998 | In terms of Section 24(2) of the NEMA the Minister may identify activities which may not commence without prior authorisation The Minister thus published GNR 327 (Listing Notice 1), 325 (Listing Notice 2) and 324 (Listing Notice 3) (4 December 2014, as amended in April 2017) listing activities that may not commence prior to authorisation. The regulations outlining the procedures required for authorisation are published in GNR 326 (EIA Regulations) (4 December 2014, as amended). Listing Notice 1 identifies activities that require a Basic Assessment (BA) process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 2 identifies activities that require a Scoping & Environmental Impact Report (S&EIR) process to be undertaken, in terms of the EIA Regulations (201, as amended), prior to commencement of that activity. Listing Notice 3 identifies activities within specific areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity.<br><br>This Act places an onus on all levels of government to ensure that risk to the environment is identified and where it cannot be avoided, is minimised and mitigated. Should there be any impact on the environment during or after construction, the applicant, has a duty to take measures to address these impacts and undertake the necessary clean up and mitigation measures (Section 28 of the NEMA: EIA Regulations).<br><br>**The Applicant is applying for an amendment of the existing Environmental Authorisation for the Ntshongweni Mixed Use Development (Urban Core Precinct) to make changes to the already authorised project design and scope, to comply with the conditions of the NEMA, the EA, and various competent authorities. All activities must be authorised by the Competent Authority, prior to construction commencing.** |
| National Environmental Management: Biodiversity Act (NEM:BA) (Act no. 10 of 2004) | Sections 52(1)(a) and 56(1) of the National Environmental Management Biodiversity Act (NEM:BA) (Act no. 10 of 2004) state that the Minister may publish national lists of species and ecosystems, respectively, that are threatened or are in need of protection. A list of species that are threatened or are in need of protection was published in GNR 151 (23 February 2007), with GNR 152 (23 February 2007) detailing the regulations relating to such species. These regulations are imposed where |

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| | restricted activities involve specimens of listed threatened or protected species. GNR 152 defines the requirements of permitting and the process related thereto.<br><br>**A vegetation specialist was appointed as part of the original EIA process to undertake an assessment of the status quo of the vegetation communities present on site, to accurately assess what potential impacts might result from the development. The specialist noted that the site has been transformed by sugar cane cultivation, and that the only natural vegetation occurring on site, is situated within the wetland habitats, which have been incorporated into the development design as a no-development ecological corridor/ green open space, to preserve these areas. The findings of the specialist assessment were verified by the specialist, again in 2022 (Appendix G1).**<br><br>**A specialist was also appointed to draft a Landscape Management plan which demarcates the sensitive/ no development areas, which has been incorporated as open space in the development layout (see Appendix B). The Applicant must still adhere to all conditions recommended within the specialist reports, as these were verified by the specialists, to still be valid to the conditions observed on site.** |
| National Forest Act (Act No. 84 of 1998) | This Act aims to promote the conservation of natural forests. Permits are required to cut or remove protected tree species. |
| KwaZulu-Natal Nature Conservation Management Act, 1997 (Act No. 9 of 1997) | The Act provides for the management of nature conservation within KwaZulu-Natal and protected areas whereby permits are required to remove or relocate protected plant species. |
| Natal Nature Conservation Ordinance (Act No. 15 of 1947) | An application is required for the removal/relocation of plants listed under this ordinance through Ezemvelo KZN Wildlife. |
| National Water Act (NWA) (Act no. 36 of 1998) | Section 22(1) of the NWA states that a person may only use water if the water use is authorised by a license under NWA or if the responsible authority has dispensed with a license requirement if it is satisfied that the purpose of the NWA will be met by the granting of a license, permit or other authorisation under any other law.<br>A person may only use water without a license if the water use is permissible:<br>• Under Schedule I of NWA;<br>• As a continuation of an existing lawful use; and<br>• In terms of a general authorisation issued under Section 39 of NWA.<br><br>**A water use license (WUL) was issued for the Ntshongweni Mixed-Use Development (Urban Core Precinct) by the Department of Water and Sanitation (DWS) in 2018 (see Appendix A), in terms of Section 41 of the NWA for activities listed in Section 21 of the said Act. He WUL was issued in terms of Section 21 (c) and (i) of the NWA for construction of the development within 500m of watercourses; construction activity within watercourses; and discharging of treated effluent from the on-site sewage treatment plant, into a watercourse.**<br><br>**A WUL Application is also being submitted for the proposed upgrades to the external Road network (i.e., Kassier Road). Should the Applicant wish to undertake any additional water use activities, then these will need to be applied for with the DWS before commencing with such activities.** |
| National Environmental Management Act, 1998<br>National Environmental Management: Waste Act, 2008 | The Act imposes obligations on the holder of waste to take reasonable measures to manage waste in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith. |

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| | **The development does not trigger any listed waste management activities. However, as part of the Applicant's requirements for duty of care in terms of Section 28 of the NEMA, appropriate waste management must be implemented during all phases of the development, in accordance with the approved EMPr.** |
| Conservation of Agricultural Resources Act: Act No 43 of 1983 | This Act provides for the regulation of agricultural resources to protect and conserve the natural soil, water and vegetation resources.<br><br>**The Agricultural specialist confirmed that the proposed development does not pose a significant risk in terms of the loss of agricultural land, and food security, considering the extent of sugar cane production in KwaZulu-Natal, and specifically, due to the investments made by THD for the planting of new sugarcane fields. It was also noted that there are more benefits associated with the development, than the loss of this land for sugarcane production, including fulfilling the expansion of the outer west node of the eThekwini Municipality, and the potential for investments, training, and economic growth. The wetland and ecological specialists also noted that the proposed development does not pose a significant threat to the natural environment if all applicable mitigation measures and recommendations are implemented.** |
| National Heritage Resources Act, 1999 | The act provides protection of and management of conservation worthy places, areas and objects by heritage authorities, by means of registration and the implementation of certain protections.<br><br>**The Heritage Impact Assessment has confirmed that there are currently no structures older than 60 years associated with the site. As such, the development does not a pose a risk to heritage resources and does not require any permits from the Heritage Resource Agency (see verification letter in Appendix G1).** |
| KwaZulu-Natal Heritage Act, 2008 (Act No. 4 of 2008) | This Act aims to promote the conservation of cultural heritage resources and the management of activities that may have a significant impact on cultural heritage resources – specifically within KwaZulu-Natal. |
| Occupational Health and Safety Act 1993 | The main objective of this Act is to provide for the health and safety of persons at work, including aspects which are hazardous to health and safety. In terms of major hazardous installation, the regulations shall apply to employers, self-employed persons and users, who have on their premises, either permanently or temporarily, a major hazard installation or a quantity of a substance which may pose a risk that could affect the health and safety of employees and the public.<br><br>**During the construction phase of this development all the requirements of Occupational Health and Safety Act 1993 should be adhered to. The site personnel (resident engineer, environmental officer and contractor) should implement aspects of this Act to minimise risk to the health and safety of all those who will be on site on a regular basis.** |
| eThekwini Municipality by-laws (Solid Waste By-laws) | The By-law specifies the appropriate management, removal and control of solid, hazardous and industrial waste.<br><br>**These requirements will need to be adhered to in both the construction and operational phase of the development. Waste must be temporarily stored on site, in appropriate bins (wind and scavenger proof) until such time that it is disposed of (regular intervals) at a registered waste disposal facility, and the safe disposal slips recorded in the environmental file on site. Waste must be managed in accordance with the EMPr (Appendix H).** |
| General Municipal By laws (2016) – Dust | The production of harmful, noisome or offensive dust, fumes, gases, smells or smoke which arises from or are caused by any activity, the operation or use of equipment or machinery or the condition of any property, movable or immovable.<br><br>**An EMPr which is site specific for the development, has been prepared to address in detail the mitigation measures and recommendations to potential impacts which may arise from the development (Appendix H).** |

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| General Municipal By laws (2016) – Noise | The reproduction of noise or vibration which arises from, or is caused by, the operation or use of equipment and/or machinery. These standards specify the maximum ambient noise level acceptable in various land use type zones.<br><br>**The Developer must ensure that construction activity on site does not exceed acceptable noise levels. Should the permitted noise levels need to be exceeded, all potential affected Interested and Affected Parties (I&APs) must be notified accordingly. An EMPr, which is site specific for the development has been prepared to address in detail, the mitigation measures and recommendations to potential impacts which may arise from the development (Appendix H).** |
| Planning and Land Use Management By-Law of eThekwini Municipality of 2016 | This By-Law provides for the Municipal Spatial Development Framework and the land use scheme of the Municipality; to provide for the development of the package of plans; to regulate and manage spatial and land use planning and development; to provide for the categorisation of land development applications; to provide for processes and procedures for land development applications; to provide for compliance with the land use scheme; to provide for an Appeal Authority; to provide for offences and penalties and to provide for matters incidental thereto.<br><br>**The development is aligned with the eThekwini Spatial Development Plan and Shongweni Local Area Plan in that the development will comprise of a mixed-use development in the Outer West area and contribute to growth of the local economy, specifically along the proposed tourism and recreation corridor along Kassier Road.Although the site is currently being used for sugar cane production, the site has already been rezoned from Agricultural Land use to support the development.** |
| Hazardous Chemical Substance Regulations 1995 | These regulations stipulate requirements for storage and handling of hazardous chemical substances and provide guidelines for training of staff. Any hazardous chemical substances used during construction must be identified, stored, used and disposed of in accordance with this legislation.<br><br>**A Spill Contingency Plan has been compiled for monitoring and managing spills during construction. This plan must be implemented, along with the mitigation measures outlined in the EMPr.** |

# 3. ALTERNATIVES

The section below discusses the alternatives that were considered as part of the application. It must be noted that this application is being submitted for changes to the design and scope of the already authorised Ntshongweni Mixed-use Development (Urban Core Precinct).

## 3.1 Site Alternatives

An assessment of alternative sites for the development was undertaken as part of the original EIA process (KSEMS, 2015), but not for this application, as the site is owned by the Applicant, and the proposed development already received EA (DM/0003/2012). As such, this application is only for the amendments to the already authorised development scope and design. The changes being applied for are limited to the approved footprint as much as possible, in that the sewage treatment plant will be located in the previously assessed and approved sewage pump station (with a larger footprint), whilst the new loop ramp and public transport holding areas are proposed in accordance with the findings and requirements of the Traffic Impact Assessment (Arup, 2021) and Transport Authorities.

## 3.2 Layout Alternatives

As mentioned above, the proposed changes to the development, is to include an on-site sewage treatment plant, new loop ramp, and new public transport holding facility. The new loop ramp and public transport holding facility has been designed to be located near the site entrance, to improve accessibility, and to adhere to the recommendations of the Traffic Impact Assessment Report, and comments made by the respective Transport Authorities. As these aspects will be constructed on land being used for sugar cane and which is owned by the Applicant, alternative layouts were not considered for these aspects as they will not be located within sensitive areas, and will not significantly increase the risk of impact on the receiving environment, as confirmed by the various specialists in their updated verification letters (Appendix G1). Potential infrastructure/ technology alternatives were only considered for the sewage service infrastructure, as noted below.

## 3.3 Technology/Infrastructure Alternatives

The proposed sewage package treatment plant will be located in the same position as the previously assessed and authorised sewage pump station, to minimise changes to the development design as much as possible, although it will have a larger footprint. The different infrastructure considered for processing the sewage of the Development, is discussed below.

### *3.3.1 Alternative 1 (Proposed Preferred Alternative): On-site sewage treatment plant*

The preferred and proposed alternative (Alternative 1), is for THD to construct a temporary on-site sewage treatment package plant measuring 76m x 49m in extent (3724m$^2$), in the same location as the previously assessed and authorised sewage pump station which had a footprint of 25m x 26m (see Engineering Services Report prepared by Bosch, 2021), to process between 1.95 and 2 Mega Litres (ML) of effluent per day (ML/day). The proposal is to phase the implementation, starting with between a 0.5ML/day and 1 ML/day plant (depending on technology accepted by eThekwini Water and Sanitation (EWS) Department) and increasing the capacity to between 1.95 and 2 ML/day to match the development take-up, using Sequencing Batch Reactor (SBR) technology or other similar approved technology. The sewage package plant will generate approximately 0.6m$^3$ of wet sludge per day, which will be stored on site within a 50m$^3$ tank. The sludge will then be removed via Vacuum Tanker Services (VTS), at approximately 1.5 VTS every month and disposed of at a licenced waste disposal facility. Proof of safe disposal will be monitored by the ECO.

The effluent will be treated in accordance with the relevant standards prescribed by the DWS, either to General Limit Values (GLV) or Special Limit Values (SLV). The treated effluent will then be discharged into the surrounding wetlands which drain into the Wekeweke River. The Applicant has already received their Water Use License (WUL), for discharging treated wastewater into the affected watercourse (a copy of the WUL can be found in Appendix A). The relevant specialists have also been appointed to verify the findings of the original assessment reports, and to assess whether the proposed package plant will significantly increase the risk of impact on the receiving environment. The specialists have also prepared the required wetland rehabilitation and offset plan; Wekeweke ecological reserve Determination study; stormwater management plan; and surface water, riverine, and wetland water quality monitoring plans; which will be strictly adhered to prevent negative impacts on the receiving environment.

Implementation of the package plant, will also result in Condition 2.6 of the existing EA being met.

### *3.2.2 Alternative 2: Mhlatuzana Regional WasteWater Treatment Works (WWTW)*

The initial and ultimate preferred option is for the development to tie into the existing Umhlatazana or Dassenhoek WWTW. At the time of the original EIA submission, eThekwini Water and Sanitation (EWS) had confirmed that the WWTW would be upgraded to support this Development. However, due to circumstances outside the control of the Applicant, this upgrade did not have the necessary environmental approvals within the timeframes needed to support the Development, and so the WWTW has still not been upgraded. This option, would require that the Applicant place the Development on hold until such time that the uMhlatuzana or Dassenhoek WWTW is upgraded, the timeframe of which, is unknown.

The proposed on-site Wastewater Package Treatment Plant (current preferred alternative) is thus proposed as an interim solution to allow for the Development to proceed and for the potential socio-economic benefits associated with it (employment opportunities, and economic growth), whilst the Municipality gets the required approvals and infrastructure upgrades in place. The development will tie into this system once the eThekwini Municipality has undertaken the required upgrades.

It should be noted that the Applicant has invested in the services of several specialists to date, during the original EIA process, to design, assess and apply for the proposed infrastructure associated with the Development, in response to which EA was granted. Unfortunately, the Municipality is unable to meet the requirements of the development. The socio-economic benefits associated with the development, will also not materialise until such time that the WWTW has sufficient capacity. As the Development is well aligned with the eThekwini Spatial Development Plan and Shongweni Local Area Plan, the strategic objectives of these government initiatives will also not be achieved.

### *3.3.2 Alternative 3: Septic Tanks (current situation)*

The current sewage system in place on site, is comprised of septic tanks. Septic tanks differ from treatment plants, in that the septic tank just store the sludge until a service provider empties the tanks. There is no treatment involved.

The septic tanks will be owned by the farm operator so no external permits would be required. However, the septic tanks may experience issues in terms of sewer overflow in cases of truck unavailability. The infrastructure will not have the capacity to service the developments ultimate requirements and the infrastructure is outdated and may pose a greater risk to the receiving environment.

### *3.3.3. Alternative 4: Hillcrest WWTW*

The Applicant's team also considered having the proposed development tie into the Hillcrest Waste Water Treatment Works. However, as this system does not have the capacity to service the development, this was not considered a viable option. This alternative was therefore not further assessed as part of this report.

## 3.4 No-go Alternative

The last option that can be considered, is that of leaving the land in its current state (sugar cane production) and having no sewage treatment solution in place - in which case the development will not proceed. This option does not seem most viable for the Applicant as the development already received EA, and a WUL for construction of the sewage package plant and the associated discharging of treated effluent into the Wekeweke River.

The Ntshongweni Mixed Use Development (Urban Core Precinct) is also aimed at promoting socio-economic development, by transforming land that is being used for sugar cane production, to promote the establishment of a new Town Centre, and so will play an important role in contributing to the local and regional economy. The development will provide services to residents, aid as an attraction to visitors from surrounding areas, as well as attract investment into the area. Developers, investors, and tenants will purchase freehold stands within the precincts upon which they could develop retail facilities, offices or warehousing etc. for their various business activities or to lease buildings/portions of buildings that could be constructed by the developer. The development will in turn, result in the creation of employment opportunities during both the construction and operational phases of the development.

Whilst it is noted that the proposed on-site sewage package plant does a pose a risk of environmental contamination should the infrastructure malfunction, it is only proposed as a temporary solution, so that construction can commence, whereby the benefits associated with the development can materialise, until such time that the eThekwini Municipality has upgraded the required infrastructure, so that the development can tie into the Municipal sewer system. Various specialist mitigation and monitoring programmes have been prepared, to limit negative impacts on the environment, as best as possible.

See below summary of the positive and negative aspects associated with each alternative considered for the proposed sewage treatment for the site.

***Table 7: Positive and negative aspects associated with each alternative considered for the proposed sewage treatment of the Development.***

| | Alternative 1 (Preferred Alternative): sewage treatment package plant | Alternative 2: uMhlatuzana WWTW | Alternative 3: Septic tanks | No-Go Alternative |
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| **Description of Proposal** | • Construction of a new on-site Sewer Treatment Package Plant. | • Treat wastewater at the Mhlatuzana Regional WWTW. | • Using the current sewer system comprising of septic tanks. | • Not establishing sewage infrastructure, in which case the development may not proceed, as per Condition 2.6 of the EA. |
| **Negative Impacts** | • Potential for partial or untreated effluent discharge to a nearby watercourse due to system malfunction, which may result in high Ecoli levels in watercourse.<br>• Contamination of the surrounding watercourses may result in negative impacts on water quality, and aquatic biodiversity and ecosystem functioning. | • Pumping of effluent over a distance of 1km (length of pipeline) has cost implications.<br>• Potential for contamination of the receiving environment in the event of infrastructure malfunctions, or poor maintenance, due to effluent leaking into the environment.<br>• Rising main will need to be constructed, resulting in disturbance of the receiving environment, as the rising main will traverse wetlands and other watercourses.<br>• A 17km long large Gravity Main Pipeline will be required from Kassier Road to the WWTW.<br>• The longer line will result in higher pressures and will require high maintenance in terms of air valves and scour valves, as a result of hills and valleys (Potential scour of line into watercourses).<br>• uMhlatuzana WWTW would need to be upgraded (timeframes unknown and there are time and cost implications for such an upgrade to | • The current sewer system being used is septic tanks.<br>• Septic tanks present a challenge in terms of risks of sewer back up problems and overflow, in the event case of truck unavailability (workers on strike).<br>• Corrosion of corrugated iron tanks which increases the risk of environmental contamination.<br>• Drain field overflow, when pipes leak and black water seeps intothe ground, resulting in foul odours and contamination.<br>• Contaminated stormwater runoff may enter the surrounding watercourses, which will negatively impact water quality, aquatic biodiversity, and ecosystem functioning. | • The development will not be permitted to proceed, as Condition 2.6 of the EA requires that a sewage system with sufficient capacity be identified, prior to construction.<br>• The socio-economic benefits associated with the development in terms of employment opportunities and economic growth, will not materialize.<br>• The Applicant already received the EA and the WUL for the development and associated activities, but cannot proceed with the development because the Municipal infrastructure has not been upgraded to have sufficient capacity.<br>• Not implementing the changes being applied for under this amendment application, will result in the conditions of the existing EA not being met (Condition 2.6 for sewage; and Conditions 3.24 for wetland |

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| | | be undertaken).<br>• Servitudes would need to be registered when crossing private land. | | rehabilitation and offset). The changes to the road network will result in the requirements of the TIA and comments of the relevant authorities not being met.<br>• The benefits associated with the development will not materialize. |
| **Mitigation Measures** | • The package plant will be designed with an overflow facility that can accommodate for 1-day storage.<br>• Maintenance by management association will also be linked to the overall precinct.<br>• Employ / Contract specialist to managethe Package Plant.<br>• Implementation of the EMPr, wetland rehabilitation and offset plan, stormwater management plan, and riverine, wetland, and surface water quality monitoring plans.<br>• Implementation of the mitigation and monitoring measures outlined in the Wekeweke reserve determination report, that will allow for early a robust monitoring system, and so, ensure a risk averse approach is adopted, and that mitigation measures are implemented timeously, before significantly | • An additional overflow pond to be constructed.<br>• Flow meter on both ends of the line to traceleakages.<br>• Appropriate design and careful construction. | • Frequent emptying of the septic tanks.<br>• Taking better Care of toilets, keep warnings of what can be flushed down to keep the tank system running. | • NA |

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| | impacting the receiving environment (as required). | | | |
| **Positive Impacts** | • Lower Power demand.<br>• At full operation, effluent will be available for use in activities which require non-potable water i.e. irrigationwhich will reduce potable water demand (in line with the recommendations of the Wekeweke reserve study).<br>• The specialist (GroundTruth, 2022) identified that the additional water inputs into the river may be in terms of promoting active flows in the system. The additional flows are expected to have a positive impact in terms of allowing establishment of marginal vegetation along the edge of the river, which is currently incised through bank erosion. This in turn will provide habitat and cover for aquatic macroinvertebrates and fish. The specialist further noted, that although the above-mentioned increase in flow velocity may lead to increased erosion, the impacts can be easily mitigated through active management of the riparian habitat, as presented in the Rehabilitation Plan for the | • Treating at central works may have better capacity to accommodate system malfunctions.<br>• The Municipality will be responsible for servicing the ultimate sewage demands of the development, and by not proceeding with the sewage package plant, there may be cost savings to the Applicant, but the timeframes within which the WWTW will be upgraded is unknown, and so the various socio-economic benefits associated with the development will not materialize.<br>• No discharging of treated effluent into the Wekeweke River (although this can be mitigated to acceptable levels through strict mitigation and monitoring). | • None identified for this option. | • No additional disturbance to the receiving environment (as a result of development). It must, however, be noted that the site and associated watercourses are already degraded as a result of the sugar cane farming practices, and surrounding road, residential and commercial developments.<br>• The development will promote socio-economic growth through employment and investment in the area, and which is aligned with the strategic objectives of the eThekwini Municipality SDP. These benefits will not materialize in the outskirts of the Municipality, which requires socio-economic development. |

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| | Ntshongweni Mixed Use Development (GroundTruth, 2022), which will help to stabilise the channel and banks of the Wekeweke River. | | | |
| **Merits of the Proposal** | • The Package Plant will be owned and maintained by the Management Association and therefore, no additional permissions will be required (e.g. servitude registration).<br>• There will be no need for pumping across great distances, hence, more cost effective and energy efficient.<br>• Operation and Implementation of mitigation and monitoring measures recommended in the various specialist reports, will be strictly adhered to, which will reduce the risks of the proposal to acceptable levels, and which may even benefit the watercourses through the active flows that will be achieved.<br>• Mitigation and monitoring of the wetland rehabilitation and offset plan will be overseen by a committee made up of members of EPCPD, EKZNW, and DWS. | • Single treatment works in an area and unable to sustain the capacity to treat the effluent currently.<br>• Additional funds to upgrade the package plant totreat and manage the capacity of the effluent. | • The Conservancy Tank will be owned by the farm operator / leasee, whereby no external permits will berequired. | • Less risk of disturbance to the environment, and contamination thereof. However, the development has already been granted EA, and so, impacts on the receiving environment will occur, even if the changes being applied for are not approved. This was confirmed by the various specialists in the updated verification letters, where it is advised that these changes do not significantly increase the risk of impact on the receiving environment.<br>• The development has already received EA (there is a risk of the development not proceeding until the WWTW is upgraded, as the timeframes for this is unknown). |

*As mentioned earlier, the Development will tie into the Mhlatuzana WWTW, once the infrastructure has been upgraded, and the required approvals have been obtained.*

# 4. CHARACTERISTICS OF THE RECEIVING ENVIRONMENT

The condition of the Site was described in detail in the Final Environmental Impact Report (EIR) prepared by KSEMS (2015) with input from the various specialist studies, in response to which EDTEA granted EA (see EIR in Appendix G2). The site is still predominantly under sugar cane production, whereby the characteristics of the site and receiving environment will remain very much the same. The general characteristics of the study site are described again below, which has been informed by the discussions in the Final EIR, as well as with the findings of the updated specialist verification statements (Appendix G1) produced by the specialists, in response to the changes now being applied for in 2022.

It must again be noted that the changes being applied for under this amendment application are applicable to the already authorised Ntshongweni Mixed Use Development (Urban Core Precinct) Site which falls on the Remainder of the Farm Kirkfalls No. 14227. The proposed sewage package plant will be situated in the same location as the previously assessed and authorised pump station (26m x 25m footprint), although the sewage treatment plant will have a greater footprint (76m x 49m), and the treated effluent will be discharged into the receiving environment, but which will be treated in accordance with the relevant standards prescribed by the Department of Water and Sanitation (DWS) and associated legislation.

The new loop ramp will be located near the development entrance on the other side of Kassier Road (previously assessed Site 3) and will result in the clearing of 5.2 hectares of sugar cane. The new Public Transport facility with a footprint of 6.5 ha, at the intersection of Kassier Road and the P559 Road. The loop ramp and public transport facility falls on the Applicant's property, on the Remainder of the Farm Kirkfalls No. 14227.

When discussing the characteristics of the study site below, the findings will pertain to the entire extent of the proposed Ntshongweni Mixed-Use Development (Urban Core Precinct) site (on the Remainder of Farm Kirkfalls No. 14227), which includes all new aspects being applied for (in relation to the new proposed footprint, either to the west of Kassier Road (Development Site), or to the east of Kassier Road (loop ramp)).

## 4.1 Land Use and Land Cover

The study site is situated in Shongweni, a residential area in the Outer West region of the eThekwini Municipality. Surrounding residential areas include Hillcrest, Assagay, Summerveld, and Alverstone. The site has been used for commercial sugar cane production for several years already (photographs of the site are shown in Appendix E) but has already been rezoned from Agricultural land use to support the Development. The site is bordered by the N3 National Road, and J.B Mcintosh Road (extension of Kassier Road). The Giba Gorge Environmental Precinct is located to the southeastern side of the site, which does contain sensitive habitat, but which will not be traversed by the proposed Development footprint.

## 4.2 Topography

The topography of the study area was characterised by undulating hills with numerous sections of moderate to steep slopes that have been cut by drainage lines and watercourses in the landscape (KSEMS, 2018). The proposed Development site is comprised of flat, gentle and steep slopes, with several drainage lines running in various directions, predominantly being south, and south-east (Mottram and Associates cc, 2022).

## 4.3 Soils and Geology

The majority of the project area is underlain by deeply weathered sedimentary bedrock of the Ordovician Natal Group Sandstone (Drennan Maud, 2012), which is generally dominated by shallow, nutrient-poor sandy soils (GroundTruth, 2015). The depth to completely weathered bedrock varies, but the rocks are generally weathered in the typical range of yellow to red colours and where the rock is completely weathered - are similar to sandy and silty clays in their mechanical behaviour. The residual sandy clays and clayey sands are preserved locally and are locally weathered across the red, orange and off-white spectrum. The thickness of the soil varied between 0.3m and 2.6m which indicates uneven weathering of the Natal Group Sandstone (Drennan Maud, 2012).

Fill material is expected to be found locally, close to farming facilities, structures, or gravel rocks. All materials available range from G6 to >G10 of which classifying G10 or better are considered suitable for reuse in road and pavement works. Materials not classified as G10 may be upgraded by mixing in better materials or used as backfill. The geotechnical specialist (Drennan Maud, 2012) concluded that the site is stable and thus sufficient for development, provided that all work is carried out according to prescribed recommendations. The Geotechnical specialist (Drennan Maud, 2021) also noted alluvial sediments accumulating along the drainage lines, whereby the soils in drainage line are likely to classify as wetland soils, although the typical flora and fauna are absent due to the farming practices that have taken place over the years. It was advised that the drainage of these systems remain undisturbed, due to them forming part of a larger drainage system linked to the KwaZulu-Natal coastline.

## 4.4 Fauna and Flora

**Vegetation (flora)**

Under natural conditions, the vegetation on site would have comprised of the endangered KwaZulu-Natal Sandstone Sourveld grassland vegetation, but as mentioned in Section 4.1 above the site has been under sugarcane plantation for several years, and so has been transformed from natural conditions. The only remaining natural vegetation of concern, falls within the wetland/drainage line area which runs in a northeast to southwest direction on the Ntshongweni Development Site (SiVEST, 2021). This system merges with another wetland system to the west of the site, which contains a significant number of *Cyathea dregea* within the drainage channel. The vegetation within the wetland areas has, however, also been relatively transformed due to surrounding land uses and cultivation practices. The most notable vegetation within these systems were *Ischaemum fasciculatum, and Christella dentata.* Other species that were encountered in low abundance included Typha *capensis, Halleria lucida, Laggera alata, Isolepis prolifer,* and *Senecio madagascarscarenis.* It must be noted that the sensitive habitats on site have been incorporated into the development design, as green open space/ no-development ecological corridor (see Figure 3 and Figure 9).

There is also no vegetation at risk within the proposed new development footprint (i.e., the new loop ramp and Public Transport holding facility), as these areas of the property are also under sugar cane production. The vegetation specialist (SiVEST, 2012) originally noted that the only area of concern located towards the eastern side of the study site, due to the presence of KwaZulu-Natal Sandstone Sourveld grassland and woody vegetation which has also proliferated within this grassland area. As per the findings of the updated ecological assessment and verification letter compiled by Kinvig & Associates (2022), the ecological condition of the site remains largely the same, although there have been some changes to the extents of the natural vegetation present, as discussed below (Kinvig & Associates, 2022).

***Primary Sandstone Sourveld Vegetation***

The extent of primary Sandstone Sourveld Vegetation has increased in extent, as a result of red list species, *Cineraria atriplicifolia* and *Crotalaria dura subsp. dura* having been identified.

***Woody encroached areas of Eastern Valley Bushveld***

The specialist (Kinvig & Associates, 2022) advised that the area previously classified as 'Woody encroached areas of Eastern Valley Bushveld' should actually be described as 'Scarp forest & Valley bushveld: Transitional', to include the small portions of this area that graduate to Scarp Forest. There is, however, a significant amount of alien tree encroachment along the upper edges, although there is still a good majority of indigenous trees present.

***Remnant Sourveld Sandstone Support Areas***

This is an additional area that was noted on site, which contains some remnant species of KwaZulu-Natal Sandstone Sourveld vegetation, which is noted as being endemic but threatened vegetation, in KwaZulu-Natal.

***Disturbed Forest and Wetland Habitat***

These areas remain very much the same in extent as was identified during the initial assessments. However, alien and invasive vegetation has proliferated along these areas, resulting in degradation of these systems over time.

The environmental attributes of the site, as identified during the recent site assessments conducted by the specialist, is shown in Figures 6 and 7 below.

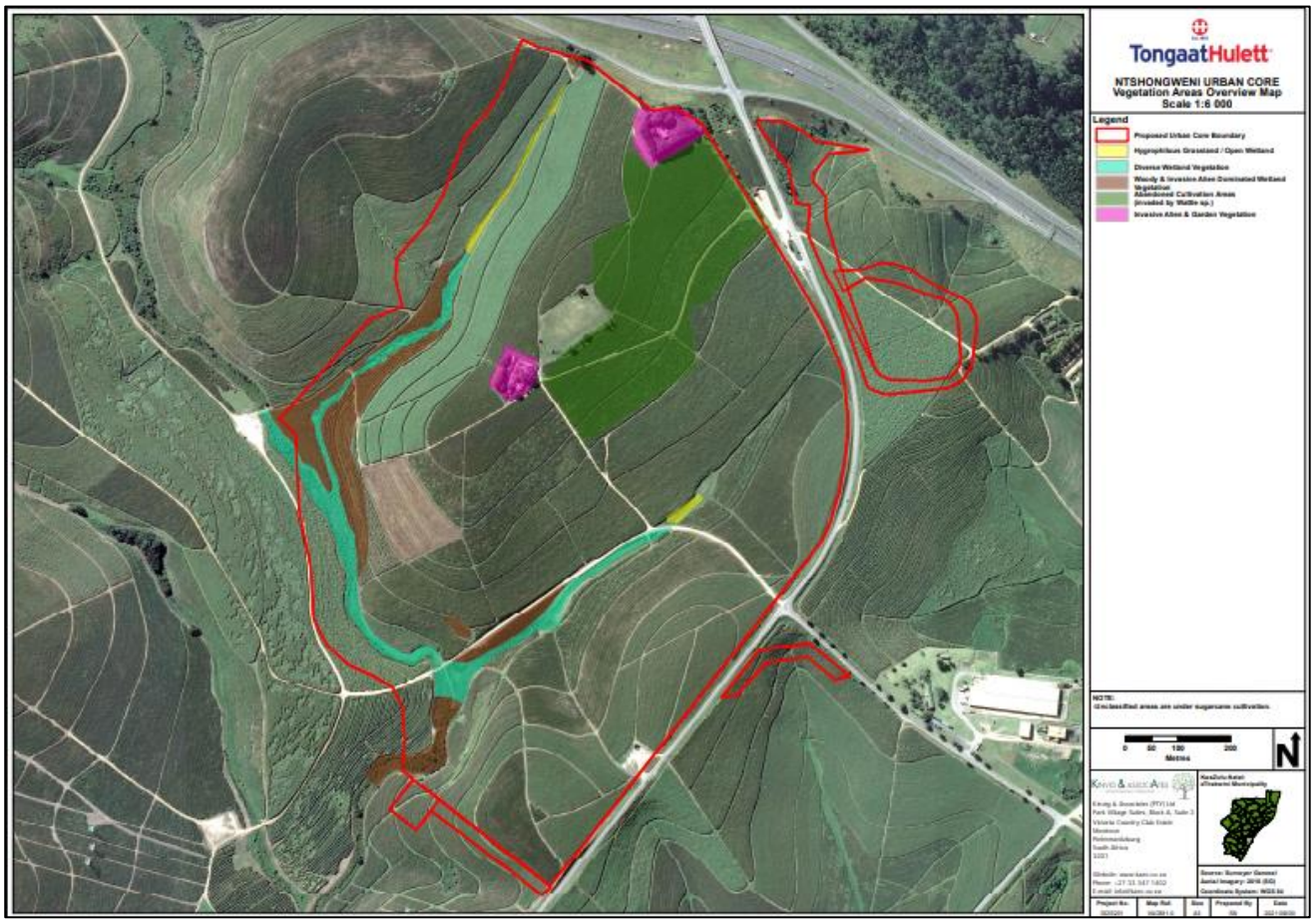


***Figure 5: Environmental attributes associated with the portion of the site situated along the western side of K.B Mcintoch Road (Kinvig % Associates, 2022).***

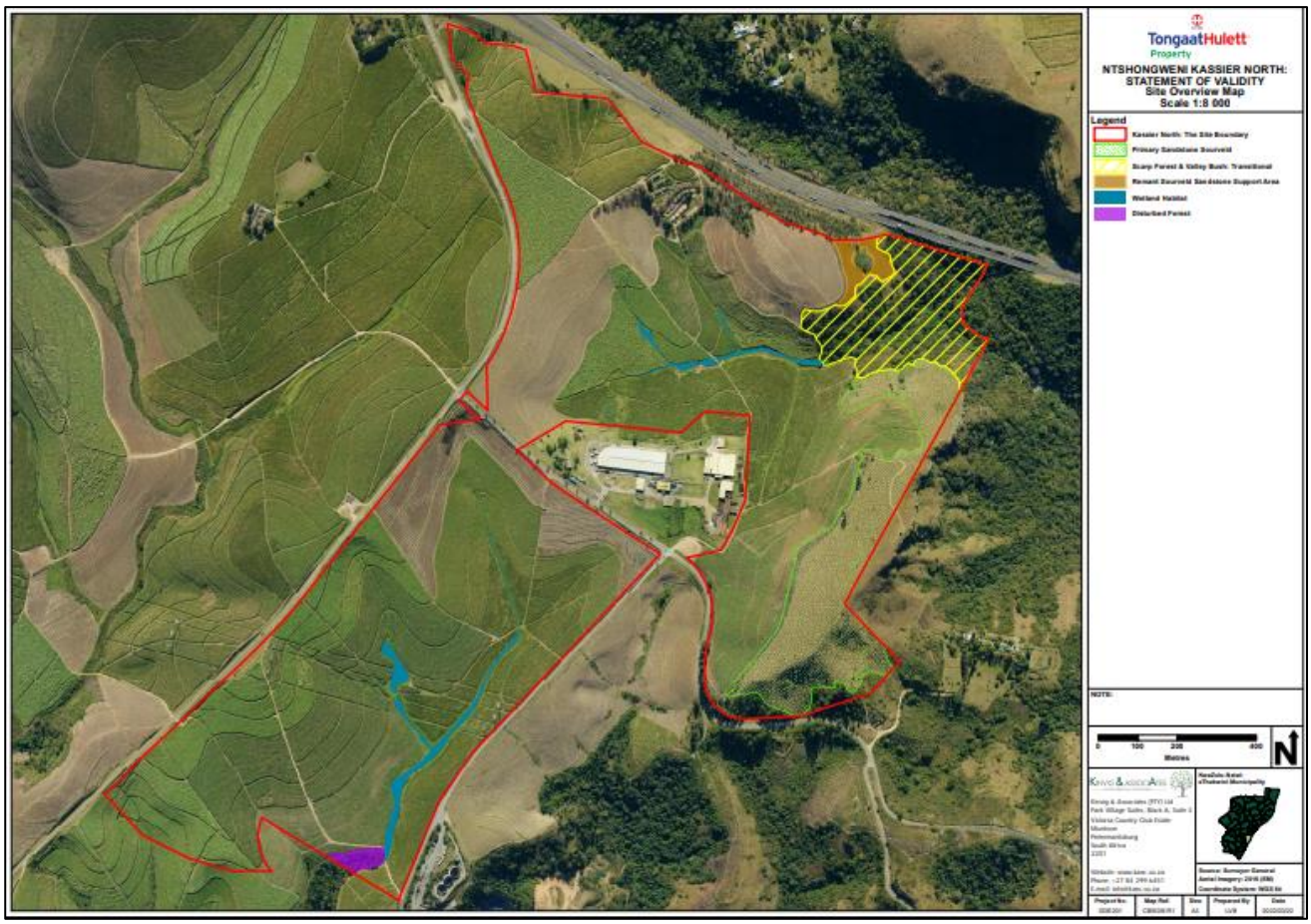


***Figure 6: Environmental attributes associated with the portion of the site situated along the eastern side of J.B. Mcintosh Road (Kinvig & Associates, 2022).***

**Fauna**

The study site also did not contain any faunal species of conservation significance, although a conservation worthy vegetation community was observed within the vicinity of the western boundary of the site. SiVest (2012) concluded that due to the site being heavily disturbed, it was also found to have a low faunal conservation value. The large areas of sugarcane were lacking in faunal species, in that the species that were observed on site include the Vervet Monkey (*Cercopithecus pygerythrus*). With regards to the faunal assessment, The Giba Gorge Environmental Precinct to the east of the property, contains several locally endemic, and IUCN Red Listed species. These include the Blue Duiker (*Philantomba monticola*), Large-eared Free-tailed Bat (*Otomops martiensseni*), Spotted Ground Thrush (Zoothera guttata), Kloof Frog (Natalobatrachus bonebergi), Spotted Shovel-nosed Frog (Hemisus guttatus), Natal Leaffolding Frog (*Afrixalus spinifrons*) and the Pink-footed Giant Black Millipede (*Doratogonus rubipodus*). Many of these species have very restricted ranges, and the Giba Gorge Environmental Precinct (GGEP) constitutes an important area for the conservation of these species.

It should again, however, be noted, that the area of concern (as discussed above), is situated along the eastern boundary where the grassland area is located. The new loop ramp and Public Transport facility is located at the opposite end of the site, on land being used for sugarcane production and which therefore does not pose a risk to faunal diversity. The ecological specialist (Kinvig & Associates, 2022) confirmed that the findings of the original assessments remain valid, whereby the site is largely transformed by the current use of the land for sugar cane plantations, and further confirmed that the proposed changes to the development scope and design, does not increase the risk of impact on the surrounding vegetation and fauna of the study area (Appendix G1).

## 4.5 Surface Water

The majority of the study site falls within the U60C quaternary catchment, with a portion of the loop road extending into the U60F quaternary catchment, both of which fall within the Mgeni Sub-Water Management Area (MWA) of the Mvoti to Mzimkulu WMA. There are several watercourses located within a 500m radius of the study site. The Water Use License (WUL) has already been issued by the DWS, for construction of the proposed development and associated infrastructure, within 500m of these watercourses (see copy of the WUL in Appendix A).

The wetland specialist (GroundTruth, 2015) originally delineated two (2) unchanneled valley-bottom (UVB) wetlands on the Ntshongweni Mixed-Use Development (Urban Core Precinct) site which falls within the Sub-Escarpment Savanna bioregion – that has a critically endangered ecosystem threat status due to the lack of protection it generally receives (GroundTruth, 2015). The wetlands have, however, been largely modified due to sugar cane cultivation and surrounding road networks. The system located on the western side of Kassier Road (along which the Urban Core Precinct is situated) is not classified as part of the National Freshwater Ecosystem Priority Area (NFEAP) but it does drain into an NFEPA River – the Wekeweke Stream. This off-site system is a healthy, well-functioning system delivering Ecological Goods and Services. The Unchannelled Valley Bottom Wetlands are approximately 6.7 hectares (ha) in extent.

There are also five (5) UVB wetlands located on the adjacent portion of the study site to the east of Kassier Road (along which the new loop ramp will be located), covering an area of approximately 9.5ha in extent. These wetlands drain into the Umhlatuzana River. The riparian assessment (GroundTruth, 2013) notes that the site is situated within the Wekeweke River Catchment which is classified as by the Department of Water Affairs as having a Present Ecological State (PES) "B", meaning that the system is largely natural with few modifications. Although there may have been changes to the system as a result of surrounding development activities, the ecosystem functions of the system remain largely unchanged. Species such as *Gladiolus cruentus* (Critically endangered) and *Hydrostachys polymorpha* (Vulnerable) may occur within the stream. Fish species that could be present within the Wekeweke system included *Awaous aeneofuscus, Anguilla mossambica, Amphilius natalensis, Barbus gurneyi, Barbus viviparous, Clarias gariepinus, Oreochromis mossambicus, Pseudocrenilabrus philander, Tilapia rendalli* and *Tilapia sparrmanii*.

A number of these species, may however, not be in streams adjacent to the study site as a result of the downstream waterfall forming a natural barrier as well as the farm dams upstream of the waterfall. The frogs *Afrixalus spinifrons* (Near Threatened) and *Hemisus guttatus* (Vulnerable), could potentially be present in the Wekeweke River system (GroundTruth, 2013)) and within wetland habitats similar to those found in the valley bottoms around the site. It is also likely that the study area supports a number of other, less sensitive frog species. To avoid impacting on these areas, the Applicant has incorporated the wetland and associated buffer areas as part of the ecological no-development corridor that has been incorporated as open space in the development design.

The specialist (Index, 2022) confirmed in the updated verification statements that the proposed changes to the Development Footprint, does not increase the risk of impact on these systems, and which can be adequately managed through implementation of the recommendations and mitigation measures outlined in the specialist assessment reports, and Stormwater Management Plan (Appendix G1). The proximity of the proposed public transport facility to the nearest wetland is depicted below (Figure 8).

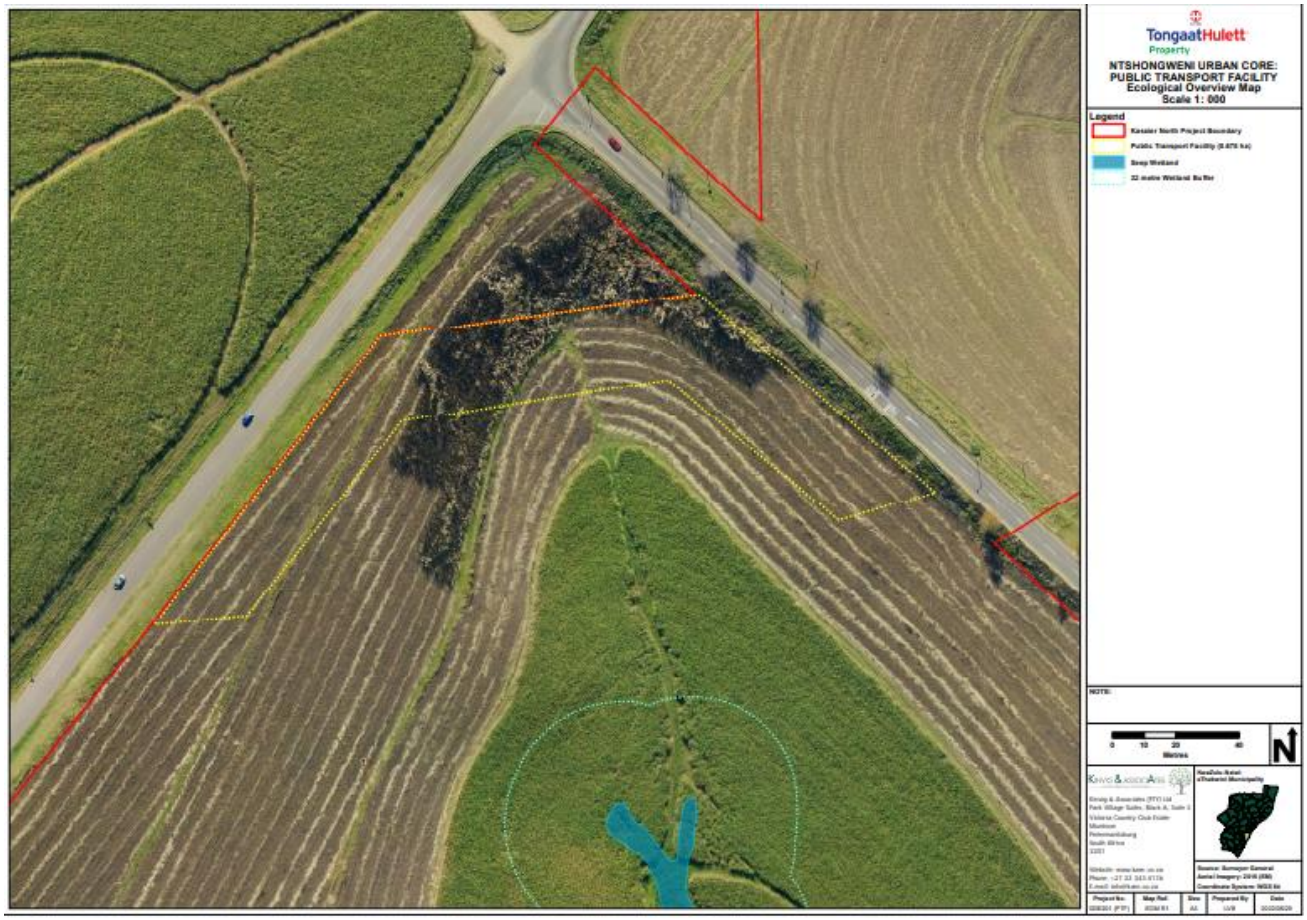


***Figure 7: Proximity of the proposed public transport facility to the seepage wetland (Kinvig & Associates, 2022).***

The above maps can be viewed in greater detail in Appendix D.

## 4.6 Groundwater

Subsoil seepage was identified by the Geotechnical specialist (Drennan Maud, 2012) along the main drainage line. It was, however, noted that perched water tables or seasonal seepage may occur when in contact with permeable sandy materials overlying less permeable clay layers, or bedrock materials, during periods of high rainfall.

## 4.7 Socio-Economic Character

The development site is located in the Outer West area of the eThekwini Municipality. The eThekwini Municipality comprises a population of approximately 3 442 361 people (the highest of all KwaZulu-Natal municipalities), 25% of which are under the age of 14 years, 4.8% of which comprise the elderly (over age 65), and the majority (70%) of which are of working age – between 15 and 64 years of age (eThekwini Integrated Development Plan, 2020/2021). The Municipality is further characterised by a high level of unemployment in which 30.2% of the population is unemployed, with a relatively high portion being the youth that is unemployed (39% of the population).

The proposed development aims to contribute to the local and regional economy as it will provide retail, commercial, light industrial land uses to the Shongweni area. The location of the proposed development is well positioned in terms of accessibility (positioned between the M13 and N3 interchange) and is well aligned with the eThekwini Municipality Spatial

Development Plan (2009) and the Shongweni Local Area Plan (LAP) in that will contribute towards development of a new town centre, as well as to the proposed tourism and recreation corridor along Kassier Road. Such development will therefore contribute to the economy by attracting consumers and investors alike. According to the socio-economic specialist (Urban Econ, 2012), standard retail shopping centres attract consumers within a 5 – 8km raidus, with a travelling distance between 10 and 16 minutes. As such, the specialist noted that the proposed development centre will be sufficiently distanced from surrounding retail outlets, such as Pavilion (20 km away), Galleria and Gateway (both 39km away).

The proposed development is likely to result in the creation of approximately 3726 temporary jobs during the construction phase, and 359 permanent employment opportunities during the operational phase, thereby making a meaningful contribution to economic activity in the region. Job opportunities will be available to the local community thereby reducing commuting time and costs (a key objective of national and provincial government). The new town centre will likely increase property values, and attract investment into the study area, thereby facilitating opportunities for economic growth and benefits to the region as a whole.

## 4.8 Heritage Resources

According to the Heritage Assessment (Archaic Consulting, 2012), the historical landscape associated with the study area is associated with the production of mono-crops and the associated labour compounds. There are thus few aspects that are of any heritage significance. The specialist did, however, note that the study site contains two aspects of interest, namely the Estate Management House 2 (29°48'30.57"S 30°44'44.11"E) and the Seasonal Labour Compound (29°48'35.35"S 30°44'33.81"E). Although these structures were most likely built in the 1960s and 1970s, the Estate Management House 2 has low architectural merit. The specialist did recommend the possible retention of the garden. The Seasonal Labour Compound was constructed in the 1960s and 1970s. Even though these structures do not fall within the ambit of the KwaZulu Natal Provincial Heritage Act No 4 of 2008, labour villages are an important part of the history of KwaZulu Natal. There is opportunity for reuse of the solid, well-designed buildings to record their contribution to labour history in the province. The specialist has described the cottages to have medium local and regional social value.

It should be noted that the new loop road which forms part of this application, does not fall within the boundary of the study site. However, during the initial EIA process, the Heritage specialist did undertake an assessment of all three sites that were being investigated. The new loop road falls on land that was referred to as Site 3. The portion of the site on which the loop road will be situated, was assessed to contain one archaeologically structure with potential significance – the full Time Labour Cottages (29°48'33.45"S 30°45'13.23"E).

The Full Time Labour Cottages were constructed in the 1960s and 1970s, but do not fall within the ambit of the KwaZulu Natal Provincial Heritage Act No 4 of 2008. There is, however, opportunity for reuse of the buildings to record their contribution to labour history in the province. The specialist has described the cottages to have medium local architectural value and medium local and regional social value. The specialist also noted the graves which are situated at 29°48.166'S; 30° 43.930'E, are well away from the Site, but which must be noted and flagged. The map below provides an indication of the layout of the Ntshonweni Mixed Use Development (Urban Core Precinct) and associated infrastructure, in relation to the environmental characteristics/ sensitive features, as discussed in the section above

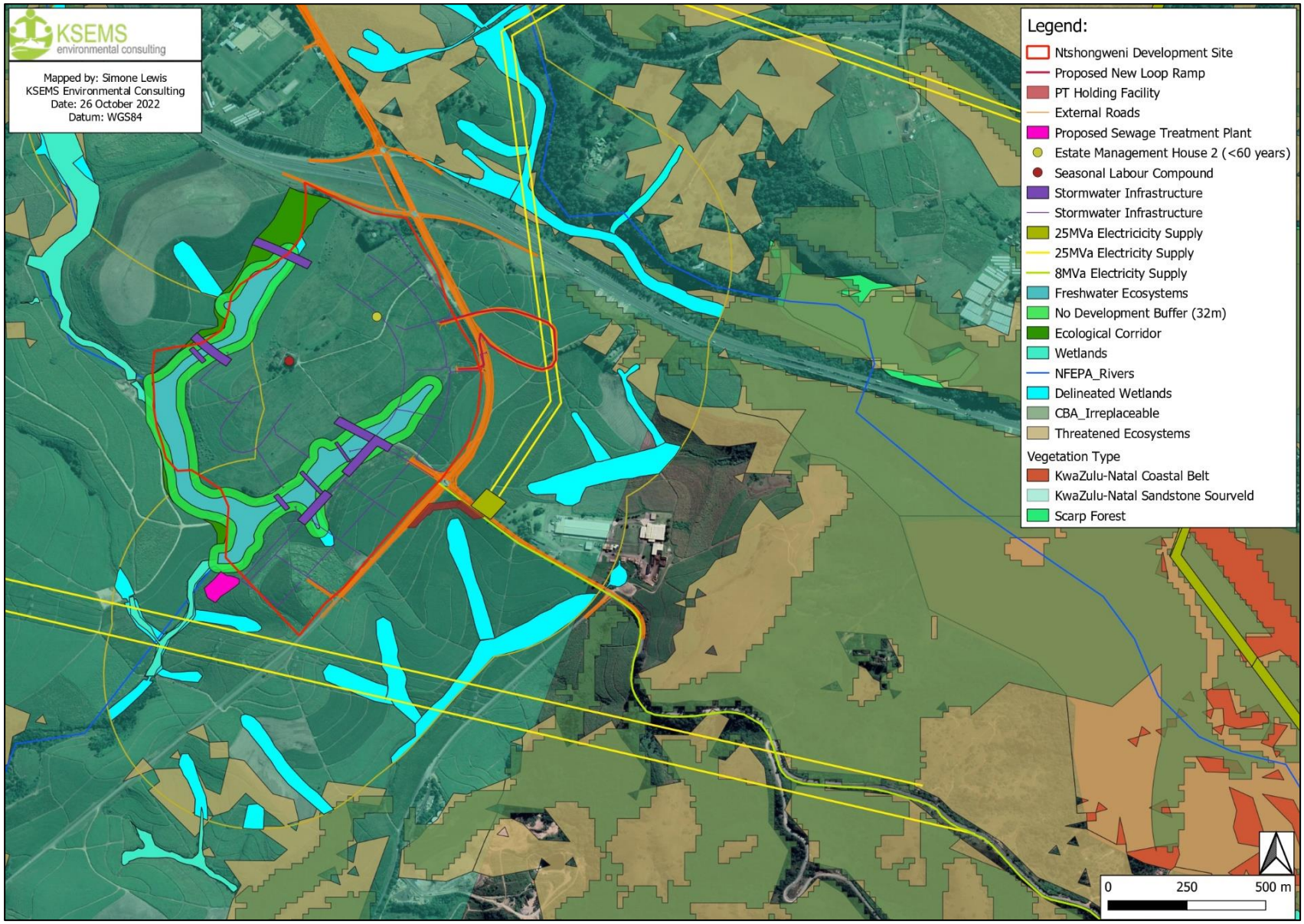


***Figure 8: Map showing the proposed development and associated infrastructure in relation to environmentally sensitive features (KSEMS, 202***

# 5. PUBLIC PARTICIPATION PROCESS/ STAKEHOLDER ENGAGEMENT

In accordance with Section 31 of the EIA Regulations (2014, as amended), a Part 2 Amendment is required where there is a change in the scope of a valid EA, where such a change will result in an increase in the level of or change in nature of the impacts associated with the proposed change. A report assessing the potential impacts associated with the changes, must be subjected to a public participation process, prior to being submitted to the CA.

As per the feedback provided by the CA during the pre-application meeting (Appendix F), the application is to be subjected to a full Public Participation Process (PPP).

The following was conducted as part of the PPP for this application:

- Placement of an advertisement in The Mercury Newspaper on 28 January 2022
- Erection of site notice boards along the study area
- Providing written notification to surrounding landowners and stakeholders. A copy of the Notice of Application (NoA) and Background Information Document (BID) was sent to key stakeholders/ departments, to inform them of the application being submitted for the changes to the existing EA.
- The NoA and BID was also sent to all previously registered I&APs, to inform them of the changes being applied for.
- The draft Impact Report will also be distributed to registered I&APs for a 30-day comment period.

Once the comment period has ended, the EAP will respond to all I&APs, and incorporate any comments that might be applicable for finalisation of the report, prior to submission to the Competent Authority. Please refer to Appendix F, for the relevant documentation associated with the Public Participation Process, as discussed above.

In addition to the PPP required under the EIA Regulations, 2014 as amended, the EDTEA, during the pre-application meeting, requested that the Applicant and EAP engage with the eThekwini Environmental Planning and Climate Protection Department (EPCPD) and Ezemvelo KwaZulu-natal Wildlife (EKZNW), to confirm that the stormwater management plan (SWMP) and wetland rehabilitation plan, are approved, in line with Conditions 3.23.1 and 3.24.4 of the EA, respectively.

The EPCPD has provided confirmation that the proposed SWMP and wetland rehabilitation plan is approved (see correspondence in Appendix F). As per Conditions 3.24.6 and 32.4.8 – a wetland offset plan must be prepared and provided to stakeholders for approval, and further lists the aspects that need to be covered in the offset plan. KSEMS thus consulted with the EPCPD to discuss whether the existing wetland rehabilitation plan could be used as an offset plan, as the specialist noted that the implementation thereof would result in an increase in functional wetland habitat (and so achieve a no-net loss of wetland habitat, as is the objective of an offset plan). EPCPD advised that the rehabilitation measures detailed in the rehabilitation plan are sufficient, and so requested that the rehabilitation plan be amended to only include the following aspects, in which case the plan would suffice as an on-site offset plan (correspondence in Appendix F):

- Implementation timelines
- Monitoring programmes (existing monitoring plans attached)
- Budget framework
- Committee (representative from EPCPD, EKZNW and DWS) to oversee implementation of the rehab and offset plans.

The rehabilitation will thus be amended accordingly and provided to I&APs for review and comment.

As per Condition 2.10 of the EA, all road improvements and updated Traffic Impact Assessment Report must be provided to the Department of Transport (DOT), eThekwini Transport Authority (ETA) and the South African National Roads Agency

(SANRAL) for review and approval. Please refer to Appendix I for the letter provided by DOT, in which the Department confirms that the proposal is approved. Comment will be obtained from ETA and SANRAL during the 30-day comment period.

# 6. IMPACT ASSESSMENT

This section of the report outlines the methodology used to identify and assess impacts that have resulted from the commencement of activities on site.

## 6.1 Methodology

Environmental issues and potential impacts will be assessed using recognised qualitative impact assessment methodology. The objective of the assessment of impacts is to identify and assess all the significant impacts that may arise as a result of the activity. The process of assessing the impacts of the project encompasses the following four activities:

1. Identification and assessment of potential impacts
2. Prediction of the nature, magnitude, extent and duration of potentially significant impacts
3. Identification of mitigation measures that could be implemented to reduce the severity or significance of the impacts of the activity
4. Evaluation of the significance of the impact after the mitigation measures have been implemented i.e. the significance of the residual impact.

Impacts are assessed in terms of the following criteria:

<table>
<tr><th>Criteria</th><th>Indicator</th></tr>
<tr><td>The nature</td><td>A description of what causes the effect, what will be affected and how it will be affected</td></tr>
<tr><td>The physical extent</td><td>Wherein it is indicated whether:<table><tr><td>1.</td><td>The impact will be limited to the site</td></tr><tr><td>2.</td><td>The impact will be limited to the local area</td></tr><tr><td>3.</td><td>The impact will be limited to the region</td></tr><tr><td>4.</td><td>The impact will be national</td></tr><tr><td>5.</td><td>The impact will be international</td></tr></table></td></tr>
<tr><td>The duration</td><td>Wherein it is indicated whether the lifetime of the impact will be of:<table><tr><td>1</td><td>A very short duration (0–1 years)</td></tr><tr><td>2</td><td>A short duration (2-5 years)</td></tr><tr><td>3</td><td>Medium-term (5–15 years)</td></tr><tr><td>4</td><td>Long term (> 15 years)</td></tr><tr><td>5</td><td>Permanent</td></tr></table></td></tr>
<tr><td>The magnitude of impact on ecological processes</td><td>Impacts quantified on a scale from 0-10, where a score is assigned:<table><tr><td>0</td><td>Small and will have no effect on the environment</td></tr><tr><td>2</td><td>Minor and will not result in an impact on processes</td></tr><tr><td>4</td><td>Low and will cause a slight impact on processes</td></tr><tr><td>6</td><td>Moderate and will result in processes continuing but in a modified way</td></tr><tr><td>8</td><td>High (processes are altered to the extent that they temporarily cease)</td></tr><tr><td>10</td><td>Very high and results in complete destruction of patterns and permanent cessation of processes</td></tr></table></td></tr>
</table>

| | |
|---|---|
| The probability of occurrence/ likelihood of the impact actually occurring | <table><tr><td>1</td><td>Very improbable (probably will not happen)</td></tr><tr><td>2</td><td>Improbable (some possibility, but low likelihood)</td></tr><tr><td>3</td><td>Probable (distinct possibility)</td></tr><tr><td>4</td><td>Highly probable (most likely)</td></tr><tr><td>5</td><td>Definite (impact will occur regardless of any prevention measures)</td></tr></table> Probability is estimated on a scale where: |

Significance is assessed in terms of:

- The significance, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high
- The status, which is described as either positive, negative or neutral
- The degree to which the impact can be reversed
- The degree to which the impact may cause irreplaceable loss of resources
- The degree to which the impact can be mitigated

The significance is determined by combining the criteria in the following formula:

Significance Points = (Magnitude + Duration + Extent) x Probability. The maximum value is 100 Significance Points.

The significance weightings for each potential impact are outlined in the table below

| Points | Significance Weighting | Description |
|---|---|---|
| **< 30 points** | **Low** | Where this impact would not have a direct influence on the decision to develop in the area |
| **30-60 points** | **Medium** | Where the impact could influence the decision to develop in the area unless it is effectively mitigated |
| **> 60 points** | **High** | Where the impact must have an influence on the decision process to develop in the area |

## 8.2 Impact Identification and Assessment

As part of the EIA process, potential impacts associated with the various phases (planning, construction and operation) of a development or activity are identified and assessed. All potential impacts that may result from construction and operation of the Ntshongweni Mixed-Use Development (Urban Core Precinct) were fully assessed in the Final Environmental Impact Report submitted by KSEMS in 2015 (see Appendix G2), in response to which the EA was issued by the Competent Authority.

The section below (Tables 8, 9, 10, 11 and 12) provides an assessment of the potential impacts associated with the proposed changes to the already authorised Development design and scope, that are now being applied for as part of this EA amendment application.

The assessment of impacts below, has been conducted with input from the specialist studies, but also based on the experience of the EAP. As per the updated verification statements provided by the specialists (Appendix G1), it is noted that the proposed changes being applied for does not increase the risk of impact on the receiving environment, although the EAP has identified potential impacts that may result from the new infrastructure being applied for.

***Table 8: Assessment of impacts associated with the changes proposed for the Ntshongweni Mixed-Use Development (Urban Core Precinct), during the Planning Phase***

| **Impact** | **Significance Rating of Impacts Prior To Mitigation** | | **Proposed Mitigation** | **Significance Rating of Impacts After Mitigation** | |
|---|---|---|---|---|---|
| • Non-compliance with environmental policy and legislative frameworks because of commencing with listed activities prior to authorisation being granted (non-compliance with legislation is an offence) | Duration | 2 | • The Applicant obtained EA for the Ntshongweni Development in 2015. The Applicant proposes to make changes to the electricity, road and sewage infrastructure associated with the development and as such, is required to apply for an amendment of the existing EA, prior to implanting such changes.<br>The Applicant must not proceed with construction of the changes before the Amended EA is granted by the Competent Authority.<br>• The Applicant must always adhere to the conditions of the existing EA, until the amended EA is obtained.<br>• This Impact assessment report is being submitted as part of the EA amendment application, to ensure compliance with the NEMA, Act No. 107 of 1998. | Duration | 1 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 10 | | Magnitude | 4 |
| | Significance rating | 42 (Medium) | | Significance rating | 12 (Low) |
| • Risk of not notifying Interested and Affected Parties (I&APs) of the proposed changes to the existing EA and Ntshongweni Development<br>• Failure to obtain feedback from affected stakeholders as requested by the CA may result in the Application not being accepted: The CA requested that EKZNW and the EPCPD be consulted for approval to remove the Condition of the EA pertaining to the need for a wetland offset and for the eThekwini Municipality to be consulted on approval of the proposed on-site sewage package plant. | Duration | 1 | • The CA requested that a full Public Participation Process (PPP) be conducted in line with the EIA Regulations, 2014 as amended to inform I&APs. The Applicant has appointed an EAP to ensure that the PPP will be conducted accordingly.<br>• The Applicant and EAP have engaged with the various stakeholders to obtain feedback required on the sewage and wetland offset aspects associated with the application, to meet the requirements of the CA. The feedback obtained has been incorporated into this report. | Duration | 1 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 2 | | Likelihood | 1 |
| | Magnitude | 8 | | Magnitude | 2 |
| | Significance rating | 22 (Low) | | Significance rating | 4 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| • Not investigating Alternative options to the proposed sewage package plant for the servicing of the Developments sewage requirements may result in the Application not being accepted. During the pre-application meeting, the CA requested that Alternative solutions be investigated, and included as part of the application. | Duration | 1 | • The Applicant has considered several alternatives for meeting the developments initial sewage requirements. These have been considered and assessed as part of this application, where applicable.<br>• It must be noted that the Mhlatuzana WWTW will service the ultimate sewage demands of the development, once it has been upgraded to have sufficient capacity to do so. The delay in the municipal infrastructure upgrades is out of the control of the Applicant, who have proposed to construct the on-site sewage package plant, as a temporary solution. | Duration | 1 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 2 |
| | Magnitude | 8 | | Magnitude | 4 |
| | Significance rating | 40 (Medium) | | Significance rating | 12 (Low) |

**The section below (Table 9) provides an assessment of the impacts that may result during the construction phase of the development. The assessment first pertains to those impacts associated with the proposed changes being applied for (divided into the different infrastructure aspects i.e., electricity, roads and sewage), and then for construction activities in general, that will be associated with all aspects of the development.**

***Table 9: Assessment of impacts associated with the proposed changes to the Ntshongweni Mixed-Use Development (Urban Core Precinct), during the Construction Phase***

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| **ELECTRICITY INFRASTRUCTURE** | | | | | |
| • Increase in the initial electricity supply from 5MVA to 8MA to allow for construction to commence, in accordance with the availability of electricity from the eThekwini Municipality. This proposed change does not trigger any additional Listing Notices Activities.<br><br>• There will be no changes to the electricity infrastructure layouts and designs, as approved in the existing EA. No additional impacts are therefore anticipated and the risk of damage to existing service infrastructure in the area, is not higher than that already assessed in the Final EIR (KSEMS, 2015).<br><br>• It should be noted that the ultimate electricity supply (29.6MVA) associated with the development in its entirety has already been authorised under the existing EA. A new substation will be required for the ultimate electricity demands of the Development, as assessed under the original EIA and EA. | Duration | 2 | • There are not many services found around the proposed site, however, this impact can be fully mitigated by identifying the presence of services prior to construction and avoiding damage to identified services. Alternatively, if service disruption is unavoidable, the parties affected must be notified in advance.<br><br>• The Applicant must aim to use electricity wisely during all project phases, to minimise the wastage of electricity and fossil fuels.<br><br>• Energy-saving light bulbs should be use where applicable, to save energy.<br><br>• The Applicant must ensure that the required Service Level Agreements are obtained from the Municipality.<br><br>• The Applicant must adhere to all conditions of the EA. | Duration | 2 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 2 | | Magnitude | 2 |
| | Significance rating | 20 (Low) | | Significance rating | 15 (Low) |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
|---|---|---|---|---|---|
| **PROPOSED NEW LOOP RAMP (5.2 HA FOOTPRINT)** | | | | | |
| • Construction of the new loop ramp will result in an increase in the development footprint, and in the clearing of approximately 5.2ha. It should be noted that the land cleared is under sugarcane production, and so the proposal will not result in the clearance of indigenous vegetation.<br>• Clearing of vegetation resulting in a loss of vegetation and associated biodiversity. The new loop ramp will be located on the eastern side of Kassier Road, (Rem. Farm Kirkfalls No. 14227) which is currently being used for commercial sugar cane production.<br>• As the land is currently being used for sugar cane production, the clearing is not anticipated to result in the loss of indigenous vegetation. As the site is not classified as a Critical Biodiversity Area (CBA), this activity will not trigger Listing Notice 3 of the EIA Regulations, 2014 as amended.<br>• The ecological specialist confirmed that there are no sensitive vegetation communities that will be traversed by the development footprint, whereby the new loop ramp does not pose an increased risk of impact on the receiving environment. | Duration | 2 | • A site walk through must be undertaken prior to construction, to confirm that no species of conservation concern will be destroyed during construction activity. The ecological specialist did note that there are no species of concern located on the affected portion of the site.<br>• Further land clearing activities are to be undertaken in a phased approach, as required to minimise the exposure of bare soil.<br>  • Landscaping of areas which have previously been cleared of vegetation must continue to take place as construction is completed.<br>  • Only indigenous vegetation, suited to the area must be used when landscaping the site.<br>• All staff are to be trained in on-site activities and their environmental responsibilities clearly outlined to minimise damage to the natural environment. All new staff are to be trained before they start work on-site.<br>• The plant species and landscaping management plan must be implemented on site (Appendix H). | Duration | 1 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 4 | | Magnitude | 4 |
| | Significance rating | 21 (Low) | | Significance rating | 12 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| • Clearance of vegetation resulting in exposure of bare soil that may be susceptible to erosion<br>• Erosion may result in sedimentation of nearby watercourses, which in turn, may reduce the quality of the water resources. | Duration | 2 | • Vegetation clearing activities are to be undertaken in a phased approach, as required to minimise the exposure of bare soil.<br>• Erosion and sedimentation should be closely monitored. After every heavy rainfall event, the contractor must check the site for erosional damage and rehabilitation in the form of in situ infilling, compaction and revegetation.<br>• Erosion control measures such as silt fences can be implemented around cleared sites, although must not be placed across any concentrated flow paths. In such instances, an erosion control mat may be utilised. By placing erosion control measures around cleared sites throughout the development site, this will limit the amount of sedimentation reaching nearby watercourses.<br>• Designated paths/roads must be demarcated for heavy machinery to travel on, and erosion control measures must be put in place in order to reduce concentrated flow potential from these paths.<br>• Landscaping of areas which have previously been cleared of vegetation must continue to take place as construction is completed.<br>• Only indigenous vegetation, suited to the area must be used when landscaping the site.<br>• Rehabilitation of disturbed areas must be undertaken with locally indigenous species upon completion of construction activities – in accordance with the plant species and landscaping management plan must be implemented on site (Appendix H). | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 5 | | Likelihood | 3 |
| | Magnitude | 8 | | Magnitude | 4 |
| | Significance rating | 60 (Medium) | | Significance rating | 21 (Low) |
| • Removal of vegetation and impacts on faunal biodiversity.<br>• The specialist (SiVEST, 2012) found that no sensitive species exist within the proposed Development Footprint. | Duration | 2 | • Alien and invasive vegetation must be adequately managed and removed on an on-going basis, along the extent of the development footprint.<br>• All buffers along the delineated sensitive wetland habitats must be strictly adhered to. These areas | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 3 |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| • Eagle, antelope, and bushpigs were observed to be present within the previously assessed Site, along the KwaZulu-Natal Sandstone Sourveld grassland, which does not fall within the new proposed development footprint.<br>• The Giba Gorge Environmental Precinct to the east of the previously assessed Site (New Footprint Site), contains a number of locally endemic, and IUCN Red Listed species.<br>• It must, however, be noted that the proposed development footprint does not traverse the sensitive habitats, as confirmed by Kinvig & Associates (2022). | Magnitude | 4 | represent no-go areas, to help preserve biodiversity on site. No development may take place in the drainage lines and wetland habitat delineated on site, unless authorised in the EA, and for establishment of wetland rehabilitation and stormwater management interventions.<br>• The development footprint must be strictly adhered to.<br>• Careful management of construction nearby sensitive areas must be ensured.<br>• Although species of conservation concern are not likely to occur on site, because of the transformed nature of the site, precautions must be taken to prevent negatively impacting on fauna in the study area.<br>• Should any faunal species be identified on site, these must be removed and relocated to a suitable site, which must be done in consultation with Ezemvelo KZN Wildlife and eThekwini Environmental Management Division.<br>• All open trenches must be inspected for the presence of faunal species which may become trapped inside. Should fauna be present in trenches, these must be safely removed prior to continuing with construction activity on site.<br>• Should the Contractors be uncertain regarding the procedures to follow in such a case, the Contractor must contact the ECO or the eThekwini Municipality, or EKZNW to assist. | Magnitude | 4 |
| | Significance rating | 24 (Low) | | Significance rating | 21 (Low) |
| • Construction of the loop ramp in proximity to watercourses may result in the potential contamination or sedimentation of watercourses.<br>• The loop ramp will not traverse any watercourses. | Duration | 1 | • Construction activities must be limited within the proximity of watercourses. No activity must take place within the delineated wetland and associated buffer areas.<br>• The development footprint must be strictly adhered to. | Duration | 2 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 2 |
| | Magnitude | 6 | | Magnitude | 4 |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
|---|---|---|---|---|---|
| • The specialist (Index, 2022) confirmed in their verification statement that the proposed loop ramp will not impact on any wetland. It was recommended that the loop road be approved. | Significance rating | 24 (Low) | • All construction vehicles must be adequately maintained to prevent any fuel/ oil leaks that may contaminate the ground surface/ stormwater which may impact on the quality of downstream watercourses.<br>• Vehicles must be washed and serviced off site where possible, or within the site camp, but must not be serviced within 50m of any watercourse.<br>• All waste must be managed in accordance with the EMPr to prevent pollution of watercourses.<br>• The wetland rehabilitation plan must be implemented.<br>• Stormwater and erosion must be properly managed on site, in accordance with the EMPr and Stormwater Management Plan, to prevent negative impacts on downstream systems.<br>• Erosion control measures must be implemented in accordance with the EMPr.<br>• Vegetation clearing must be undertaken in a phased approach to limit erosion and sedimentation potential. | Significance rating | 14 (Low) |
| **SEWAGE INFRASTRUCTURE** | | | | | |
| **Alternative 1 (Preferred Alternative): On-site sewage treatment plant** | | | | | |
| • The proposed on-site sewage treatment plant will have a footprint of 76m x 75m (5700m$^2$). The plant will be located in the same location as where the previously assessed pump station would have been situated. The pump station would have had a footprint of 26m x 25m (650m$^2$). The proposed on-site treatment plant will thus have a greater footprint. | Duration | 2 | • The site is currently being used for sugar cane production and so the additional land clearing is not anticipated to have a significant impact in terms of the loss of vegetation.<br>• There will be an increase in bare soil, so clearing must take place in a phased approach, as applicable, to limit the potential for erosion.<br>• Areas in which construction is complete, must be rehabilitated and landscaped with indigenous vegetation. | Duration | 2 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 6 | | Magnitude | 4 |
| | Significance rating | 27 (Low) | | Significance rating | 14 (Low) |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
|---|---|---|---|---|---|
| • The greater footprint will result in additional land clearing, although the sewage plant will result in the clearing of sugar cane, rather than indigenous vegetation, and the site does not fall within a CBA. As such, the proposal does not trigger any additional Listing Notice Activities.<br>• The greater footprint will result in a greater surface area of bare soil which may be prone to erosion. (The greatest risk of impact associated with the change to include the on-site sewage package plant, will be during the operational phase).<br>• The specialist (Index, 2022) prepared an updated verification statement (April 2022) confirming that the findings of the original wetland assessment are still valid, and that the proposed changes to the development, to include the on-site sewage treatment plant, will not result in an increased risk of impact, if all mitigation measures are implemented, and considering that this will only form a temporary solution until the Umhlatazana WWTW is upgraded.<br>• The specialist confirmed that the proposed changes will not increase the risk of impact on the receiving environment (Index, 2022). | | | • The wetland previously assessed the pump station which is proposed to be replaced by the on-site sewage treatment plant. The specialist recommended the following:<br>- Emergency procedures should be in place to manage pump station failures and spills/leaks with immediate effect.<br>The same measures must be taken for the sewage treatment plant, where applicable.<br>• The Development must tie into the Umhlatazana WWTW as soon as there is sufficient capacity.<br>• The monitoring plans (Appendix H) must be implemented. | | |
| • The treated wastewater will be directly discharged into a watercourse, which if not treated to the correct quality | Duration | 3 | • The long-term wetland, river and surface water quality monitoring plans (Appendix H) must be | Duration | 2 |
| | Extent | 3 | | Extent | 1 |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| standards, may result in the contamination and degradation of the system, and reduced water quality, which may negatively impact on biodiversity of the watercourse.<br>• System malfunctions may result in contamination of the receiving environment, which depending on the scale of the spill/ leak, may have detrimental impacts on the water quality and aquatic biota and ecosystems. The Wekeweke stream is an NFEPA river.<br>• The on-site sewage treatment plant is only proposed as a temporary solution, until the Umhlatazana WWTW is upgraded. | Likelihood | 4 | strictly implemented for the duration of the Development.<br>• The sewage package plant must be adequately maintained on a continual basis, to prevent any malfucntions and leaks.<br>• The Development must tie into the Umhlatazana WWTW as soon as there is sufficient capacity.<br>• Any spills or incidents occur, the spill response plan must be implemented immediately. The source of contamination must be contained/ stopped, and all clean up procedures implemented. The relevant authorities (EDTEA and DWS) must be notified immediately.<br>• The wetland rehabilitation and offset plan must be strictly implemented on site. Implementation must be monitored by the resident engineer, Contractor, ECO and committee made up of members from DWS, EPCPD and EKZNW.<br>• The mitigation measures highlighted in the ecological reserve determination study report (GroundTruth, 2022) must be implemented. The specialist recommends that Thresholds of Potential Concern (PTCs) be identified for the Wekewkeke Stream, prior to construction, and for financial provision to be made available accordingly, to ensure that a proactive approach is adopted in monitoring and managing this system (monitoring change, but also the trajectory of change), so that issues can be detected early, and so to ensure the timeous mitigation of negative impacts. | Likelihood | 2 |
| | Magnitude | 10 | | Magnitude | 4 |
| | Significance rating | 64 (High) | | Significance rating | 14 (Low) |
| • The treated wastewater that will be discharged into the watercourse, may exceed the capacity of the system to receive additional water inputs, which may lead to increased flow velocity and | Duration | 2 | • Suitable water release structures must be installed to discharge the water safely, as required to control the additional water inputs.<br>• The approved stormwater management plan (SWMP) must be implemented. | Duration | 2 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 2 |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
|---|---|---|---|---|---|
| erosion of the watercourse banks/ habitats.<br>• The specialist (Index, 2022) noted the following: "Provided that suitable water release structures are installed to discharge the water safely, the risk will be low and no additional risk is expected. The proposed amendment is also temporary. It is recommended that the structure be approved".<br>• GroundTruth (2022) were appointed to undertake an Ecological Reserve Determination Assessment (Appendix G) to determine the present ecological state of the Wekeweke River (into which the treated effluent will be discharged) to ascertain whether the system can safely accommodate the additional water inputs associated with discharging the treated effluent into it.<br>• The specialist confirmed that the additional input will not have a significant impact in terms of the amount of water entering the system, as it will only increase water depths by approximately 2cm.<br>• The specialist did, however, confirm that the discharging of the effluent will impact the River in terms of an increase in flow velocity. | Magnitude | 8 | • The engineering and ecological interventions proposed by the specialist include:<br>○ The specialist recommended the following potential engineering mitigation interventions:<br>○ Treatment process converting General Limit Values (GLVs) to Special Limit Values (SLVs).<br>○ Capacity upgrades (at 0.5 to 1.0 ML/day increments)<br>○ Use of treated effluent for commercial and industrial operations (i.e., to shopping centres for public toilets)<br>○ Latest technology alternatives (RO plant)<br>○ The specialist also recommended potential ecological interventions (which would require that a catchment wide spatial analysis be undertaken to identify opportunities for ecological infrastructure that can be utilised):<br>○ Irrigation of green areas within the catchment<br>○ Optimisation of existing wetlands and addition of constructed wetland expansion<br>○ Re-use of grey water by contributors to the sewage package plant (irrigate gardens)<br>○ Potential for inter basin transfer back across into adjacent systems.<br>○ Pre-development baseline monitoring of chemical, biological, and physical indicators is essential in defining the TPCs and RQOs for the River. This must include a minimum of one (1) years' worth of monitoring/ sampling to | Magnitude | 4 |
| | Significance rating | 44 (Medium) | | Significance rating | 14 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| | | | supplement existing data from this study. A minimum of two sites will be required, one upstream and one downstream of the development (at the EWR site).<br>○ This monitoring must be undertaken in accordance with Section 4.5 of the Ecological Reserve Determination Study (GroundTruth, 2022). | | |
| • Treatment of effluent to DWS water quality standards will allow for the treated wastewater to be re-used and recycled, by means of irrigation.<br>• Treated water can also be re-used in the development, for gardening and operation of toilets etc. | Duration | 3 | • Water quality monitoring must be conducted as per the EMPr, water surface quality, riverine and wetland monitoring plans, to ensure that the water being used is treated as per the required standards. | Duration | 2 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 2 |
| | Magnitude | 8 | | Magnitude | 4 |
| | Significance rating | 48 (Medium)<br>+ Positive | | Significance rating | 14 (Low) |
| **Alternative 2: Umhlatuzana WWTW** | | | | | |
| • Treating at central works may have better capacity to accommodate system malfunctions.<br>• The Municipality will be responsible for servicing the ultimate sewage demands of the development, and so it would be ideal for the development to tie into the WWTW directly and immediately (this is not possible due to the system not having been upgraded). The development will need to be placed on hold until the WWTW is upgraded (timeframes unknown). Benefits will not | Duration | 4 | • The Municipality must upgrade the uMhlatuzana WWTW to service the development, as originally indicated in 2015, so that there is no need for the on-site package plant.<br>• An additional overflow pond to be constructed.<br>• Flow meter on both ends of the line to traceleakages.<br>• Appropriate design and careful construction.<br>• Infrastructure must be well-maintained to prevent system failures and leaks of the pipeline which may lead to contamination of the receiving environment. | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 2 | | Likelihood | 2 |
| | Magnitude | 4 | | Magnitude | 4 |
| | Significance rating | 20 (Low) | | Significance rating | 14 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| materialize.<br>• No discharging of treated effluent into the Wekeweke River (although this can be mitigated to acceptable levels through strict mitigation and monitoring). | | | | | |
| • Risk of leaks in infrastructure and system malfunction, resulting in effluent contaminating the receiving environment (negative impacts on water quality, and aquatic biodiversity and ecosystem functioning). | Duration | 4 | • Municipal infrastructure must be well maintained to prevent leaks and environmental degradation.<br>• Water quality monitoring must be conducted as per the EMPr, water surface quality, riverine and wetland monitoring plans, to ensure that the water being used is treated as per the required standards. | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 8 | | Magnitude | 4 |
| | Significance rating | 42 (Medium) | | Significance rating | 14 (Low) |
| • Treatment of wastewater at the Umhlatuzana WWTW.<br>• It must be noted that the development will ultimately tie into the WWTW once the municipality has upgraded their infrastructure. The timeframe within which this will occur is, however, unknown.<br>• By placing the development on hold until such time that the infrastructure is upgraded, means that the socio-economic benefits associated with the development will not materialise, and there will be economic losses for the Applicant who has already invested in the services of several specialists to conduct all the designs and assessments, for which EA was granted. | Duration | 4 | • The Municipality need to obtain the relevant approvals and implement the required upgrades to have capacity to service the development, as advised during the original EIA process in 2015.<br>• Construction of the on-site sewage treatment plant will alleviate pressure on the Municipality whilst they upgrade their WWTW, while also fulfilling Condition 2.6 of the existing EA, in finding a suitable solution for processing effluent associated with the development, so that the development, for which EA and the WUL, has already been obtained.<br>• All mitigation and monitoring measures recommended for the package plant, must be strictly implemented on site.<br>• The development must tie into the WWTW as soon as it has been upgraded, to have the required capacity to do so. | Duration | 1 |
| | Extent | 2 | | Extent | 2 |
| | Likelihood | 5 | | Likelihood | 4 |
| | Magnitude | 10 | | Magnitude | 4 |
| | Significance rating | 80 (High) | | Significance rating | 28 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| **Alternative 3: Septic Tanks** | | | | | |
| • The current sewage infrastructure present on the property is comprised of septic tanks.<br>• The sludge in septic tanks is not treated, and so potential leaks pose a risk of contamination of the receiving environment, including watercourses which in turn pose health risks and risk of loss of aquatic biodiversity and ecosystem functioning.<br>The septic tanks may have the following impacts:<br>• Sewer Back up problem and overflow in case of truck unavailability. This is a risk if the Municipal workers or services providers go on strike, which may lead to environmental contamination.<br>• Corrosion of corrugated iron tanks which may lead to contamination.<br>• Drain field overflow when pipes leak and black water seeps into the ground, resulting in foul odours and disturbance to residents. | Duration | 3 | • Frequent emptying of the septic tanks.<br>• Residents must take better care of toilets<br>• Keep warnings of what can be flushed down to keep the tank system running efficiently.<br>• Septic tanks must be frequently maintained.<br>• A leak detection system must be established and implemented. | Duration | 2 |
| | Extent | 3 | | Extent | 2 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 10 | | Magnitude | 4 |
| | Significance rating | 64 (High) | | Significance rating | 24 (Low) |
| **PROPOSED PUBLIC TRANSPORT HOLDING FACILITY** | | | | | |
| • Damage to vegetation associated with land clearing activities. Land clearing | Duration | 2 | • A site walk through must be undertaken prior to construction, to confirm that no species of conservation concern will be destroyed during | Duration | 2 |
| | Extent | 1 | | Extent | 1 |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| activities may also pose a risk of disturbance to faunal species.<br>• The proposed Public Transport Facility will have a footprint of 6500 square metres, but which is located on land used for sugarcane production. It is thus not anticipated that this activity will result in damage to indigenous vegetation.<br>• This was confirmed in the updated ecological specialist assessment/ verification statement (Kinvig & Associates, 2022) where the specialist confirmed that the new Public Transport facility does not pose an increased risk of impact on the receiving environment. | Likelihood | 4 | construction activity. The ecological specialist did note that there are no species of concern located on the affected portion of the site.<br>• Further land clearing activities are to be undertaken in a phased approach, as required to minimise the exposure of bare soil.<br>  • Landscaping of areas which have previously been cleared of vegetation must continue to take place as construction is completed.<br>  • Only indigenous vegetation, suited to the area must be used when landscaping the site.<br>• All staff are to be trained in on-site activities and their environmental responsibilities clearly outlined to minimise damage to the natural environment. All new staff are to be trained before they start work on-site.<br>• The plant species and landscaping management plan must be implemented on site (Appendix H). | Likelihood | 3 |
| | Magnitude | 2 | | Magnitude | 2 |
| | Significance rating | 20 (Low) | | Significance rating | 15 (Low) |
| • Removal of vegetation resulting in erosion and sedimentation of the receiving environment. | Duration | 2 | • Vegetation clearing activities are to be undertaken in a phased approach, as required to minimise the exposure of bare soil.<br>• Erosion and sedimentation should be closely monitored. After every heavy rainfall event, the contractor must check the site for erosional damage and rehabilitation in the form of in situ infilling, compaction and revegetation.<br>• Erosion control measures such as silt fences can be implemented around cleared sites, although must not be placed across any concentrated flow paths. In such instances, an erosion control mat may be utilised. By placing erosion control measures around cleared sites throughout the development site, this will limit the amount of sedimentation reaching nearby watercourses. | Duration | 2 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 2 | | Magnitude | 2 |
| | Significance rating | 20 (Low) | | Significance rating | 15 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| | | | • Designated paths/roads must be demarcated for heavy machinery to travel on, and erosion control measures must be put in place in order to reduce concentrated flow potential from these paths.<br>• Rehabilitation of disturbed areas must be undertaken with locally indigenous species upon completion of construction activities – in accordance with the plant species and landscaping management plan must be implemented on site (Appendix H).<br>• The measures outlined in the EMPr for construction within the proximity of sensitive habitats, such as watercourses, must be adhered to at all times. | | |
| • Increase in the volume and velocity of stormwater runoff associated with the increased in hardened surface area (6500 square metre footprint).<br>• The specialist (Index, 2022) noted that the Public Transport facility is positioned at the head of a drainage channel that may receive lateral subsurface flow.<br>• Kinvig & Associates (2022) noted that the new public transport facility will be located 99m away from a seepage wetland, which not be negatively impacted on, if adequate stormwater management and erosion control measures are implemented. | Duration | 4 | • Any stormwater that the watercourse receives from the public transport facility, must be managed in accordance with the approved stormwater management plan (SWMP) to ensure that the water is safely discharged.<br>• All stormwater management and erosion control measures must be implemented, as per the approved EMPr.<br>• No contaminated wastewater may enter the surrounding watercourses.<br>• The surface water quality, and wetland monitoring plans (KSEMS, 2021) must be implemented on site (as per Appendix H). | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 8 | | Magnitude | 4 |
| | Significance rating | 56 (Medium) | | Significance rating | 27 (Low) |
| • Improved accessibility of residents that do not have private transport.<br>• This will have a positive effect on community members that will have designated parking areas when using public transport. | Duration | 2 | • No mitigation required as this is a positive impact. | Duration | |
| | Extent | 2 | | Extent | |
| | Likelihood | 4 | | Likelihood | |
| | Magnitude | 4 | | Magnitude | |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
|---|---|---|---|---|---|
| • This will make parking more organised for private and public transport users to each have designated facilities.<br>• The public transport facility has been designed in accordance with the findings of the Traffic Impact Assessment, and comments made by the Department of Transport.<br>• Designated parking facilities will improve the flow of traffic along the Development. | Significance rating | 32 (Medium)<br>+ Positive Impact | | Significance rating | NA (positive impact) |
| **GENERAL CONSTRUCTION-RELATED IMPACTS: APPLICABLE TO CONSTRUCTION ACTIVITIES IN GENERAL - OVER AND ABOVE THOSE LISTED ABOVE** | | | | | |
| • Failure to adhere to the approved layout/ construction footprint may result in additional impacts or activities being triggered, that have not been assessed in this report. | Duration | 2 | • No additional construction activities must be undertaken, other than that which has been applied for as part of this EA Amendment Application, and as approved in the EA.<br>• Ensure efficient communication during all project phases and amongst all stakeholders to ensure that activities undertaken on site are in accordance with the proposal assessed in this report, as applied for.<br>• The Contractors on site must ensure that the approved development layout is adhered to. This must also be monitored by the ECO.<br>• No construction may take place within the demarcated no-development ecological corridor. | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 10 | | Magnitude | 4 |
| | Significance rating | 42 (Medium) | | Significance rating | 14 (Low) |
| • Land clearing activities resulting in the loss of vegetation and associated biodiversity.<br>It should be noted that the vegetation and faunal specialists found that the only species of concern were located along the wetland/ drainage line on site, | Duration | 2 | • Clearing should be undertaken in a phased approach, as required. Vegetation clearing must only be undertaken as and when necessary.<br>• If any endangered or protected species, or species of conservation concern are discovered on site during any pre-construction walkthrough, these | Duration | 2 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 6 | | Magnitude | 4 |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
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| which has been incorporated into the development design as "green open space" in which no development will take place. The remainder of the site is being used for sugar cane production and so will not pose a significant risk of impact to biodiversity.<br>• It should also be noted that the proposal will not increase the risk of biodiversity loss as previously assessed, as the loop ramp will be located on land being used for sugar cane production.<br>The vegetation specialist noted that the previously assessed Site 3 (on which the loop ramp and public transport facility will be situated), only contains vegetation of conservation concern along the eastern boundary. The new footprint will, however, be located along the western edge of the site, along which no species of concern were identified. | Significance rating | 27 (Low) | must be demarcated, and appropriate permits obtained before they are removed.<br>• All staff should be educated about the importance and sensitivity of environmental areas near or within the development site. Frequent inspection of the site must be done to ensure that the integrity of sensitive areas is maintained, especially along the drainage line/ no-development ecological corridor. Illegal harvesting of indigenous vegetation by construction personnel outside of the site must be strictly prohibited (this includes the Giba Gorge area).<br>• All alien vegetation must be removed and controlled.<br>• The no-go areas/ no-development ecological corridor must be strictly adhered to. No construction activity is permitted to take place within these areas. The plant species and landscape management plan (Appendix H) must be implemented, along with the wetland rehabilitation plan. | Significance rating | 14 (Low) |
| • Failure to adhere to the no-development ecological corridor designated as green open space will result in damage to the sensitive vegetation and wetland habitats on site.<br>• Construction within this area will be an offence under the NEMA, as these | Duration | 4 | • The drainage line and no-development ecological corridor must be clearly demarcated as a no-go area. All staff must be informed that no construction activity may take place within this area. | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 2 |
| | Magnitude | 10 | | Magnitude | 4 |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
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| areas were authorised under the EA as no-go areas. | Significance rating | 64 (High) | • Construction must be limited to the approved footprint as per the activities authorised under the EA.<br>• The freshwater ecosystems on the site are currently degraded and are not being maintained due to the current land use. However, it will be part of the proposed development plans to rehabilitate the ecosystems and to remove the alien invasive vegetation. By removing the alien species, indigenous species will be encouraged to grow, and it is likely that faunal species associated with this vegetation, will populate the proposed Green Open Space.<br>• The no-go areas/ no-development ecological corridor must be strictly adhered to. No construction activity is permitted to take place within these areas. The plant species and landscape management plan (Appendix H) must be implemented, along with the wetland rehabilitation plan. | Significance rating | 14 (Low) |
| • Vegetation clearing resulting in bare soil exposure which may be prone to erosion.<br>• Erosion of soil may increase the risk of wash-away and subsequent sedimentation of the receiving environment, including the on-site wetlands as well as downstream watercourses. This may in turn impact on the quality of water within affected systems.<br>• As the proposed changes will increase the development footprint, there is a greater risk of erosion, if land clearing | Duration | 2 | • Vegetation clearance must be undertaken in a phased approach, where construction is proposed to take place, to limit the exposure of bare soil and the associated risks of erosion and sedimentation.<br>• Once construction in a particular area is complete, open excavations must be filled and revegetated with indigenous vegetation, as per the landscape management plan.<br>• Erosion and sedimentation should be closely monitored. After every heavy rainfall event, the contractor must check the site for erosional damage and rehabilitation in the form of in situ infilling, compaction and revegetation, or the placement of temporary flow-energy dissipaters must occur immediately if damage is found. | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 2 |
| | Magnitude | 8 | | Magnitude | 4 |
| | Significance rating | 48 (Medium) | | Significance rating | 14 (Low) |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
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| is not undertaken strategically, in a phased manner. | | | • Erosion control measures must such as silt fences must be implemented around cleared areas, although must not be placed across any concentrated flow paths. In such instances, an erosion control mat may be utilised.<br>• Areas with erosion damage must be rehabilitated through infilling, shaping and revegetation.<br>• Designated paths/roads must be demarcated for heavy machinery to travel on, and erosion control measures must be put in place to reduce concentrated flow potential.<br>• The Contractor must stabilise cleared areas to prevent and control erosion and/or sedimentation of watercourses.<br>• Rehabilitation of disturbed areas must be undertaken with locally indigenous species upon completion of construction activities/ concurrently with construction in areas in which construction is completed. This must done to the satisfaction of the ECO and must be guided by the EMPr. | | |
| • Disturbance of the soil profile because of excavation activities.<br>• Excavation activities may result in the mixing of topsoil with sub-soil, and the subsequent loss of nutrient rich topsoil.<br>• Loss of quality topsoil may prevent effective rehabilitation and landscaping of the site. As topsoil is important for rehabilitation and plant growth, it should be carefully separated and stored from sub-soil to preserve the integrity thereof.<br>• Improper stockpile management may increase the risk of erosion on site and subsequent sedimentation of the surrounding environment | Duration | 1 | • Excavation should be undertaken in a phased approach where possible.<br>• Cut and fill operations must be avoided where possible.<br>• Topsoil must be stockpiled separately from base soil and must be stored for use during rehabilitation.<br>• Soil stockpiles must not exceed 2m in height and must be covered if not used for extended periods of time and are not to be located within 50m of any watercourses, or within the 1:100 year flood lines.<br>• Where stockpiles are stored for prolonged periods of time (more than 3 months) the need for planting of indigenous grasses can be investigated, to control erosion, as required. | Duration | 1 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 6 | | Magnitude | 4 |
| | Significance rating | 36 (Medium) | | Significance rating | 18 (Low) |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
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| | | | • IAPS must systematically be removed from topsoil stockpiles. All plants must not be allowed to come to seed and potentially infest the topsoil further.<br>• Erosion control measures such as silt fences, low soil berms and/or shutter boards must be placed around stockpiles to limit erosion and sediment runoff into surrounding watercourses.<br>• Topsoil stockpiles must not be stored adjacent to any heavy run-off area, drain, or wetland on site.<br>• Once work areas are completed, soil should be backfilled in the same order that it was removed, with the topsoil being replaced last in order ensure the integrity of the soil is maintained and to assist with the establishment of vegetation where applicable.<br>• Construction vehicles must use designated access roads to prevent additional loss/ contamination of topsoil.<br>• Only environmentally friendly substances must be used to mark construction lines (agricultural lime).<br>• Erosion control measures must be implemented on site (i.e., silt fencing, gabions or contouring) to prevent erosion damage and sedimentation of the receiving environment. | | |
| • Stormwater design and management. Ineffective stormwater management on site may promote erosion and sedimentation of downstream watercourses and properties.<br>• An increase in hardened surfacing will promote an increase in stormwater runoff velocity, which increases the risk of erosion and sedimentation of downstream watercourses and properties.<br>• Ineffective stormwater management may result in pooling of water on site. | Duration | 4 | • The contractor must utilise a Stormwater Management Plan (SWMP) (which may form part of the construction method statement) to ensure that all construction activities do not cause, or precipitate, soil erosion which may result in sediment input into the surrounding environment.<br>• The wetland rehabilitation plan and stormwater management plan must be prepared with cognisance of the findings of each and implemented accordingly.<br>• Any proposed associated stormwater infrastructure must be positioned at areas where concentrated flows will not enter any freshwater | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 2 |
| | Magnitude | 8 | | Magnitude | 6 |
| | Significance rating | 56 (Medium) | | Significance rating | 22 (Low) |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
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| • Blockage of stormwater drains will inhibit the flow of water across the site and may starve downstream systems. | | | resources, and consequently result in erosion of the surrounding environment.<br>• The mitigation of impacts should focus on managing the runoff generated by the concrete surfaces, and introducing it responsibly into the receiving environment. Therefore, the stormwater infrastructure must not be positioned where concentrated flows will enter these systems without efficient energy dissipaters positioned downslope within the flow-path.<br>• Alien invasive vegetation must also be removed from stormwater drains.<br>• Litter should be monitored and removed from the stormwater system to prevent blockages.<br>• The SWMP recommends that energy dissipating structures be utilised where erosion is a possibility, on the outlets from underground conduits or the run-off from the embankments. Bio-attenuation swales and infiltration measures (such as permeable paving) will be applied at the point source (individual sites and road reserves) as far as possible to reduce flow velocity draining into the different freshwater systems.<br>• The stormwater management plan and stormwater system must account for the increase water inputs associated with the new development footprint (i.e., public transport area, and additional water inputs from the treated wastewater being discharged into the watercourses).<br>• Stormwater infrastructure must be regularly monitored for the accumulation of sediment and debris/ waste. The structures must be cleared of anu such debris, to ensure optimal functioning. | | |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
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| • Stormwater contamination which may lead to contamination and degradation of the receiving environment. Stormwater may be contaminated by:<br>• Pollution of surface water due to spillage of hazardous materials, such as oil and fuels either directly through surface runoff during rainfall events, or subsurface water movement.<br>• Hydrocarbons including petrol/diesel and oils/grease/lubricants associated with construction activities (machinery, maintenance, storage, handling) may potentially enter surrounding watercourses by means of surface runoff or through dumping by construction workers.<br>• The incorrect positioning and maintenance of the portable chemical toilets and use of the surround environment as ablution facilities may result in sewage and chemicals entering the system. | Duration | 4 | • All potential stormwater contaminants must be bunded in the site camp to prevent run-off into the surrounding environment. A drainage system must be established for the construction camp. The drainage system must be regularly checked to ensure that the water flow is unobstructed.<br>• No contaminated runoff or grey water is allowed to be discharged from the construction camp.<br>• Construction vehicles and machinery should be well maintained and must be provided with drip trays at all times to prevent seepage of oil and fuel.<br>• Chemical toilets must be placed within the construction camp, outside of the 1:100 year floodline, and not within 50m of the surrounding watercourses.<br>• The chemical toilets must be provided by a registered company and all effluent must be regularly disposed of at a licenses facility.<br>• A safe disposal certificate must be obtained for all chemical toilets.<br>• All solid waste generated during the construction process (including packets, plastic, rubble, cut plant material, waste metals etc.) must be placed in the waste collection area in the construction camp and must not be allowed to blow around the site, be accessible by animals, or be placed in piles adjacent the skips / bins.<br>• Burying of waste, rubble on site, or dumping in drainage lines/rivers is prohibited.<br>• Hazardous material storage areas must not be within 50 m of any watercourse or within the 1:100 year flood line. The furthest threshold must be adhered to. Hazardous storage areas to be hard surfaced and bunded with an impermeable liner to protect groundwater quality and undercover. The bunded catch pit must have at least 110% the storage capacity of the total stored quantity. | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 2 |
| | Magnitude | 8 | | Magnitude | 6 |
| | Significance rating | 56 (Medium) | | Significance rating | 22 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
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| • Direct destruction of Watercourses resulting in a loss of wetland/ riparian habitat. | Duration | 4 | • No construction may take place within watercourses and their associated buffer zones.<br>• The no-go ecological corridor must be clearly demarcated whereby no construction activity is permitted therein. The development layout must thus be strictly adhered to at all times.<br>• The wetland rehabilitation plan must be implemented on site.<br>• The approved development footprint must be strictly adhered to. | Duration | 5 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 8 | | Magnitude | 2 |
| | Significance rating | 42 (Medium) | | Significance rating | 16 (Low) |
| • Irrigation of land using treated waste water from the Waste WaterTreatment Plant. Inefficient treatment of such waste water will result in contamination of the receiving environment. | Duration | 5 | • The existing Water Use License (WUL) speaks to the treatment of effluent which will be discharged into a surrounding watercourse.<br>• The use of treated effluent for irrigation purposes is a separate water use. Should the Applicant wish to irrigate the site with treated effluent, then a Section 21 (e) water use license will need to be applied for from DWS. | Duration | 5 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 6 | | Magnitude | 2 |
| | Significance rating | 39 (Medium) | | Significance rating | 16 (Low) |
| • Concrete mixing and handling of hazardous materials on site resulting in contamination of the receiving environment.<br>• Use of heavy machinery on site which may result in spillages and subsequent contamination of the receiving environment<br>• Contamination of the receiving environment as a result of contaminants from construction vehicles or site personnel. | Duration | 4 | • Mixing of cement should be done on an impervious surface.<br>• Contamination of soil with cement must be collected immediately and should be disposed of in the relevant waste bins until such time that it is disposed of at the relevant registered landfill facility, and the safe disposal slips placed in the environmental file.<br>• Material Safety Data Sheets (MSDSs) must be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes. | Duration | 1 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 1 |
| | Magnitude | 6 | | Magnitude | 0 |
| | Significance rating | 48 (Medium) | | Significance rating | 2 (Low) |

| Impact | Significance Rating of Impacts<br><br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br><br>After Mitigation | |
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| | | | • Hazardous material storage areas must not be within 50 m of any watercourse or within the 1:100 year flood line. The furthest threshold must be adhered to. Hazardous storage areas to be hard surfaced and bunded with an impermeable liner to protect groundwater quality and undercover. The bunded catch pit must have at least 110% the storage capacity of the total stored quantity.<br>• Vehicles should adhere to designated access roads.<br>• The soil located at ad-hoc tracks should be overturned to prevent compaction and resulting channels for water to be diverted.<br>• All machinery should be serviced to prevent leaks. Servicing of vehicles should not take place on site, unless on an impermeable surface, which must subsequently be disposed of.<br>• All potential stormwater contaminants must be bunded in the site camp to prevent runoff into the receiving environment.<br>• No contaminated runoff or grey water is allowed to be discharged from the site camp.<br>• Construction vehicles and machinery must be well maintained and must be provided with drip trays at all times to prevent spillage of oil and fuel.<br>• Chemical toilets must be provided be a registered company and must be regularly serviced and proof of such placed in the environmental file.<br>• Spill kits are to be kept on site and any accidental spillages reported. The relevant clean up specialists must be contacted immediately to attend to the clean up<br>• In the event of a spill, the following procedure is to be followed:<br>• Stop the source of the spill;<br>• Contain the spill; | | |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
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| | | | • All significant spills must be reported to this Department and other relevant authorities;<br>• Remove the spilled product for treatment or authorised disposal;<br>• Determine if there is any soil, groundwater or other environmental impact;<br>  ○ If necessary, remedial action must be taken in consultation with the Department of Economic Development, Tourism and Environmental Affairs;<br>  ○ Incident must be documented.<br>• In the event of spills that cannot be contained, then the relevant authorities must be contacted and notified of such.<br>• All hazardous substances such as fuel, must be kept in sealed container, and stored in a bunded area.<br>• Spilled concrete should be treated as hazardous waste and disposed of in a hazardous waste container until disposed of at a suitable, registered facility.<br>• Cement mixing must take place on an impermeable surface, such as boarding sheet, to prevent soil contamination.<br>• All spills must be cleaned up immediately. The contaminated soil must be disposed of at a registered waste disposal facility suitable to the type of waste (in accordance with the National Environmental Management: Waste Act, 2008). | | |
| • Use of illegal earthen material for construction. | Duration | 2 | • All materials must be obtained from a registered and sustainable source (i.e., mined material such as stone must only be obtained from permitted quarries) and all delivery notes and slips must be kept on record, and made available to the ECO or competent authority upon request. | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 8 | | Magnitude | 4 |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
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| | Significance rating | 36 (Medium) | | Significance rating | 14 (Low) |
| • Excavation and other construction activities may impact on the geological stability of the site.<br>• Potentially slope failures resulting in unstable slopes during construction and operation. These slopes are also more vulnerable to erosion and sediment deposition into the adjacent drainage lines. Steep slopes were noted along the northern hilltop and a section of the southern hilltop of the Development Site.<br>• With regards to the previously assessed Site 3 on which the new loop ramp is proposed, steeper slopes were noted in the north and east (Geotechnical Report, 2012) | Duration | 2 | • All earthworks and embankment construction should be carried out in accordance with SABS 1200 specifications.<br>• Should fill be placed onto loose material, the ground surface should be well compacted before commencing with fill placement.<br>• During the earthworks phase, the geotechnical engineer recommended several slope gradients for the cut and fill embankments depending on the underlying material / location of the proposed embankments. The specialist recommended that the overall natural drainage systems should remain intact in terms of subsoil drainage as the wetland system on site is part of a wider, complex drainage system connecting to the KZN coast line. | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 6 | | Magnitude | 4 |
| | Significance rating | 40 (Medium) | | Significance rating | 21 (Low) |
| • Risk of injury to site staff | Duration | 2 | • The contractor should be made aware of potential safety/ health risks.<br>• Open excavations must be clearly demarcated to prevent risk of injury to site staff.<br>• All activities are to be undertaken in accordance with the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).<br>• The applicant has appointed a health and safety officer on site to ensure compliance with the above Act.<br>• Adequate toilet facilities will be provided for all staff members as standard construction practice.<br>• The chemical toilets to be provided must be from a registered company and all sewage must be disposed of at an appropriate facility. Safe disposal | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 6 | | Magnitude | 2 |
| | Significance rating | 30 (Low) | | Significance rating | 10 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
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| | | | certificates must be kept on record in the site environmental file. | | |
| • Use of heavy construction vehicles resulting in compaction of the soil profile. Compacted soil will increase the risk of concentrated surface flows which may lead to erosion and subsequent sedimentation of the receiving environment.<br>• Use of undesignated haulage or access routes may increase the risk of impact on the receiving environment in terms of compaction and loss of topsoil. | Duration | 1 | • Movement of construction vehicles should be limited to demarcated tracks and haulage roads to limit the surface area being compacted.<br>• All alternative tracks and footpaths, access and haulage roads, site camps and spill sites created during the construction phase should be appropriately rehabilitated (e.g. tillage and revegetation of the affected areas). This rehabilitation should result in improved surface roughness and increased infiltration along with reduced stormwater flow and consequently reduced rill erosion. | Duration | 1 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 1 |
| | Magnitude | 2 | | Magnitude | 0 |
| | Significance rating | 12 (Low) | | Significance rating | 2 (Low) |
| • Destruction of Resources of Heritage Significance.<br>• Of the 11 features of architectural nature, the only properties that may be significantly impacted by the road and development routing, is the property described as the Estate Management House 2 (S29°48'30.57" E30°44'44.11") which will be demolished, as well as the Seasonal Labour Compound (S29°48'35.35" E30°44'33.81"), which closely skirts the development footprint (Archaic Consulting, 2022). Neither of these buildings are over 60 years old, and so the Heritage specialist confirmed that no Heritage resources are at risk by the proposed development (Archaic Consulting, 2022). | Duration | 2 | • Should any archaeological/ heritage objects such as artefacts or graves be uncovered during excavation, all works must cease, and the relevant heritage authority (South African Heritage Resources Agency) notified, prior to re-commencement of activities on site. Work may only continue once written permission of provided by SAHRA.<br>• The chance find protocol provided in Appendix 1 of the heritage specialist verification letter on the management of graves and burial grounds, must be acknowledged and implemented as required. | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 2 |
| | Magnitude | 2 | | Magnitude | 2 |
| | Significance rating | 24 (Low) | | Significance rating | 10 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
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| • Loss of agricultural land resulting from the transformation of agricultural land to the proposed Mixed-Use Development.<br>• The agricultural specialist (Mottram & Associates, 2022) noted that over the past 8 years, poor average sugarcane yields have been obtained. Unless disease is eradicated, and yields improved this Estate could incur loss. The specialist further noted the benefits that would result from development, including:<br>• fulfilling the planned expansion of the outer west node of the eThekwini Municipality;<br>• complying with municipal strategic planning;<br>• complying with local planning;<br>• making efficient use of existing infrastructure and resources; and<br>• creating employment and socio-economic benefits.<br>• The specialist also concluded that considering the above, in addition to the new sugarcane plantations planned by THD, there proposal will not have a negative impact on the region's food security. | Duration | 3 | • No mitigation is required as this is a positive impact | Duration | - |
| | Extent | 3 | | Extent | - |
| | Likelihood | 4 | | Likelihood | - |
| | Magnitude | 8 | | Magnitude | - |
| | Significance rating | 56 (Medium)<br>+ Positive | | Significance rating | - |
| • Traffic increase and disturbance and/or delay to commuters along the route due to an increase in construction vehicles and partial road closures. | Duration | 2 | • Flagmen and other traffic control measures must be implemented if the need arises during the construction phase.<br>• Alert traffic department if road closure is required, conduct road closures during off peak hours and place notices of intent in advance. Construction vehicles to comply with the speed limits. | Duration | 1 |
| | Extent | 2 | | Extent | 2 |
| | Likelihood | 4 | | Likelihood | 2 |
| | Magnitude | 4 | | Magnitude | 4 |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
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| | Significance rating | 32 (Medium) | • The traffic specialist recommended that the minimum width of the proposed new sidewalks be 3m to safely accommodate pedestrians and cyclists. Initially, a sufficient road reserve is required to ensure the incorporation of public transport provisions at a later stage.<br><br>The Traffic Impact Assessment stated that there will be the construction of a public transport interchange within the site and lay-bys along Kassier Road. In the long term, the road upgrades will ensure that sufficient road reserve is maintained to provide a BRT lane if required. There will be a minimum width of 3m for sidewalks, both internally and externally, to safely accommodate pedestrians and cyclists.<br><br>• The new loop ramp and construction of the public transport facility has been proposed to improve the flow of traffic and accessibility to the site, in line with the findings of the Traffic Impact Assessment and comments made by the Department of Transport (DOT). | Significance rating | 16 (Low) |
| • Clearing of vegetation leaving soil bare and susceptible to proliferation of alien/ invasive plant species.<br>• Disturbance may promote the proliferation of alien/ invasive vegetation which will have a negative impact on indigenous biodiversity. | Duration | 2 | • An Alien Invasive Management Plan must be implemented on site.<br>• IAPS must be effectively controlled on site to prevent proliferation not only on site, but in the surrounding areas.<br>• Revegetation activities must occur concurrently with IAPS removal activities to reduce reoccupation by IAPS and encourage indigenous plant species growth.<br>• Use of herbicides must only be applied if necessary and must be done in consultation with the contractor and vegetation specialist.<br>• A specialist was appointed by the Applicant, to prepare a Landscape Management Plan and Plant | Duration | 5 |
| | Extent | 2 | | Extent | 2 |
| | Likelihood | 3 | | Likelihood | 5 |
| | Magnitude | 4 | | Magnitude | 4 |
| | Significance rating | 24 (Low) | | Significance rating | (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
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| | | | Species Plan (Appendix H) to ensure effective rehabilitation of the site, to mitigate against the loss of biodiversity on site. These plans must be implemented on site. | | |
| • Waste generation and littering on site which may result in contamination of the surrounding environment.<br>• Improper waste management will result in degradation of the receiving environment. | Duration | 2 | • No littering is permitted on site.<br>• Waste generated during construction must be disposed of at a registered waste disposal facility, applicable to the waste type (i.e., general, or hazardous waste). Safe disposal certificates must be kept in the environmental file.<br>• Sufficient waste receptacles, suitable to the type of waste, must be made available on site. The bins must be emptied on a regular basis (weekly or bi-weekly), at a registered landfill/ waste disposal facility, and the safe disposal slips, kept for record keeping purposes. The bins must be sealed (wind and scavenger proof).<br>• A designated waste area must be utilised at all times. Sufficient bins must be provided within the construction camp and emptied at no less than monthly intervals.<br>• Recycling bins may be placed within the construction camp to encourage recycling and ensure the separation of waste.<br>• Composting of organic waste is encouraged.<br>• Burying of waste, rubble on site, or dumping in drainage lines/rivers is prohibited.<br>• Refuse must be separated at source and disposed of in the appropriate bins, which must be emptied regularly.<br>• All solid waste must then be disposed of at the nearest licensed landfill and safe disposal certificates must be obtained and kept on-site in the environmental file at all times during construction.<br>• All onsite personnel must also be trained in proper waste management techniques and shown the | Duration | 2 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 2 |
| | Magnitude | 8 | | Magnitude | 4 |
| | Significance rating | 48 (Medium) | | Significance rating | 14 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
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| | | | appropriate waste dumps for specific materials prior to any construction activities occurring (including site establishment).<br>• All fuel-operated vehicles and equipment (i.e., generators) must be provided with drip trays for collection of potential leaks, when stationary. Drip trays must be regularly cleaned, and the spillage handled and disposed of as hazardous waste.<br>• The Contractor must have a spill response plan available on site, for in the event of accidental spills/ fuel leaks. All site staff are to be made aware of the procedure to follow in the event of a spill.<br>• A spill kit must be kept on site, for the cleaning and disposal of hazardous waste.<br>• Spills of hazardous substances must be cleaned up immediately, using materials that absorb fuel and oils such as Drizit and earth. The contaminated material must be disposed of in the spill kit receptacle until it is removed to a registered waste disposal facility. Safe disposal slips must be maintained in the environmental file on site. The Contractor may also contact the relevant specialists to assist with the clean-up, if required. The Contractor must notify the ECO (if applicable) and Project Manager of all incidents on site.<br>• Hazardous material storage areas must not be located within 50m of a watercourse. Hazardous storage areas are to be hard surfaced and bunded with an impermeable liner to protect soil/ groundwater quality. | | |
| • Increased dust levels as a result of land clearing activities which may cause disturbance to surrounding properties, and which may affect plants by reducing photosynthesis and a subsequent loss of plant diversity | Duration | 2 | • Dust suppression by means of a mobile water tanker with spraying attachment must implemented on site. This is particularly important during winter and heavy wind events.<br>• If suppression by water is not effective, "environmentally friendly" chemical additives may be investigated to assist with dust control. The | Duration | 2 |
| | Extent | 2 | | Extent | 2 |
| | Likelihood | 4 | | Likelihood | 2 |
| | Magnitude | 4 | | Magnitude | 2 |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| | Significance rating | 32 (Medium) | appointed ECO must first approve of any chemical products used in this regard.<br>• Active planting of indigenous species must take place in all areas where construction will no longer take place. The developer must ensure that at any point in time, the presence of bare ground is at an absolute minimum. | Significance rating | 24 (Low) |
| • Noise disturbance resulting from construction activities on site.<br>• Increased noise in the area. This is likely to be a nuisance to residents in the neighbouring areas. | Duration | 1 | • Excessive noise must be controlled on site. Workers will be trained regarding noise generation on site and construction hours will be kept to working hours (07h00 to 17h00).<br>• All precautions should be taken to ensure that noise generation is kept to a minimum. If excessive noise is expected during certain stages of the construction, nearby residents must be notified prior to the event.<br>• A complaints register may be maintained on site in order to record any complaints by the surrounding community. Such concerns may thus be taken into consideration and addressed by the applicant to minimise disturbance where possible. | Duration | 1 |
| | Extent | 2 | | Extent | 2 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 6 | | Magnitude | 4 |
| | Significance rating | 27 (Low) | | Significance rating | 16 (Low) |
| • Increase in economic opportunity through job creation.<br>• According to the Final EIR (KSEMS, 2015) the development will create 3726 temporary employment opportunities during the construction phase. | Duration | 2 | • It is recommended that the developer make use of local labour and suppliers during the construction and operational phases of the development. | Duration | - |
| | Extent | 2 | | Extent | - |
| | Likelihood | 4 | | Likelihood | - |
| | Magnitude | 8 | | Magnitude | - |
| | Significance rating | 48 (Medium)<br>+ Positive Impact | | Significance rating | - |

***Table 10: Assessment of Impacts associated with the proposed changes to the Ntshongweni Mixed-Use Development (Urban Core Precinct), during the Operational Phase***

| **Impact** | **Significance Rating of Impacts Prior To Mitigation** | | **Proposed Mitigation** | **Significance Rating of Impacts After Mitigation** | |
|---|---|---|---|---|---|
| • The proposed changes to the electricity infrastructure will not result in an increase in the risk of impact on the receiving environment as the ultimate electricity requirement of 29.6MVA has already been approved under the existing EA.<br>• See Appendix I for the correspondence from the eThekwini Municipality confirming that there is capacity to supply 8MA of electricity for the initial development requirements.<br>• The Applicant confirmed that there will be no changes to the infrastructure and layout, as that authorised under the existing EA. | Duration | 4 | • The Applicant should aim to use energy saving light bulbs for the development, and to use electricity sparingly, where possible, to minimise wastage of an important resource. | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 2 | | Likelihood | 2 |
| | Magnitude | 4 | | Magnitude | 2 |
| | Significance rating | 20 (Low) | | Significance rating | 12 (Low) |
| • As a result of the increase in development anticipated in the study area, there will be an increase in traffic within the study area. The new loop ramp is being proposed to improve the distribution and flow of traffic along the development site. | Duration | 4 | • The proposed loop ramp is being proposed in line with the findings of the Traffic Impact Assessment and comments made by DOT.<br>• The road has been designed in accordance with ETA standards. | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 2 | | Likelihood | 2 |
| | Magnitude | 4 | | Magnitude | 2 |
| | Significance rating | 20 (Low) | | Significance rating | 14 (Low) |
| • The proposed on-site sewage package plant will be located in the same position as the previously proposed and assessed sewage pump station.<br>• The proposed on-site sewage treatment plant will collect and process | Duration | 4 | • The SWMP, wetland rehabilitation and EMP must be strictly implemented for the duration that the sewage package plant is utilised.<br>• In the event of a spill, the following procedure is to be followed:<br>• Stop the source of the spill; | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 10 | | Magnitude | 4 |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| 1.95ML of effluent per day. The treated effluent will be discharged into a nearby watercourse. As the proposed capacity of the treatment plant falls below the 2Ml/day threshold listed under Listing Notice 1 (GNR 327 of 2017), this activity does not trigger a listed activity.<br>• If the treatment plant malfunctions, and the sewage being discharged into the watercourse has not been treated to standard, there is potential for significant contamination of downstream watercourses.<br>• The wetland specialist (Index, 2022) confirmed that the proposed package plant does not increase the risk of impact on the receiving environment, considering all mitigation measures are implemented and that this is only a temporary solution, until such time that the Umhlatazana WWTW is upgraded. | Significance rating | 64 (High) | • Contain the spill;<br>• All significant spills must be reported to this Department and other relevant authorities;<br>• Remove the spilled product for treatment or authorised disposal;<br>• Determine if there is any soil, groundwater or other environmental impact;<br>• If necessary, remedial action must be taken in consultation with the Department of Economic Development, Tourism and Environmental Affairs;<br>• Incident must be documented.<br>• The emergency protocol as per Appendix C of Notice 509 of 2016 must be implemented in the case of emergency incidents.<br>• The sewage infrastructure must be regularly monitored and must undergo regular maintenance.<br>• Should a leak occur, an emergency response team must be mobilised to attend to the clean up immediately, as per the spill response procedure.<br>• The wetland, river and surface water quality monitoring plans (Appendix H) must be strictly implemented on site.<br>• The Development must tie into the Umhlatazana WWTW as soon as there is sufficient capacity.<br>• Any spills or incidents occur, the spill response plan must be implemented immediately. The source of contamination must be contained/ stopped, and all clean up procedures implemented. The relevant authorities (EDTEA and DWS) must be notified immediately.<br>• The wetland rehabilitation and offset plan must be strictly implemented on site. Implementation must be monitored by the resident engineer, Contractor, ECO and committee made up of members from DWS, EPCPD and EKZNW.<br>• The mitigation measures highlighted in the ecological reserve determination study report (GroundTruth, | Significance rating | 27 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| | | | 2022) must be implemented. The specialist recommends that Thresholds of Potential Concern (PTCs) be identified for the Wekewkeke Stream, prior to construction, and for financial provision to be made available accordingly, to ensure that a proactive approach is adopted in monitoring and managing this system (monitoring change, but also the trajectory of change), so that issues can be detected early, and so to ensure the timeous mitigation of negative impacts. | | |
| • Waste generated by residents may be transported into sensitive habitats, resulting in degradation of affected systems. | Duration | 4 | • An internal solid waste collection service will be operated by Durban Solid Waste on contract with the Developments Management Association and body corporate of the estate.<br>• The management body must ensure that littering is prohibited and that litter is collected, and disposed of the designated waste receptacles on site.<br>• The Body Corporate must ensure that a team is present on site for maintenance of the site and no-development ecological corridor, to ensure that no waste is present within these areas. All waste must be removed and disposed of in the relevant receptacles. | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 2 | | Likelihood | 2 |
| | Magnitude | 4 | | Magnitude | 2 |
| | Significance rating | 20 (Low) | | Significance rating | 14 (Low) |
| • Poorly maintained stormwater infrastructure and stormwater management may result in erosion damage and sedimentation of the receiving environment.<br>• Risk of flooding downstream of the sites with the increase in hard surfaces resulting in increased water quantity (SWMP, 2013).<br>• Increase stormwater associated with the development, in addition to the treated effluent being discharged into the surrounding watercourses may | Duration | 4 | • The SWMP states that measures will be required to minimise the run-off especially for large storm events. Even with the bulk of overland run-off being redirected via kerbing, a certain level of erosion can be expected from precipitation on the embankments. It is recommended that these embankments be stabilised as soon as possible during the construction phase. Stormwater management is included under section 3B of the EMPr.<br>• One of the philosophies of the SWMP is to reduce stormwater flow to within a 10% variance of the pre-development flows using attenuating devices such as attenuation dams/structures or infiltration devices. | Duration | 4 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 4 | | Magnitude | 2 |
| | Significance rating | 27 (Low) | | Significance rating | 12 (Low) |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| result in the capacity of these systems to receive water being exceeded, thereby posing a risk of altered flow and flooding regimes, and erosion damage along riparian habitats. | | | Infiltration is to be maximised across the site with the SWMP being followed during design, construction and operational phases. On completion of works, a site inspection will be carried out to check compliance with the stormwater management requirements prior to the Certificate of Occupation being issued.<br>• Stormwater infrastructure must be regularly monitored and cleared of debris, to ensure optimal functioning.<br>• Stormwater infrastructure established for discharging water safely into the watercourses must be properly maintained. | | |
| • Accumulated/ contaminated material on hardened surfaces transported via stormwater directly into the adjacent freshwater ecosystems resulting in a build-up of sediment /material in the wetland (SWMP, 2013) | Duration | 4 | • The SWMP has catered for attenuation swales and infiltration measures. Revegetation along the proposed buffer zones and Green Open Space areas will assist in reducing the transportation of sediment into the wetlands. Landscaping and re-vegetation of areas not occupied by buildings/paving shall be implemented immediately after building works are complete. Stabilisation and erosion control measures should be implemented immediately if any embankments are constructed. All mitigation measures and recommendations made in the SWMP have been included in the EMPr.<br>• The internal road network must be properly managed throughout the life-span of the project, to prevent contaminated stormwater from entering sensitive habitats. | Duration | 4 |
| | Extent | 1 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 4 | | Magnitude | 2 |
| | Significance rating | 27 (Low) | | Significance rating | 12 (Low) |
| Risk of alien and invasive vegetation proliferating in sensitive habitat with the proposed disturbance resulting in displacement of indigenous species | Duration | 4 | • The wetland specialist has recommended that the rehabilitation of the buffer zones between site development and the drainage lines is to include the removal of alien invasive vegetation species and active replanting of indigenous plants, to ensure a dense, undisturbed vegetative community. This will | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 4 | | Magnitude | 2 |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| | Significance rating | 30 (Medium) | reduce the likelihood of alien vegetation invasion however a maintenance plan is also included in the Rehabilitation Plan (Appendix H) This involves the intermittent removal of excess plant material and control of alien species (to continue during operational phase). It is also a recommendation within the Riparian Assessment, that a comprehensive alien weed control programme be implemented be developed.<br>• Vegetation on site must be maintained throughout the lifespan of the project, and the rehabilitation plan pertaining to the sensitive habitats must be strictly implemented.<br>• The plant species and landscaping management plan must be implemented throughout the lifespan of the project.<br>• All monitoring plans must be implemented throughout the duration of the Development, until such time that the Competent Auhtority and Specialist advise that impacts are not being notified, and for alternative monitoring arrangements to be followed. | Significance rating | 12 (Low) |
| • Increase in the volume of traffic on the roads during the operation of the proposed development resulting in congestion and disturbance to surrounding communities.<br>• Reduced road safety resulting from additional traffic. | Duration | 4 | • The Traffic Impact Assessment has identified intersections/ roads requiring upgrades and/or signalised. Once the upgrades are complete, the road network should cope with the calculated predicted traffic flows.<br>• The road network is being upgraded in line with the findings of the Traffic Impact Assessment and according to ETA standards, to alleviate traffic pressure along the surrounding road network, to accommodate the projected increases in traffic.<br>• The proposed upgrades will improve carrying capacity of the roads and so improve road safety. | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 4 | | Magnitude | 4 |
| | Significance rating | 40 (Medium) | | Significance rating | 27 (Low) |
| | Duration | 4 | | Duration | 4 |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| • Increased pressure on existing Municipal bulk service infrastructure.<br>• Insufficient capacity of the Umhlatazana WWTW to service the Development. | Extent | 2 | • The bulk water supply for the proposed development will originate from the proposed and soon to be constructed Western Aquaduct. eThekwini Water and Sanitation have confirmed that a supply may be taken off the Western Aquaduct to serve the greater development. The water services required for the development has already been authorised. The proposed changes being applied for will not increase pressure on bulk water infrastructure.<br>• The ultimate electricity supply required for the development has already been authorised. The proposed changes being applied for will not increase pressure on electricity infrastructure.<br>• The proposed inclusion of a temporary on-site sewage package plant is intended to alleviate pressure on the eThekwini Municipality until such time that the Umhlatazana WWTW is upgraded to service the Development's sewage requirements. .<br>• All mitigation measures, rehabilitation and monitoring plans, must be strictly implemented to minimise environmental impacts associated with the sewage package plant.<br>• The development must tie into the Municipal system as soon as there is capacity.<br>• The service infrastructure in the Municipality will be upgraded to accommodate the Development's requirements. | Extent | 2 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 6 | | Magnitude | 2 |
| | Significance rating | 48 (Medium) | | Significance rating | 24 (Low) |
| • Positive impact with the incorporation of public transport and non-motorised transportation into the proposal.<br>• This will allow for the more efficient flow of traffic utilising the development, as private vehicle users will not need to | Duration | 4 | • The Traffic Impact Assessment has stated that there will be the construction of a public transport interchange within the site and laybys on Kassier Road. In the long term, the road upgrades will ensure that the public transport aligns with the IRPTN strategy and that sufficient road reserve is | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 4 | | Magnitude | 6 |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| wait for taxi's stopping at undesignated areas. | Significance rating | 40 (Medium) Positive | maintained to provide a BRT lane if required. There will be a minimum width of 3m for sidewalks, both internally and externally, to safely accommodate pedestrians and cyclists.<br>• The new public transport holding facility will provid designated parking and access to residents that utilise public transport.<br>• The management team of the development must ensure that allocated areas are utilised as intended. | Significance rating | - |
| • Utilisation of the public transport facility may result in waste and contaminated stormwater entering the downstream drainage channel/ watercourse. | Duration | 4 | • The SWMP must be implemented to ensure stormwater entering the downstream drainage channel, is not negatively impacted on.<br>• The Public Transport area must be kept clean and free of waste to prevent waste from contaminating the downstream watercourse.<br>• Should any spill contamination occur, this must be reported to the relevant authorities, and the spill clean-up procedures undertaken immediately. | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 8 | | Magnitude | 4 |
| | Significance rating | 56 (Medium) | | Significance rating | 27 (Low) |
| • There may be an increase in crime in the area, due to the influx of contractors. | Duration | 3 | • Contractors employed must be adequately screened to ensure trustworthy contractors are employed. | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 3 |
| | Magnitude | 4 | | Magnitude | 4 |
| | Significance rating | 27 (Low) | | Significance rating | 27 (Low) |
| Social and Economic:<br>• Positive impact for meeting housing and basic service needs, access to employment opportunities<br>• Shongweni Regional Centre stimulating trade and investment along the | Duration | 4 | • No mitigation is required as this is a positive impact.<br>• Findings from interviews conducted in the local area, undertaken as part of the Marketing and Socio-Economic Impact Assessment identified the demand for affordable housing, the demand for safe, secure, upmarket office space and retail brand preferences | Duration | - |
| | Extent | 2 | | Extent | - |
| | Likelihood | 4 | | Likelihood | - |
| | Magnitude | 4 | | Magnitude | - |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
|---|---|---|---|---|---|
| intended freight highway (the N3; Planning Report, 2013).<br>• According to the Final EIR (KSEMS, 2015) the development will create 359 permanent employment opportunities during the operation phase.<br>• The development will attract investment and economic activity within the outer west region, and so will promote socio-economic growth in the area.<br>• There will likely be an increase in the value of surrounding properties. | Significance rating | 40 (Medium)<br>Positive | (which are likely to be incorporated into the tenant considerations).<br>• The planning specialist states that the site is positioned strategically within a dominant freight and logistics corridor in Southern Africa. In anticipation of the proposed dug-out Port, a proposed freight highway along the N3 highway, is intended to pass directly through the THD landholdings in Shongweni (KSEMS, 2015). | Significance rating | - |

***Table 11: Cumulative impacts association with the development***

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| • The Increase in hardened surface area associated with the proposed development, along with the discharging of treated wastewater into the wetlands and Wekeweke Stream, may exceed these systems capacity to accept the additional water inputs. This may lead to erosion damage along the riparian habitat and alteration of the flow regimes of affected systems.<br>• The change in hydrological conditions may in turn have an impact on aquatic ecosystem functioning, and so, negatively affect aquatic biodiversity and river health.<br><br>The wetland specialist (Index, 2022) confirmed that the proposed discharge of the treated effluent into the watercourses, can be adequately mitigated provided that suitable water release structures are installed to discharge the water safely. | Duration | 4 | • The EMPr, stormwater management plan (SWMP) and wetland rehabilitation plan must be strictly implemented on site.<br>• Suitable water release structures must be installed to discharge stormwater runoff safely into the receiving environment.<br>• Any stormwater that watercourse downstream of the new public transport facility, must be in line with the SWMP to ensure that water is safely discharged.<br>• According to the Engineering Services Report (ESR, 2021), the stormwater control philosophy is to restrict post development flows into the catchment to equal or less than 100% of the occurring pre-development flows – which is said to prevent impact on the Wekeweke Stream.<br>• The mitigation measures highlighted in the ecological reserve determination study report (GroundTruth, 2022) must be implemented. The specialist recommends that Thresholds of Potential Concern (PTCs) be identified for the Wekewkeke Stream, prior to construction, and for financial provision to be made available accordingly, to ensure that a proactive approach is adopted in monitoring and managing this system (monitoring change, but also the trajectory of change), so that issues can be detected early, and so to ensure the timeous mitigation of negative impacts. | Duration | 3 |
| | Extent | 3 | | Extent | 2 |
| | Likelihood | 4 | | Likelihood | 3 |
| | Magnitude | 10 | | Magnitude | 4 |
| | Significance rating | 68 (High) | | Significance rating | 27 (Low) |
| • The economic benefits associated with the proposed development will likely have a multiplier effect (Urban Econ, 2012) in the capital injection and operational costs will generate new | Duration | 4 | • No mitigation required as this is a positive impact. | Duration | - |
| | Extent | 2 | | Extent | - |
| | Likelihood | 5 | | Likelihood | - |

| Impact | Significance Rating of Impacts<br>Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts<br>After Mitigation | |
|---|---|---|---|---|---|
| wealth, job opportunities, attract spending and investment, which will contribute to enhanced economic growth in the region. | Magnitude | 8 | | Magnitude | - |
| | Significance rating | 70 (High)<br>+ Positive | | Significance rating | - |
| • The original EIA process noted that the proposed development will place additional pressure on services in the area, namely electricity, water and sanitation. The ultimate electricity supply has already been approved under the existing EA. The changes to the current application, to use 8MVA as the initial supply, does not increase this risk, as this is just what the eThekwini Municipality has made available for the time being.<br>• There will also be additional pressure on the Municipal sewage system as this is a large-scale development, which does not currently have the capacity to service the Development. | Duration | 4 | • As the development will place additional pressure on Municipal Service Infrastructure, the Applicant proposes to construct the on-site sewage treatment plant to alleviate pressure on the eThekwini Municipality, until such time that the necessary upgrades are implemented, for servicing of the Development's ultimate sewage requirements.<br>• All mitigation measures, rehabilitation, and monitoring plans must be strictly implemented to minimise environmental impacts associated with the sewage package plant.<br>• The development must tie into the Municipal system as soon as there is capacity. | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 2 | | Magnitude | 2 |
| | Significance rating | 24 (Low) | | Significance rating | 14 (Low) |

***Table 12: Assessment of impacts associated with the no-go option***

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| • The no-go option will mean that the changes being applied for in the EA Amendment Application, will not be authorised.<br>• By not implementing the changes now being applied for, the development will not be able to proceed, until the Umhlatazana WWTW is upgraded (not confirmed when this will be completed). The benefits of promoting the strategic planning objectives of the eThekwini Municipality will not be achieved, and there will be a delay in the potential for socio-economic growth, for a development that has already been authorised.<br>• By not upgrading the road network and constructing the public transport facility, the development will not comply with the findings of the Traffic Impact Assessment, and comments made by a key stakeholder, the Department of Transport.<br>• The flow of traffic within the study area will be hindered, which will reduce the quality of life of surrounding residents.<br>• The public will also not have easy access to the new development. | Duration | 4 | • Proceeding with the development, will allow for the benefits associated with the proposal, to be achieved.<br>• The findings of the TIA notes that the surrounding road network will need to be upgrade to accommodate further growth projected for the area. The road upgrades will allow for more efficient traffic and commuting between people's places of work and residence.<br>• More efficient transportation means safer conditions for road users, and less risk of injury or death from accidents.<br>• The new public transport facility will also provide access to the portion of the population who do not have private means of transport. Thereby promoting inclusive socio-economic development.<br>• All mitigation measures outlined in the EMPr must be implemented.<br>• All monitoring and rehabilitation plans must also be implemented to ensure that activities are undertaken in a manner that will cause least harm to the environment. | Duration | 4 |
| | Extent | 2 | | Extent | 1 |
| | Likelihood | 3 | | Likelihood | 2 |
| | Magnitude | 8 | | Magnitude | 2 |
| | Significance rating | 42 (Medium) | | Significance rating | 14 (Low) |
| • The no-go option will mean that the changes being applied for in the EA Amendment Application, will not be authorised.<br>• The original EIA process noted that the proposed development will place additional pressure on services in the area, namely electricity, water, and sanitation. This pressure | Duration | 3 | • Proceeding with the development, will allow for the benefits associated with the proposal, to be achieved.<br>• Jobs will be created and investment will be attracted into the study area which will benefit the local and regional economy. As per the eThekwini | Duration | 4 |
| | Extent | 3 | | Extent | 2 |
| | Likelihood | 5 | | Likelihood | 2 |
| | Magnitude | 8 | | Magnitude | 2 |

| Impact | Significance Rating of Impacts Prior To Mitigation | | Proposed Mitigation | Significance Rating of Impacts After Mitigation | |
|---|---|---|---|---|---|
| will be alleviated, although other socio-economic pressure (lack of development and employment), will take its place.<br>• Development is, however, inevitable, and as the population grows, the need for housing and employment will be required. The site on which the development will be located, is currently under sugarcane production, which was assessed by the agricultural specialist as producing low yields. As most of the site is not of a sensitive nature and considering that sensitive features have been incorporated into the development design, the EAP is of the opinion that not proceeding with the development is not the most viable option.<br>• No new employment opportunities will be created (over 3700 temporary, and 359 permanent).<br>• The strategic planning objectives of the eThekwini Municipality for the creation of a new economic node, will not be realised.<br>• The benefits associated with the development outweigh the risks, and so the no-go option will have a negative impact on the regional economy. | Significance rating | 70 (High) | Development objectives, the outer west area needs to be developed to promote socio-economic growth.<br>• All mitigation measures outlined in the EMPr must be implemented.<br>• All monitoring and rehabilitation plans must also be implemented to ensure that activities are undertaken in a manner that will cause least harm to the environment. | Significance rating | 16 (Low) |

# 7. SPECIALIST FINDINGS AND RECOMMENDATIONS

The specialists initially conducted their assessments in 2012, during the original EIA process. EDTEA requested that the specialists be appointed to verify the findings of these reports, in support of this amendment application. The section below provides a summary of the specialist findings that were confirmed in the updated verification reports (Appendix G1). The original and detailed assessments can be produced upon request and which are also discussed in the Final EIR previously prepared by KSEMS (2015) which can also be found in Appendix G2.

## 9.1 Heritage Impact Assessment (HIA)

The Heritage specialist (Archaic Consulting, 2022) prepared a statement of significance, upon review of the original Heritage Impact Assessment (Archaic Consulting, 2012), to confirm whether the findings of the report, were still valid. The specialist concluded that the findings of the original assessments were still valid, and that the development does not pose an increased risk of impact on the heritage resources identified within the vicinity of the study site.

As per the findings of the HIA (Archaic Consulting, 2012 and 2022), the following resources of potential heritage significance were identified:

*Estate Management House 2 (29°48'30.57"S; 30°44'44.11"E)*

A ranch style suburban building made of conventional construction materials, anticipated to have been constructed in between the 1960s and 1970s. The house is situated in a well-established garden, but it is not of architectural or heritage significance. The structure is likely to be demolished to allow for construction of the Ntshongweni Mixed Use Development (Urban Core Precinct). The specialist noted that due to the condition of the structure, it may be reused rather than demolished, but because the building is just over 50 years old, demolition is an option. If the structure was over 60 years old, demolition would require approval by the KwaZulu-Natal Amafa Institute.

*Seasonal Labour Compound (29°48'35.35"S; 30°44'33.81"E)*

The compound is comprised of several buildings, arranged a series of courtyard spaces, with trees established in the courtyard. There is also a football field situated to northeast of the structure. The buildings are utilitarian, constructed out of stretcher box bond brickwork, with asbestos sheeting. The condition of the building provides an opportunity for reuse. The proposed Ntshongweni Mixed Use Development (Urban Core Precinct) layout appears to closely skirt the building site. Although the specialist noted that this building is not of heritage significance, it could have a medium local/ regional social value, as it could be used as a labour compound.

Further to the above, the specialist noted that there are graves located at 29° 48.166'S; 30° 43.930'E, which although located well away from the proposed Development, must be noted and flagged to ensure that the area is avoided.

The proposed changes to the development layout as being applied for under this amendment application, will not pose an additional risk of impact on the receiving environment, from a heritage perspective. As the buildings are under 60 years of age, demolition thereof is an option, and which will not require approval by Amafa.

## 9.2 Agricultural

Mottram and Associates cc conducted an Agricultural Impact Assessment in 2012, and updated the report in April 2022 (Appendix G1) to identify the agricultural potential of the Development Site, and to determine the significance of converting this land into a Mixed Use Development.

It was noted that the agricultural potential of the site is limited as the sugar cane yields over the past few years (10 years at the time of writing the report), was between 31 and 45 hectares per annum, when the break-even yield for the Site, is 45ha per annum. The current sugar cane plantations were therefore not deemed very profitable. It was further noted that some areas on site is characterised by low soil fertility, and that improved irrigation would be needed to maximise sugar cane crop yields. This would increase management costs and also place additional pressure on the Umgeni Catchment for water supply.

The specialist also noted that considering the location of the Development Site along the eThekwini – Msunduzi Corridor, in addition to the projected expansion within both the Msunduzi and eThekwini Municipalities, that within the next 10 years, the surrounding area will most likely have been transformed into a compact urban conglomerate. This prediction is also in alignment with the eThekwini Spatial Development Plan (SDP) and Shongweni Local Area Plan (LAP) which aims to promote a new town centre in the Outer West area, and so, promote socio-economic growth in the Province, thereby also promoting the objectives of the Provincial Growth and Development Strategy (PGDS).

In summary, the specialist concluded that the transformation of the site from sugar cane plantation to the Ntshongweni Mixed-Use Development (Urban Core Precinct) will have little to no impact on food security in the region, and which will have a greater socio-economic benefit for the region. The main reasons for this decision, are listed below:

- Some areas of the site are characterised by low soil fertility;
- There are no water resources present on site, apart from two (2) small dams on the site, which do not have sufficient capacity for irrigation of the sugar cane plantations that will be required to maximise productivity/ yields;
- Irrigation using Municipal water supply will place additional pressure on the Umgeni catchment water supply;
- The site has produced poor average yields over the past few years;
- There is existing electricity and road infrastructure in the area that will be available to support the new Development;
- The site is located along the N3 highway, which is a major transportation route, resulting in good accessibility for a large-scale mixed use development;
- The development is aligned with the PGDS, the eThekwini SDP and the Shongweni LAP; and
- THD had already commenced with new sugar cane plantations in 2009, which by the end of the year 2013, would result in an additional 9 506ha of sugar cane plantations, with the potential to also farm an additional 10 000ha of land, and a further 7000ha in 2015.

## 9.3 Vegetation and Faunal Assessments

***Vegetation Assessment:***

As discussed in Section 4 of this report, the site would have naturally comprised of KwaZulu-Natal Sandstone Sourveld Vegetation (Endangered), but which has since been transformed due to sugar cane cultivation practices on site. SiVEST conducted a vegetation impact assessment in 2012, to confirm whether any species of conservation significance were present on site, and to identify the potential impact of the Development on such vegetation communities.

No species of conservation concern were identified on site, within the proposed development footprint. The only remaining natural vegetation on the authorised Ntshongweni Mixed-Use Development site is found within the wetland/ drainage line area, shown as the no-development ecological corridor on the development layout (Appendix B). This space has thus been designated for conservation of the natural habitats on site. Species identified within the centralised drainage channel of the wetland, included *Cyathea dregea*. The rest of the vegetation present within the wetland area was found to be relatively transformed, with the most notable vegetation consisting of large stands of *Ischaemum fasciculatum* and *Christella dentata.* Other species that were encountered at low abundances were *Typha capensis, Halleria lucida, Laggera alata, Isolepis prolifer, Persicaria senegalensis forma albotomentosa, Senecio madagascarensis, Commelina sp., Gomphocarpus physocarpus, Juncus lomatophyllus, Pycreus nitidus, Paspalum urvillei and Ranunculus multifidus.* Several alien species were also encountered, but the majority of these currently occured in low abundances, including: *Amaranthus cf. hybridus, Bidens pilosa, Galinsoga parviflora, Gamochaeta pensylvanica, Plantago major, Verbena officinalis, Taraxacum officinale, Rubus cuneifolius, Solanum mauritianum and Coronopus didymus.*

With regards to the new proposed footprint, the only vegetation communities of conservation concern was the KwaZulu-Natal Sandstone Sourveld grassland and scarp forest, located along the eastern boundary of the property, and along the drainage line. These communities are not, however, situated within the proposed Development footprint, and so, no negative impacts on these areas are anticipated.

The specialist concluded that the Development Site has a low conservation and biodiversity value, due to it having been used for sugarcane farming for several years, although there are some noteworthy vegetation communities present along certain portions of the site, as discussed above. The specialist did recommend that the following mitigation measures be implemented:

- The control and management of alien invasive plant species is legislated by the Conservation of Agricultural Resources Act, Act 43 of 1983.
- All the alien vegetation that currently exists on Site should be removed and controlled.
- The wetlands on and neighbouring the site must be afforded a suitable buffer as determined by the wetland specialist.
- The wetlands should be rehabilitated in accordance with the wetland rehabilitation plan.
- Stormwater generated by the proposed development must be allowed to infiltrate back into the groundwater across the site to ensure that the wetland system downstream is not negatively impacted.
- Stormwater generated by the proposed development must be effectively controlled and attenuated to ensure that the erosion and sedimentation risks associated with increased floodpeaks is mitigated and/or avoided.

As per the Department's request, an Ecological specialist (Kinvig & Associates, 2022) was appointed to review the original assessments in response to which the verification letter was drafted - after having conducted a site assessment. The specialist noted that the ecological condition of the site remains relatively the same, with some changes to extents of the natural vegetation communities that were previously assessed, as discussed below. Please refer to Appendix A of the Ecological Statement of Validity letter, in Appendix G1 to see the extent of the below mentioned habitats.

***Primary Sandstone Sourveld Grassland***

The KwaZulu-Natal Sandstone Sourveld (KZNSS) vegetation has since increased in extent, as species of *Cineraria atriplicifolia* and *Crotalaria dura subsp. dura* have been identified (red listed species). As these areas have not been properly managed (under burning), it was anticipated that additional sensitive species (red listed) would likely be identified, following a winter/ spring burn.

***Woody Encroached Areas of Eastern Valley Bushveld***

This area is known as the Scarp Forest and Valley Bush. It was observed that this area contains a significant amount of alien tree encroachment along the upper edges, although "a good majority of the indigenous trees are evident". There has, however, been a slight increase in the extent of the Scarp Forest vegetation.

***Remnant Sourveld Sandstone Support Area***

This is a new area identified on the study site which contains some remnant species of the KZNSS vegetation, but which was considered to be isolated and degraded. However, due to the presence of KZNSS species being identified, the area is considered a remnant habitat of the threatened and endemic vegetation unit.

***Disturbed Forest and Wetland Habitat***

The extent of this habitat has not changed since the original assessments, although there has been an increase in the proliferation of alien invasive plant species and so, degradation over time.

It should also be noted that the Applicant has incorporated the sensitive areas into the development design, as green open space, and the no-development ecological corridor.

***Faunal Assessment:***

SiVEST (2012) also undertook an assessment of the faunal species present on site, to identify whether any species of conservation concern were present on the Development site, and to assess the significance of any impacts that may arise from the Development.

The specialist reiterated the findings of the vegetation assessment, noting that the site has been largely transformed due to agricultural practices, with a few remnant patches of natural vegetation observed. The value of the site for supporting biodiversity, and thus for faunal conservation, was thus said to be limited.

Few species were noted on the Development site, including Vervet Monkey (*Cercopithecus pygerythrus*). Antelope species, and dung of a mongoose species – which were observed along the KZN Sandstone Sourveld grassland area, along the eastern perimeter of the study site. However, this grassland area which supports the faunal species, is not located within the proposed Development footprint.

Mitigation measures recommended by the specialist included:

- Removal of alien vegetation through proper management;
- Appropriate buffer zones around wetlands and drainage lines; and
- Careful management of construction activities within the development footprint, to minimise impact on the receiving environment.

The wetland and drainage lines, as well as the KwaZulu-Natal Sandstone Sourveld vegetation areas must be avoided. The proposed development footprint does, however, avoid these areas. The wetlands on site that cannot be avoided altogether, will be rehabilitated to achieve a no-net loss of habitat.

## 9.4 Wetland and Riparian Assessments

***Wetland Assessment:***

GroundTruth (2015) assessed the wetlands present within the study area which may be impacted on by the proposed Development. The specialist delineated unchanneled valley bottom wetlands on the site, which are characterised by not having clearly defined stream channels, but which are gently sloped and contain alluvial sediment deposits which leads to an accumulation of sediment. These systems are usually fed with water inputs from channels entering the system, and from adjacent slopes.

The specialist noted that none of the wetlands across the study site are NFEPA (National Freshwater Ecosystem Priority Area) systems, but that the wetland system located on the Authorised Ntshongweni Development Site, which falls within the no-development corridor (see layout in Appendix B), drains into an NFEPA river, the Wekeweke Stream, whereas the wetland located to the southeast of the proposed new loop ramp, drains into the Umhlatazana River.

The wetland systems on the Authorised Ntshongweni Development site, are approximately 6.7ha in extent. It was noted that the catchment has been extensively modified due to agricultural practices and surrounding development activities (GroundTruth). Although these wetlands are not classified as being of national importance, they do drain into the Wekeweke stream, whereby adequate mitigation would be required to reduce potential impacts on either of these systems. This is especially important considering that the proposed development will take place within close proximity to the wetland system.

Upon further assessment of the wetlands situated on the Ntshongweni Development Site, the specialist noted that these systems supply ecosystem services at moderately high levels. The wetlands assist in improving the quality of water within the landscape by capturing nutrients and sediment, as well as by assisting with flood attenuation.

The ecological integrity of the wetlands (referenced as the Present Ecological State (PES)) was also investigated, which provides an indication of the condition of the wetlands, pre-construction, which helps monitor the impacts of the development on these systems, as you can monitor how the condition of the systems change over time. The PES of the wetlands situated within the development footprint, was assessed as being greatly modified, whereby there have been changes to the ecosystem processes and natural habitat within these systems, with some natural features still being recognisable (PES – E).

The reason for such high levels of modification within these wetlands, is likely attributed to the following:

- Canalised flows through the wetlands;
- Infilling of wetlands associated with the establishment of access roads;
- Altered water flows linked to catchment changes;
- Removal of wetland vegetation due to sugar cane plantations;
- Infilling of wetlands leading to a loss of habitat;

The above-mentioned changes have thus altered the natural state and functioning of the wetlands on site. Although the specialist delineated 6.7ha of wetland habitat, the state of the wetlands would be equivalent to 2.7ha of intact wetland habitat. This indicates that the wetlands on the site, is only functioning at approximately 40% of its natural capacity.

The specialist did note the wetlands and Wekeweke stream have been incorporated into the development design as green open space (27.58ha of open space) but concluded that there will still be a loss of approximately 1.84ha of wetland habitat.

The following measures were recommended, to minimise the risk of impact associated with the Development:

- Avoidance of the riparian habitat around the Wekeweke stream. Adoption and rehabilitation of a 32m buffer from the boundary of the riparian habitat of the Wekeweke Stream;

- Rehabilitation of the riparian habitat;
- Implementation, rehabilitation and management of the variable buffer zones adjacent to the wetland habitats;
- Rehabilitation of remaining areas of wetland habitat to achieve a no-net loss of wetland habitat.

Mitigation of impacts must focus on wetland rehabilitation, incorporating buffer zones, and managing stormwater runoff.

*Wetland rehabilitation:*

Rehabilitating the remaining area of wetland habitat to enhance the ability of these systems to provide benefits. This can be achieved through deactivation of drainage channels and the incised channel to promote more frequent overtopping of the channel across the wetland habitat where appropriate diffuse flow, maximising the extent of seasonal and permanent wetness zones within wetlands, and also, removing alien invasive plant species within the wetland. This will also require active revegetation with indigenous wetland species.

*Buffer zones:*

A minimum buffer of 32m from the from the edge of a watercourse, must be incorporated into the design to minimise risk of impacting on the wetland systems. The buffer zone areas must also be rehabilitated and managed, by removing alien and invasive plant species; active revegetation with indigenous wetland species; preventing encroachment into the buffer areas. It is preferable that revegetation within the buffer zones take place prior to construction, so that the vegetation can capture sediment or pollutants, prior to entering the wetland habitats.

*Stormwater management:*

Stormwater can be managed by including multiple discharge points across the development site; implementing erosion control measures across the site; energy dissipating mechanisms at discharge points to reduce the velocity of runoff; and by ensuring that no stormwater is discharged directly into the Wekeweke Stream, but rather, first into the rehabilitated wetlands. All stormwater and erosion control structures must be regularly monitored to ensure efficient functioning thereof.

A wetland rehabilitation plan was also compiled (GroundTruth, 2015) to rehabilitate and offset any impacts on the wetland systems on the Ntshongweni Development Site, as these wetlands will be impacted on by construction activity. The Applicant must implement the rehabilitation measures (Appendix H). The mitigation and rehabilitation measures outlined in the rehabilitation plan will result in an increase in the functional habitat of the affected wetlands on the site, and so, a no-net loss of wetlands will be achieved. The eThekwini EPCPD further confirmed that the rehabilitation measures in the rehabilitation plan are sufficient to act as an on-site offset plan (proof of correspondence in Appendix F).

The wetland specialist (Index, 2022) further drafted a letter confirming that the findings of the original wetland assessment report (GroundTruth, 2015) as well as the rehabilitation plan, are still valid, and that the proposed changes to the Development footprint, for inclusion of the on-site temporary sewage package plant, and construction of the new loop ramp and public transport facility, will not result in additional impacts on the receiving environment, and which thus does not require further assessment (see Appendix G1).

The specialist does, however, advise that suitable water release structures must be installed to safely discharge water (in a controlled manner), from the temporary sewage package plant, into the surrounding watercourses. It was also confirmed that the new loop ramp topographically will not impact on any wetland. Whilst the proposed public transport facility is located on land used for sugar cane, and which will not traverse wetland habitat, it is located at the head of a drainage channel that may receive lateral subsurface flow from the increased hardened surface area. As such, the specialist recommends that any stormwater that the watercourse receives from the public transport facility must be managed in line with the Stormwater Management Plan to ensure that it is safely discharged into the receiving environment.

***Riparian Assessment:***

GroundTruth (2013) also conducted the riparian assessment for the proposed Ntshongweni Mixed-Use Development (Urban Core Precinct) Site. The study area falls within the Wekeweke River catchment which has been classified as "largely natural with few modifications" by the Department of Water and Sanitation. It was, however, noted that the system has been modified by surrounding land use and alien vegetation infestation. An NFEPA River, the Wekeweke Stream is located downstream of the Development Site. Although the stream is not located on the site it will not be directly impacted on by the development. However, the unchanneled valley bottom wetland systems on the Authorised Development Site feed into this system, whereby there are still risks of impacted associated with it. The aim of the riparian assessment was to assess the ecological integrity/ state of the river, and to identify the potential impacts and associated mitigation measures.

Upon assessing the Wekeweke stream, the specialist noted that the vegetation along the river is comprised of scarp forest, riverine forest, cliff face communities, grasslands and wetlands. The scarp forest is found approximately 3.5km downstream of the Development Site, along the edges of steep cliffs, but extends into Eastern Valley Bushveld further into the valley. The steep topography resulted in many typical scarp forest species not being present, but there were species such as *Eugenia sp. nov. B*. (Krantz Myrtle) and *Tarchonanthus trilobus subsp. trilobus* (Trident Camphor Tree). Herbaceous species in moist areas included *Impatiens hochstetteri* and *Plectranthus ciliates.*

Upstream of the waterfall, common and pioneer species were recorded. The specialist noted that this riverine forest was either young or had been subjected to disturbance. Species present included *Albizia adianthifolia* (Flatcrown), *Bridelia micrantha* (Mitzeerie), *Celtis africana* (White Stinkwood), *Dalbergia obovata* (Climbing Flat-bean), *D. armata* (Hluhluwe Creeper), *Cryptocarya woodii* (Cape Wildquince), *Ficus burkei* (Common Wild Fig), Ficus sur (Broom Cluster Fig), *Halleria lucida* (Tree Fuschia), *Macaranga capensis* (Wild Poplar), *Maesa lanceolata* (False Assegai), *Protorhus longifolia* (Red Beech), *Psychotria capensis* (Black Bird-berry), *Syzygium cordatum* (Umdoni), *Rapanea melanophloeos* (Cape Beech) and *Searsia chirindensis* (Red Currant).

Extensive alien plant invasion was observed along the riverine forest, containing problem species such as *Acacia mearnsii* (Black Wattle), *Chromolaena odorata* (Chromolaena*), Lantana camara* (Lantana), *Melia azedarach* (Syringa), the hybrid origin Populus x canescens (Grey Poplar), Rubus sp. (Bramble) and *Solanum mauritianum* (Bugweed), amongst many others.

The cliff face vegetation comprised of a significant population of the Critically Endangered *Gladiolus cruentus* species as well as *Gasteria croucheri*, which is also listed as Vulnerable. Another rare, range-restricted species also occurs on the cliffs, namely *Delosperma velutinum*. Typical cremnophytes found on the rock faces are *Agapanthus sp., Aloe arborescens, Bulbine natalensis, Cinerara cf. albicans* (flowering material needed to confirm), *Crassula perfoliata, Crassula perforata var. heterotricha, Cyrtanthus sanguineus* and *Talbotia elegans*. *Euphorbia evansii*, usually not seen this far south in KwaZulu-Natal is a small succulent tree that was also observed.

The Endangered KwaZulu-Natal Sandstone Sourveld grassland was also observed along the Wekeweke stream, which appeared to reflect good species diversity, including some rare and range-restricted species such as *Aloe parviflora* and *Phymaspermum pinnatifidum.* However, this grassland is located to the east of the property, which does not fall within the range of the Development footprint.

Wetlands were also present in the open areas along the river, but which had been disturbed by the presence of sugar cane plantations and alien invasive plant species. The specialist did, however, note that the wetlands did still contain typical wetland vegetation species, such as *Cyperus dives, Dissotis canescens, Ischaemum facilatum, Lobelia erinus,* and *Miscanthus capensis*, amongst others.

The river displayed a Modified ecological state, mostly due to disturbances such as sugar cane farming, and alien plant infestations. Despite its modified status, the river is till characterised as a freshwater aquatic ecosystem. The river system must remain unaffected to preserve the aquatic habitat, and continued ecological and hydrological functioning of the system, by supplying services such as improving water quality within the catchment, streamflow regulation and flood attenuation, groundwater recharge, erosion control and supporting biodiversity.

The specialist identified the existing impacts affecting the study area, including:

- Alien invasive plants. Areas along the Wekeweke River have been invaded by alien invasive plants, which has resulted in a decrease in the ecological functionality and integrity of vegetation within the system. This in turn reduces the capability of the system to support biodiversity (especially for species of conservation significance).
- Altered hydrology. The hydrology of the Wekeweke Stream adjacent to the authorised Development Site has been altered by instream dams, water abstraction and drainage of wetland areas. These activities will have impacted on the riparian and wetland habitats within the study area. These impacts are of concern, considering the presence of threatened *Gladiolus cruentus* species, located downstream.
- Catchment transformation. It was noted that the majority of terrestrial catchment areas have been transformed by sugarcane cultivation – which not only alters the hydrological regime of the Wekeweke River, but which also is likely to contribute to water pollution (sedimentation and herbicide and pesticide application).
- Solid waste dumping. Certain areas along the catchment are affected by dumping of solid waste, which contributes to habitat degradation and proliferation of alien and invasive species.
- Lack of formal veld management. Surrounding areas of grassland contain ruderal species which indicates a lack of burning. It was thus identified that a proper veld and fire management plan is required for the study area.

The specialist also identified the following potential impacts that may result from the Ntshongweni Mixed-Use Development (Urban Core Precinct):

- Habitat loss and transformation. Poorly planned developments may result in the degradation and destruction of riparian habitat and the subsequent loss of biodiversity. Habitat loss reduces the potential of such habitat to support biodiversity, including frog species of conservation importance.
- Increased stormwater runoff due to the increase in hardened surface areas (roads, driveways, roofs etc.).
- Pollution from contaminated stormwater runoff. Stormwater may be contaminated by toxic heavy metals, hydrocarbons and pesticides. This can in turn, lead to the degradation of aquatic habitats and the loss of biodiversity.

In light of the above, the specialist recommended the following mitigation and management measures, to avoid or minimise the risk of impact on the Wekeweke Stream:

- Ensure, where possible, that the development footprint avoids aquatic, riparian and wetland habitat.
- A buffer zone of at least 32m must be adopted and incorporated into the design. Not only must the buffer area be avoided, but it must also be managed and rehabilitated by removing alien invasive species, and revegetating with indigenous species suitable to the wetland or riparian habitat type – in accordance with the prepared by wetland rehabilitation plan, and plant species and landscaping management plan (which must include planting with KwaZulu-Natal Sandstone Sourveld vegetation). These areas will need to be managed indefinitely.
- Incorporation of an extended management area into the layout (proposed downstream of the Green Open Space System), to offset the loss of wetland habitat. The purpose of the extended management area will be to enhance the functional area of wetland habitat on site, which will help safeguard the downstream aquatic habitats. A 10m buffer was recommended to limit disturbance.

- Incorporation of a more substantial buffer to protect important frog species. The specialist advised that a 100m buffer is ideal. The specialist did, however, take cognisance of the proposed layouts, and advised that in the case of the development site, that a variable buffer be adopted that will provide adequate protection to biota on site.
- Ensure minimal or no disturbance outside of the development footprint area during construction. Buffer areas should preferably be revegetated with indigenous vegetation prior to construction to minimise impacts on the wetland and riparian systems.
- Rehabilitate areas containing solid waste and remove all refuse/waste which is accumulated on the property, and to thereafter, maintain the property in a refuse/ litter-free state.
- Develop and implement a comprehensive alien weed control programme to eradicate such species and to prevent the further spread thereof.
- Ensure that the stormwater management plan for the development minimises low-related impacts to the aquatic environment and associated buffers (It should be noted that the eThekwini EPCPD has approved of the stormwater management plan).
- Pollutants, potentially carried in surface water runoff, should be limited through the use of best management practises and designs (e.g. first-flush pollutant traps and filters, permeable paving in driveways and parking areas, etc.).
- Monitor wetland, river and other open space systems during the construction and operational phases.
- Implement a biennial or triennial fire burning regime in both grassland and wetland areas to increase grassland vigour. A fire management plan will therefore need to be compiled for the system.
- Considering the importance of flow for downstream systems and for the survival of *Gladiolus cruentus* population, no further reduction in the hydrology for the catchment should occur without further investigation of the system and its ecological water reserve.
- The use of chemical control is recommended in areas where Pteridium aquilinumhas become locally dominant. Once plants form dense monotypic stands they are difficult to eradicate, as they are resistant to burning and secrete allelochemicals (biochemicals) into the soil that inhibit and suppress growth of other plants.

The specialist made note of the sewer pump station that had previously been proposed (26m x 26m footprint), where the newly proposed sewage package plant will be located, and recommended the following additional mitigation measures:

- emergency procedures should to in place to manage pumpstation failures and spills/leaks with immediate effect.

The specialist also stipulated that the various recommendations made in the report, must be included in the EMPr, to ensure effective management of these areas.

**Wetland and Riparian Verification Statements (2022):**

Kinvig & Associates (2022) conducted a recent site visit to confirm the findings of the original reports, and conditions on site. The specialist, in response to the site assessment and proposed changes to the development scope and design, noted the following:

- The new public transport holding facility is located within the small upper catchment area of one (1) seepage wetland system, which is situated over 99m away from the development.
- The seepage wetland has been exposed to numerous disturbances because of surrounding land use and sugar cane cultivation practices. The wetland is thus considered degraded and invaded by alien vegetation.

- Although the wetland is located downstream of the proposed public transport facility, the wetland was not considered to be at risk, on condition the relevant mitigation measures and stormwater management practices, are implemented.

Index (2022) was also appointed to comment on the potential impacts associated with the changes to the development scope and design, and noted the following:

- The proposed on-site sewage treatment plant will only act as a temporary solution, until such time that the Mhlatuzana WWTW has been upgraded which will service the ultimate sewage requirements of the development. The package plant (76m x 49m footprint) will be located at the same position as the previously assessed and authorised sewage pump station (26m x 25m footprint), which will have a greater footprint, and which will now require that the treated effluent be discharged into the surrounding wetlands and Wekeweke stream.
- The specialist confirmed that the risk associated with this change will be low whereby no additional risk of impact is expected, provided that suitable water release structures are installed to safely discharge the water into the receiving systems.
- Construction of the new loop ramp with a footprint of 5.2 ha will not impact on any surrounding watercourses.
- Construction of the new public transport facility with a footprint of 6.5 ha will be limited to the portion of the site that is currently under sugar cane plantation. The public transport facility will be located upstream of a seepage wetland, but which must be managed in accordance with the Stormwater Management Plan to ensure that water is safely discharged into the system.

The specialist therefore concluded that these proposed changes being applied for under this amendment application, do not require further assessment (Index, 2022) and so verified that the findings of the original wetland and riparian specialist reports remain valid, and applicable to the proposed activity.

## 9.5 Ecological Reserve Determination

Upon liaison with the eThekwini Environmental Planning and Climate Protection Department (EPCPD) regarding the Departments' support/ approval of the proposed on-site sewage treatment plant, the EPCPD requested that a reserve determination study be undertaken to confirm whether the affected Wekeweke River, into which the treated effluent will be discharged, can safely accommodate the additional water inputs.

GroundTruth (2022) was appointed to undertake this study to address the concerns of the EPCPD, and to determine whether the Wekeweke River can receive the additional flows, from a quality and quantity perspective. The assessment was based on the proposed Activity discharging 2ML of treated effluent into the River, per day. The reserve determination aims to identify the amount of water required within a system, to maintain the ecological processes occurring within that system. The assessment comprised of a rapid level 2 assessment, looking at components such as riparian vegetation, benthic diatoms, and macroinvertebrates. Please refer to Section 2 of the Ecological Reserve Determination Report (GroundTruth, 2022) in Appendix G1, for more information on the methodology applied when conducting this assessment.

The proposed Development is located within the lower reaches of the U60C catchment, along the eastern side of the River, which is dominated by sugar cane plantations. Although much of the land has been transformed by sugar cane, there are portions of wetland habitat that will be affected, and the change in land use from sugarcane to a mixed-use development, will alter the hydrological responses with increased stormwater runoff and treated effluent, contributing to additional flows within the surrounding watercourses. A team of specialists have been appointed, to compile a Stormwater Management Plan, and Wetland Rehabilitation/ Offset Plan, to mitigate impacts on these systems, and to promote sustainable development.

The reserve determination report (GroundTruth, 2022) noted the following (Appendix G1):

- The Ecological Water Requirements (EWR) of the Wekeweke River is characterised by sandy substrate with limited marginal vegetation and small pockets of bedrock and pools with limited cobbles.
- The integrity of the riparian habitat (Present Ecological Condition) is currently classified as category C/D (moderately to highly modified) – largely a result of bank erosion from the April 2022 floods, and infestation of alien/ invasive plants.
- Areas of sugarcane plantations has resulted in a loss of 30% of the river's floodplain.
- The integrity of the in-stream habitat is category C (moderately modified) mainly due to the bed modification caused by sedimentation of substrates within the channel. The sedimentation associated with bank erosion presents a concern for benthic diatom, which are stripped from rock and other substrates, resulting in reduced nutrient assimilation within the system, and so, less food availability for macroinvertebrates.
- The sediment also poses a risk for macroinvertebrates that get smothered by sediment and so, which disrupts the aquatic ecosystem/ food chain in general.
- The water quality assessment found the water to be in good conditions, with no signs of excessive salt, nutrient or sewage pollution. The main concern is sedimentation within the channel, but the water quality is good. See data on water quality parameters below.

| Metric | Levels at Sample Site | Units |
|---|---|---|
| Water temperature | 14.6 | ºC |
| Electrical conductivity | 9.16 | mS/m |
| pH | 7.17 | pH units |
| Dissolved oxygen | 9.32 | Mg/l |
| Water clarity | 100 | cm |

- Benthic diatom samples found sites dominated by *Achnathidium sp*. Indicating good water quality.
- Almost a third of the diatom communities found upstream, consisted of the rare *Achanthes swazi* species, which is associated with clean, well-oxygenated waters.
- The macroinvertebrate ecological category is C, meaning the river is modified. The river has experienced modification in terms of water quality, habitat modification and flow modification. The taxa that were found characterising the site at which the samples were taken, included Chironomidae, Tipulidae, and Baetidae.
- According to the analyses undertaken, the presence and abundance of taxa that have a preference for modertaley fast flowing water were ranked the most important, whereas the taxa with an affinity for very fast flowing water was ranked least important. Taxa with a preference for moderately fast and slow flowing water have been the most impacted on in this system.
- The occurrence of taxa with a preference for gravel, sand and mud have been impacted on the least, whilst taxa with a preference for loose cobbles and vegetation, have been most impacted on.
- Loose cobbles was ranked the most important in-stream habitat for the site, with preference for gravel, sand and mud being ranked the least important habitat for the site.
- Only one (1) out of the three (3) expected fish species for the site, was observed during the survey (*Pseudocrenilabrus philander*) – indicating that the fish community is in a largely modified state (category of D). The identified species of fish has a preference for slow, shallow water. Refer to Table 3-9 in the specialist report (GroundTruth, 2022) for a summary of these findings.
- The Ecological Importance and Sensitivity (EIS) of the systems, represents the importance of the system in maintaining biological diversity and ecological functioning, along with the ability of the system to resist and recover from changes and modifications. The Wekeweke River has a 'Moderate" EIS rating.
- The Recommended Ecological Category (REC) for the system is B/C.

- The Ecological Water Requirement (EWR) was determined for the river, based on site-specific flow requirements in terms of flow velocity and habitat requirements for the flow-sensitive macroinvertebrates and depths for fish. The results are shown below:

| Quaternary Catchment | U60C |
|---|---|
| River | Wekeweke |
| EWR Site Co-ordinates | 29.820042 (S); 30.738089 (E) |
| Recommended Ecological Category | B/C |
| MAR at EWR site (106m3) | 1.249 |
| Total EWR (106m3) | 0.459 (36.79 % of MAR) |
| Maintenance High flows (106m3) | 0.117 (9.37 % of MAR) |
| Maintenance Low flows (106m3) | 0.342 (27.41 % of MAR) |
| Drought Low flows (106m3) | 0.106 (8.50 % of MAR) |
| Overall confidence | Low |

- The 1.95 – 2 ML/day of treated effluent that is proposed to be discharged into the river, is the equivalent of 1950 - 2000 $m^3$/d (or KL/day) or 0.0223 $m^3$/second (or cumecs) or 23.1 L/second. The accumulative contribution to the flows of the river system at the EWR site will be seemingly significant in terms of total volumes of annual runoff. The additional water input will only increase average water depths by up to 2cm, which will not have a significant impact on water depth and aquatic biota (causing minor influences on instream habitats that support aquatic biota based on water depth alone).
- The additional flows are expected to have a positive impact in terms of allowing establishment of marginal vegetation along the edge of the river, which is currently incised through bank erosion. This in turn will provide habitat and cover for aquatic macroinvertebrates and fish.
- The additional flows will have a greater impact in terms of increased flow velocity – whereby an increase by 0.15m/s is expected.
- The specialist further noted, that although the above-mentioned increase in flow velocity may lead to increased erosion, the impacts can be easily mitigated through active management of the riparian habitat, as presented in the Rehabilitation Plan for the Ntshongweni Mixed Use Development (GroundTruth, 2022), which will help to stabilise the channel and banks of the Wekeweke River.
- As the activity is not yet taking place, the impacts on water quality could not yet be determined, but it was assumed that the effluent will be treated to general limit values (GLVs) or special limit values at best. Negative impacts associated with the treated effluent being discharged into the watercourse can be expected to include impacts on water quantity in terms of increased base flows which may exacerbate erosion of river banks and channels, leading to habitat modification; and, impacts on water quality in terms of increased nutrient inputs leading to habitat modification and algal growth.
- These aspects need to be carefully managed, and so, the activity will require a robust monitoring and feedback mechanism to detect emerging issues related to water quality and quantity of the treated effluent being discharged. Adequate monitoring will allow for timeous implementation of mitigation measures.
- The specialist has recommended a Biological Response Monitoring Programme based on Resource Quality Objectives (RQO) obtained from the assessment undertaken. The specialist further advises that the Thresholds of Potential Concern (TPOs) need to be specifically developed for the Wekeweke River system in relation to the proposed development in order to develop well-defined triggers prior to the construction of the WWTW, and these should be based on the pre-development baseline monitoring values.
- The trajectory of change in the TPCs must also be monitored, to ensure that mitigation measures can be implemented early, to prevent significant negative impacts on the system, and so to ensure that the TPC are never exceeded.
- The specialist notes that the choice of interventions listed in the report (GroundTruth, 2015) is not prescriptive, and is a function of what is available on the landscape (e.g. additional irrigation of treated WWTW effluent to green open spaces), and modifications and treatment options at WWTW based on the available best technology, for

example WWTW treatment process conversion from General Limit Values (GLV) to Special Limit Values (SLV) in winter and other months if necessary, through to tertiary treatment of the WWTW treated effluent via Reverse Osmosis.

- The engineering interventions, therefore, include incremental and progressive capacity upgrades to the WWTW as well as treatment options, whilst the ecological interventions would seek to maximise opportunities for percolation, absorption, and adsorption of excess nutrients within the landscape, and other considerations/regulations for future developments.
- It is important that the finance mechanisms and guarantees be established prior to commencement, as it may be required that the measures be implemented based on the trajectory of change, to prevent TPCs from being exceeded. There will therefore not be sufficient time to obtain funds, after the impacts have materialised.
- The specialist recommended the following potential engineering mitigation interventions:
    - Treatment process converting General Limit Values (GLVs) to Special Limit Values (SLVs).
    - Capacity upgrades (at 0.5 to 1.0 ML/day increments)
    - Use of treated effluent for commercial and industrial operations (i.e., to shopping centres for public toilets)
    - Latest technology alternatives (RO plant)
- The specialist also recommended potential ecological interventions (which would require that a catchment wide spatial analysis be undertaken to identify opportunities for ecological infrastructure that can be utilised):
    - Irrigation of green areas within the catchment
    - Optimisation of existing wetlands and addition of constructed wetland expansion
    - Re-use of grey water by contributors to the sewage package plant (irrigate gardens)
    - Potential for inter basin transfer back across into adjacent systems.
- Pre-development baseline monitoring of chemical, biological, and physical indicators is essential in defining the TPCs and RQOs for the River. This must include a minimum of one (1) years' worth of monitoring/ sampling to supplement existing data from this study. A minimum of two sites will be required, one upstream and one downstream of the development (at the EWR site).
- This monitoring must be undertaken in accordance with Section 4.5 of the Ecological Reserve Determination Study (GroundTruth, 2022).

## 9.6 Wetland Rehabilitation and Offset Plan

The wetland specialist delineated and assessed all wetlands at risk of impact within the footprint of the proposed development (GroundTruth, 2015). The specialist identified two (2) unchanneled valley bottom (UVB) wetlands on site, namely HGM 1 and HGM 2.

The HGM 1 wetland was delineated to be 4 hectares (ha) in extent, but because of the degraded and modified condition of the site, was equivalent to 1.62ha of intact wetland habitat, but which would be reduced to 1.56ha of wetland habitat, following construction of the development. The HGM 2 wetland, was determined to be 2.65ha in extent, but again, because of the degraded condition of the system, was equivalent to 1.08ha of intact habitat. The specialist recommended several mitigation and rehabilitation interventions which can be implemented, which would increase the extent of functional (intact) wetland habitat, to 1.94ha (increase of 0.86ha).

As the proposed increase in functional wetland habitat will exceed the extent of wetland loss following implementation of the rehabilitation plan, it was deemed that no wetland offsets would be required, as the goal of wetland offset is to achieve a no-net loss of wetland habitat, which will already be realised upon implementation of the wetland rehabilitation plan.

KSEMS Environmental Consulting proceeded to liaise with the EPCPD to confirm whether the rehabilitation plan will be accepted as an on-site offset plan. The EPCPD in response, confirmed that the mitigation measures being proposed are

sufficient to offset the loss of wetland habitat, but requested that the rehabilitation be amended to be more specific, in that it must also address the following, to be accepted as the offset plan, and so to fulfil Conditions 3.24.6 and 3.24.8 of the EA:

- Implementation timelines
- Monitoring programmes
- Budgetary framework
- Monitoring committee to oversee implementation (from EPCPD, Ezemvelo KZN Wildlife, and the DWS).

The wetland rehabilitation plan (GroundTruth, 2015) has thus been amended accordingly. The amended wetland rehabilitation and offset plan (GroundTruth, 2022) can be found in Appendix G1. The findings and recommendations of this plan is discussed later in this report, as part of the mitigation and monitoring requirements of the Development (Section 9).

Please see below Table 13 for a summary of the key findings and opinions of the specialists in the updated verification statements provided upon review of the original specialist studies, and in response to the changes being applied for under this amendment application.

**Table 13: Summary of updates specialist assessments in response to the changes being applied for.**

| Specialist | Summary of findings | Conclusion in terms of proposed Development |
|---|---|---|
| Socio-economic (Urban Econ, 2012) | The socio-economic assessment conducted by Urban Econ (2012) noted that the proposed development falls within an area designated for "mixed-use" land use, and so, the development is aligned with the eThekwini Municipality Spatial Development Plan (2009). The Shongweni Local Area Plan (LAP) aims to establish a new town centre along this area, and so the Development is directly geared towards achieving these objectives, that were identified by Government as being important for promoting socio-economic growth in the region.<br><br>The socio-economic assessment also identified that there is a growing demand for retail within the node, and so the proposed development is well-suited to meet these demands, by providing mixed-use, and retail development within the area. Due to the nature and scale of the development, the development will also generate employment opportunities during the construction and operational phases and will also likely have a positive impact on the study area in general by attracting investment and increasing property values. The most significant impact identified by the specialist, was the potential for an increase in employment and income generation in the region, and urban renewal, with the potential negative impacts being a risk of reduced turnover for existing retailers in the surrounding areas, and an increase in traffic congestion – hence the need for the surrounding road network to be upgraded, to accommodate growth in the area. | Permitted to proceed condition all mitigation is adhered to. |
| Heritage (Archaic Consulting, 2022) | The specialist concluded that the findings of the original assessments were still valid, and that the development does not pose an increased risk of impact on the heritage resources identified within the vicinity of the study site. The resources of potential concerns are the Estate Management House 2 (29°48'30.57"S; 30°44'44.11"E), and Seasonal Labour Compound (29°48'35.35"S; 30°44'33.81"E). The specialist further advised that the proposed changes to the development layout as being applied for under this amendment application, will not pose an additional risk of impact on the receiving environment, from a heritage perspective. As the buildings are under 60 years of age, demolition thereof is an option, and which will not require approval by Amafa. | Permitted to proceed condition all mitigation is adhered to. |
| Agricultural (Mottram & Associates, 2022) | In summary, the specialist concluded that the transformation of the site from sugar cane plantation to the Ntshongweni Mixed-Use Development (Urban Core Precinct) will have little to no impact on food security in the region, and which will have a greater socio-economic benefit for the region. The changes being applied for do not increase the risk of impact on the agricultural potential of the land, and which will not pose a threat to food security, considering THD already commenced with new sugar cane plantations in 2009, which by the end of the year 2013, would result in an additional 9 506ha of sugar cane plantations, with the potential to also farm an additional 10 000ha of land, and a further 7000ha by 2015. | Permitted to proceed condition all mitigation is adhered to. |

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| Ecological (Kinvig & Associates, 2022)) | The specialist noted that the ecological condition of the site remains relatively the same – dominated by sugar cane plantations, with limited vegetation of conservation concern, except along the drainage lines and KwaZulu-Natal Sandstone Sourveld vegetation areas located along the southern extent of the site, with some changes to extents of the natural vegetation communities that were previously assessed. It was, however, concluded that the areas of concern do not fall within the Development footprint, and so the changes being applied for do not increase the risk of impact on the receiving environment. | Permitted to proceed condition all mitigation is adhered to. |
| Faunal Assessment (SiVEST, 2012 and Kinvig & Associates, 2022) | The specialist reiterated the findings of the vegetation assessment, noting that the site has been largely transformed due to agricultural practices, with a few remnant patches of natural vegetation observed. The value of the site for supporting biodiversity, and thus for faunal conservation, was thus said to be limited. Few species were noted on the Development site, including Vervet Monkey (*Cercopithecus pygerythrus*). Antelope species, and dung of a mongoose species – which were observed along the KZN Sandstone Sourveld grassland area, along the eastern perimeter of the study site. However, this grassland area which supports the faunal species, is not located within the proposed Development footprint. | Permitted to proceed condition all mitigation is adhered to. |
| Wetland (Index, 2022 and Kinvig & Associates, 2022) | The specialist concluded that the proposed inclusion of the temporary on-site sewage treatment plant, new Public Transport facility and loop road, will not increase the risk of impact on the receiving environment, and so, did not require further assessment (Index, 2022). Although the wetland is located downstream of the proposed public transport facility, the wetland was not considered to be at risk, on condition the relevant mitigation measures and stormwater management practices, are implemented. | Permitted to proceed condition all mitigation is adhered to. |
| Engineer | As mentioned earlier in this report, alternatives considered for this application, pertains to the sewage treatment options for the development. The section below is related to the findings considered for the sewage solution.<br><br>**Alternative 1 (Preferred Alternative)**: The preferred alternative is favourable as it will allow for the development to proceed, whilst the eThekwini Municipality upgrades the Mhlatuzana WWTW, which will service the ultimate sewage demands of the Development. This option will only become viable once the Municipality upgrades their infrastructure. The proposed Preferred Alternative in this application, is for an on-site sewage treatment plant to be constructed, to temporarily service the development (2ML/day) until such time that the Mhaltuzana WWTW is upgraded. This will allow for the development to proceed, and for the socio-economic benefits associated with it, to materialise. The Applicant has appointed a technical team to ensure that the design of the treatment plant is geared towards minimising potential negative impacts on the environment, and several monitoring and rehabilitation plans have been prepared to further minimise potential negative impacts on the receiving environment.<br><br>**Alternative 2 (Mhaltuzana WWTW):**<br>• This WWTW does not have the capacity to service the development, but it will service the ultimate sewage demands of the Ntshongweni Mixed-Use Development (Urban Core Precinct) as soon as the Municipality has upgraded their infrastructure.<br><br>**Alternative 3 (current Septic Tanks):**<br>• The current sewage system in place on site, is septic tanks. The septic tanks will be owned by the farm operator so no external permits would be required. However, the septic tanks may experience issues in terms of sewer overflow in cases of truck unavailability. The infrastructure is outdated and may pose a greater risk to the receiving environment. | The preferred alternative is the most viable option as it will act as a temporary solution, but yet allow for the development to proceed, until the Municipality has upgraded their infrastructure. |
| Environmental Assessment Practitioner (KSEMS) | The EAP acknowledges that the Applicant has appointed several specialists to ensure that aspects are considered and adhered to and has put a financial provision letter in place confirming that the rehabilitation and monitoring requirements have been accounted for and so accept responsibility for managing the impacts associated with the development.<br><br>The EAP is of the opinion that the benefits associated with construction of the development outweigh the potential risks associated with the on-site sewage package plant, as the package plant will form a temporary solution, and which will be closely monitored and managed to prevent contamination of the receiving environment.<br><br>The treatment plant is more favourable than septic tanks which allow for storage of waste, but no treatment. The technology is more outdated. The EAP also acknowledges that there | Permitted to proceed condition all mitigation measures are adhered to.<br>The monitoring of mitigation is very important considering the potential impacts that may be associated with treated effluent being discharged into the |

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| | is always a risk of infrastructure malfunction, whether this be for the sewage treatment plant, or with the pump station and pipelines that will tie into the Mhlatuzana WWTW. The various mitigation and monitoring measures that are proposed for the package plant, means that the activity is likely to receive greater focus, and so, leaks or malfunctions will be more readily identified.<br><br>The activity must, however, be very closely monitored by the Contractors, ECO, and appointed committee (DWS, EPCPD, and EKZNW). | surrounding watercourses. |

# 8. ENVIRONMENTAL IMPACT STATEMENT

Upon assessing the impacts associated with the proposed development, specifically with regards to the changes being applied for under this amendment application, it was determined that the most noticeable impacts associated with the proposed activity, will be during the construction and operation of the temporary on-site sewage treatment package plant; an increase stormwater runoff associated with the increase in hardened surface area; and the potential for construction within the demarcated no-development ecological corridor which represents the sensitive habitat on site.

Although the sewage package treatment plant will not process more than 2 ML of effluent per day, and so will remain below the triggering threshold of Activity 25 of Listing Notice 1 of the EIA Regulations, 2014 as amended, the direct discharging of treated effluent does pose an increased risk of impact on the receiving watercourses, should there be a malfunction in the infrastructure whereby untreated effluent is discharged into the receiving environment. The ESR (Bosch, 2021) does, however, note that the effluent will be treated in accordance with the DWS standards (General Limit Values), and there are several monitoring plans in place i.e., the wetland, riverine, and surface water quality monitoring plans, to prevent, and identify contamination incidents, to allow for the timeous implementation of mitigation measures.

The Wekeweke Reserve Determination Report (GroundTruth, 2022) also provides several mitigation measures that can be implemented, which will allow for a robust monitoring and feedback mechanism to be promoted, to detect emerging issues or impacts related to both the quality and quantity of additional treated water released into the river system, and to enable the timeous implementation of mitigation measures. In so doing, the activity can proceed whilst following a risk-averse approach to managing treated wastewater flows to the Wekeweke River, as well as ensuring capital investment is available for the sewage package plant, by prompting upgrades as and when appropriate. The risk associated with the proposal can thus be mitigated to acceptable levels, on condition that the mitigation measures and plans referred to above, are strictly implemented and monitored throughout the lifespan of the development.

Further to the above, the alternative considered for the on-site sewage treatment package plant, was to have septic tanks in place (current situation), which will need to be upgraded to accommodate the additional sewage, but which also poses a risk of contamination in the event of infrastructure degradation or system malfunctions. The concern with the septic tanks is also that there is no treatment of sludge, whereby the waste is stored, until a service provider collects and empties the tanks. There are also risks of the trucks mechanics malfunctioning which can also lead to spills, leaks, and contamination, and, if the workers go on strike, this will leave the tanks at risk of overflowing, and so, for contamination of the receiving environment, including the surrounding watercourses, resulting in health risks, and risk of a loss of aquatic biodiversity and ecosystem functioning.

It must be noted that most of the impacts associated with the proposed Ntshongweni Mixed-Use Development (Urban Core Precinct), were already assessed, and authorised during the original EIA process. Whilst the ultimate plan is for the development to tie into the uMhlatuzana WWTW, which will require that a sewage pump station be constructed (already

approved under the existing EA), such infrastructure could also pose a risk of impact in terms of leaks and contamination of the receiving environment, in the event of system malfunctions and poor maintenance. It is also imperative to note that the Applicant already received their EA and WUL for the proposed activity, and had hoped that the WWTW would have been upgraded. However, as the WWTW still does not have capacity, the Applicant is proposing a solution, that will be followed with stringent mitigation and monitoring, so that the development can proceed, and so that all benefits associated with it (employment opportunity, investment and socio-economic growth) can materialise.

There are also increases in the risk of impact associated with the new loop ramp and public transport facility, which will result in an increase in the extent of hardened surface area, and so, which may lead further exacerbate the potential volume and velocity of stormwater runoff along the study site. The relevant specialists did, however, confirm that these changes to the development design, do not significantly increase the risk of impact on the receiving environment (see Appendix G1). The Stormwater Management Plan (SWMP) must be strictly implemented, and all stormwater infrastructure properly monitored and maintained for the duration of the Development, to prevent and minimise negative impacts on the receiving environment. The wetland specialist (Index, 2022) recommended that suitable water release structures be installed to ensure that water is safely discharged into the receiving environment, which if implemented, will adequately reduce the risk of impact associated with the changes being applied for.

The increase in the development footprint associated with the construction of the new loop ramp and public transport facility, will also result in further land clearing (5.2ha for the loop ramp, and 6.5ha for the public transport area), which increases the risk of erosion on site, and the subsequent sedimentation of surrounding watercourses, which may impact on the ecological integrity and functionality of the systems, which in turn may result in the loss of biodiversity. This impact can, however, be adequately mitigated through the implementation of effective erosion and stormwater control measures. The wetland specialist (Index, 2022) noted that the proposed changes to the development footprint, do not increase the risk of impact on the receiving environment, and so recommended that the changes be approved.

Although the changes to the proposal do not trigger any additional Listing Notice Activities of the EIA Regulations, 2014 as amended, there is an increased risk of impact on the receiving environment. These impacts can, however, be mitigated to low levels of significance, following the strict implementation of the mitigation measures highlighted in the EMPr, specialist assessment reports, wetland rehabilitation and offset plan, Wekeweke reserve study, stormwater management plan, and wetland, river, and surface water quality monitoring plans. These must be implemented throughout the lifespan of the Development, to protect the sensitive wetland habitats and no-development ecological corridor. The Developer must therefore strictly adhere to the approved footprint and must not traverse the no-go areas that have been incorporated into the development design. Implementation of these plans must be strictly monitored by the resident engineer, Contractor, ECO and Committee comprising of members from EPPCD, EKZNW, and the DWS.

Furthermore, it should also be noted that one of the most significant impacts that is likely to result from the proposal, is positive in nature, in terms of the employment opportunities that will be created (3726 during construction and 359 during operation), in addition to the potential for economic growth in the region through increased investment and spending in the area, and the likely increase in surrounding property values. The development is also well aligned with the eThekwini Municipality Spatial Development Plan and Shongweni Local Area Plan, to aid development in the Outer West area of the Municipality.

The EAP is therefore of the opinion that the impacts associated with the proposed changes being applied for, including the on-site sewage treatment plant, can be reduced to acceptable levels. It will, however, be crucial for all mitigation and monitoring measures outlined in the following reports, to be always implemented, and overseen by the committee made up of the Engineer, ECO, DWS, EPCPD and EKZNW):

- Environmental Management Programme (KSEMS, 2022)
- Wetland rehabilitation and offset plan (GroundTruth, 2022)
- Ecological Reserve Determination Report (GroundTruth, 2022)
- Stormwater Management Plan (Bosch, 2015)
- Landscape Management Plan (KSEMS, 2021)
- Surface Water Quality, Riverine and Wetland Monitoring Plan (KSEMS, 2021)
- Spill Response Plan (KSEMS, 2021)

The sensitive features and no-go areas are indicated in the Sensitivity Map below (Figure 10).

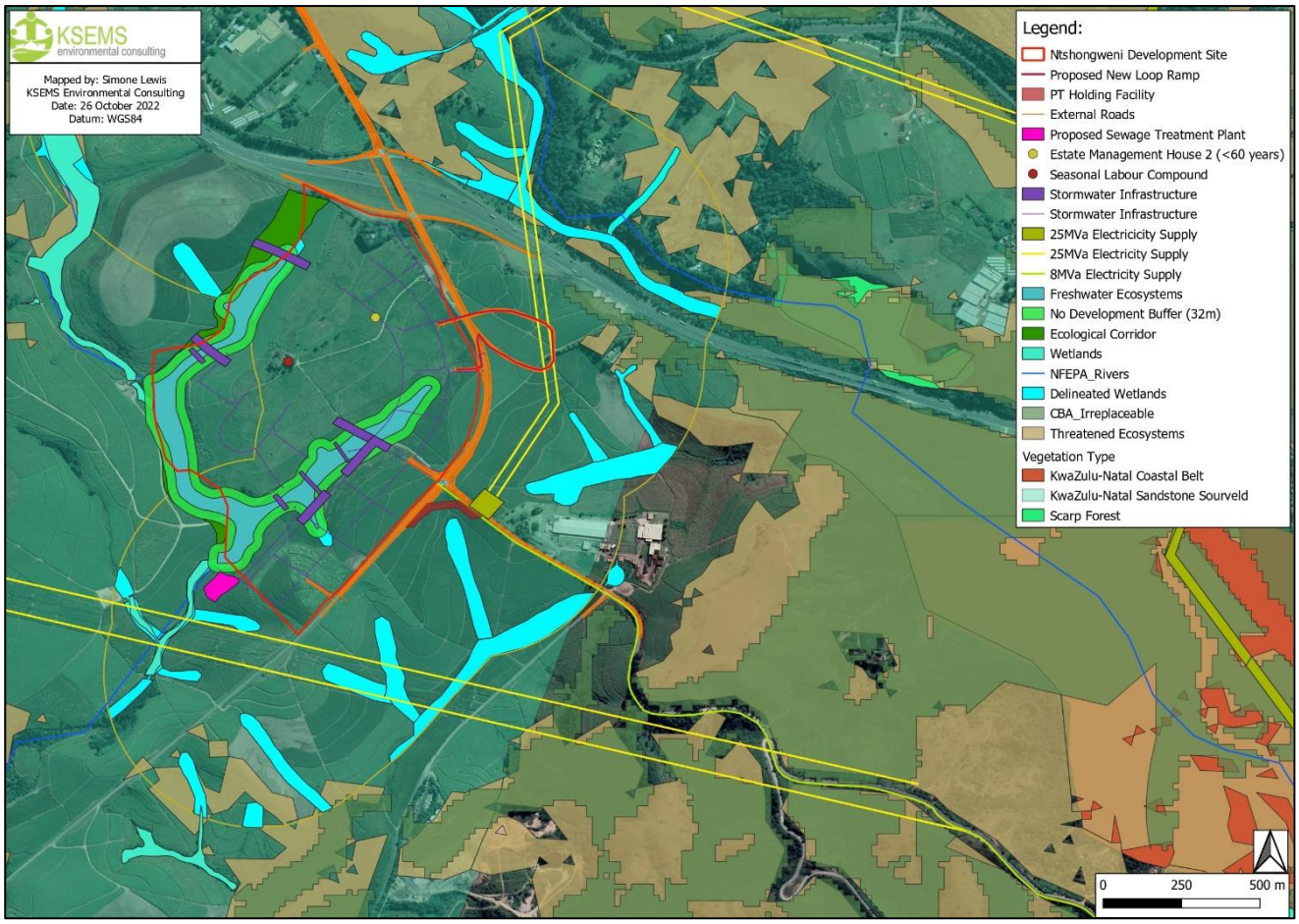


***Figure 9: Map showing the proposed Development in relation to Environmentally Sensitive Features (KSEMS, 2022).***

As Condition 2.6 of the existing EA stipulates that a sewer with adequate capacity to service the development must be found, prior to commencement with construction, and considering that the eThekwini Municipality, which confirmed that the Umhlatazana WWTW will still be upgraded to service the ultimate sewage requirements of the Development, alternative solutions for the sewage infrastructure were investigated.

The table below (Table 12) provides a comparison of the viability of the proposed options considered, with a motivation behind the ranking applied to each option, in relation to the potential impacts on the receiving environment.

***Table 12: Comparative analysis of the various sewage treatment options considered for the proposed Development (Key: 0 = not viable (significant impact); 1 = less viable (medium impact); 2 = most viable (low impact).***

| Ranking of Alternatives | Alternative 1 (preferred): Proposed Package Plant | Alternative 2: uMhlatuzana WWTW | Alternative 3: Septic Tanks | No-Go Alternative | Reasons for Ranking |
|---|---|---|---|---|---|
| **Physical** | 2 | 1 | 0 | 1 | The option for the Development to tie into the Municipal sewage system. However, the Municipality has not yet upgraded their infrastructure and so this option is not yet physically feasible at this point in time. By waiting for this infrastructure to first be upgraded and not proceeding with the development, the Applicant runs the risk of significant economic losses, and the employment and investment opportunities that the development will bring, will not materialise.<br><br>The new proposed package plant will be designed to treat effluent in accordance with the prescribed DWS standards, to ensure that the receiving watercourses are not negatively impacted on. The sewage treatment plant seems most viable as the plant will be located in the same position as the previously assessed and authorised sewage pump station. Although it will have a greater footprint, the site is currently under sugar cane production and so, is not sensitive.<br><br>The current sewage systems in place on site, is comprised of septic tanks, which also hold effluent, but which does not treat the waste, these tanks pose a risk of contamination if they become too full, and if trucks are not available to service them, and which may overflow if not properly managed.<br><br>The no-go alternative was not deemed viable as the development will not be permitted to proceed until the municipality upgrade their infrastructure. This will result in the potential employment and socio-economic benefits associated with the development, to not materialise. As per Condition 2.6 of the EA – the applicant needs to find a viable sewage solution, for construction to proceed. Implementation of the various mitigation measures will render the sewage package plant, a viable solution. |
| **Ecological** | 1 | 2 | 0 | 1 | For the development to tie into the Municipal sewer system a pump station will be required to pump the sewage to the required WWTW. Although there is a risk of system malfunction during which leaks can occur, the proposed package plant will result in treated effluent being directly discharged into the surrounding watercourses. Although the effluent will be treated according to DWS standards, the risk of contamination is slightly greater in the event of system failure. However, following adequate monitoring and mitigation procedures, this option may have ecological benefits to surrounding watercourses, which will receive active flow of water. |

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| | | | | | The septic tanks are not favourable as the tanks will just store sludge, which may overflow if not serviced, and which may erode and leak, without early detection. |
| **Freshwater Habitat** | 2 | 1 | 0 | 2 | For the development to tie into the Municipal sewer system a pump station will be required to pump the sewage to the required WWTW. Although there is a risk of system malfunction during which leaks can occur, the proposed package plant will result in treated effluent being directly discharged into the surrounding watercourses. Although the effluent will be treated according to DWS standards, the risk of contamination is slightly greater in the event of system failure.<br><br>However, following adequate monitoring and mitigation procedures, which is intended by the Applicant, for which a financial provision letter confirming such has been voideded, the package plant may have benefits to surrounding watercourses, which will receive active flow of water, as per the findings of the Wekeweke Reserve Study (GroundTruth, 2022), as the specialist notes the following potential benefits:<br><br>The additional flows are expected to have a positive impact in terms of allowing establishment of marginal vegetation along the edge of the river, which is currently incised through bank erosion. This in turn will provide habitat and cover for aquatic macroinvertebrates and fish.<br><br>The specialist further noted, that although the above-mentioned increase in flow velocity may lead to increased erosion, the impacts can be easily mitigated through active management of the riparian habitat, as presented in the Rehabilitation Plan for the Ntshongweni Mixed Use Development (GroundTruth, 2022), which will help to stabilise the channel and banks of the Wekeweke River. |
| **Heritage** | 2 | 2 | 2 | 2 | The specialist did not identify any structures of heritage or cultural significance to be at risk by either of the Alternatives. All alternatives therefore pose a low risk to Heritage resources. |
| **Social/ Socio-economic** | 2 | 0 | 1 | 0 | Currently, the greatest social and socio-economic impact associated with the proposal, is the benefits that will be felt by the public in terms of employment opportunity, and greater growth within the study area due to the nature of the development that enhances potential for investment and economic activity in the region. As such, the proposed package plant will allow for these benefits to materialise sooner, and which will be followed by stringent mitigation and monitoring, to prevent negative impacts on the environment. From this perspective, the Umhlatazana WWTW is not viable, as the WWTW does not have the capacity for the development to proceed, and the timeframes within which these upgrades will take place, is not known. |
| **Capacity** | 2 | 0 | 1 | 0 | The Umhlatazana WWTW does not currently have the capacity to service the proposed development. |
| **Total** | **11** | **6** | **4** | **6** | |

Based on the analysis in Table 12 above, the proposed sewage treatment package plant represents the most viable option for meeting the sewage requirements associated with the development, as it will have the capacity to do so, for the development to proceed, and so, for the various benefits associated with the development to materialise, whereas the Mhlatuzana WWTW simply does not have the capacity to service the development, and the timeframes within which the upgrades will be completed is unknown.

As per Condition 2.6 of the EA, "the project cannot commence until there is a sewer with sufficient capacity that will service the site/development". As the Municipality still does not have the required capacity, the Applicant has proposed an alternative, and temporary solution, so that construction of the Development can commence, and for the benefits thereof, in terms of employment, and socio-economic development in line with the eThekwini Municipality's strategic planning objectives, to begin to materialise.

The Development will tie into the Umhlatazana WWTW as soon as the Municipality has upgraded the required infrastructure. But until then, the package plant will be a viable option, as it will be designed to treat effluent to the DWS General Limit Values or Special Limit Values, to ensure that the treated effluent does not negatively impact the receiving watercourses. The Applicant has also appointed a specialist to undertake the Wekeweke reserve study, to ensure that the system will be able to accommodate the additional flows associated with the discharging of the treated effluent into it. The specialist (GroundTruth, 2022) confirmed that the system will not be significantly affected, and even noted that the system my benefit from the active flows that will be achieved through the additional water inputs. The package plant will be closely monitored and managed in accordance with the recommendations of the wetland rehabilitation and offset plan, stormwater management plan, and surface water quality, riverine and wetland monitoring plans. The Applicant has further provided a financial provision letter (Appendix I) to ensure that the funds have been set aside for these measures to be implemented.

The table below (Table 13) provides a summary of the positive and negative impacts associated with the proposal.

***Table 13: Summary of positive and negative impacts associated with the proposed Activity.***

| Positive Impacts | Negative Impacts |
|---|---|
| • Positive economic impact with the provision of potential employment and business opportunities. It is anticipated that 3726 new employment opportunities will be created during construction, and 359, during operation.<br>• The municipal service infrastructure will be upgraded which will improve the services in the area. The temporary on-site sewage treatment plant will take pressure off the municipality, until such time that their infrastructure has been upgraded.<br>• The geotechnical specialist confirmed that the site is suitable for development.<br>• There are no neighbouring properties that will be directly affected by the Development.<br>• Reduce the amount of sugar cane farming in the precinct, a desired effect of the Shongweni LAP (this has been offset with the new sugr cane plantations that have been established by THD over the years, as confirmed in the Agricultural Report prepared by Mottram & Associates (2022)).<br>• The Development may stimulate investment and trading along the proposed freight corridor (i.e. N3 Highway).<br>• The rehabilitation plan prepared by the wetland specialist will be sufficient to mitigate the impacts on wetland habitat, as confirmed by EPCPD. | • Increase in traffic.<br>• The layout does not include a residential component due to the close proximity of the Mushroom Farm and Shongweni Landfill site (both give off an unpleasant scent) as well as the strategic location adjacent to the N3 Logistics Corridor.<br>• Increase in stormwater runoff from hardened surfaces to potentially transport pollutants and excess sediment into the freshwater ecosystems on and adjacent to the site, if not adequately mitigated through implementation of the EMPr and SWMP.<br>• Initial loss of wetland habitat – although there will ultimately be a net gain of wetland habitat, due to implementation of the wetland rehabilitation/ offset plan.<br>• There will be a disturbance to surrounding commuters during the construction phase, although this is a temporary impact.<br>• The increased project footprint with the new loop ramp (5.2 ha) and public transport facility (6.5 ha) will increase the risk of erosion and sedimentation of the receiving environment, which may negatively impact the downstream watercourses. However, the specialists confirmed that the risk associated with these aspects on the receiving environment, is negligible, given the relevant mitigation measures are implemented.<br>• There is a risk of contamination of the Wekeweke River, which will negatively affect the quality of water and functioning of aquatic ecosystems, if there are malfunctions in the sewage |

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| • The sensitive habitats present on the site has been incorporated into the development design as a no-development ecological corridor, to promote conservation thereof. The condition of the wetlands will be improved, as the alien and invasive species currently proliferating in these systems will be actively removed.<br>• The ecological reserve determination study (GroundTruth, 2015) identified that the additional inputs from the treated effluent into the Wekeweke River may have a positive impact on the river, in terms of promoting active flows in the system. The additional flows are expected to have a positive impact in terms of allowing establishment of marginal vegetation along the edge of the river, which is currently incised through bank erosion. This in turn will provide habitat and cover for aquatic macroinvertebrates and fish. The specialist further noted, that although the above-mentioned increase in flow velocity may lead to increased erosion, the impacts can be easily mitigated through active management of the riparian habitat, as presented in the Rehabilitation Plan for the Ntshongweni Mixed Use Development (GroundTruth, 2022), which will help to stabilise the channel and banks of the Wekeweke River.<br>• The specialist further confirmed that the additional water /discharged into the system will not have a significant impact in terms of an increase in depth (approximately 2cm increase in depth). | treatment plant, which leads to untreated effluent being discharged into the river. |

# 9. ENVIRONMENTAL IMPACT MITIGATION AND MANAGEMENT

All impacts identified in Section 8.2 of this report, can be reduced to a low level of significance if all mitigation measures contained in the Environmental Management Programme (Appendix H), specialist assessment reports, wetland rehabilitation and offset plan, Wekeweke ecological reserve determination report, stormwater management plan, plant species and landscaping management plan, and wetland, river, and surface water quality monitoring plans, are strictly and effectively implemented and monitored on site.

The eThekwini Municipality Environmental Planning and Climate Protection Department (EPCPD) confirmed that the proposed Stormwater Management Plan (SWMP), and wetland rehabilitation plan, are approved, and thereby confirmed that the management measures contained within these reports, are sufficient for the mitigation of impacts associated with the Development. See proof of correspondence in Appendix F.

The various specialists reviewed the findings of the original assessment reports, and confirmed that the findings remain valid, and that the proposed changes to the Development and EA, as being applied for, will not increase the risk of impact of the Development on the receiving environment. The specialists therefore had no objections to the changes being applied for, on condition that all mitigation measures are implemented.

The most significant impact that may be associated with the changes being proposed, is with regards to the on-site sewage package treatment plant, which will result in treated effluent being directly discharged into the receiving environment. The section below highlights some of the key mitigation measures that need to be implemented on site, to allow for the impacts associated with the development, to be reduced to acceptable levels:

**Heritage**

- The Applicant must consider preserving the garden associated with the Estate Management House 2 (29°48'30.57"S 30°44'44.11"E).
- It is suggested that the Seasonal Labour Compound (29°48'35.35"S 30°44'33.81"E) be reused, if possible. Demolition will not, however, be an issue, as the structures are not older than 60 years.

**Ecological**

- All the alien vegetation on Site should be removed and controlled.
- The wetlands on and neighbouring the site must be afforded a suitable buffer as determined by the wetland specialist.
- The wetlands should be rehabilitated in accordance with the wetland rehabilitation plan.
- Stormwater generated by the proposed development must be allowed to infiltrate back into the groundwater across the site to ensure that the wetland system downstream is not negatively impacted.
- Stormwater generated by the proposed development must be effectively controlled and attenuated to ensure that the erosion and sedimentation risks associated with increased flood peaks is mitigated and/or avoided.
- Construction activities must be carefully managed within the development footprint, in accordance with the EMPr, to minimise impact on the receiving environment.
- All buffer zones must be strictly adhered to.

**Watercourses**

- Ensure, where possible, that the development footprint avoids aquatic, riparian and wetland habitat.
- All buffer zones (no-development ecological corridor) must be strictly adhered to and avoided.
- Ensure minimal or no disturbance outside of the development footprint area during construction. Buffer areas should preferably be revegetated with indigenous vegetation prior to construction to minimise impacts on the wetland and riparian systems.
- The site and no-development ecological corridor must be rehabilitated in accordance with the wetland rehabilitation and offset plan, and the plant species landscape management plan, that form part of the EMPr.
- Rehabilitate areas containing solid waste and remove all refuse/waste which is accumulated on the property, and to thereafter, maintain the property in a refuse/ litter-free state.
- Develop and implement a comprehensive alien weed control programme to eradicate such species and to prevent the further spread thereof.
- Ensure that the stormwater management plan for the development minimises low-related impacts to the aquatic environment and associated buffers (It should be noted that the eThekwini EPCPD has approved of the stormwater management plan).
- Pollutants, potentially carried in surface water runoff, should be limited through the use of best management practises and designs (e.g. first-flush pollutant traps and filters, permeable paving in driveways and parking areas, etc.).
- Monitor wetland, river and other open space systems during the construction and operational phases. The surface water quality, riverine and wetland monitoring plans must be strictly implemented on site.
- Implement a biennial or triennial fire burning regime in both grassland and wetland areas to increase grassland vigour. A fire management plan will therefore need to be compiled for the system.

- Considering the importance of flow for downstream systems and for the survival of Gladiolus cruentus population, no further reduction in the hydrology for the catchment should occur without further investigation of the system and its ecological water reserve.
- The use of chemical control is recommended in areas where Pteridium aquilinumhas become locally dominant. Once plants form dense monotypic stands they are difficult to eradicate, as they are resistant to burning and secrete allelochemicals (biochemicals) into the soil that inhibit and suppress growth of other plants.
- The specialist (GroundTruth Riparian Assessment, 2013) made note that emergency procedures should to in place to manage pumpstation failures and spills/leaks with immediate effect.
- The specialist (GroundTruth, 2022) has recommended a Biological Response Monitoring Programme based on Resource Quality Objectives (RQO) obtained from the assessment undertaken. The specialist further advises that the Thresholds of Potential Concern (TPOs) need to be specifically developed for the Wekeweke River system in relation to the proposed development in order to develop well-defined triggers prior to the construction of the WWTW, and these should be based on the pre-development baseline monitoring values.
- The trajectory of change in the TPCs must also be monitored, to ensure that mitigation measures can be implemented early, to prevent significant negative impacts on the system, and so to ensure that the TPC are never exceeded.
- The choice of interventions is not prescriptive, and is a function of what is available on the landscape (e.g. additional irrigation of treated WWTW effluent to green open spaces), and modifications and treatment options at WWTW based on the available best technology, for example WWTW treatment process conversion from General Limit Values (GLV) to Special Limit Values (SLV) in winter and other months if necessary, through to tertiary treatment of the WWTW treated effluent via Reverse Osmosis.
- The engineering interventions therefore, include incremental and progressive capacity upgrades to the WWTW as well as treatment options, whilst the ecological interventions would seek to maximise opportunities for percolation, absorption and adsorption of excess nutrients within the landscape, and other considerations/regulations for future developments.
- It is important that the finance mechanisms and guarantees be established prior to commencement, as it may be required that the measures be implemented based on the trajectory of change, to prevent TPCs from being exceeded. There will therefore not be sufficient time to obtain funds, after the impacts have materialised.
- The specialist recommended the following potential engineering mitigation interventions:
    - Treatment process converting General Limit Values (GLVs) to Special Limit Values (SLVs).
    - Capacity upgrades (at 0.5 to 1.0 ML/day increments)
    - Use of treated effluent for commercial and industrial operations (i.e., to shopping centres for public toilets)
    - Latest technology alternatives (RO plant)
- The specialist also recommended potential ecological interventions (which would require that a catchment wide spatial analysis be undertaken to identify opportunities for ecological infrastructure that can be utilised):
    - Irrigation of green areas within the catchment
    - Optimisation of existing wetlands and addition of constructed wetland expansion
    - Re-use of grey water by contributors to the sewage package plant (irrigate gardens)
    - Potential for inter basin transfer back across into adjacent systems.
- Pre-development baseline monitoring of chemical, biological, and physical indicators is essential in defining the TPCs and RQOs for the River. This must include a minimum of one (1) years' worth of monitoring/ sampling to supplement existing data from this study. A minimum of two sites will be required, one upstream and one downstream of the development (at the EWR site).

- This monitoring must be undertaken in accordance with Section 4.5 of the Ecological Reserve Determination Study (GroundTruth, 2022).
- The additional flows are expected to have a positive impact in terms of allowing establishment of marginal vegetation along the edge of the river, which is currently incised through bank erosion. This in turn will provide habitat and cover for aquatic macroinvertebrates and fish.
- The specialist further noted, that although the potential increase in flow velocity associated with the additional water inputs may lead to increased erosion, the impacts can be easily mitigated through active management of the riparian habitat, as presented in the Rehabilitation Plan for the Ntshongweni Mixed Use Development (GroundTruth, 2022), which will help to stabilise the channel and banks of the Wekeweke River.
- It is important to note that the Ntshongweni Mixed Use Development has been designed specifically to manage stormwater runoff, primarily using on-site wetland attenuation structures, thus stormwater aspects were not considered in the reserve Determination process (GroundTruth, 2022). The SWMP is designed for achieving "flood neutrality" (i.e. post-development flows is equivalent to pre-development flows). The specialist noted that the reserve study for the development is planning for a "flood negative" scenario, whereby post-development floods will be less than pre-development floods (Peter Tooley pers. comm., 2022). This will be achieved through the adoption of Sustainable Urban Drainage systems (SUDs), for example swales, permeable pavers/parking areas. The Rehabilitation Plan will also aim to enhance the integrity of the riparian zone along the Wekeweke River downstream of the development, thus increasing the natural assimilative capacity (for improving water quality) and flood reduction potential in the system.
- The SWMP must be strictly implemented on site.
- The wetland, riverine, and surface water quality monitoring reports must be implemented.
- The Wetland rehabilitation and offset plan must be strictly implemented on site. Please refer to Section 8 and Section 9 of the rehabilitation plan.
- Monitoring must be undertaken in accordance with Section 10 of the Wetland rehabilitation and offset plan (GroundTruth, 2022).
- The mitigation approach recommended in the Wekeweke Reserve Determination Study must be followed, to ensure that a risk-averse approach is adopted, to allow for the timeous implementation of mitigation, to prevent contamination of the receiving environment.
- The above-mentioned plans and reports must form part of the EMPr.

# 10. EAP RECOMMENDATION AND CONDITIONS OF THE EA

Based on the Impact Assessment conducted for the proposed changes to the Ntshongweni Mixed-Use Development (Urban Core Precinct, now branded as Westown), in addition to the findings of the specialist assessments, the EAP is of the opinion that the proposed changes to the development scope and design should be granted EA, as the potential impacts associated with these changes can be reduced to acceptable levels. It is noted that the proposed development is important in promoting socio-economic growth, by providing opportunities for employment, and for attracting investment into the study area, in addition to the development being aligned with the strategic development objectives of the eThekwini Municipality Spatial Development Plan, and the Shongweni Local Area Plan.

The proposed changes to the electricity, and road infrastructure aspects associated with the development, will not significantly increase the risk of impact on the receiving environment, further than what was previously determined during the original EIA process, for the development in its entirety, These impacts can be adequately mitigated through implementation of the general construction mitigation measures outlined in the EMPr, for preventing contamination, and limiting erosion and sedimentation, of the receiving environment.

The aspect of concern pertains to the changes being proposed for the sewage infrastructure. The development, as many others, will require sewage processing. Whilst the ultimate objective is for the development to tie into either the Mhlatuzana or Dassenhoek WWTW, it must be noted that there are still risks of impact in terms of environmental contamination, should the infrastructure (pump station and associated pipelines) leak or fail. The proposed on-site sewage treatment plant may pose an additional risk of impact in that treated effluent will be directly discharged into the receiving watercourses. However, the sewage will be treated to DWS General Limit Values, to ensure that the water being discharged, does not pose a risk of contamination of the surrounding watercourses, which would otherwise pose a risk to community health, and aquatic ecosystem functioning and biodiversity. Grey water must also be reused on site, where possible, for construction, irrigation, or for operation of toilets etc.

The EAP is of the opinion that the Applicant has taken the necessary measures to ensure that the sewage treatment plant, will be adequately designed, operated, and monitored, to ensure that the risk of impact is mitigated, as best as practically possible, considering the team of specialists that have been appointed to assess the risk of the proposal and to prepare the required design plans, and rehabilitation and monitoring plans. The EAP therefore recommends that the amendments to the EA be granted, on condition that all mitigation measures contained in the EMPr and various specialist assessment reports, as well as the wetland rehabilitation and monitoring plans, are strictly implemented. The rehabilitation and monitoring plans must be implemented throughout the lifespan of the Development, to prevent degradation of the sensitive habitats identified in the assessment.

The Applicant has invested in the services of several specialists for the design, assessment, and monitoring of the development and associated construction activities, for which environmental authorisation was granted by EDTEA (in 2015). As the EA remains valid for 10 years, and the timeframe within which the uMhaltuzana WWTW will be upgraded cannot be confirmed, it does not seem viable for the Ntshongweni Development, and associated socio-economic benefits, to not materialise.

The proposed sewage package plant will also alleviate pressure on the Municipality, and which will allow for the Development to proceed, so that the benefits associated with it, can begin to materialise (i.e., employment and investment opportunity, and socio-economic growth in the region). It is critical that all mitigation and rehabilitation measures are strictly implemented, along with the wetland, river and surface water quality monitoring plans. Rehabilitation must occur concurrently with construction wherever possible, to improve the integrity and ecological functioning of sensitive habitats.

The EAP further recommends that the following be included as conditions to the amended EA:

- The approved EMPr must be strictly adhered to throughout the lifespan of the project.
- The surface water quality monitoring plan must be implemented throughout the lifespan of the project, until the competent authority determines otherwise.
- The wetland rehabilitation and offset plan must be implemented until the competent authority, ECO and specialists, are satisfied that the requirements thereof have been met.
- Implementation of the wetland rehabilitation and offset plan must be monitored and overseen by a committee comprising of members from the eThekwini Environmental Planning and Climate Protection Department (EPCPD), Ezemvelo KZN Wildlife (EKZNW) and the Department of Water and Sanitation (DWS).
- The plant species and landscape management plan must be implemented through the construction and rehabilitation phases of the development.
- The wetland and riverine monitoring plans must be implemented throughout the construction and rehabilitation phases of the project, until such time that the competent authority is satisfied.

- The monitoring plan for the treated effluent must be agreed upon by the monitoring committee, prior to construction and operation of the sewage treatment plant.
- The development must tie into the Umhlatazana or Dassenhoek WWTW as soon as there is sufficient capacity to do so.
- The recommendations and mitigation and monitoring strategy noted in the Wekeweke Reserve Determination Report (GroundTruth, 2022) must be followed to ensure that a flexible, and risk averse approach is adopted, so that mitigation and monitoring measures are re-evaluated, as required, to ensure minimal degradation of the receiving environment.

# 11. DECLARATION OF THE EAP

**Environmental assessment practitioner (EAP):**[1]

| | | | |
|---|---|---|---|
| Trading name (if any): | KSEMS Environmental Consulting Pty Ltd | | |
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| Education Qualifications[2]: | BSc (Hons) – Estuarine Ecology (Major), Urban Biography (Ecology) (Major) MSc awarded cum laude. | | |
| Professional affiliation(s) (if any)[3] | Kerry Stanton is EAPSA certified. and is a member of the IAISA Certified Professional Natural Scientist (400167/12) | | |

| Name of representative of the EAP | Education qualifications | Professional affiliations | Experience at environmental assessments (years) |
|---|---|---|---|
| Kerry Stanton | MSc Cum laude BSc (Hons) MSc | EAPSA Certified<br>Certified Professional Natural Scientist (400167/12), | 24 |

I, _____Kerry Stanton_____ declare that I

- am the independent environmental practitioner in this application;
- do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- declare that there are no circumstances that may compromise my objectivity in performing such work;

[2] [8] Please include details of names, education qualifications and professional affiliations of the EAP and each representative of the EAP appointed to manage this application.

- have expertise in conducting environmental impact assessments, including knowledge of the National Environmental Management Act, 1998 (Act107 of 1998), regulations and any guidelines that have relevance to the proposed activity;
- will comply with the National Environmental Management Act, 1998 (Act107 of 1998), regulations and all other applicable legislation;
- will take the provisions of regulation EIA Regulations, 2014 into account when preparing any report relating to this application;
- undertake to disclose to the applicant and the EDTEA all material information in my possession that reasonably has or may have the potential of influencing its decision with respect to this application;
- will ensure that information containing all reports in respect of this application is distributed or made available to interested and affected parties and that their participation is facilitated in such a manner that they will be provided with a reasonable opportunity to participate and provide comments on the reports;
- will provide the competent authority with access to all information at my disposal regarding this application, whether such information is favourable to the applicant or not;
- declare that all the particulars furnished by me in this form are true and correct;
- I am aware that a false declaration is an offence in terms of regulation EIA Regulations, 2014; and
- I will comply with all the requirements as indicated in the National Environmental Management Act, 1998 (Act 107 of 1998) and Environmental Impact Assessment Regulations, 2014.

_____

Signature of the environmental assessment practitioner

_____KSEMS Environmental Consulting Pty Ltd_ ___

Trading name

_____29 November 2022_____

Date:

## Appendix A: Existing Environmental Authorisation and Water Use License

# Appendix B – Facility Illustrations

# Appendix C – Details of the EAP

# Appendix D – Maps

# Appendix E – Site Photographs

## Appendix F – Stakeholder Engagement/ Public Participation Process

# Appendix G – Specialist Studies

## Appendix G1 – Updated Specialist Reports/ Verification Statements

## Appendix G2 – Original Specialist Studies (2015) and EIR Report (KSEMS, 2015)

# Appendix H – Environmental Management Programme (EMPr)

# Appendix I – Additional Information