BASIC ASSESSMENT REPORT

PROPOSED DEVELOPMENT OF PORTION 565 (A PORTION OF PORTION 19) OF THE FARM ZEVENFONTEIN 407 JR, CITY OF JOHANNESBURG | KENGIES EXT 35

FINAL SUBMISSION

Proponent:
Lumal Projects
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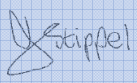
Document Compilation	**Ms. V Stippel** **(MSc. Animal, Plant and Environmental Science). | Reg. EAP | Pr.Sci.Nat.**		**2021/09**
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Amendments on Document

Date	Report Reference Number		Description of Amendment
15 September 2021	22052-BAR-1	22052-BAR-2	Updated to take into account comments received during Public Review

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Please note that maps included in this report are to provide context. A3 Maps are provided in Appendix A.

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EXECUTIVE SUMMARY

1. Overview

The proposed development of Portion 565 (a portion of Portion 19) of the Farm Zevenfontein No. 407-JR, City of Johannesburg, Gauteng Province, to be known as Kengies Extension 35, involves the development of fifty-one (51) “Residential 2” erven which have a combined area of 1.17 hectares (ha). The following land use control details are applicable:

- Zoning: Residential 2 (dwelling units, residential buildings)
- Density: 26 units/ha
- Floor area ratio (FAR): 0.8 percent
- Coverage: 60%
- Height restriction: 2 storeys
- Building line: 2m on common boundaries, 3m on Frederick Road

In addition, one (1) “Special” erf for Private Roads, Guardhouse and Access Control Measures (0.51ha) and one (1) “Private Open Space” erf of 0.35ha will be developed. All necessary access, internal roads and services will also be put in place.

This includes the finalisation of the bio-engineered regional stormwater channel which passes through the site. This channel forms part of the Regional Stormwater Plan for the area which was developed to deal with historic issues such as erosion, deposited silt on downstream properties, and unnatural flooding scenarios. This bio-engineered regional stormwater channel includes Erosion control blankets (Geo fabric), Armoring which comprises of the Armoflex DN 140 system and then filling with in-situ topsoil, and vegetation.

The design of the bio-engineered regional stormwater channel aimed to:

- Maintain as accurately as possible natural water infiltration and flows;
- Use water sensitive urban design principals;
- Use best practice urban stormwater quality and quantity management; and
- Address temporary and permanent erosion prevention, sediment control and control of other development activities that can cause pollution.

It should be noted that the proposed regional system has already been implemented throughout, with the development of the section through Portion 565 (a portion of Portion 19) of the Farm Zevenfontein No. 407-JR (Kengies Extension 35), being the last section to be developed. The completion of the system will ensure proper stormwater management in the area.

Figure 1 provides the overall locality of the site and is followed by an Aerial Locality Map which includes the proposed development footprint (**Figure 2**).

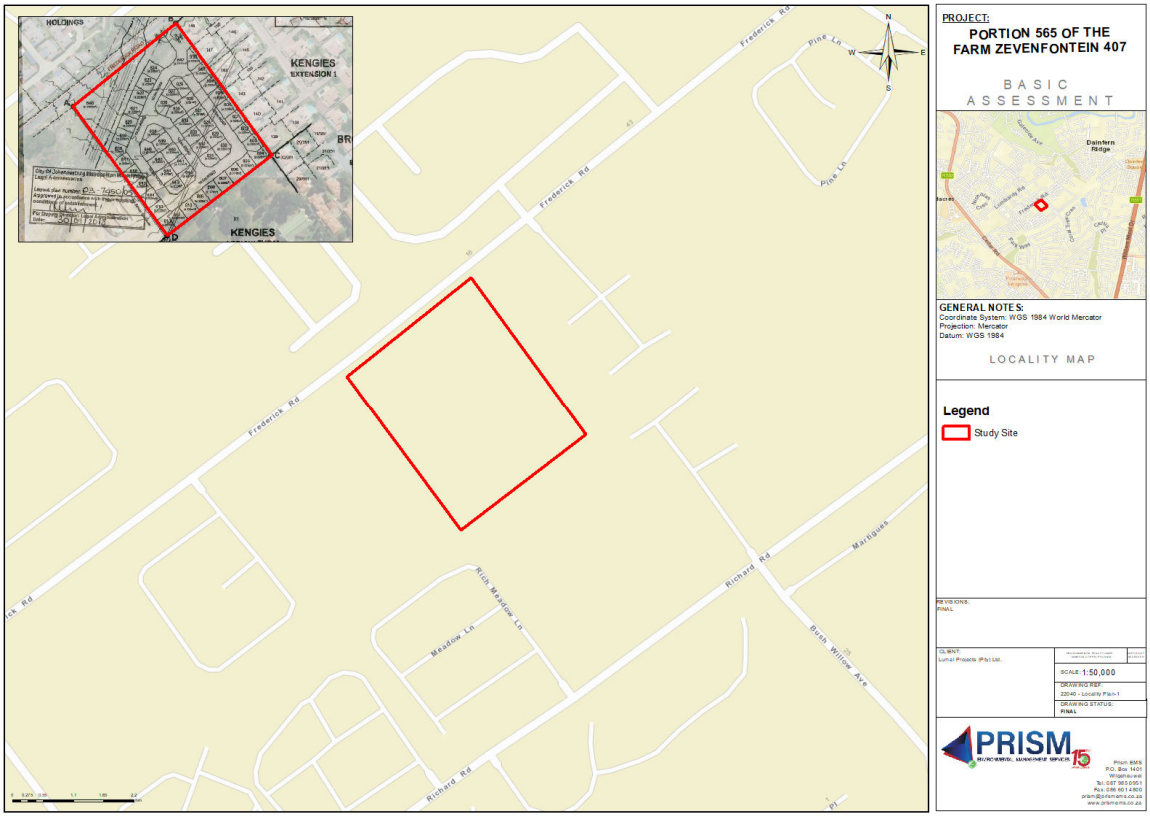


Figure 1: Locality Map

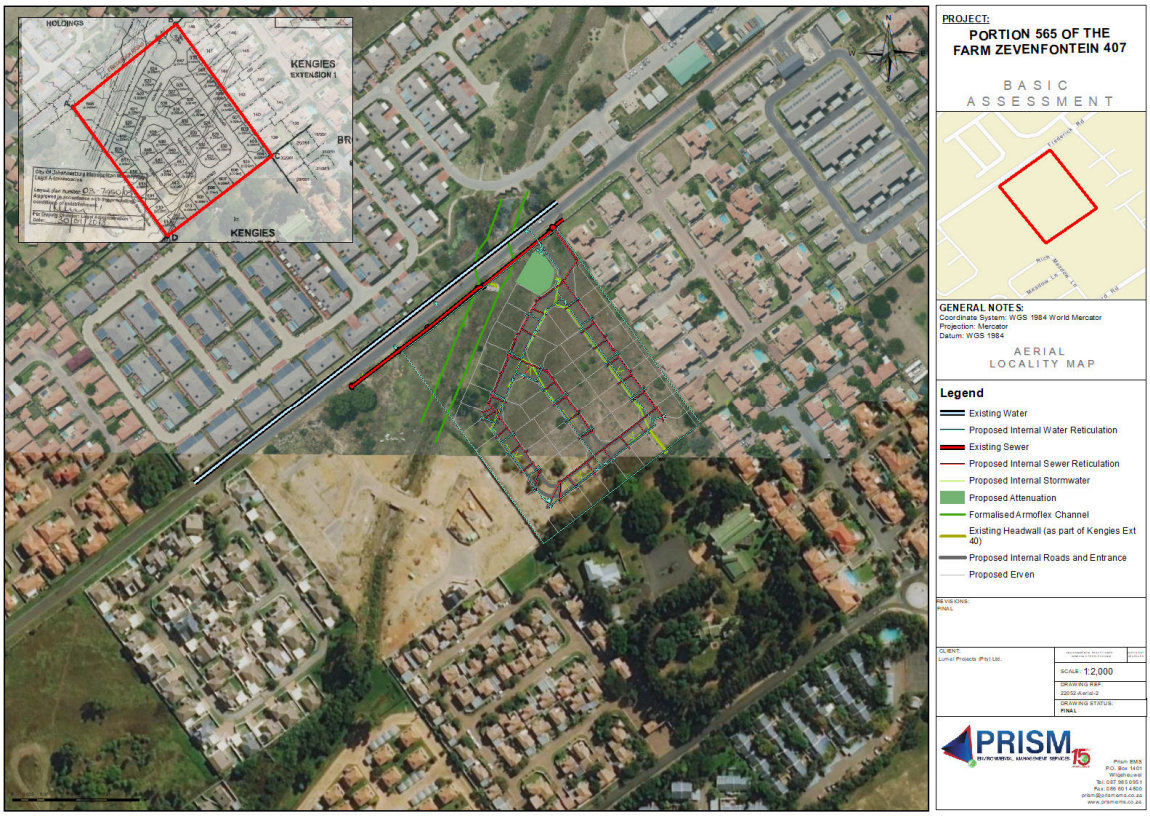


Figure 2: Aerial Locality Map

2. Process to Date

In order to provide context to the final submission, a summary of the process undertaken to date is provided below. Please note that in order to aid the review of the final submission, all changes between the Basic Assessment Report (BAR) that was made available for review and the final submission to the Department are shown as underlined.

a.) Site Verification Assessment

A detailed desktop investigation was undertaken to understand the potential sensitivities. In addition, a site verification was undertaken and in line with the requirements of the '*Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Section 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998 when applying for Environmental Authorisation (GN 320 of 20 March 2020)*', a Site Sensitivity Verification Report was compiled and included in the BAR that was made available for public review.

b.) Specialist Studies

Based on the site verification assessment, a number of specialist studies were identified as being necessary including a Baseline Ecological Habitat Assessment; Wetland Verification; and Heritage Impact Assessment. The terms of reference for these studies were drawn up and the appropriate specialist appointed. All specialists then performed the necessary field and desktop investigations and compiled a report to present their findings.

c.) Initial Notification and Registration

Initial Public Participation was undertaken in terms of the Environmental Impact Assessment (EIA) Regulations, 2014.

- A potential I&AP database was compiled and included Adjacent Landowners, Ward Councillors, Authorities and Potential I&APs.
- A Background Information Document (BID) was compiled and included information on the proposed development, services and roads and included a map showing all these components.
- An advert was placed in the Star Newspaper on 10 May 2021 to notify potential Interested and Affected Parties (I&APs) of the project and to request that they register they register their interest in the project.
- Site notices and notification of adjacent landowners and other I&APs also took place via email and hand delivery and the BID was provided as part of this.
- A 30-day registration period was provided to allow I&APs an opportunity to register their interest in the project from 10 May 2021 to 9 June 2021

A number of requests for registration/comments were made by the following:

- S Mhlongo – *Request registration*
- E. Allers (City of Johannesburg) - *Request registration*
- M. de Groen (Aqualinks) – *Stormwater and impact to cane rats*
- W Swart (Evergreen Lifestyle Village) – *Stormwater*
- C Bedeker (Evergreen Property Investments) – *Stormwater*
- S Newman (Evergreen Lifestyle Village) – *request registration*
- E Reyneke (the Willows) – *Stormwater*

All requests for registration/comments are provided in **Appendix E4**. Further, all comments received during the initial registration periods have been added to the Comments and Responses Report in **Appendix E6**.

d.) Compilation of the Basic Assessment Report

The BAR was duly compiled on the basis of the technical information on the proposed development, findings of the specialist studies, information determined during the desktop investigation and comments received during the initial notification and registration period. The BAR included a detailed impact assessment which identified a number of important mitigation measures required to reduce the significance of impacts. A detailed Environmental Management Programme (EMPr) was also compiled and aimed to ensure that the necessary mitigation measures would be implemented.

e.) Public Review of the Basic Assessment Report

Public review of the BAR was undertaken as follows:

- Emails and/or Whatsapp messages were sent to all the registered I&APs to notify them of the 30-day review period on 25 June 2021.
- As applicable, electronic copies (USB Flash drive) or PDF uploads of the BAR were submitted to competent and commenting authorities including the Gauteng Department of Agriculture and Rural Development (GDARD), the City of Johannesburg (CoJ), South African Heritage Resources Agency (SAHRA), the Provincial Heritage Resources Agency of Gauteng (PHRA-G) and Department of Human Settlements, Water and Sanitation (DHSWS) on 25 June 2021.
- A 30-day public review was provided between **25 June 2021 to 26 July 2021.**

During the review period of the BAR, the main comments received were from the City of Johannesburg and GDARD. A number of smaller comments regarding requests for information were also noted and dealt with as required.

All comments received are captured in the Comments and Responses Report in **Appendix E6**. However, in summary, the main comments and concerns include the following:

- Confirmation of receipt;
- Request for further information;
- Requests for additional links to the report;
- Support of the proposed bio-engineered stormwater channel from COJ;
- Confirmation that the stormwater management of the development must comply to a number of factors;
- Concern regarding the impact to the wetland feature and associated requests for changes to the layout from GDARD;
- Request for clarification regarding the date of construction of stormwater infrastructure from GDARD;
- Requests for additional impacts to be assessed from GDARD;
- Queries regarding the alternatives assessed from GDARD;
- Support of the proposed bio-engineered stormwater channel from GDARD; and
- Confirmation from SAHRA that they have no objections to the proposed development.

In order to deal with these, a consultation meeting was held with GDARD on 3 September 2021. As a result of this meeting, the BAR and EMPr have been updated to include the following:

- Confirmation of the Stormwater Infrastructure on Site
  - The comments received from the Department dated 12 August 2021 and 27 August 2021 requested clarity on the stormwater infrastructure already on site.
  - This was discussed in detail during the meeting held on 3 September 2021 and it was noted that the culvert had been developed in around 2012/3 by the previous owners of the adjacent site (Kengies Extension 40). This development is approved by an Exemption Approval under Section 28A of the Environmental Conservation Act, 1989. The approval included Activity 1(j) *The construction or upgrading of dams, levees and weirs affecting the flow of a river* and Activity 2(c) *The change of land use from agricultural or undetermined use to any other land use*. Included in the approvals was a point that showed that the assessment of the wetlands on Holdings 7,8,10, 11, 14, **30**, 33, 34 and 35 (*Portion 565 (a Portion of Portion 19) of the Farm Zevenfontein 407 JR was previously Holding 30*).
  - It should also be noted the change of land use activity under ECA incorporated all necessary services and infrastructure required by the development (even those outside the specific property).
  - A copy of the Kengies Ext 40 Exemption Approval as well as other associated approvals as well as the approved roads and stormwater plan are included in **Appendix I5** as requested.
  - In addition, confirmation that this stormwater system was approved by COJ and JRA are also included.
- Additional Assessment of Impacts:

- The comments dated 12 August 2021 requested additional impacts be assessed:
- ***Impacts to Hydrological System and Catchment***: This was identified to have a **positive low-medium** impact due to the implementation of the bio-engineered regional stormwater channel as well as the necessary attenuation on site.
- ***Increased stormwater due to impervious surfaces***: This was identified to have a negative, **low** impact which could be mitigated through the implementation of the necessary attenuation on site which would ensure the post development flow was not greater than the pre-development levels.
- ***Decreased groundwater recharge due to impervious surfaces***: This was identified to have a negative, **low** impact which could be mitigated through the riparian buffer as well as the attenuation on site which would channel stormwater to areas where some infiltration to groundwater could take place.
- ***Impacts to erven due to wetland/drainage line features*** - The wetland feature identified on site is due to the existing poor stormwater management of the area. Firstly, due to the berm (which acts as a dam wall), stormwater that should flow down the drainage line is dammed and forced outward. Secondly, water from the south of the site is not managed and also feeds this wetland. As part of the development, the bio-engineered, stormwater channel will be completed and as such, the damming will no longer occur. In addition, the stormwater system will capture stormwater from the southern property. Further, as discussed with the Departmental officials on 3 September 2021, the site will be filled and will utilize raft foundations (or equivalent) which will therefore accommodate any subsurface flow that may occur. As the design incorporates this, the impact to the erven in that area is expected to be **low** after mitigation.

- Discussion regarding need for Additional Alternatives
  - The EIA Regulations, 2014 (as amended) do not prescribe the type of alternatives that need to be assessed. In this case, alternative layouts were assessed where the main differences between the proposal and alternative is the type of residential development. Whilst neither layout takes into account the wetland feature identified on site, it should be noted that that feature exists due to the existing poor stormwater management of the area.
    - Firstly, due to the berm (which acts as a dam wall), stormwater that should flow down the drainage line is dammed and forced outward.
    - Secondly, water from the south of the site is not managed and also feeds this feature.
  - As part of the development, the bio-engineered, stormwater channel will be completed and as such, the damming will no longer occur. In addition, the stormwater system will capture stormwater from the southern property. Therefore, even if this feature was included in the layout, it would no longer occur post development as the drivers of this area (poorly managed stormwater) would be managed through the

completed bio-engineered regional channel. Further, stormwater from the southern property will be captured as part of the internal stormwater pipes and released into the stormwater attenuation pond.

- In addition, if the wetland feature was removed from the development, it would take out around 10 units. This would seriously compromise the economic viability of the development and would effectively sterilize the development. Further, the bio-regional stormwater channel would not be completed and stormwater in the area would remain an issue.
- The development of an alternative that removes the wetland feature from the development footprint is therefore not seen as viable and has not included in the assessment of alternatives.
- Further, as discussed with the Departmental officials on **3 September 2021**, the site will be filled and will utilize raft foundations (or equivalent) which will therefore accommodate any subsurface flow that may occur. This mitigation measure ensures that any remaining possible impacts are suitably managed. It is the EAP's opinion that this mitigation measure is of utmost importance to either layout alternative and, as such, the type of foundations have not been included as an alternative because they are an important recommendation included within this Application which must be undertaken regardless of which layout is approved.

- Additional Mitigation Measure:
  - As agreed at the meeting with the Wetland Specialist, the following additional mitigation measure has been added to the EMPr and is also included as a recommendation of the EAP:
    - Fill to be utilized together with raft foundations (or equivalent) in order to accommodate and preserve the subterranean flow driver.

3. Water Services

The estimated water demand to be generated by the proposed development is 46.5 kl per day with a peak water consumption of 2.24 litres per second (calculated as recommended by the “Guidelines for Human Settlement Planning and Design” (The Red Book), as published by the CSIR).

The internal water reticulation will comprise of a series of 75mm diameter to 110mm diameter Class 12 uPVC (Z-lok) water pipes extending into the development in a ring feed layout. No new internal servitudes need to be registered as all services will be accommodated within internal road reserve areas.

Each stand will be provided with a water connection and water meter by Johannesburg water in the positions indicated in the water layout drawing. This service will be handed over to Johannesburg Water on completion.

The internal reticulation will connect to an existing 90mm diameter water main located in the Frederick Road, road reserve area, on the north-western boundary of the development.

Please refer to **Figure 3** for the Water Services Layout for the proposed development which shows the proposed internal reticulation and connection. A copy of the Outline Scheme Report is included in **Appendix G**.

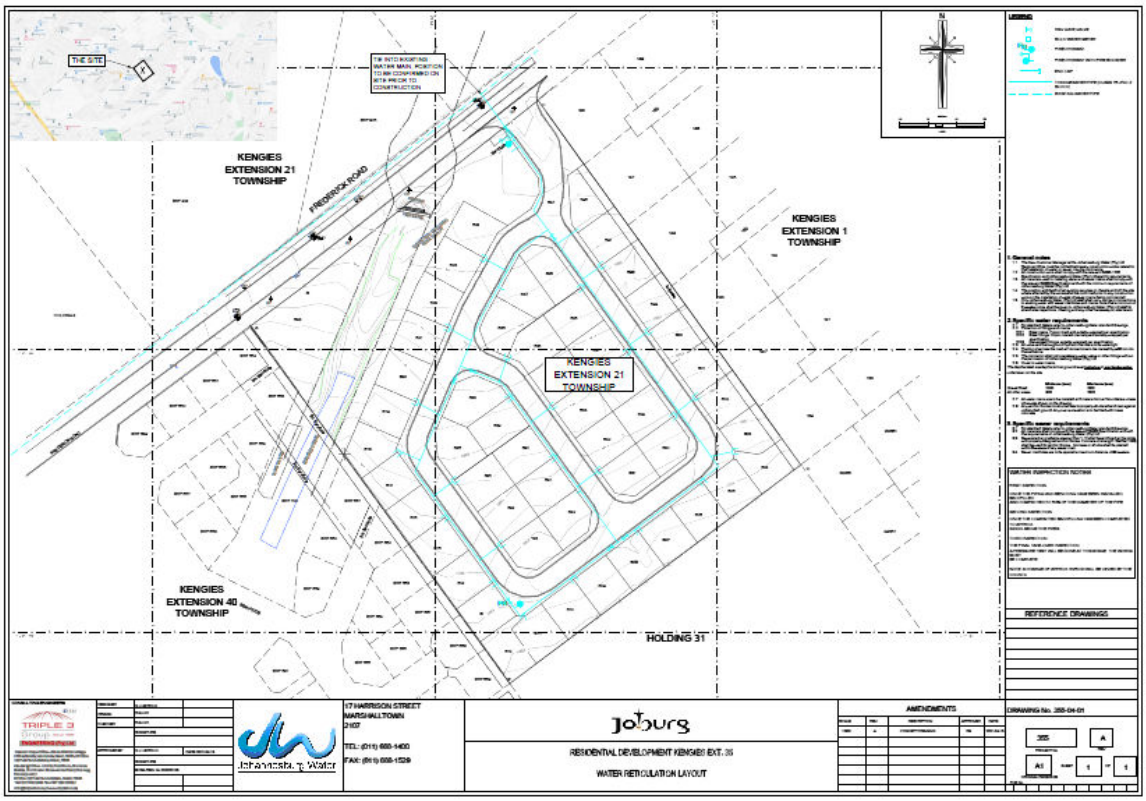


Figure 3: Water

4. Sewer Services

The estimated sewerage flow to be generated by the proposed development is 37.2 kl per day with a peak sewer flow of 1.11 litres per second (calculated as required by the Red Book for Engineering Services).

The internal sewer reticulation will be made up of 160mm dia. Class 34 uPVC solid wall (or similar approved) pipeline with 110mm dia. house connections. Manholes and spacing thereof will comply with the relevant SANS 1200 specifications. This service will be handed over to Johannesburg Water on completion.

The proposed sewer system will be connected to a new manhole in the existing sewer system. The manhole will is located in the Fredrick Road, road reserve area and has sufficient capacity to accommodate the development.

Please refer to **Figure 4** for the Sewer Services Layout for the proposed development which shows the proposed internal reticulation and connection to existing services. A copy of the Outline Scheme Report is included in **Appendix G**.

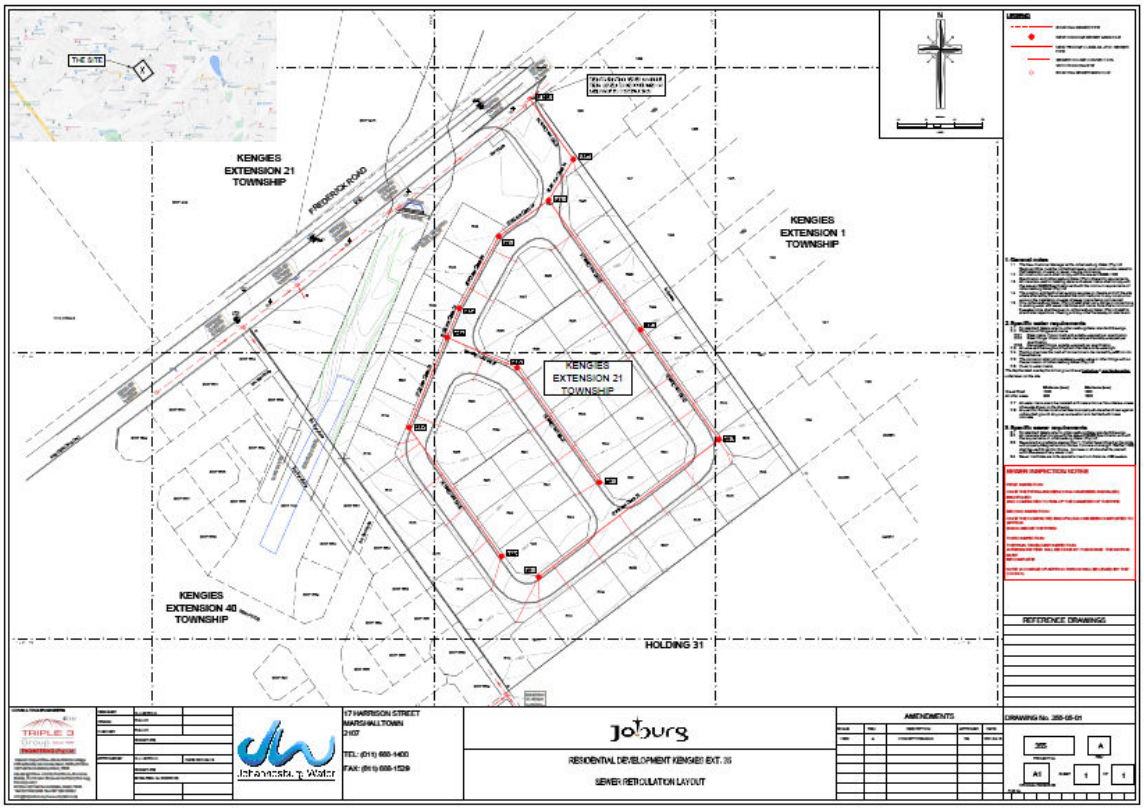


Figure 4: Sewer

5. Internal Stormwater and linkage to the Regional Stormwater System

5.1. Regional Stormwater System

In order to understand the proposed development's stormwater management system, it is important to look at the regional system as a whole. A brief summary of the "*The Report on Best Management Practices for Stormwater Management and Erosion Prevention and Sediment Control*" by Triple 3 Engineering Solutions (Pty) Ltd (2008), is therefore provided for context and describes the historical issues that existed at the time and **the proposed regional system which has already been implemented throughout, with the development of Kengies Extension 35, being the last section to be developed.** A copy of the report is included in as an annexure to the Stormwater Management Plan (**Appendix G**).

In summary, the report noted that the area was impacted by a number of historical issues such as:

- Deposited silt on downstream properties and estates;
- Erosion;

- Unnatural flooding scenarios;
- Inconsistent flood plane modeling by engineers;
- Concentration of up stream stormwater run off causing erosion ditches; and
- Variable flood lines resulting for the need to convey the entire 1: 100 year flood underneath the road through a culvert.

At this time, the wetland health was assessed in the area and found to be severely disturbed and in some areas, destroyed. As such, it was decided to utilize environmentally sensitive canalization to manage stormwater. The design aimed to:

- Maintain as accurately as possible natural water infiltration and flows
- Use water sensitive urban design principals
- Use best practice urban stormwater quality and quantity management
- Address temporary and permanent erosion prevention, sediment control and control of other development activities that can cause pollution

The regional bio-engineered stormwater drainage corridor starts where the concentration of stormwater occurs underneath the K-56 road reserve. From there it will be a 10m wide trapezoidal bioengineered channel across holding 37 (Canal View on Richard Road).

A stilling basin then mitigates the energy, and the channel width increases to between 24m and 70m in areas (due to the fact that the attenuation ponds of the various developments will be incorporated into the stormwater corridor reserve). These attenuation ponds as well as the three in-stream stilling basins will be vegetated and designed to act as wetlands.

Once the corridor reaches Frederick road (at Kengies Extension 35), it will coincide with the natural flood line. From there onwards, no canalization will be used. The regional channel layout for the Kengies area is provided in **Figure 5**. Please refer to **Appendix A** for a larger drawing of this layout.

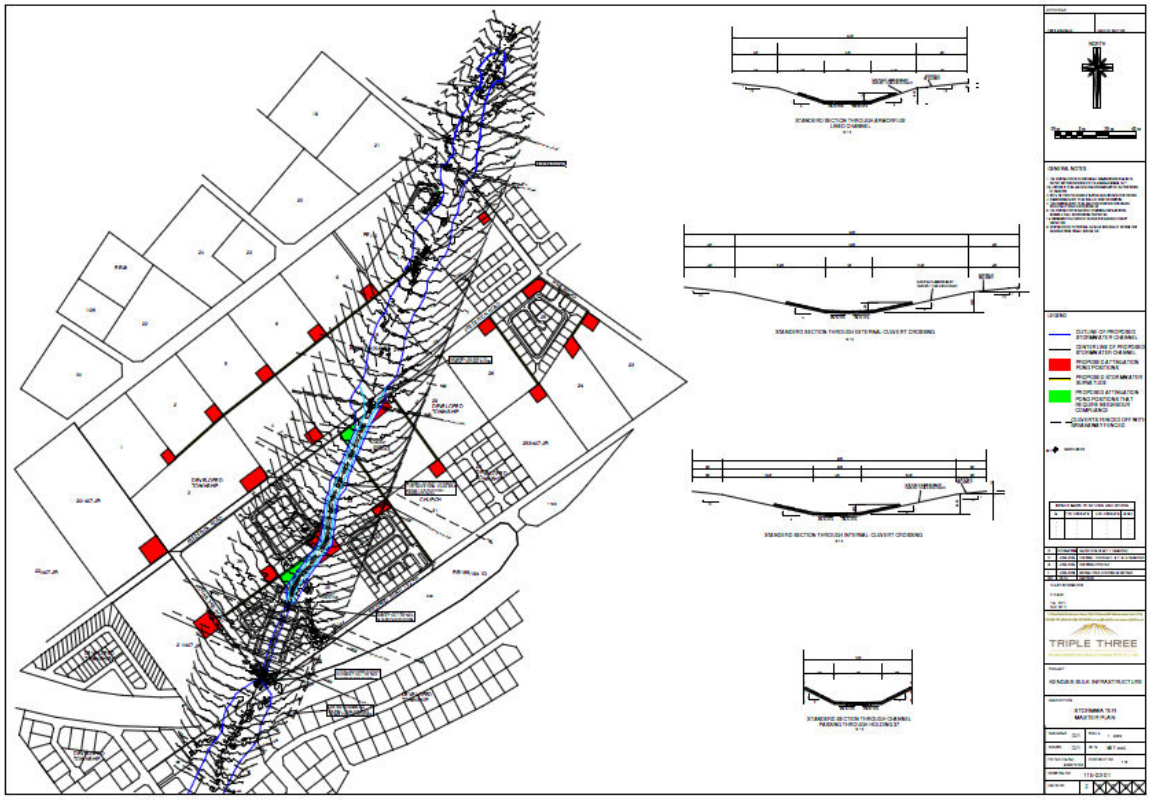


Figure 5: Kengies Regional Channel Layout (Triple 3 Engineering, 2008)

The design of the bio-engineered channel is provided in **Figure 6** and includes:

- Erosion control blanket (Geo fabric)
- Armoring which comprises the Armoflex DN 140 system which has big holes in each block and allows the natural water infiltration to remain at the same levels. Furthermore it allows for the movement of micro organisms and other bio diversities through the medium.
- Finally the holes in the armoring will be filled with in-situ topsoil, and vegetation.

Please refer to **Appendix C** for A3 versions of these drawings.

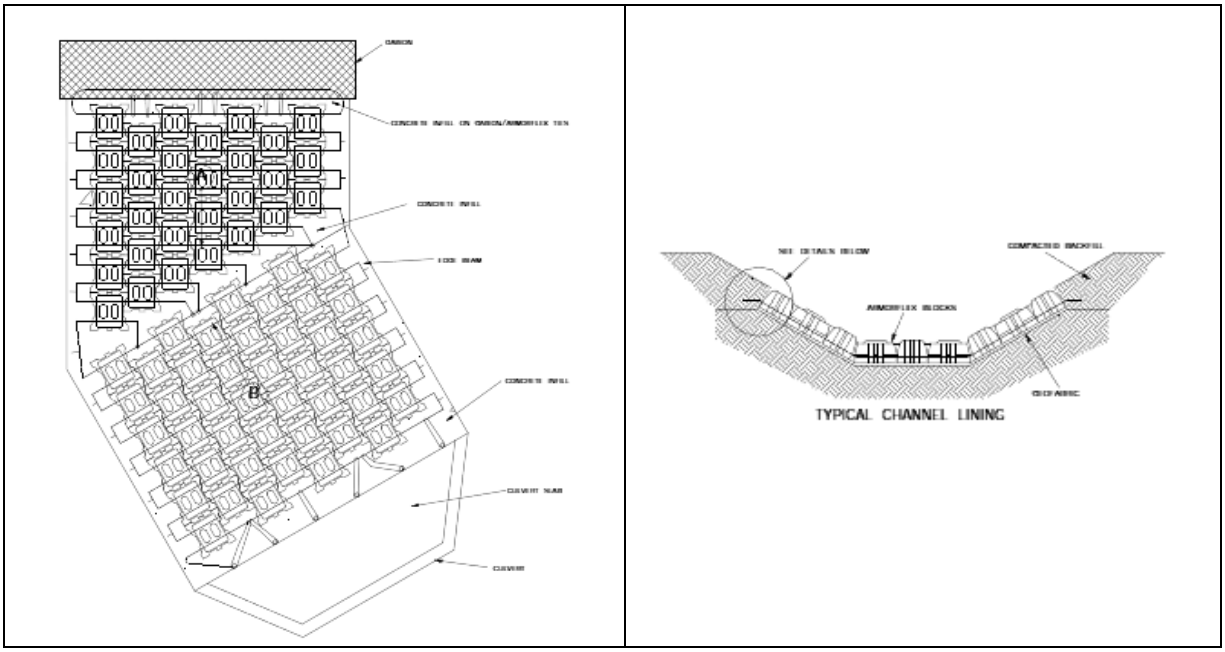


Figure 6: Armoflex plan and typical channel lining

As part of the development of the regional bio-engineered stormwater channel, the following approvals were obtained:

- Local Authority Concept and JRA Approval
  - The proposed stormwater canalization was presented to City of Johannesburg and Johannesburg Roads Agency (JRA) and was accepted as a solution to the stormwater issues in the area. Construction drawings was subsequently submitted and approved by the JRA.
- Water Use Licence Application (WULA)
  - The necessary Water Use License Application (WULA) process was undertaken was issued for the construction and related work in terms of the wetland and regional stormwater management system for both Kengies Ext 35 and 40 (issued during May 2012 and updated during December 2020)
- Gauteng Department of Agriculture and Rural Development (GDARD)
  - It was decided that each township will obtain GDARD approval for their section of the work. This has been undertaken and all only section of the system requiring canalization is Kengies Ext 35 (this project).

As mentioned, this bio-engineered stormwater channel has been put in place and Kengies Extension 35 is the last site within the plan that requires development. Photographs from an adjacent property which utilized this technology in line with the regional stormwater plan is provided in **Figure 7** and provides an indication of the planned channel that will be put in place on Kengies Extension 35.

Figure 7: Photograph of armoflex channel on adjacent property

It should be noted that Environmental Authorisation for the proposed development of the Kengies Extension 35, therefore includes the finalisation of this regional plan and the canalisation of the watercourse. The completion of the system will ensure proper stormwater management in the area.

5.2. Internal Stormwater

Details of the proposed internal stormwater system is provided in the sections that follow. The internal stormwater layout is provided in **Figure 8**. A copy of the Outline Scheme Report and Stormwater Management Plan is included in **Appendix G**.

5.2.1. Stormwater Canal on Kengies Extension 35

A new stormwater canal will be constructed diagonally across the north-western corner of the proposed development (*please refer to **Section 4.1**. for more information on this as it forms part of the bio-engineered regional channel*). The external stormwater emanating from the neighbouring stand (Holding 31 Kengies AH) south of the development, will be collected, and conveyed through this township to the regional canal referred to above. Allowance had been made to convey the predeveloped 1:5 year storm of Holding 31, through the underground piped system whilst the 1:100 year storm will be accommodated overland. A new 3m wide stormwater servitude will be registered. On completion a Section 21 Company will be established amongst the Developers adjoining the canalized system, to maintain the canal.

5.2.2. Stormwater Attenuation

The Internal Storm water from the development will discharge into a new stormwater attenuation pond which will be constructed close to the northern corner of the development. From here, storm water will then discharge into the channel through a pipe system. The attenuation dam will be designed to absorb the difference in flow between the pre-development and post development stormwater runoff,

for both the 1 in 5 and 1 in 25 years return period storms. In addition, the 1: 100 year storm will safely pass through it. The pond will be designed as an artificial wetland so as to enhance the adjacent wetland zone. On completion, the owners of the development shall maintain the attenuation pond.

5.2.3. Internal Stormwater Design:

Stormwater drainage will be managed on surface, where after an underground piped drainage system will be installed for the 1 in 5 year return period storm. Allowance has been made for the 1 in 100 year storm to traverse the site in defined channels (which includes the internal road system) without causing any damages to buildings. The stormwater emanating from the site will be conveyed in a piped system to an attenuation dam. On completion, the owners of the development (Home Owners Association) will take over the maintenance of the internal stormwater system.

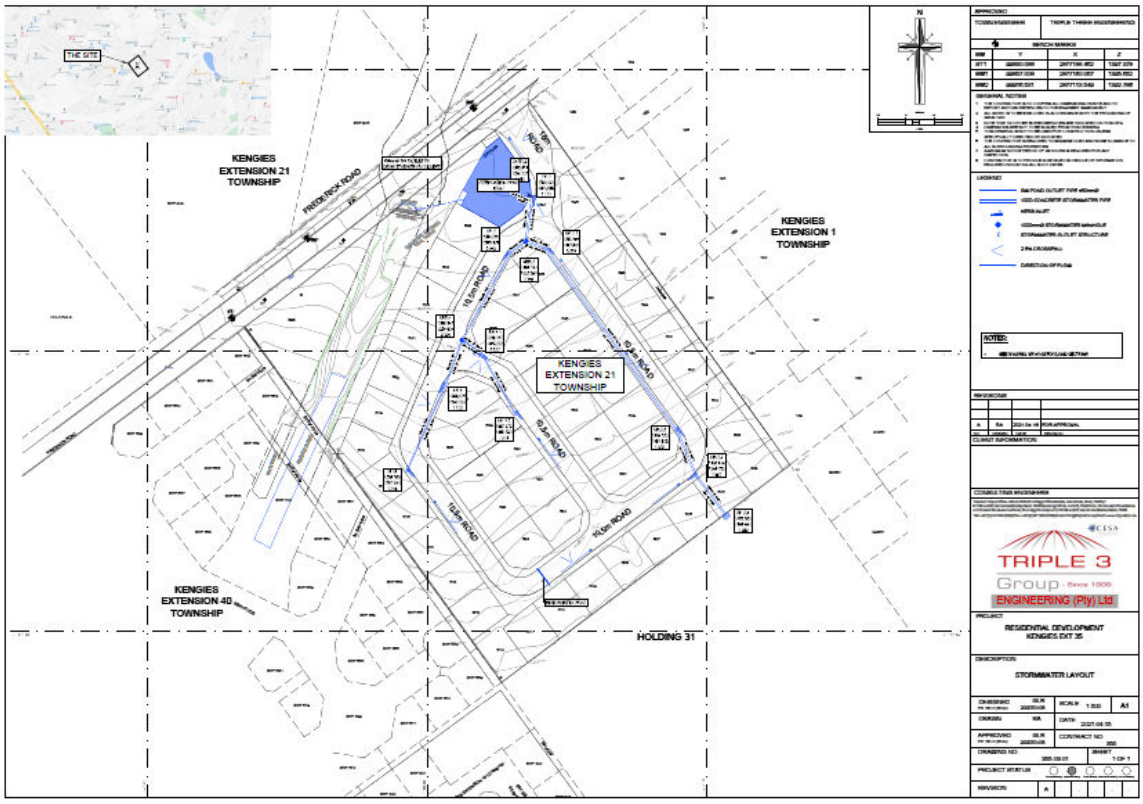


Figure 8: Stormwater

6. Access, Roads and Parking

A Traffic Impact Assessment (TIA) was conducted by Arup Transport Planning for the proposed development in 2006. However, due to the fact that that the study was undertaken 15 years ago, a new traffic statement had recently been done by Mariteng Consulting Engineers and is included in **Appendix G**.

The study concluded that the proposed residential development will generate 51 trips, during the weekday morning and weekday afternoon peak hours respectively. On this basis, no external road upgrade is required to accommodate these development trips.

The site access arrangements are provided in **Figure 9** and include the following:

- Access from Frederick Road;
- Two inbound lanes (total width 6.0m). Note, in the event the lanes are separated in future by means of an island, then one lane to have a minimum width of 4.5m;
- One outbound lane, with a minimum width of 4.5m;
- A minimum throat length of 10.0m;
- Bellmouth radii intersecting with council road is 10.0m; and
- No provision made for any overhead structures. Should the need arise in future, then a minimum vertical clearance of 5.2m is required.

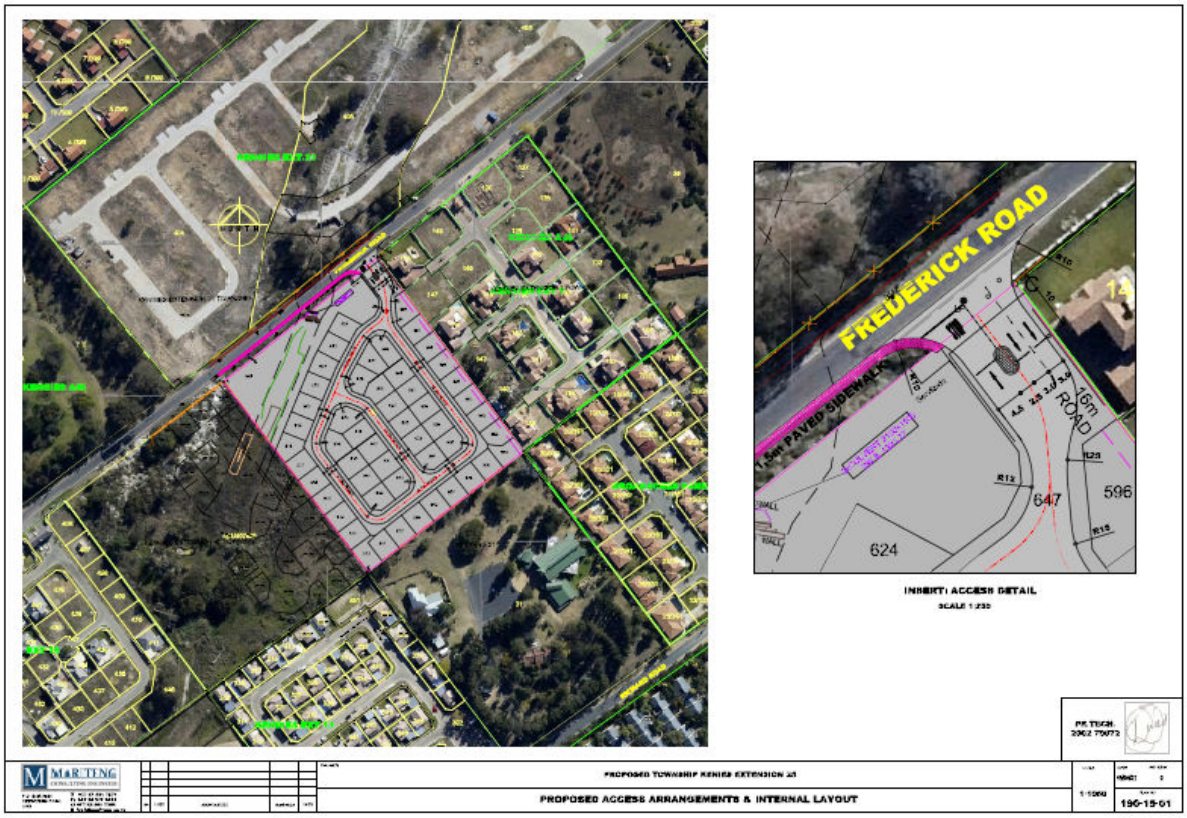


Figure 9: Internal Roads and Access

7. Alternatives

Two alternatives are assessed as part of the Basic Assessment Process in addition to the No-Go Alternative. These included:

- Proposal; and
- Alternative 1.

The main differences between the proposal and alternative is the type of residential development.

In the Proposal, a cluster development will take place and will include the development of 51 separate erven. In contrast, with the alternative layout, a sectional title approach would be followed and as such only one Residential 2 erf would be developed. A number of sectional title units would be put in place within the single erf. The main difference between the two is market related as the cluster (full title unit) approach is more acceptable to the area with many of the complexes in the area following the cluster approach.

Sensitivity maps have been compiled for both the proposal and alternatives and are included in **Appendix A3**. From an environmental sensitivity perspective, there is no difference between the two layouts. However, as mentioned, the Proposal is preferred as it increases the benefits associated with the development from a socio-economic perspective as it is line with the market requirements of the area.

As part of the initial comments provided by the Department on 12 August 2021, a request for an additional alternative which incorporated the wetland feature was made. In regard to this, the following is noted:

According to the 2014 EIA Regulations, alternatives are defined as:

"Different means of meeting the general purpose and requirements of the activity, which may include alternatives to the-

(a) property on which or location where the activity is proposed to be undertaken;
(b) type of activity to be undertaken;
(c) design or layout of the activity;
(d) technology to be used in the activity; or
(e) operational aspects of the activity;

and includes the option of not implementing the activity"

The Regulations do not therefore prescribe the type of alternatives that need to be assessed. In this case, alternative layouts were assessed where the main differences between the proposal and alternative is the type of residential development.

Whilst neither layout takes into account the wetland feature identified on site, it should be noted that that feature exists due to the existing poor stormwater management of the area.

- Firstly, due to the berm (which acts as a dam wall), stormwater that should flow down the drainage line is dammed and forced outward.
- Secondly, water from the south of the site is not managed and also feeds this feature.

As part of the development, the bio-engineered, stormwater channel will be completed and as such, the damming will no longer occur. In addition, the stormwater system will capture stormwater from the southern property. Therefore, even if this feature was included in the layout, it would no longer occur post development as the main driver of this area (poorly managed stormwater) would be managed through the completed bio-engineered regional channel.

Further, stormwater from the southern property will be captured as part of the internal stormwater pipes and released into the stormwater attenuation pond.

In addition, if the wetland feature was removed from the development, it would take out around 10 units. This would seriously compromise the economic viability of the development and would effectively sterilize the development. This would have negative multiplier effects as there would be a loss of approximately R95 million investment in the area. There would also be a loss of the associated employment opportunities (200 construction related (temporary) jobs and 31 operational (permanent) jobs).

Further, the bio-regional stormwater channel would not be completed and stormwater in the area would remain an issue.

The development of an alternative that removes the wetland feature from the development footprint is therefore not seen as viable and has not included in the assessment of alternatives.

8. Listed Activities

In terms of the EIA Regulations and Listed Activities, 2014, the activities that are triggered under the Listing Notices for this proposed development are provided in **Table 1.**

Table 1: Listed Activities

Listing Notice and Activity	Description of Listed Activity	Interpretation
GN R 983 4 December 2014 (As amended) 9	*The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or **storm water**—* *(i) with an internal diameter of **0,36** metres or more; or* *(ii) with a peak throughput of 120 litres per second or more;* *excluding where—* *(a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or* *(b) where such development will occur within an urban area.*	The proposed stormwater system for Kengies Ext 35 involves the development of just over 1000m of stormwater pipes and drainage lines. The stormwater pipelines vary between 300mm and 600mm in diameter.

Listing Notice and Activity	Description of Listed Activity	Interpretation
GN R 983 4 December 2014 (As amended) 12	*The development of—* *(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or* *(ii)* ***infrastructure or structures*** *with a physical footprint of 100 square metres or more;* *where such development occurs—* *(a)* ***within a watercourse****;* *(b) in front of a development setback; or* *(c) if no development setback exists,* ***within 32 metres*** *of a watercourse, measured from the edge of a watercourse; —* *excluding—* *(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;* *(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;* *(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;* *(dd) where such development occurs within an urban area;* *(ee) where such development occurs within existing roads, road reserves or railway line reserves; or* *(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.*	The proposed development includes the finalisation of this Bio-engineered regional stormwater system for the area and the canalisation of the watercourse. In addition, infrastructure of more than 100m^2 will be developed within 32m of a watercourse.
GN R 983 4 December 2014 (As amended) 19	*The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;* *but excluding where such infilling, depositing, dredging, excavation, removal or moving—* *(a) will occur behind a development setback;* *(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;* *(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;* *(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or* *(e) where such development is related to the development of a port or harbour, in*	The proposed development includes the finalisation of this Bio-engineered regional stormwater system for the area and the canalisation of the watercourse and thus infilling and dredging of the watercourse will take place.

Listing Notice and Activity	Description of Listed Activity	Interpretation
	which case activity 26 in Listing Notice 2 of 2014 applies.	
GN R 983 4 December 2014 (As amended) 27	*The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—* *(i) the undertaking of a linear activity; or* *(ii) maintenance purposes undertaken in accordance with a maintenance management plan.*	The proposed development is approximately 2 ha in extent. Whilst the site is degraded, more than 1 ha of indigenous vegetation will be cleared.
GN R 985 4 December 2014 4 (c)(iv)(v)(vi)	*The development of a road wider than 4 metres with a reserve less than 13,5 metres.* *(c) Gauteng* *i. A protected area identified in terms of NEMPAA, excluding conservancies;* *ii. National Protected Area Expansion Strategy Focus Areas;* *iii. Gauteng Protected Area Expansion Priority Areas;* *iv**. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;*** ***v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);*** *vi**. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority**;* *vii. Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas;* *viii. Important Bird and Biodiversity Area (IBA);* *ix. Sites or areas identified in terms of an international convention;* *x. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;* *xi. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or* *xii. Sites zoned for conservation use or public open space or equivalent zoning*	The internal road within the development will be 5m in width and will occur in a 10.5m wide servitude. The site, whilst degraded occurs partly within an Ecological Support Area (ESA), original extent of Egoli Granite Grassland and Zone 2 of the GPEMF.
GN R 985 4 December 2014 12 (c)(i)(ii)	*The clearance of an area of 300m^2 or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.*	The proposed development is approximately 2 ha in extent and thus more than 300m^2 of vegetation will be cleared. This

Listing Notice and Activity	Description of Listed Activity	Interpretation
	C. Gauteng ***i. Within any critically endangered or endangered ecosystem listed in terms of Section 52 of NEMBA or prior to the publication of such list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment, 2004****.* *ii.* ***Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans****;* *iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.*	vegetation partly occurs in an Ecological Support Area and the original extent of Egoli Granite Grassland.
GN R 985 4 December 2014 14 (ii) (a)(c)(i)(iv)(v)(vi)	*The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii)* ***infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs****—(a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure* *or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.* *Gauteng* *i. A protected area identified in terms of NEMPAA, excluding conservancies;* *ii. National Protected Area Expansion Strategy Focus Areas;* *iii. Gauteng Protected Area Expansion Priority Areas;* ***iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;*** ***v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);*** *vi****. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;*** *vii. Sites or areas identified in terms of an international convention;* *viii. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;* *ix. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or* *x. Sites zoned for conservation use or public open space or equivalent zoning.*	The proposed development includes the finalisation of this Bio-engineered regional stormwater system for the area and the canalisation of the watercourse. In addition, infrastructure of more than 100m^2 will be developed within 32m of a watercourse. This site partly occurs in an Ecological Support Area and the original extent of Egoli Granite Grassland as well as Zone 2 of the GPEMF.

9. Other Authorisations required

A Water Use Licence (WUL) was obtained previously for the development of the bio-regional stormwater channel on Kengies Extension 35 and 40 and is contained in **Appendix F**. In addition, a General Authorisation for Section 21(c) and (i) uses will be obtained for the development.

A Heritage Impact Assessment has also been undertaken and will be submitted to the South African Heritage Resources Agency (SAHRA) for comment in terms of Section 38 of National Heritage Resources Act, 1999 (Act No. 25 of 1999).

10. Need and Desirability

In terms of the need and desirability of the project, it should be noted that the proposed development will further the objectives of the Region A Regional Spatial Development Plan (RSDF) by creating intensification of developments within Sub Area 4 (characterised by high-density urban residential components and well-defined mixed-use nodes). Objectives for this area include "*Promote the development of a sustainable spatial structure to ensure the efficiency, compatibility and integration of various land uses in the sub area*." In line with this, the RSDF includes the following intervention: "*Support land use intensification and mixed-use developments within demarcated nodal areas in the sub area*." The proposed development is therefore in line with the RSDF.

In addition, the site occurs within the Urban Development Boundary identified in Region A RDSF and thus residential infill is promoted.

The development also occurs within the Consolidation Zone within the City of Johannesburg Spatial Development Framework 2040. According to the SDF, this area must be the focus of urban consolidation, infrastructure maintenance, controlled growth, urban management, addressing backlogs (in social and hard infrastructure) and structural positioning for medium to longer term growth. The policy intent in these areas would be to ensure existing and future development proposals are aligned as far as possible with the broader intent of the SDF, specifically in terms of consolidating and diversifying development around existing activity nodes and public transport infrastructure. In this broad area, new development that does not require bulk infrastructure upgrades should be supported. The proposed Kengies Ext 35, does not require bulk infrastructure upgrades and is thus in line with the objectives for the consolidation zone.

Lastly, a large extent of the proposed development falls within Zone 1: Urban Development Boundary (UDB) of the Gauteng Provincial Environmental Management Framework (GPEMF). The intention of this zone is "*to streamline urban development activities in it and to promote development infill, densification and concentration of urban development within the urban development zones as defined in the COJ Spatial Development Framework (GSDF), in order to establish a more effective and efficient city region that will minimise urban sprawl into rural areas*."

Whilst a section, does fall within Zone 2, this section relates to the watercourse on site. As discussed above, a regional bio-engineered stormwater system has been developed for the Kengies area and this property is the last section which requires development. The aim of this bio-regional stormwater system is to

- Maintain as accurately as possible natural water infiltration and flows
- Use water sensitive urban design principals
- Use best practice urban stormwater quality and quantity management
- Address temporary and permanent erosion prevention, sediment control and control of other development activities that can cause pollution

Without the finalisation of this bio-regional stormwater system (which needs to function as a whole) and the necessary attenuation, the area will continue to experience stormwater capacity issues which will impact on neighbours downstream of the site.

Lastly from a socio-economic perspective, the proposed development will benefit the area as it will result in approximately R95 million investment in the area which will have numerous economic multiplier effects that will benefit the region positively. The proposed development will also result in 200 construction related (temporary) jobs and 31 operational (permanent) jobs.

11. Public Participation

11.1. Initial Public Participation

Initial Public Participation was undertaken in terms of the Environmental Impact Assessment (EIA) Regulations, 2014.

- A potential I&AP database was compiled and included Adjacent Landowners, Ward Councillors, Authorities and Potential I&APs.
- A Background Information Document (BID) was compiled and included information on the proposed development, services and roads and included a map showing all these components.
- An advert was placed in the Star Newspaper on 10 May 2021 to notify potential Interested and Affected Parties (I&APs) of the project and to request that they register they register their interest in the project.
- Site notices and notification of adjacent landowners and other I&APs also took place via email and hand delivery and the BID was provided as part of this.
- All registered I&APs were added to the I&AP database and all comments received added to the Comments and Responses Report.

In line with the new Permitting Regulations (GN 650 of 5 June 2020), a Public Participation Plan was compiled and submitted to GDARD on 3 May 2021.

A number of requests for registration/comments were made by the following:

- S Mhlongo – *Request registration*
- E. Allers (City of Johannesburg) - *Request registration*
- M. de Groen (Aqualinks) – *Stormwater and impact to cane rats*
- W Swart (Evergreen Lifestyle Village) – *Stormwater*
- C Bedeker (Evergreen Property Investments) – *Stormwater*
- S Newman (Evergreen Lifestyle Village) – *request registration*
- E Reyneke (the Willows) – *Stormwater*

All requests for registration/comments are provided in **Appendix E4**. Further, all comments received during the initial registration periods have been added to the Comments and Responses Report in **Appendix E6**.

11.2. Public Review of the Basic Assessment Report

In addition to the above, notification of the review of the Basic Assessment Report (*this document*) has been undertaken as follows:

- Emails and/or Whatsapp messages were sent to all the registered I&APs to notify them of the 30-day review period on 25 June 2021.
- As applicable, electronic copies (USB Flash drive) or PDF uploads of the BAR were submitted to competent and commenting authorities including the Gauteng Department of Agriculture and Rural Development (GDARD), the City of Johannesburg (CoJ), South African Heritage Resources Agency (SAHRA), the Provincial Heritage Resources Agency of Gauteng (PHRA-G) and Department of Human Settlements, Water and Sanitation (DHSWS) on **25 June 2021**.
- A 30-day public review was provided between **25 June 2021 to 26 July 2021.**

During the review period of the BAR, the main comments received were from the City of Johannesburg and GDARD. A number of smaller comments regarding requests for information were also noted and dealt with as required.

All comments received are captured in the Comments and Responses Report in **Appendix E6 and copies are included in Appendix E7**. However, in summary, the main comments and concerns include the following:

- Confirmation of receipt;
- Request for further information;
- Requests for additional links to the report;
- Support of the proposed bio-engineered stormwater channel from COJ;
- Confirmation that the stormwater management of the development must comply to a number of factors;

- Concern regarding the impact to the wetland feature and associated requests for changes to the layout from GDARD;
- Request for clarification regarding the date of construction of stormwater infrastructure from GDARD;
- Requests for additional impacts to be assessed from GDARD;
- Queries regarding the alternatives assessed from GDARD;
- Support of the proposed bio-engineered stormwater channel from GDARD; and
- Confirmation from SAHRA that they have no objections to the proposed development.

In order to deal with these, a consultation meeting was held with GDARD on 3 September 2021. Minutes of this meeting are included in **Appendix E5.**

As a result of this meeting, the BAR and EMPr where necessary and is submitted to GDARD for review and decision making. All registered I&APs will be notified of the decision.

12. Site Verification Assessment

In line with the recent Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Section 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998 when applying for Environmental Authorisation (GN 320 of 20 March 2020), a Site Sensitivity Verification is required prior to commencing with the specialist assessment and aims to confirm the sensitivity of the site identified by the National Screening Tool. A copy of this Site Verification Assessment is included in **Appendix I3**.

Based on the findings of this verification assessment, the following specialist studies have been undertaken and are summarised in the section to follow:

- Baseline Ecological Habitat Assessment;
- Wetland Verification; and
- Heritage Impact Assessment.

13. Environmental Sensitivity

Copies of the specialist studies are included in **Annexure G**. In summary, the following was noted:

- Baseline Ecological Habitat Assessment
  - From a desktop perspective, the proposed development occurs within the Egoli Granite Grassland (Endangered) vegetation type. According to the Gauteng Conservation Plan, the proposed development footprint traverses a small section of Ecological Support Area and Zone 2of the Gauteng Provincial Environmental Management Framework (GPEMF).

- The site was actively surveyed to determine the current status of the habitats on site. Three main habitat types were identified within the study site, namely:
    - Disturbed vegetation;
    - Highly modified wetland; and
    - Grassland.
- The habitats identified were identified as having a low to very low sensitivity.
- No Species of Conservation Concern was identified on site.
- In conclusion, the specialist noted that the proposed development is unlikely to have a high impact on the study site due to low to very low sensitivity on site. Aspects such as human activities in and around the study site, presence of alien invasive species on site, lack of habitat for most fauna species and the presence of feral animals in the area have impacted on the existing sensitivity. All recommendations and mitigation measures, with regards to the fauna and flora on site, should be well managed pre -, during and post of the construction activities.

- Heritage Impact Assessment
    - The study area was assessed both on desktop level and by a field survey. The field survey was conducted as a non-intrusive pedestrian survey to cover the extent of the study area.
    - The Study found that the study area is located in a densely developed residential area and surrounding developments and road construction as well as dumping activities would have impacted on surface evidence of heritage site if any ever occurred in the area.
    - A visual and physical inspection of the proposed site recorded no structures older than 60 years or archaeological finds of significance.
    - Based on the SAHRA Paleontological map the area is of insignificant paleontological sensitivity and no further studies are required for this aspect.
    - Therefore, the study concluded that no significant heritage resources will be affected by the development and therefore the impact of the project on heritage resources are low and the project can commence based on the implementation of the recommendations in this report and the approval of SAHRA. The main recommendation included:
        - Implementation of a chance find procedure for the project
    - The specialist also noted that both the proposed and alternative layout is acceptable from a heritage point of view.

- Wetland Verification
    - The Wetland Specialist found that the site is highly impacted on by stormwater influx onto the site.

- The stormwater is captured from external sources and released unmanaged onto the subject site (Kengies Ext 35) from the south-eastern development.
- The incomplete regional bio-engineered stormwater drainage channel and associated remnants inclusive of a bermed area to the east of the uncompleted channel and depression area has contributed to the development of simulated wetland conditions in this area.
- This is a combination of sheet flow related to stormwater and subsurface interflow culminating next to the incomplete regional bio-engineered stormwater drainage channel.
- The additional water input from the channel and poor performance of the uncompleted bio-engineered stormwater drainage channel further contributes to water influx in the section next to the channel.
- Stormwater management is therefore of critical importance to secure and protect the site as well as the downstream channel and total system functionality. The finalisation of the bio-engineered stormwater drainage channel is thus essential and supported from a wetland and aquatic resource management point of view. Development, in fill, next to the trench area will be most beneficial to retain interflow. This combined with raft foundation (or similar) will preserve the subterranean flow driver.
- The system is un urban system that is functioning with the already completed phases of the channel. The completion is thus imperative in the holistic and regional management approach. The buffering of the system should tie in with the adjacent completed system. The bio-engineered stormwater drainage channel and associated buffer would span approximately 23m and should be rehabilitated to tie in with the existing features. This is totally possible as the adjacent Kengies Ext 40 was just recently completed by the applicant.
- It must be noted that the required Water Use License (WUL) was issued for the required work related to the regional bio-engineered stormwater drainage channel. The conditions of the Water Use License (WUL) must be adhered too. Further, the area must utilize filling and raft foundations (or equivalent) in order to allow for any subsurface flow.
- For this reason, it can be supported that the development may go-ahead and the bio-engineered stormwater drainage channel must be completed as part of the development of Kengies Ext 35.

A compositive sensitivity map has been compiled on the basis of these studies and is provided in **Figure 10** below. Overall, the site has **a low to very low sensitivity**. An A3 version of this map is provided in Appendix A3.

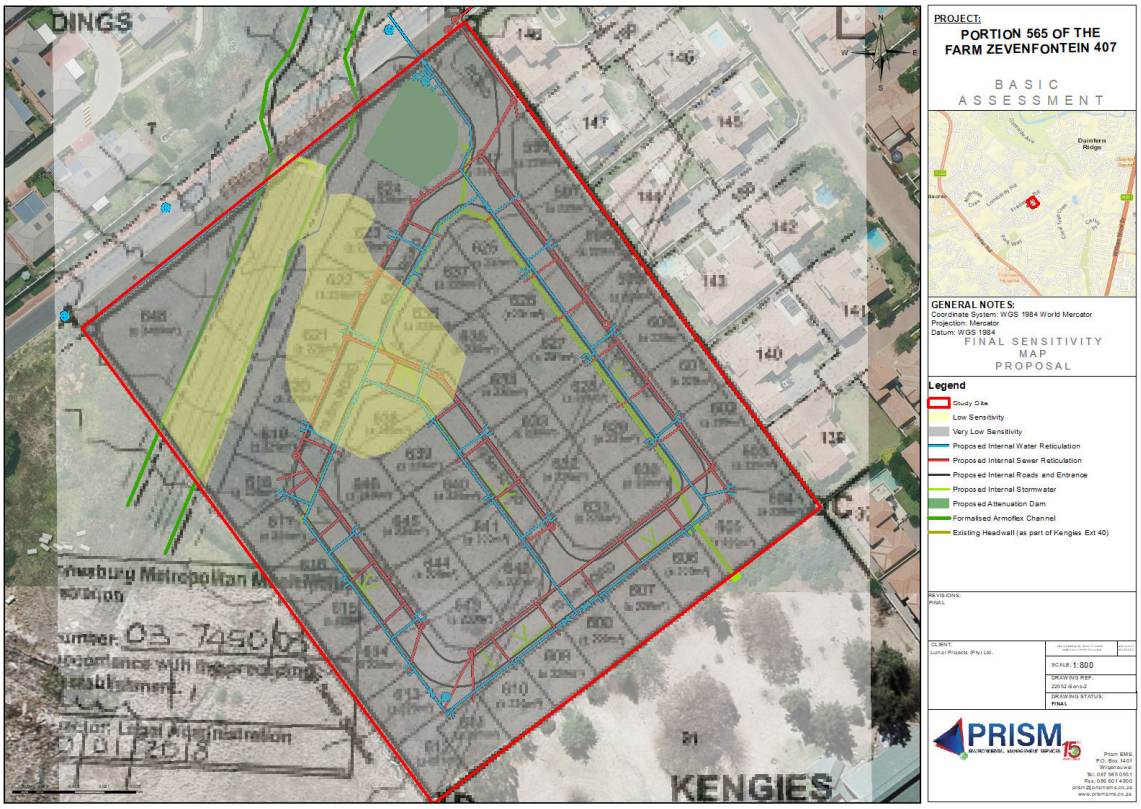


Figure 10: Final Sensitivity Map

It should be noted that the wetland feature is identified as having a **low** sensitivity. This is due to the fact that the feature exists due to the existing poor stormwater management of the area.

- Firstly, due to the berm (which acts as a dam wall), stormwater that should flow down the drainage line is dammed and forced outward.
- Secondly, water from the south of the site is not managed and also feeds this feature.

As part of the initial comments provided by the Department on 12 August 2021, a request for an additional alternative which incorporated the wetland feature was made. As part of the assessment of this comment. It was found that that as the bio-engineered, stormwater channel will be completed, the drivers of this area (poorly managed stormwater) would be removed.

In addition, if the wetland feature was removed from the development, it would take out around 10 units. This would seriously compromise the economic viability of the development and would effectively sterilize the development. This would have negative multiplier effects as there would be a loss of approximately R95 million investment in the area. There would also be a loss of the associated employment opportunities (200 construction related (temporary) jobs and 31 operational (permanent) jobs).

Further, the bio-regional stormwater channel would not be completed and stormwater in the area would remain an issue.

The development of an alternative that removes the wetland feature was not seen as viable. This is corroborated by the sensitivity analysis which indicates that the area has a low sensitivity.

In addition, a number of technical studies are also included:

- Outline Scheme Report;
- Stormwater Management Plan; and
- Traffic Impact Statement.

14. Impact Assessment

A detailed impact assessment has been undertaken and assessed the types of impact, duration of impacts, likelihood of potential impacts as well as the overall significance of the impact occurring (**Appendix I**). Most impacts have a low significance once mitigation measures were applied.

A detailed Environmental Management Programme (EMPr) has been compiled and is included in **Appendix H**. Mitigation measures recommended by the specialists as well as best practice measures have been included in this document which must be implemented.

15. Recommendation of the Practitioner

Based on the findings of the specialist studies and impact assessment and taking into account the successful implementation of the EMPr, it is felt that the **Proposal should be authorised.** The reasons for this opinion are as follows:

- The proposal involves the development of Kengies Extension 35 as a cluster development which is in line with the market requirements for the area. It thus has an increased socio-economic benefit for the area.

The following are recommended conditions for inclusion in the EA:

- The **proposed layout** should be implemented;
- The **proposed bio-engineered stormwater channel** must be completed on the site so to ensure proper stormwater management in the area.
- **The site should be filled and raft foundations (or equivalent) be utilized so to allow for any subsurface flow.**
- A copy of the Final SDP must be submitted to GDARD once finalised as part of the townplanning process.
- An Environmental Control Officer (ECO) should be appointed to ensure compliance to the authorisation and EMPr. Weekly construction monitoring together with six-monthly full environmental audits is recommended;
- As required by the Baseline Ecological Habitat Assessment, the following should be undertaken:

- Minimising the further loss of fauna and flora habitat by strictly keeping construction activities within the footprint of the proposed study area.
- All construction activities including laydown areas and service roads should strictly be kept within the study area;
- A qualified environmental control officer (ECO) should be appointed during the construction phase. The ECO should during the pre-construction phase identify species that will be directly impacted during the construction phase. This includes species of fauna found during the construction phase.
- Areas on site that will be denuded during the construction phase should be vegetated with indigenous vegetation to prevent the loss of topsoil due to erosion activities such as wind and flooding; and
- An alien vegetation management plan for the site should be compilated and implemented throughout the construction phase.
- Should any fauna species be found during the construction phase, activities should stop until the specific species move away. Should the species not move away, a sufficient specialist should be consulted to implement the correct form of action (example ECO);
- A waste management plan should be compiled and implemented on site for any type of waste to be collected and stored adequately. It is also recommended that all waste on site should be removed on a weekly basis to prevent rodents and any other form of pest entering the site;
- No Trapping, killing or poisoning of any form of wildlife found on site is allowed;
- Measures should be put in place on site so that all employees are fully aware on how to handle a situation for when encountered by a species. The killing of any animals found on site, such as lizards, birds and even snakes should be strictly prohibited; and
- No domesticated animals such as cats and dogs are allowed on site during both the pre- construction and construction phase.

- As required by the Heritage Impact Assessment:
  - Implementation of a chance find procedure;
- As required by the Wetland Verification:
  - The finalisation of the bio-engineered stormwater drainage channel must be undertaken.
  - The buffering of the system should tie in with the adjacent completed system.
  - The bio-engineered stormwater drainage channel and associated buffer should be rehabilitated to tie in with the existing features.
  - The conditions of the Water Use License (WUL) must be adhered to.
- As required by the Stormwater Management Plan:

- The Attenuation pond and stormwater pipes are to be cleaned and de-sludged at the beginning of the raining season, at least once a month during the raining season and at the end of the raining season. No shrubs or other elements that occupy a large volume (whether organic or inorganic) are to be placed within the attenuation pond enclosure
- Appropriate signage to be erected on site by the developer.
- Both the Channel and pond areas are to be fenced in.
- Pond piped outlets are to be covered with a caged / metal grid so as to prevent a vortex from forming.
- Site Entry Best Management Practices (BMPs)
- Access to and from the work site must be controlled so as to prevent migration of sediments off the work site.
- Perimeter Sediment Control BMP's
- Temporary sediment control fences should be installed prior to commencement with construction to provide a physical barrier to sediment movement and reducing run off velocities.
- Filtration bags (eg. sandbags) may be used as an alternative.
- Vegetated buffers must be placed along the sides of the corridor as a permanent measure against sediment entering the stormwater corridor.
- Storm drain inlets are to be temporarily protected by means of filtration berms or a sandbag barrier.
- Stormwater Control BMP's
- Temporary Interceptor Dikes and swales must be used during rain storms
- Alternatively Stormwater barriers in the form of sand bag check dams could be used.
- Attenuation pond should have a silt trap which will form part of the permanent perimeter Sediment Control BMP's of the individual developments.
- Erosion Prevention BMP's
- Due to the highly eroding characteristics of the in-situ soils a three tier environmentally sensitive erosion prevention channel has been devised. This system includes the following components
- Erosion control blanket (Geo fabric)
- Armoring which comprises the Armoflex DN 140 system which has big holes in each block and allows the natural water infiltration to remain at the same levels. Furthermore it allows for the movement of micro organisms and other bio diversities through the medium.
- Finally the holes in the armoring will be filled with in-situ topsoil, and vegetation as per the list supplied by Exigent engineering consultants will be established.

- As required by the Traffic Impact Statement:

- The study found that the proposed residential development will generate 51 trips, during the weekday morning and weekday afternoon peak hours respectively. Thus, no external road upgrade is required to accommodate the development trips.
- The following site assess is required:
- Access from Frederick Road;
- Two inbound lanes (total width 6.0m). Note, in the event the lanes are separated in future by means of an island, then one lane to have a minimum width of 4.5m;
- One outbound lane, with a minimum width of 4.5m;
- A minimum throat length of 10.0m; and
- Bellmouth radii intersecting with council road is 10.0m.

GAUTENG PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (Version 1)

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.
2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
3. **A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.**
4. **A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.**
5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.
6. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
8. An incomplete report may lead to an application for environmental authorisation being refused.
9. **Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.**
10. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation being refused.
11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.

DEPARTMENTAL DETAILS

Gauteng Department of Agriculture and Rural Development
Attention: Administrative Unit of the of the Environmental Affairs Branch
P.O. Box 8769
Johannesburg
2000

Administrative Unit of the of the Environmental Affairs Branch
Ground floor Diamond Building
11 Diagonal Street, Johannesburg

Administrative Unit telephone number: (011) 240 3377
Department central telephone number: (011) 240 2500

(For official use only)

NEAS Reference Number:						
File Reference Number:						
Application Number:						
Date Received:						

If this BAR has not been submitted within 90 days of receipt of the application by the competent authority and permission was not requested to submit within 140 days, please indicate the reasons for not submitting within time frame.

Not Applicable.

Is a closure plan applicable for this application and has it been included in this report? N/A

if not, state reasons for not including the closure plan.

Not Applicable

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity? ✓

The Basic Assessment Report was made available for a 30-day public review between **25 June 2021 and 26 July 2021**. Copies of the report were provided to the following Departments:

- GDARD;
- DHSWS;
- City of Johannesburg; and
- SAHRA.

Is a list of the State Departments referred to above attached to this report including their full contact details and contact person? ✓

Please note that in terms of the Protection of Personal Information Act, 2013 (POPI), which came into effect on 1 July 2021, contact details are not included in the Interested and Affected Party (I&AP) Database but are available and can be provided on request.

If no, state reasons for not attaching the list.

Not Applicable

Have State Departments including the competent authority commented? **X**

If no, why?

Comments have been received from the following:

- GDARD;
- City of Johannesburg; and
- SAHRA.

SECTION A: ACTIVITY INFORMATION

1. Proposal or Development Description

Project title (must be the same name as per application form):

Proposed Development of Portion 565 (a Portion of Portion 19) of the Farm Zevenfontein 407 JR, City of Johannesburg

Select the appropriate box

The application is for an upgrade of an existing development		The application is for a new development	✓	Other, specify	

Does the activity also require any authorisation other than NEMA EIA authorisation?

YES	NO
✓	

If yes, describe the legislation and the Competent Authority administering such legislation

A Water Use Licence (WUL) is required for the development of the bio-engineered stormwater channel. The WUL has subsequently been issued in 2012 and amended in December 2020 (for both Kengies Extension 35 and 40). A copy of the approved WUL is included in **Appendix F1.** In addition, a General Authorisation is required for Section 21 (c) and (i) water uses related to the development as a whole and is currently being undertaken. Further, comment from the South African Heritage Resources Agency (SAHRA) is required in terms of Section 38 of the National Heritage Resources Act however no other authorisations are required. A copy of the Basic Assessment Report and associated Heritage Impact Assessment was uploaded to the South African Heritage Resources Information System (SAHRIS) to facilitate this. Comments from SAHRA were received on 13 September 2021 and confirm that they have no objection to the development.

If yes, have you applied for the authorisation(s)?		
WUL	YES ✓	
GA	In progress	
SAHRA Comment	YES ✓	
If yes, have you received approval(s)? (attach in appropriate appendix)	YES ✓	NO ✓
WUL	YES ✓	
GA	In progress	
SAHRA Comment	YES ✓	

2. Applicable legislation, policies and/or guidelines

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	*National & Provincial*	*27 November 1998*
Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)	National (DFFE) Provincial (GDARD)	4 December 1996
National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended	National (DFFE) Provincial (GDARD)	18 December 2014
Environmental Impact Assessment Regulations (GN R 982 of 4 December 2014) (as amended by GN 326 of 7 April 2017)	National (DFFE) Provincial (GDARD)	8 December 2014 (as amended on 7 April 2017)
Listing Notice 1 (GN R 983 of 4 December 2014) (as amended by GN 327 of 7 April 2017)	National (DFFE) Provincial (GDARD)	8 December 2014 (as amended on 7 April 2017)
Listing Notice 3 (GN 985 of 4 December 2014) (As amended by GN 324 of 7 April 2017)	National (DFFE) Provincial (GDARD)	8 December 2014 (as amended on 7 April 2017)
Need & Desirability Guideline (Notice 891 of 2014)	National (DFFE) Provincial (GDARD)	20 October 2014
Public Participation Process Guideline (GN R 807 of 10 October 2012)	National (DFFE) Provincial (GDARD)	10 October 2012
National Heritage Resource Act (NHRA), 1999 (Act No. 25 of 1999)	South African Heritage Resources Agency (SAHRA) Provincial Heritage Resources Agency – Gauteng (PHRA-G)	28 April 1999
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) [as amended] (NEMBA)	DFFE	1 September 2004
Alien and Invasive Species Regulations, 2014	DFFE	1 August 2014
Alien and Invasive Species Lists, 2016	DFFE	29 July 2016
Gauteng Spatial Development Framework (SDF) The Gauteng Spatial Development Framework 2030	GDARD	2011
Gauteng Provincial Environmental Management Framework (EMF) (GN 164 of 2 March 2018)	GDARD	2018
Adoption of the Gauteng Provincial Environmental Framework Standard and Exclusion of Associated Activities from the requirement to obtain environmental authorisation in terms of Section 24(2)(d) and 24(10)(a) Read in conjunction with Section 24(1)(d) of NEMA, 1998 for the implementation of the Gauteng Provincial Environmental Management Framework	GDARD	2018
Notice of the requirements to submit a report generated by the National Web Based Environmental Screening Tool in terms of Section 24(5)(h) of the National Environmental Management Act, 1998 and Regulation 18(1)(b)(v) of the EIA Regulations, 2014 (as amended (GN 960 of 5 July 2019)	DFFE GDARD	2019
Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Section 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998 when applying for Environmental Authorisation (GN 320 of 20 March 2020	DFFE GDARD	2020
GDARD C-PLAN v3	GDARD	-

Legislation, policy of guideline	Description of compliance
Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)	*Section 24 of the Constitution states that –* *"Everyone has the right to –* *a) an environment that is not harmful to their health or well-being; and* *b) have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that – (i) Prevent pollution and ecological degradation;* *(ii) Promote conservation; and* *(iii) Secure ecologically sustainable*

Legislation, policy of guideline	Description of compliance
	development and use of natural resources while promoting justifiable economic and social development." • **A Basic Assessment Process including an Impact Assessment has been undertaken to ensure that negative impacts on the environment can be mitigated satisfactorily**
National Environmental Management Act, 1998 (NEMA) (Act No. 107 of 1998), as amended	The NEMA is the umbrella framework for all environmental legislation primarily to assist with implementing the environmental rights of the Constitution. The NEMA provides fundamental principles required for environmental decision making and to achieve sustainable development. It also makes provision for duty of care to prevent, control and rehabilitate the effects of significant pollution and environmental degradation, and prosecute environmental crimes. These principles must be adhered to and taken into consideration during the impact assessment phase. Section 24D and 24(2) of the NEMA makes provision for the publication of list and associated regulations containing activities identified that may not commence without obtaining prior environmental authorisation from the competent authority. The Act also requires that no person may commence an activity listed or specified unless the competent authority has granted an environmental authorisation of that activity. • **A Basic Assessment Process including an Impact Assessment has been undertaken to ensure that negative impacts on the environment can be mitigated satisfactorily. This assessment is in line with the requirements of NEMA and the associated EIA Regulations.** • **Further, other important aspects of NEMA such as sustainability principles such as the "Polluter Pays" and "the Precautionary Principle" have also been considered in the assessment of the impacts of the proposed development.** • **The commencement of the activity will not take place unless authorised by the competent authority.**
EIA Regulations (GN R 982 of 4 December 2014) (as amended by GN 326 of 7 April 2017)	The purpose of the EIA Regulations, 2014 is to regulate the procedure and criteria as contemplated in Chapter 5 of NEMA relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts. • **The Basic Assessment Process undertaken for the proposed development is in line with the requirements of the EIA Regulations, 2014 (as amended)**
Listing Notice 1 (GN R 983 of 4 December 2014) (as amended by GN 327 of 7 April 2017)	In terms of Listing Notice 1, the proposed development triggers **Activity 9, 12, 19 and 27**. • **In line with the requirements of Listing Notice 1 of the EIA Regulations, 2014 (as amended),**

Legislation, policy of guideline	Description of compliance
	these activities have been included in the Application. • **A Basic Assessment Process in line with the requirements of the EIA Regulations, 2014 (as amended) is being undertaken.**
Listing Notice 3 (GN 985 of 4 December 2014) (As amended by GN 324 of 7 April 2017)	In terms of Listing Notice 3, the proposed development triggers **Activity 4,12 and 14** • **In line with the requirements of Listing Notice 3 of the EIA Regulations, 2014 (as amended), these activities have been included in the Application.** • **A Basic Assessment Process in line with the requirements of the EIA Regulations, 2014 (as amended) is being undertaken.** • **Due to the potential sensitivities on site, a Baseline Ecological Habitat Assessment was undertaken and are included in Appendix G of this Report. The study found that aspects such as human activities in and around the study site, presence of alien invasive species on site, lack of habitat for most fauna species and the presence of feral animals in the area have impacted on the existing sensitivity of the site which low to very low** • **In addition, a wetland verification was undertaken and found that the site is highly impacted on by stormwater influx onto the site. The study also noted that the incomplete regional bio-engineered stormwater drainage channel and associated remnants inclusive of a bermed area to the east of the uncompleted channel and depression area has contributed to the development of simulated wetland conditions in this area. The study therefore found that stormwater management on site is of critical importance to secure and protect the site as well as the downstream channel and total system functionality. The specialist recommended that the bio-engineered stormwater drainage channel be finalised as it essential from a wetland and aquatic resource management point of view. Further, development, in fill, next to the trench area will be most beneficial to retain interflow. This combined with raft foundation (or similar) will preserve the subterranean flow driver.**
Notice 891 of 2014	The Department of Forestry, Fisheries and the Environment (DFFE) published a guideline on determining the need and desirability of a proposed development. This document provides information and guidance considering the need and desirability in terms of NEMA, the EIA Regulations, the NEM: AQA, and NEM: WA. It also aims to assist Environmental Assessment Practitioners (EAPs) to prepare a well-structured and complete application and reports in order, and to assist the competent authorities to ensure that need and desirability are given due consideration during every EIA application, to expedite and ensure well-informed decision-making. • **Section E, Part 9 of this report includes an assessment of the need and desirability of the**

Legislation, policy of guideline	Description of compliance
	proposed development which takes into account the Guidelines
GN R 807 of 10 October 2012)	The DFFE also published guidelines for public participation. However, these specifically relate to the EIA Regulations, 2010. • **Section C of this report provides information on the public participation process. Where applicable, the guideline assisted in ensuring all the necessary I&APs were identified. However, as mentioned, these guidelines specifically relate to the EIA Regulations, 2010.**
GN 650 of 5 June 2020	Due to the current Covid-19 pandemic and the associated National State of Disaster, the Department published directions regarding the permitting process that must be followed in regards to Environmental Authorisation processes. In particular, public participation plans must be submitted to the Competent Authority and public participation must be undertaken in a way that limits risk but ensure fair consultation. • **A public participation plan (PP Plan) was submitted to GDARD 3 May 2021 but no response was provided. Subsequently, it has been noted at the Gauteng EAP Forum, that approval of these plans is not required as the country is no longer at level 3. Instead, all public participation must be undertaken in line with the Disaster Management Regulations. Public participation has been undertaken with the greatest attention to safety and in line with all Covid-19 Safety Requirements.**
National Heritage Resource Act (NHRA), 1999 (Act No. 25 of 1999)	The National Heritage Resources Act (25 of 1999) was promulgated for the protection of National Heritage Resources and the empowerment of civil society to conserve their heritage Resources. In terms of Section 38 of this act, certain listed activities require authorisation from provincial agencies including "any development or other activity which will change the character of a site— (i) exceeding 5 000 m^2 in extent.". • **A Heritage Impact Assessment Report has been compiled and is included in Appendix G.** • **A copy of the Basic Assessment Report including the Heritage Impact Assessment was uploaded on the SAHRIS website for review and comment.** • **Comments were received on 13 September 2021 and confirm that SAHRA has no objection to the development**.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) [as amended] (NEMBA) Alien and Invasive Species Regulations, 2014 Alien and Invasive Species Lists, 2016	NEMBA aims to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA. The purpose of NEMBA is to protect ecosystems and the species within as well as the promoting of sustainable use of indigenous biodiversity. During any environmental authorisation process the following regulations are considered and researched if at any stage the following regulations are applicable:

Legislation, policy of guideline	Description of compliance
	• *Alien and Invasive Species Regulations, 2014;* • *Alien and Invasive Species List, 2016.* • **In terms of this environmental authorisation process, due to the disturbed nature of the site, measures to control alien and invasive species have been included in the Environmental Management Programme for the construction and operation of the proposed development.** • **In addition, an Ecological Assessment has been undertaken as included in Appendix G. A number of alien and invasive species were identified and an Alien Invasive Species Management Plan will be compiled and implemented as required by the Ecological Specialist. **
Gauteng Spatial Development Framework (SDF) The Gauteng Spatial Development Framework 2030	The Gauteng Spatial Development Framework, 2011 was among others, compiled to specify a clear set of spatial objectives for municipalities to achieve to ensure realisation of the future provincial spatial infrastructure; and to enable and direct growth. The SDF aims to articulate the spatial objectives of the Gauteng Spatial Development Framework (SDF) The Gauteng Spatial Development Framework 2030 The Gauteng Spatial Development Framework, 2011 was among others, compiled to specify a clear set of spatial objectives for municipalities to achieve to ensure realisation of the future provincial spatial infrastructure; and to enable and direct growth. The SDF aims to articulate the spatial objectives of the Gauteng region to assist the alignment of neighbouring municipalities' spatial plans. • **The Gauteng SDF has been considered in Section B9 and E7 of this Basic Assessment Report to ensure that the development is in line with framework.**
Gauteng Provincial Environmental Management Framework (GPEMF)	The objective of the GPEMF is to guide sustainable land use management within the Gauteng Province. The GPEMF, inter alia, serve the following purposes: • To provide a strategic and overall framework for environmental management in Gauteng; • Align sustainable development initiatives with the environmental resources, developmental pressures, as well as the growth imperatives of Gauteng; • Determine geographical areas where certain activities can be excluded from an EIA process; and • Identify appropriate, inappropriate and conditionally compatible activities in various Environmental Management Zones in a manner that promotes proactive decision-making. • **As part of the Basic Assessment Process, the site was assessed in terms of the GPEMF, and it was determined that the site falls partly within Zone 1: Urban Development Zone.** • **The intention with this zone is to streamline urban development activities in it and to promote development infill, densification and concentration of urban development, in order to establish a more effective and efficient city region that will minimise urban sprawl into rural**

Legislation, policy of guideline	Description of compliance

	areas.
	• **A section of the site falls also within Zone 2 of the GPEMF (Sensitive Zone within the UDZ). This section relates to the watercourse on site. As discussed above, a regional bio-engineered stormwater system has been developed for the Kengies area and this property is the last section which requires development. The aim of this bio-regional stormwater system is to**
	  • **Maintain as accurately as possible natural water infiltration and flows**
	  • **Use water sensitive urban design principals**
	  • **Use best practice urban stormwater quality and quantity management**
	  • **Address temporary and permanent erosion prevention, sediment control and control of other development activities that can cause pollution**
	• **Without the finalisation of this bio-regional stormwater system (which needs to function as a whole) and the necessary attenuation, the area will continue to experience stormwater capacity issues which will impact on neighbours downstream of the site.**

Adoption of the Gauteng Provincial Environmental Framework Standard and Exclusion of Associated Activities from the requirement to obtain environmental authorisation in terms of Section 24(2)(d) and 24(10)(a) Read in conjunction with Section 24(1)(d) of NEMA, 1998 for the implementation of the Gauteng Provincial Environmental Management Framework (GN 164 of 2 March 2018)	The GPEMF Standard, 2018 provides for a number of activity exclusions in certain zones (for example, Zone 1 and Zone 5). The aim of this is streamline development in areas that are earmarked for development. In this way, the Standard promotes densification and infill. • **The proposed development occurs within Zone 1 and Zone 2 and as such the GPEMF Standard, 2018 does not apply.** • **Further, additional activities within Listing Notice 3 are triggered and a Registration in terms of the GPEMF is not applicable.**
Notice of the requirements to submit a report generated by the National Web Based Environmental Screening Tool in terms of Section 24(5)(h) of the National Environmental Management Act, 1998 and Regulation 18(1)(b)(v) of the EIA Regulations, 2014 (as amended (GN 960 of 5 July 2019)	GN960 of 5 July 2019 made it compulsory for the report generated on the DFFE online screening tool to be submitted as part of the Application for Environmental Authorisation. The aim of this is to ensure that a certain level of standardized information is provided to the Competent Authorities as well as I&APs. • **As per the requirements of GN 960 of 5 July 2019, a report was generated on the National Screening tool and is submitted in Appendix I.**
Procedures for the assessment and minimum criteria for reporting on identified environmental themes in terms of Section 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998 when applying for Environmental Authorisation (GN 320 of 20 March 2020 and GN 1150 of 30 October 2020).	In terms of GN 320 of 20 March 2020, the site sensitivity verification can be undertaken by an environmental assessment practitioner (EAP) or a specialist and should utilize the following methodology: • A desk top analysis, using satellite imagery; • A preliminary on-site inspection; and • Any other available and relevant information.

Legislation, policy of guideline	Description of compliance
	Further, the outcome of the site sensitivity verification must be recorded in a report that-- • Confirms or disputes the current use of the land and the environmental sensitivity as identified by the screening tool, such as new developments or infrastructure, the change in vegetation cover or status etc.; • Contains a motivation and evidence (e.g. photographs) of either the verified or different use of the land and environmental sensitivity; and • Is submitted together with the relevant assessment report prepared in accordance with the requirements of the Environmental Impact Assessment Regulations1 (EIA Regulations). • **In line with these requirements, a Site Verification Report has been compiled and is included in Appendix I.** • **Further, Specialist Assessments have been compiled in line with the requirements where applicable.**

C-PLAN v3	Gauteng Conservation Plan (C-Plan) 3.3. is based on the systematic conservation protocol developed by Margules & Pressey (2000) and is based on the principles of complementarity, efficiency, defensibility and flexibility, irreplaceability, retention, persistence and accountability.
	
	The main purpose of C-Plan 3.3 is to serve as the primary decision support tool for the biodiversity component of the EIA process, to inform protected area expansion and biodiversity stewardship programmes in the province and to serve as a basis for development of Bioregional Plans in municipalities within the province.
	
	According the Gauteng C-Plan, the north western section of the site falls is classified as a Ecological Support Area (ESA):
	
	• **In order to determine the impacts of the proposed development. A Baseline Ecological Habitat Assessment and Wetland Verification have been undertaken.**
	  • **The Baseline Ecological Habitat Assessment found the site has a low to very low sensitivity due to human activities in and around the study site, the presence of alien invasive species on site, and the lack of habitat for most fauna species.**
	  • **In addition, a wetland verification was undertaken and found that the site is highly impacted on by stormwater influx onto the site. The study also noted that the incomplete regional bio-engineered stormwater drainage channel and associated remnants inclusive of a bermed area to the east of the uncompleted channel and depression area has contributed to the development of simulated wetland conditions in this area. The study therefore found that stormwater management on site is of critical importance to secure and protect the site as well as the downstream channel**

Legislation, policy of guideline	Description of compliance
	and total system functionality. The specialist recommended that the bio-engineered stormwater drainage channel be finalised as it essential from a wetland and aquatic resource management point of view. Further, development, in fill, next to the trench area will be most beneficial to retain interflow. This combined with raft foundation (or similar) will preserve the subterranean flow driver.

3. Alternatives

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not** include the no go option into the alternative table below.

Note: After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Please describe the process followed to reach (decide on) the list of alternatives below

As part of the development planning process for the proposed Kengies Extension 35, several technical assessments have been undertaken including the following:

- Traffic Impact Statement;
- Stormwater Management Plan ; and
- Outline Scheme Report.

In addition, market analysis was undertaken to better understand the residential market in the area.

As part of the initial comments provided by the Department on 12 August 2021, a request for an additional alternative which incorporated the wetland feature was made. In regard to this, the following is noted:

According to the 2014 EIA Regulations, alternatives are defined as:

"Different means of meeting the general purpose and requirements of the activity, which may include alternatives to the-
(a) property on which or location where the activity is proposed to be undertaken;
(b) type of activity to be undertaken;
(c) design or layout of the activity;
(d) technology to be used in the activity; or
(e) operational aspects of the activity;
and includes the option of not implementing the activity"

The Regulations do not therefore prescribe the type of alternatives that need to be assessed. In this case, alternative layouts were assessed where the main differences between the proposal and alternative is the type of residential development.

Whilst neither layout takes into account the wetland feature identified on site, it should be noted that that feature exists due to the existing poor stormwater management of the area.

- Firstly, due to the berm (which acts as a dam wall), stormwater that should flow down the drainage line is dammed and forced outward.
- Secondly, water from the south of the site is not managed and also feeds this feature.

As part of the development, the bio-engineered, stormwater channel will be completed and as such, the damming will no longer occur. In addition, the stormwater system will capture stormwater from the southern property. Therefore, even if this feature was included in the layout, it would no longer occur post development as the main driver of this area (poorly managed stormwater) would be managed through the completed bio-engineered regional channel.

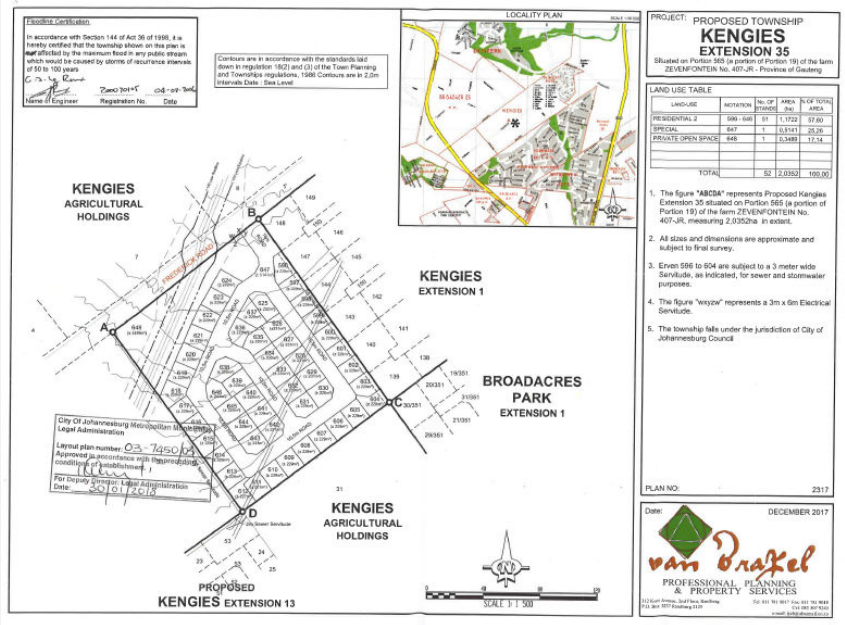
Further, stormwater from the southern property will be captured as part of the internal stormwater pipes and released into the stormwater attenuation pond.

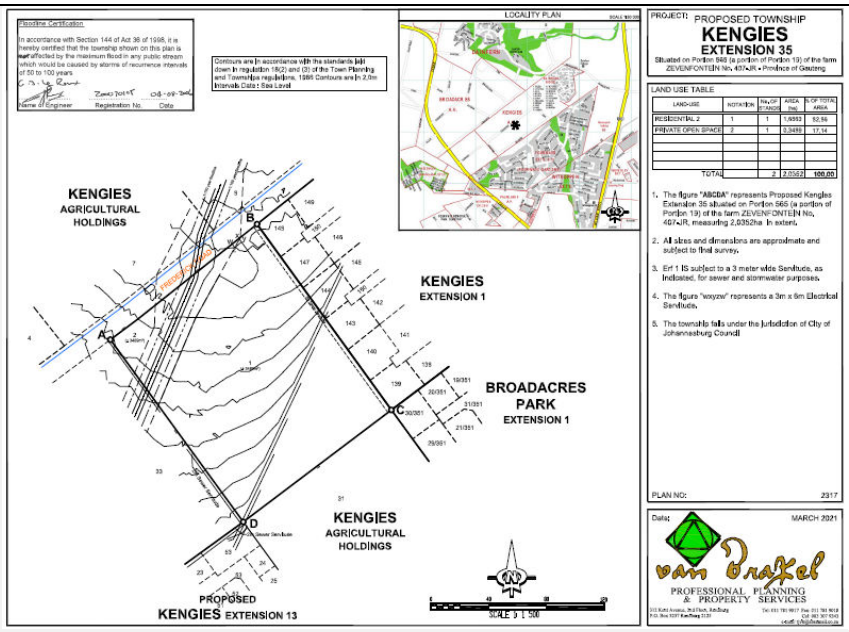
In addition, if the wetland feature was removed from the development, it would take out around 10 units. This would seriously compromise the economic viability of the development and would effectively sterilize the development. This would have negative multiplier effects as there would be a loss of approximately R95 million investment in the area. There would also be a loss of the associated employment opportunities (200 construction related (temporary) jobs and 31 operational (permanent) jobs).

Further, the bio-regional stormwater channel would not be completed and stormwater in the area would remain an issue.

The development of an alternative that removes the wetland feature from the development footprint is therefore not seen as viable and has not included in the assessment of alternatives.

Provide a description of the alternatives considered

No.	**Alternative type**, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	**Description**
1	**Proposal**	The main differences between the proposal and alternative is the type of residential development. In the Proposal, a cluster development will take place and will include the development of 51 separate erven. From a market perspective, this approach is more acceptable to the area with many of the complexes in the area following the cluster approach (**Figure 11**). A3 maps of the alternatives are included in **Appendix A1**.  **Figure 11: Proposed Layout**
2	**Alternative 1**	In contrast, with the alternative layout, a sectional title approach would be followed and as such only one Residential 2 erf would be developed. A number of sectional title units would be put in place within the single erf. In this area, Market research noted that Sectional Title units are not preferred and thus the alternative layout is not preferred from a socio-economic perspective. A map showing the alternative layout is provided in **Figure 12** is provided below for context. A3 maps of the alternatives are included in **Appendix A1**.

		 **Figure 12: Alternative Layout**
3	Alternative 2	
	Etc.	

In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

Not Applicable.

4. Physical size of the activity

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces and landscaped areas:

	Size of the activity:
Proposed activity ***(Total environmental (landscaping, parking, etc.) and the building footprint)***	2.0352 ha
Alternatives:	
Alternative 1 (if any)	2.0352 ha
Alternative 2 (if any)	
	Ha/ m^2

Please note that this includes the development of internal roads and services.

or, for linear activities:

	Length of the activity:
Proposed activity	
Alternatives:	
Alternative 1 (if any)	
Alternative 2 (if any)	
	m/km

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

	Size of the site/servitude:
Proposed activity	2.0352 ha
Alternatives:	
Alternative 1 (if any)	2.0352 ha
Alternative 2 (if any)	
	Ha/m^2

5. Site Access

Proposal

Does ready access to the site exist, or is access directly from an existing road?

YES	NO
✓	
	N/A

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

A Traffic Impact Assessment (TIA) was conducted by Arup Transport Planning for the proposed development in 2006. However, due to the fact that that the study was undertaken 15 years ago, a new traffic statement had recently been done by Mariteng Consulting Engineers and is included in Appendix G.

The study concluded that the proposed residential development would generate 51 trips, during the weekday morning and weekday afternoon peak hours respectively. On this basis, no external road upgrade is required to accommodate these development trips.

The site access arrangements are provided **Figure 13** and include the following:

- Access from Frederick Road;
- Two inbound lanes (total width 6.0m). Note, in the event the lanes are separated in future by means of an island, then one lane to have a minimum width of 4.5m;
- One outbound lane, with a minimum width of 4.5m;
- A minimum throat length of 10.0m;
- Bellmouth radii intersecting with council road is 10.0m; and
- No provision made for any overhead structures. Should the need arise in future, then a minimum vertical clearance of 5.2m is required.

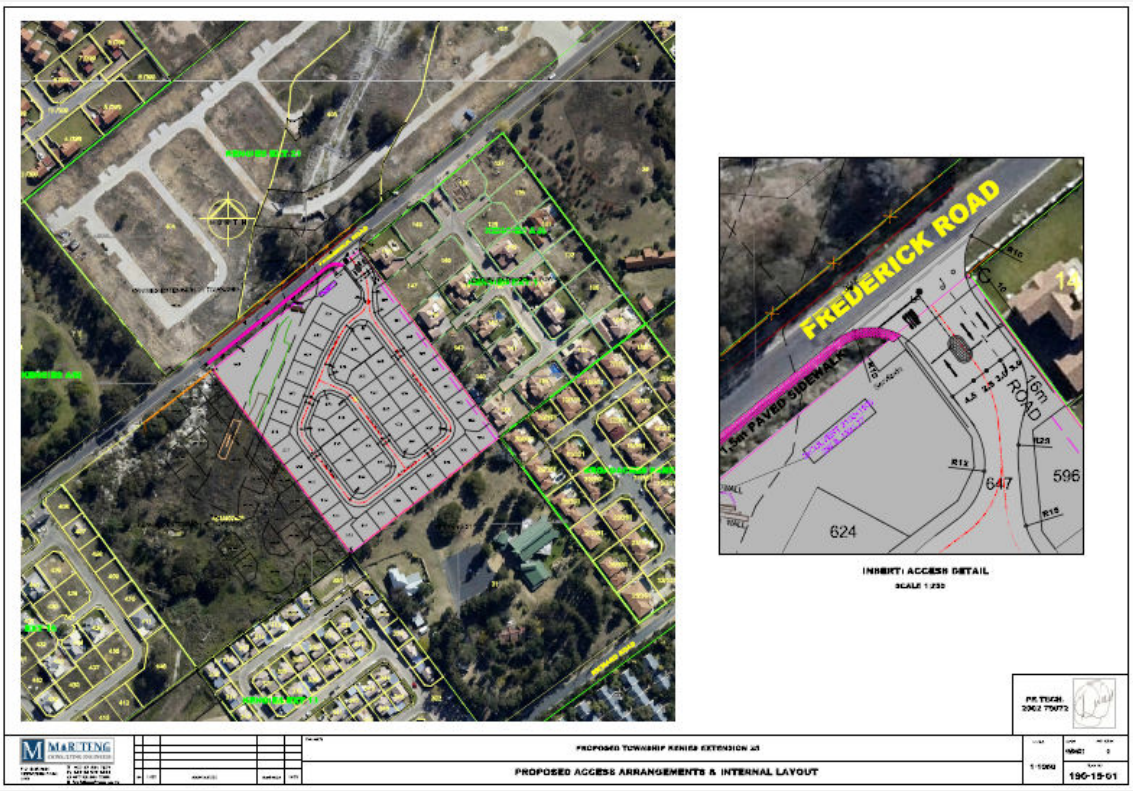


Figure 13: Access

Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 1

Does ready access to the site exist, or is access directly from an existing road?

YES	NO
✓	
	N/A

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

Both the proposal and alternative layout will utilise the same existing access which will require formalisation. Details of this road are provided above (**Figure 13**).

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 2

Does ready access to the site exist, or is access directly from an existing road?	YES	NO
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives

Section A 6-8 has been duplicated **0** Number of times

(only complete when applicable)

The proposal and alternative occur on the same property and as such, duplication of the following items is not required.

6. Layout or Route Plan

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
  - A4 size for activities with development footprint of 10sqm to 5 hectares;
  - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
  - A2 size for activities with development footprint of >20 hectares to 50 hectares);
  - A1 size for activities with development footprint of >50 hectares);

- The following should serve as a guide for scale issues on the layout plan:
  - A0 = 1: 500
  - A1 = 1: 1000
  - A2 = 1: 2000
  - A3 = 1: 4000
  - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
  - Rivers and wetlands;
  - the 1:100 and 1:50 year flood line;
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

Please see **Appendix A1** for a copy of the layout plan for both the proposal and Alternative 1. The site plan is provided in A3 as the development footprint is under 20ha.

FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map;
- the locality map and all other maps must be in colour;
- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;
- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);

- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

Please see **Appendix A2** for a copy of the Locality Map. Please note that a number of maps have been provided at different scales to ensure that all information required is indicated. In addition, a number of sensitivity maps are provided in **Appendix A3**.

7. Site photographs

Colour photographs from the center of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under the appropriate Appendix**.** It should be supplemented with additional photographs of relevant features on the site, where applicable.

Please see **Appendix B** for site photographs.

8. Facility Illustration

A detailed illustration of the activity must be provided at a scale of 1:200 for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity to be attached in the appropriate Appendix.

Please see **Appendix C** for Facility Illustrations related to the services.

081 773 2625 -

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal and alternative(s) (if necessary)

Instructions for completion of Section B for linear activities

1) For linear activities (pipelines etc) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
2) Indicate on a plan(s) the different environments identified
3) Complete Section B for each of the above areas identified
4) Attach to this form in a chronological order
5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route | **0** | times

Not Applicable. The proposed development is not a linear activity. Although internal access roads will be undertaken they will be developed within the footprint of the site itself.

Instructions for completion of Section B for location/route alternatives

1) For each location/route alternative identified the entire Section B needs to be completed
2) Each alterative location/route needs to be clearly indicated at the top of the next page
3) Attach the above documents in a chronological order

Section B has been duplicated for location/route alternatives (complete only when appropriate) | **0** | times

Instructions for completion of Section B when both location/route alternatives and linear activities are applicable for the application

Section B is to be completed and attachments order in the following way

- All significantly different environments identified for Alternative 1 is to be completed and attached in a chronological order; then
- All significantly different environments identified for Alternative 2 is to be completed and attached chronological order, etc.

Section B - Section of Route | **0** | (complete only when appropriate for above)

Section B – Location/route Alternative No. | **0** | (complete only when appropriate for above)

Not Applicable. The alternatives assessed are layout alternatives and therefore occur on the same property.

1. Property Description

Property description: (Including Physical Address and Farm name, portion etc.)

Portion 565 (a Portion of Portion 19) of the Farm Zevenfontein 407 JR, City of Johannesburg

2. Activity Position

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

Proposal and Alternative:	**Latitude (S):**	**Longitude (E):**
	-26.000063° °	27.998078° °

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
• Starting point of the activity	°	°
• Middle point of the activity	°	°
• End point of the activity	°	°

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix

Addendum of route alternatives attached ☐

The 21-digit Surveyor General code of each cadastral land parcel

PROPOSAL	**T**	**0**	**J**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**7**	**0**	**0**	**5**	**6**	**5**
ALT. 1	**T**	**0**	**J**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**7**	**0**	**0**	**5**	**6**	**5**
ALT. 2																					
etc.																					

3. Gradient of the Site

Indicate the general gradient of the site.

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
	✓					

4. Location in Landscape

Indicate the landform(s) that best describes the site.

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front
				✓		✓

5. Groundwater, Soil and Geological Stability of the Site

a) Is the site located on any of the following?

Shallow water table (less than 1.5m deep)	YES ✓	NO
Dolomite, sinkhole or doline areas	YES	NO ✓
Seasonally wet soils (often close to water bodies)	YES ✓	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO ✓
Dispersive soils (soils that dissolve in water)	YES	NO ✓
Soils with high clay content (clay fraction more than 40%)	YES	NO ✓
Any other unstable soil or geological feature	YES	NO ✓
An area sensitive to erosion	YES ✓	NO

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

b) are any caves located on the site(s)

YES	NO ✓

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): **Longitude (E):**

c) are any caves located within a 300m radius of the site(s)

YES	NO ✓

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S): **Longitude (E):**

°	°

d**) are any sinkholes located within a 300m radius of the site(s)**

YES	NO ✓

If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)

Latitude (S):	Longitude (E):
°	°

If any of the answers to the above are "YES" or "unsure", specialist input may be requested by the Department

A Geotechnical investigation was conducted on the site of the proposed development by Schwartz Tromp and Associates Consulting Engineers and the complete report (No. 05/87/1) dated September 2005. The Study found that site is underlain by granite (migmatite and banded gneiss) of the Halfway House Granite Inlier, which has the propensity for the development of isolated Castle Koppies as found in the nearby Lonehill region.

The test pits were excavated to an average depth of 2.0 metres. A description of the soil that blankets the site is summarised below.

- *Transported Soils*
  - The higher-lying ground yielded hillwash overlying altered residual granite which has typically been reworked within the upper 1.0m to 1.5m of the profile. This reworking includes the development of, in places, a hardpan ferricrete horizon. In the low-lying area in the vicinity of the drainage line, the profile is characterised by hillwash (locally fill) overlying gullywash and deeply reworked altered residual granite.
- *Pebble Markers*
  - The geotechnical investigation yielded only a single pebble marker based on the excavated test pits, the report also provides no further detail or discussion on this parameter and can therefore be considered negligible with regards to Kengies Extension 35.
- *Residual Granite*
  - The residual granite found on this site is altered residual granite, which has typically been reworked within the upper 1.0m to 1.5m of the profile and can be found throughout the site. The higher-lying only contains reworked altered residual granite, whereas the lower-lying area contains deeply reworked altered residual granite.
- *Granite Bedrock*
  - The base depth at which the residual granite grades into very soft rock quality granite varies from 2.0m in the north-eastern sector to in excess of 2.5m in the vlei sector (where it was generally not proven). Localised pockets of pedogenic material (hardpan ferricrete) of soft rock quality were encountered from depths around 0.5m in the higher-lying ground

No ground water table is observable on site, but the presence of ferricrete indicates a potential seasonal shallow perched groundwater table beneath the site.

In regard to earthworks, the site has been tentatively (subject to verification) divided into two zones along a diagonal that starts above the south-west corner, on the boundary line, and ends below the north-east corner, on the boundary line. With Zone 1 being on the eastern sector of the site and Zone 2 on the western sector.

In terms of the National Home Builders Registration Council (NBRC) site classification system, Zone 1 has been classified as Class 2/C-C1-C2/locally R (ferricrete sub-outcrop). Expected consolidation and collapse settlement will range between <5.0 mm and up to □10.0mm. Collapse will be mitigated by the presence of ferricrete in the profile.

With respect to Zone 2, it has been classified by the NBRC site classification system as Class 2-3W/HH1/ S1. A large portion of this zone will not be viable for development under present conditions, as it falls within the anticipated non-developable 1:50 flood line. Canalisation and terracing of these low-lying areas to be undertaken in a controlled fashion, then development is possible. A further measure to mitigate the current conditions of Zone 2 will be to place building rubble (of suitable size) and compact it into the soil, creating adequate drainage and stability for development to take place.

Due to the conditions of both zones, it is imperative that a high degree of drainage provision and management is provided around individual structures, and excess moisture should not be allowed to accumulate adjacent to foundations.

6. Agriculture

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	YES	NO ✓

The site is indicated as "moderate" agricultural potential (**Figure 14**) in terms of GAPA IV.

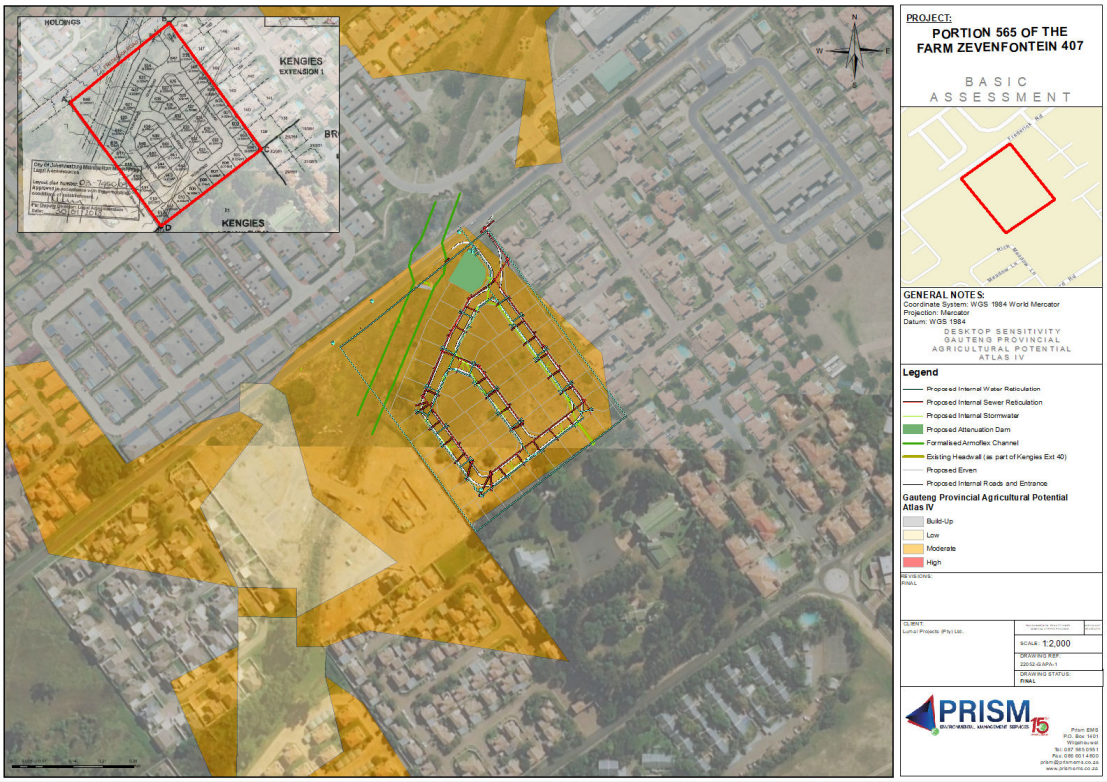


Figure 14: Agricultural Potential

Please note: The Department may request specialist input/studies in respect of the above.

7. Groundcover

To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Indicate the types of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition % =	Natural veld with scattered aliens % =10% ✓	Natural veld with heavy alien infestation % = 80% ✓	Veld dominated by alien species % = ☐	Landscaped (vegetation) % =
Sport field % =	Cultivated land (historical) % =0	Paved surface (hard landscaping) % =	Building or other structure % (culvert = 5%) ✓	Bare soil % = 5% ✓

Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

Are there any rare or endangered flora or fauna species (including red list species) present on the site?	YES	NO ✓

If YES, specify and explain:

Please note:

No red list endangered or rare flora or fauna species were identified by the Baseline Ecological Habitat Assessment. The study area is regarded as having a **low to very low sensitivity**. The study area is disturbed by human activities and has a high presence of alien invasive species.

A copy of the study is provided in **Appendix G1**.

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES	NO ✓

If YES, specify and explain:

Not Applicable.

Are there any special or sensitive habitats or other natural features present on the site?	YES	NO ✓

If YES, specify and explain:

A Baseline Ecological Habitat Assessment was undertaken by Prism EMS and is included in **Appendix G1**. The study included both a desktop assessment and field assessment of the site.

From a desktop perspective, the study noted that the project area falls within Egoli Granite Grassland which is classified as endangered. The study also noted that the study area falls within an Ecological Support Area (ESA). W

However, the specialist found the following:

- *From a desktop perspective, the site falls within Egoli Granite Grassland and ESA area. However, the site visit confirmed that the site is not representative of the vegetation due to a variety of historic disturbance and occurrence of numerous alien invasive species.*
- *The study area has been severely altered both historically and currently. Factors such as human presence, presence of alien invasive species and the compacting of soil.*

A Wetland Verification was also undertaken and is included in **Appendix G2**. The study found the following:

- *The site is highly impacted on by stormwater influx onto the site: The stormwater is captured from external sources and released unmanaged onto the subject site (Kengies Ext 35) from the south-eastern development.*
- *The incomplete regional bio-engineered stormwater drainage channel and associated remnants inclusive of a bermed area to the east of the uncompleted channel and depression area has contributed to the development of simulated wetland conditions in this area.*
- *This is a combination of sheet flow related to stormwater and subsurface interflow culminating next to the incomplete regional bio-engineered stormwater drainage channel.*
- *The additional water input from the channel and poor performance of the uncompleted bio-engineered stormwater drainage channel further contributes to water influx in the section next to the channel.*
- *Stormwater management is therefore of critical importance to secure and protect the site as well as the downstream channel and total system functionality. The finalisation of the bio-engineered stormwater drainage channel is thus essential and supported from a wetland and aquatic resource management point of view.*
- *The system is un urban system that is functioning with the already completed phases of the channel. The completion is thus imperative in the holistic and regional management approach. The buffering of the system should tie in with the adjacent completed system. The bio-engineered stormwater drainage channel and associated buffer would span approximately 23m and should be rehabilitated to tie in with the existing features.*
- *Development, in fill, next to the trench area will be most beneficial to retain interflow. This combined with raft foundation (or similar) will preserve the subterranean flow driver.*

Was a specialist consulted to assist with completing this section	YES ✓	NO

If yes complete specialist details		
Name of the specialist:	De Wet Botha	A.E. Van Wyk
Qualification(s) of the specialist:	M.A. Env. Man.)(PHED) Member of the International Association for Impact Assessors (IAIAsa)(1653) Member of the Gauteng Wetland Forum Member of the South African Wetland Society SACNASP Registered Scientist – Pr.Sci.Nat. (119979) EAPASA – Registered EAP (2019-1209)	BSc. (Biological Sciences)
Postal address:	PO Box 1401 Wilgeheuwel Johannesburg	
Postal code:	1736	
Telephone:	087 985 0951	Cell: 083 232 3042
E-mail:	dewet@prismems.co.za	Fax: 086 601 4800

Are any further specialist studies recommended by the specialist?	YES	NO ✓

If YES, specify: Not applicable.

If YES, is such a report(s) attached? Not applicable

If YES list the specialist reports attached below

Not Applicable.

Signature of specialist: 

Date: March 2021

Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

8. Land Use Character of Surrounding Area

Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

1. Vacant land	**2. River, stream, wetland**	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	8. Low density residential	**9. Medium to high density residential**	10. Informal residential
11. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial[AN]	17. Hospitality facility	**18. Church**	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport[N]	23. Train station or shunting yard[N]	24. Railway line[N]	25. Major road (4 lanes or more)[N]
26. Sewage treatment plant[A]	27. Landfill or waste treatment site[A]	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33.Spoil heap or slimes dam[A]	34. Small Holdings	
Other land uses (describe):	35. Road (Frederick Road) 36. Road (Lombard Road) 37. Road (Richard Road) 38. Shumba Valley Lodge			

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks

NORTH

9, 36	**9, 36**	**9, 36**	**9, 36**	**9, 36**
9, 35	**9, 35**	**9, 2, 35**	**9, 2, 35**	**9, 35**
9	**9, 2**		**9**	**9**
9, 2	**9**	**18, 37**	**9**	**9**
9	**9**	**9**	**9**	**9**

WEST EAST = Site

SOUTH

Note: More than one (1) Land-use may be indicated in a block

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an "A" and with an "N" respectively.

Have specialist reports been attached

YES	NO
✓	

If yes indicate the type of reports below

The following environmental specialist studies have been undertaken:

- Baseline Ecological Habitat Assessment;
- Wetland Verification; and
- Phase 1 Heritage Impact Assessment.

In addition, the following technical studies have been undertaken:

- Traffic Impact Statement;
- Outline Scheme Report; and
- Stormwater Management Plan.

These studies are all included in **Appendix G.**

9. Socio-Economic Context

Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

The proposed development occurs within the City of Johannesburg in Gauteng. A summary of the socio-economic environment for the City of Johannesburg (obtain from StatsSA) is included below.

The City of Johannesburg Local Municipality is situated in Gauteng province and covers an area of 1 645km^2. The City is the provincial capital of Gauteng, the wealthiest province in South Africa. According to Census 2011 information, the area has a total population of 4,4 million of which 76,4% are black African, 12,3% are white people, 5,6% are coloured people, and 4,9% are Indian/Asian.

Figure 15 below shows that the majority of people in the area have either some primary school education (33.6%) or secondary education (30%). Only 20.8% of the population has completed secondary school and an even smaller percentage (5.3%) have higher education (Stats SA, 2017).

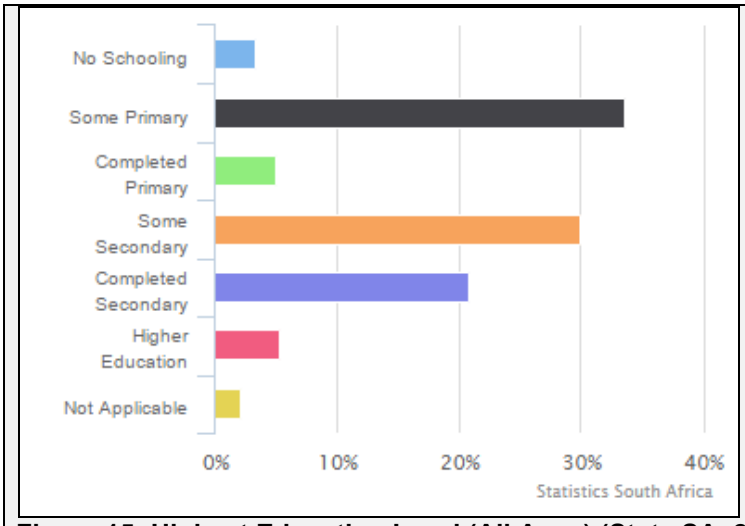


Figure 15: Highest Education Level (All Ages) (Stats SA, 2017).

Approximately 72.7% of the population are at a working age (15-64). Of those, approximately 52.6% (1 696 520 people) are employed (Figure 16). The unemployment rate for the area is 25%. Of the 1 228 666 economically active youth (15–35 years) in the area, 31,5% are unemployed. In terms of living conditions, there is 1 434 856 households in the municipality with an average household size of 2,8 persons per household. 64,7% of households have access to piped water, 26,9% have water in their yard and only 1,4% of households do not have access piped water (Stats SA, 2017).

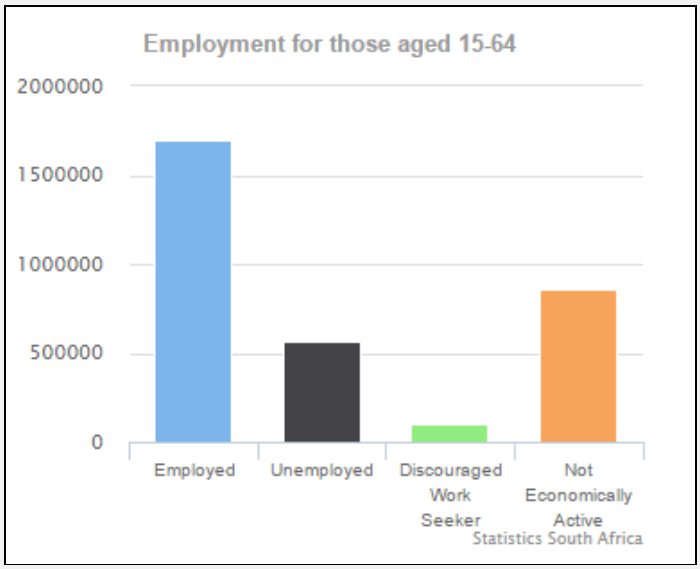


Figure 16: Employment for those aged 15-64 (Stats SA, 2017)

In addition to the above, the following planning documents and frameworks apply to the area and are discussed in more detail in the following subsections:

Regional Spatial Development Framework (RSDF), 2011: Administrative Region A:

The RSDF represents the prevailing spatial planning policy within the City of Johannesburg and is adopted in terms of the Municipal Systems Act, 2000 (Act No. 32 of 2000) as an integral component of the City's Integrated Development Plan (IDP).

Region A is one of seven administrative regions that make up the City of Johannesburg. It is located on the northern periphery of the City of Johannesburg Metropolitan area, bordered by Region C and Region E to the south, Mogale City Local Municipality to the west, City of Tshwane Municipality to the north and City of Ekurhuleni Municipality to the east.

The proposed study site is situated in Sub-Area 4 of Region A according to the Regional Spatial Development Framework. Sub Area 4 is characterised by high-density urban residential components and well-defined mixed-use nodes. Objectives for this area include "*Promote the development of a sustainable spatial structure to ensure*

the efficiency, compatibility and integration of various land uses in the sub area." In line with this, the RSDF includes the following intervention: "*Support land use intensification and mixed-use developments within demarcated nodal areas in the sub area*." The proposed development is therefore in line with the RSDF.

City of Johannesburg Spatial Development Framework 2040

The development also occurs within the Consolidation Zone within the City of Johannesburg Spatial Development Framework 2040. According to the SDF, this area must be the focus of urban consolidation, infrastructure maintenance, controlled growth, urban management, addressing backlogs (in social and hard infrastructure) and structural positioning for medium to longer term growth. The policy intent in these areas would be to ensure existing and future development proposals are aligned as far as possible with the broader intent of the SDF, specifically in terms of consolidating and diversifying development around existing activity nodes and public transport infrastructure. In this broad area, new development that does not require bulk infrastructure upgrades should be supported. The proposed Kengies Ext 35, does not require bulk infrastructure upgrades and is thus in line with the objectives for the consolidation zone.

Gauteng Provincial Environmental Management Framework (GPEMF

Lastly, a large extent of the proposed development falls within Zone 1: Urban Development Boundary (UDB) of the Gauteng Provincial Environmental Management Framework (GPEMF). The intention of this zone is "*to streamline urban development activities in it and to promote development infill, densification and concentration of urban development within the urban development zones as defined in the COJ Spatial Development Framework (GSDF), in order to establish a more effective and efficient city region that will minimise urban sprawl into rural areas*."

Whilst a section, does fall within Zone 2, this section relates to the watercourse on site. As discussed above, a regional bio-engineered stormwater system has been developed for the Kengies area and this property is the last section which requires development. The aim of this bio-regional stormwater system is to

- Maintain as accurately as possible natural water infiltration and flows
- Use water sensitive urban design principals
- Use best practice urban stormwater quality and quantity management
- Address temporary and permanent erosion prevention, sediment control and control of other development activities that can cause pollution

Without the finalisation of this bio-regional stormwater system (which needs to function as a whole) and the necessary attenuation, the area will continue to experience stormwater capacity issues which will impact on neighbours downstream of the site.

Socio-Economic Motivation

Lastly from a socio-economic perspective, the proposed development will benefit the area as it will result in approximately R95 million investment in the area which will have numerous economic multiplier effects that will benefit the region positively. The proposed development will also result in 200 construction related (temporary) jobs and 31 operational (permanent) jobs.

10. Cultural/Historical Features

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate annexure

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-

(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50m in length;

(c) any development or other activity which will change the character of a site-

(i) exceeding 5 000 m2 in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

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

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

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?	YES	NO ✓

If YES, explain:

Not applicable.

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist if one was already appointed:

A Heritage Impact Assessment was undertaken HCAC Heritage Consultants. The assessment included both a desktop review as well as field survey. The study found the following:

- *The proposed site is in a densely developed area and construction activities would have impacted on surface indicators of heritage sites if any ever occurred in the area,*
- *The site itself is highly overgrown due to recent rains and is used for illegal dumping limiting archaeological visibility within the study area,*
- *A visual and physical inspection of the proposed site recorded no structures older than 60 years or archaeological finds of significance.*
- *Based on the South African Heritage Resources Information Services (SAHRIS) Palaeontological map the area is of insignificant paleontological sensitivity and no further studies are required for this aspect.*
- *Both the proposed and alternative layout is acceptable from a heritage point of view.*
- *No significant heritage resources will be affected by the development and the impact of the project on heritage resources are low. The project can commence based on the implementation of the recommendations in this report and the approval of SAHRA.*

Due to the lack of significant heritage resources in the study area the impact of the proposed project on heritage resources is considered low and impacts can be mitigated to an acceptable level. It is therefore recommended that the proposed project can commence on the condition that the following recommendations are implemented as part of the EMPr and based on approval from SAHRA:

- *Implementation of a chance find procedure*

Will any building or structure older than 60 years be affected in any way?	YES	NO ✓
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	NO ✓

If yes, please attached the comments from SAHRA in the appropriate Appendix

Comments were received from SAHRA on 13 September 2021 and are included in **Appendix** E. The comments indicate that SAHRA has no objection to the proposed development.

SECTION C: PUBLIC PARTICIPATION (SECTION 41)

The Environmental Assessment Practitioner must conduct public participation process in accordance with the requirement of the EIA Regulations, 2014.

Please note that Public participation has been undertaken in line with the requirements of the EIA Regulations, 2014.

Initial Notification

Initial Public Participation was undertaken in terms of the Environmental Impact Assessment (EIA) Regulations, 2014. As part of this, the following has been undertaken:

- A potential I&AP database was compiled and included Adjacent Landowners, Ward Councillors, Authorities and Potential I&APs.
- A Background Information Document (BID) was compiled and included information on the proposed development and associated infrastructure.
- An advert was placed in the Star Newspaper on 10 May 2021 to notify potential Interested and Affected Parties (I&APs) of the project and to request that they register they register their interest in the project.
- Site notices and notification of adjacent landowners and other I&APs also took place via email and hand delivery on 7 May 2021 and the BID was provided as part of this.
- All registered I&APs were added to the I&AP database and all comments received added to the Comments and Responses Report.

During this initial registration period, a number of requests for registration/comments were made by the following:

- S Mhlongo – *Request registration*
- E. Allers (City of Johannesburg) - *Request registration*
- M. de Groen (Aqualinks) – *Stormwater and impact to cane rats*
- W Swart (Evergreen Lifestyle Village) – *Stormwater*
- C Bedeker (Evergreen Property Investments) – *Stormwater*
- S Newman (Evergreen Lifestyle Village) – *request registration*
- E Reyneke (the Willows) – *Stormwater*

All requests for registration/comments are provided in Appendix E4. Further, all comments received during the initial registration periods have been added to the Comments and Responses Report in Appendix E6.

In addition to the above, notification of the review of the Basic Assessment Report was undertaken as follows:

- Emails and/or Whatsapp messages were sent to all the registered I&APs to notify them of the 30-day review period on 25 June 2021.
- As applicable, electronic copies (USB Flash drive) or PDF uploads of the BAR were submitted to competent and commenting authorities including the Gauteng Department of Agriculture and Rural Development (GDARD), the City of Johannesburg (CoJ), South African Heritage Resources Agency (SAHRA), the Provincial Heritage Resources Agency of Gauteng (PHRA-G) and Department of Human Settlements, Water and Sanitation (DHSWS) on 25 June 2021.
- A 30-day public review was provided between 25 June 2021 to 26 July 2021.

During the review period of the BAR, the main comments received were from the City of Johannesburg and GDARD. A number of smaller comments regarding requests for information were also noted and dealt with as required.

All comments received are captured in the Comments and Responses Report in Appendix E6. However, in summary, the main comments and concerns include the following:

- Confirmation of receipt;
- Request for further information;
- Requests for additional links to the report;
- Support of the proposed bio-engineered stormwater channel from COJ;
- Confirmation that the stormwater management of the development must comply to a number of factors;
- Concern regarding the impact to the wetland feature and associated requests for changes to the layout from GDARD;
- Request for clarification regarding the date of construction of stormwater infrastructure from GDARD;
- Requests for additional impacts to be assessed from GDARD;
- Queries regarding the alternatives assessed from GDARD;

- Support of the proposed bio-engineered stormwater channel from GDARD; and
- Confirmation from SAHRA that they have no objections to the proposed development.

In order to deal with these, a consultation meeting was held with GDARD on 3 September 2021. As a result of this meeting, the BAR and EMPr where necessary and is submitted to GDARD for review and decision making. A copy of the meeting minutes are included in **Appendix E5**. Il registered I&APs will be notified of the decision.

1. Local Authority Participation

Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least thirty (30) calendar days before the submission of the application to the competent authority.

Was the draft report submitted to the local authority for comment?

YES	NO
✓	

If yes, has any comments been received from the local authority?

YES	NO
✓	

If "YES", briefly describe the comment below (also attach any correspondence to and from the local authority to this application):

An email was received from Mr. Etienne Allers of the City of Johannesburg which requested that the City be registered as an Interested and Affected Party (I&AP). The request was duly noted and the City registered as an I&AP and the comment added to the Comments and Responses Report.

A copy of the BAR was also provided to the City to facility their review and comment. Comments were duly provided on 7 July 2021 and included:

- Support of the proposed bio-engineered stormwater channel;
- Confirmation that the stormwater management of the development must comply to a number of factors.

These comments have been noted in the Comments and Responses Report and are also included in **Appendix E7**.

If "NO" briefly explain why no comments have been received or why the report was not submitted if that is the case.

Not applicable.

2. Consultation with Other Stakeholders

Any stakeholder that has a direct interest in the activity, site or property, such as servitude holders and service providers, should be informed of the application at least **thirty (30) calendar days** before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

YES	NO
✓	

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Initial Notification

A 30-day registration period was provided to allow I&APs an opportunity to register their interest in the project from 10 May 2021 to 9 June 2021. A number of requests for registration/comments were made by the following:

- S Mhlongo – *Request registration*
- E. Allers (City of Johannesburg) - *Request registration*
- M. de Groen (Aqualinks) – *Stormwater and impact to cane rats*
- W Swart (Evergreen Lifestyle Village) – *Stormwater*
- C Bedeker (Evergreen Property Investments) – *Stormwater*
- S Newman (Evergreen Lifestyle Village) – *request registration*
- E Reyneke (the Willows) – *Stormwater*

All requests for registration/comments are provided in **Appendix E4**. Further, all comments received during the initial registration periods have been added to the Comments and Responses Report in **Appendix E6**.

During the review period of the BAR, the main comments received were from the City of Johannesburg and

GDARD. A number of smaller comments regarding requests for information were also noted and dealt with as required.

All comments received are captured in the Comments and Responses Report in **Appendix E6** and copies are included in **Appendix E7**. However, in summary, the main comments and concerns include the following:

- Confirmation of receipt;
- Request for further information;
- Requests for additional links to the report;
- Support of the proposed bio-engineered stormwater channel from COJ;
- Confirmation that the stormwater management of the development must comply to a number of factors;
- Concern regarding the impact to the wetland feature and associated requests for changes to the layout from GDARD;
- Request for clarification regarding the date of construction of stormwater infrastructure from GDARD;
- Requests for additional impacts to be assessed from GDARD;
- Queries regarding the alternatives assessed from GDARD;
- Support of the proposed bio-engineered stormwater channel from GDARD; and
- Confirmation from SAHRA that they have no objections to the proposed development.

In order to deal with these, a consultation meeting was held with GDARD on 3 September 2021. Minutes of this meeting are included in **Appendix E5**. As a result of this meeting, the BAR and EMPr where necessary and is submitted to GDARD for review and decision making. All registered I&APs will be notified of the decision.

If "NO" briefly explain why no comments have been received

Not Applicable.

4. General Public Participation Requirements

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed.

The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

5. Appendices for Public Participation

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below

Appendix 1 – Proof of site notice

Please seen **Appendix E1** for proof of the site notices that were placed during the initial notification and registration period.

Appendix 2 – Written notices issued as required in terms of the regulations

Please seen **Appendix E2** for proof of the emails and hand delivery of BIDs which took place as part of the initial notification and registration period.

Appendix 3 – Proof of newspaper advertisements

Please seen **Appendix E3** for proof of newspaper notice which was placed in the Star on newspaper on 10 May 2021.

Appendix 4 –Communications to and from interested and affected parties

Comments received during the initial registration period is included in **Appendix E4**.

Please note that the requirements for the Protection of Personal Information Act, 2013 came into effect on 1 July 2021. Therefore, no contact details are included in the comments so to protect this information.

Appendix 5 – Minutes of any public and/or stakeholder meetings

Minutes from the Meeting with GDARD held on 3 September 2021 are included in **Appendix E5**.

Appendix 6 - Comments and Responses Report

Please seen **Appendix E6** for a copy of the Comments and Responses Report.

Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report

Please refer to **Appendix E7** for a copy of all comments from I&APs on the BAR.

Appendix 8 –Comments from I&APs on amendments to the BA Report

Not applicable.

Appendix 9 – Copy of the register of I&Aps

Please seen **Appendix E9** for a copy of the I&AP register.

Please note that the requirements for the Protection of Personal Information Act, 2013 came into effect on 1 July 2021. Therefore, no contact details are provided in the I&AP database to protect this information.

SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal and alternative(s) (if necessary)

Instructions for completion of Section D for alternatives

1) For each alternative under investigation, where such alternatives will have different resource and process details (e.g. technology alternative), the entire Section D needs to be completed
4) Each alterative needs to be clearly indicated in the box below
5) Attach the above documents in a chronological order

Section D has been duplicated for alternatives | 0 | times (complete only when appropriate)

Section D Alternative No. | 0 | (complete only when appropriate for above)

1. Waste, Effluent, and Emission Management

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES	NO
✓	

If yes, what estimated quantity will be produced per month?

Approximately 100m^3

How will the construction solid waste be disposed of (describe)?

The building rubble and solid construction waste (such as sand, gravel, concrete and waste material) that cannot be used for filling and rehabilitation and other litter and waste generated during the construction phase will be removed from site and be disposed of safely and responsibly at a licensed landfill site.

Where will the construction solid waste be disposed of (describe)?

Waste will be removed by a Certified Waste Management Company and be disposed of at a registered landfill site

Will the activity produce solid waste during its operational phase?

YES	NO
✓	

If yes, what estimated quantity will be produced per month?

200 m^3

How will the solid waste be disposed of (describe)?

City of Johannesburg Municipality waste collectors under contract by the municipality will collect the domestic waste on a weekly basis. Recycling will be encouraged whereby paper and other recyclable materials will be stored separately and collected on a weekly basis.

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity?

YES	NO
	✓

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

Not Applicable.

Note: If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

YES	NO
	✓

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO
	✓

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:

All materials that can be recycled will be separated from the general waste and disposed of at recycling facilities. Spoil material which could be used for landscaping purposes will be extracted at kept neatly intact and in a controlled manner as to prevent erosion by the wind and water

Liquid effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	NO ✓
If yes, what estimated quantity will be produced per month?	Not Applicable	
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?	YES	NO ✓

Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	NO ✓
If yes, what estimated quantity will be produced per month?	Not Applicable	

If yes describe the nature of the effluent and how it will be disposed.

Not Applicable.

Note that if effluent is to be treated or disposed on site the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA

Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	NO ✓

If yes, provide the particulars of the facility:

Facility name:	Not Applicable.
Contact person:	
Postal address:	
Postal code:	
Telephone:	
E-mail:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

Not Applicable. The proposed development is a residential development and will not produce effluent other than domestic sewage.

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?*	YES ✓	NO
If yes, what estimated quantity will be produced per month?	1 116 m^3 (37.2 kl per day x 30 days)	
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?	YES ✓	NO

Please note that the technical team has compiled an Outline Scheme Report which was submitted it to the City of Johannesburg for approval.

Comments from Johannesburg Water were provided on 27 July 2021 and confirms that the result of the hydraulic analysis shows that there is adequate sewer capacity for the development

Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	NO ✓

If yes describe how it will be treated and disposed off.

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	YES	NO ✓
If yes, is it controlled by any legislation of any sphere of government?	YES	NO ✓

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.
If no, describe the emissions in terms of type and concentration:

Please note that dust will be generated during the construction phase and will be regulated under the National Dust Control Regulations, 2013 (GN R 827). The dustfall rate (D) may not exceed 600 $mg/m^2/day$. Dust suppression measures will be stipulated in the EMPr.

2. Water Use

Indicate the source(s) of water that will be used for the activity

Municipal	Directly from water board	Groundwater	river, stream, dam or lake	other	the activity will not use water
✓					

An Outline Scheme Report has compiled and is included in **Appendix G**. The Study notes that water requirements will be 46.5 kl/day. This amounts to approximately 1 395 KL per month.

Comments from Johannesburg Water were provided on 27 July 2021 and confirms that the result of the hydraulic analysis shows that there is adequate water capacity for the development.

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month: Not applicable

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix

Not Applicable

Does the activity require a water use permit from the Department of Water Affairs?

YES	NO
✓	

If yes, list the permits required

A Water Use Licence (WUL) was issued for the formalisation of the bio-engineered regional channel on Kengies Extension 35 and 40 and a copy is included in **Appendix F**.

In addition, a General Authorisation process is underway for Section 21(c) and (i) water uses related to stormwater release.

If yes, have you applied for the authorisation(s)?

	YES	NO
WUL	✓	
GA	In progress	

If yes, have you received approval(s)? (attach in appropriate appendix)

	YES	NO
WUL	✓	
GA	In progress	

3. Power Supply

Please indicate the source of power supply eg. Municipality / Eskom / Renewable energy source

Eskom

If power supply is not available, where will power be sourced from?

Not applicable.

4. Energy Efficiency

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The development design has complied with the NHBRC standards for energy efficiency (SANS 10400).

Describe how alternative energy sources have been considered or been built into the design of the activity, if any:

The buildings will comply with NHBRC standards (SANS 10400) for energy efficiency. As part of this, the following measures will be put in place:

- Energy saving measures for water heating (for example heat pumps or solar);
- LED lamps;
- General control switching (to minimise use of lights when not needed); and
- Energy saving appliances.

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4)(b)(i).

1. Issues raised by Interested and Affected Parties

Summarise the issues raised by interested and affected parties.

During the initial registration period, other than requests for registration, the following concerns were noted:

- Impacts related to stormwater;
- Impacts to Cane Rats.

During the public review of the BAR, the following items were noted:
Confirmation of receipt;

- Support of the proposed bio-engineered stormwater channel from COJ;
- Confirmation that the stormwater management of the development must comply to a number of factors;
- Concern regarding the impact to the wetland feature and associated requests for changes to the layout from GDARD;
- Request for clarification regarding the date of construction of stormwater infrastructure from GDARD;
- Requests for additional impacts to be assessed from GDARD;
- Queries regarding the alternatives assessed from GDARD;
- Support of the proposed bio-engineered stormwater channel from GDARD; and
- Confirmation from SAHRA that they have no objections to the proposed development.

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included)
(A full response must be provided in the Comments and Response Report that must be attached to this report):

Initial Registration

All comments received to date and responses thereof are included in the Comments and Responses Report in **Appendix E6**.

In summary, the following was noted as a responses to the I&APs:

- Stormwater –
  - The Basic Assessment Report will contain information on the proposed development including stormwater management. As part of this, a detailed Stormwater Management Plan has been compiled and will be included as an appendix to the report. It should also be noted that Stormwater for the area has been designed as a whole and this development slots into the existing system.
- Cane Rats –
  - We will ensure that the Environmental Management Programme (EMPr) includes specific mitigation measures to ensure that fauna is not poisoned and to minimise impacts to these species.

In regards to Stormwater, a more detailed response has been added to the Comments and Responses Report which will be available for review by I&APs:

"In order to understand the proposed development's stormwater management system, it is important to look at the regional system as a whole. A brief summary of the "The Report on Best Management Practices for Stormwater Management and Erosion Prevention and Sediment Control" by Triple 3 Engineering Solutions (Pty) Ltd (2008), is provided in the Basic Assessment Report. In summary, the Kengies area has been impacted by a number of historical issues. In order to deal with these, it was decided to utilize environmentally sensitive canalization to manage stormwater. The design aimed to:

- *Maintain as accurately as possible natural water infiltration and flows*
- *Use water sensitive urban design principals*
- *Use best practice urban stormwater quality and quantity management*
- *Address temporary and permanent erosion prevention, sediment control and control of other development activities that can cause pollution*

This regional bio-engineered stormwater drainage has been implemented however, the last section (which relates to Kengies Extension 35) needs to be put in place so the system can function as a whole.

Without the finalisation of this bio-regional stormwater system (which needs to function as a whole) and the necessary attenuation, the area will continue to experience stormwater capacity issues which will impact on neighbours downstream of the site. This was corroborated by the Wetland Specialist who found that the site is highly impacted on by stormwater influx onto the site. Stormwater management is therefore of critical importance to secure and protect the site as well as the downstream channel and total system functionality. The finalisation of the bio-engineered stormwater drainage channel is thus essential and supported from a wetland and aquatic resource management point of view."

BAR Public Review

All comments received to date and responses thereof are included in the Comments and Responses Report in **Appendix E6**.

In summary, the following responses have been provided:

- **Support of the proposed bio-engineered stormwater channel and requirements for stormwater management from COJ**;
  - A General Authorisation process will be undertaken for Section 21 (c) and (i) uses. A Water Use Licence is already in place for the bio-regional stormwater channel.
  - The bio-engineered stormwater channel will be constructed as part of the development.
  - In terms of the floodlines, the bio-engineered channel has been designed along the 1:100 year floodlines and caters for this. This floodline is showed on the layout plan (Appendix A1) and has been signed-off by an ECSA Registered Engineer.
  - The development footprint including the stormwater attenuation pond are all outside the 1:100 year floodline as well as the associated buffer that was agreed with the City of Johannesburg (Me J Eagle and team) at the time when the stormwater channel was designed and for most already completed.
  - Stormwater infrastructure includes a stormwater attenuation pond which will attenuate stormwater to predevelopment levels.
  - Stormwater management for the site has been developed in line with "The Report on Best Management Practices for Stormwater Management and Erosion Prevention and Sediment Control" by Triple 3 Engineering Solutions (Pty) Ltd (2008). The design of the bio-engineered stormwater channel aims to:
    - Maintain as accurately as possible natural water infiltration and flows
    - Use water sensitive urban design principals
    - Use best practice urban stormwater quality and quantity management
    - Address temporary and permanent erosion prevention, sediment control and control of other development activities that can cause pollution
    - It thus includes measures to address water quality.
    - The Stormwater Management Plan and Outline Scheme Report (by Triple 3 Engineering Solutions (Pty) Ltd) will be submitted to the City in due course as part of the ongoing townplanning process. "*The Report on Best Management Practices for Stormwater Management and Erosion Prevention and Sediment Control"* by Triple 3 Engineering Solutions (Pty) Ltd (2008) has been approved by the City.
- **Concern regarding the impact to the wetland feature and associated requests for changes to the layout from GDARD:**
  - Poorly managed stormwater is the driver of this feature, once stormwater is managed correctly, it is expected that it will no longer function as it does currently. It was therefore identified as having a **low** sensitivity and was not included in the layout plan for the development. In addition to its low sensitivity, if wetland feature was removed from the development, it would take out around 10 units. This would seriously compromise the economic viability of the development and would effectively sterilize the development. Further, the bio-regional stormwater channel would not be completed and stormwater in the area would remain an issue.
  - During the meeting with the Departmental officials on 3 September 2021 (see minutes included in Appendix E), this wetland feature was discussed in detail. Based on this discussion, it was agreed that the BAR would include the recommendation that the site be filled and will utilize raft foundations (or equivalent) which will therefore accommodate any subsurface flow that may occur. As the design incorporates this, the impact to the erven in that area is expected to be low after mitigation and no updated layout plan is included in the final submission.
- **Request for clarification regarding the date of construction of stormwater infrastructure from GDARD;**
  - The comments received from the Department dated 12 August 2021 and 27 August 2021 also requested clarity on the stormwater infrastructure already on site.
  - This was discussed in detail during the meeting held on 3 September 2021 and it was noted that the culvert had been developed in around 2012/3 by the previous owners of the adjacent site (Kengies Extension 40). This development is approved by an Exemption Approval under Section 28A of the Environmental Conservation Act, 1989. The approval included Activity 1(j) The construction or upgrading of dams, levees and weirs affecting the flow of a river and Activity 2(c)

The change of land use from agricultural or undetermined use to any other land use. Included in the approvals was a point that showed that the assessment of the wetlands on Holdings 7,8,10, 11, 14, 30, 33, 34 and 35 (Portion 565 (a Portion of Portion 19) of the Farm Zevenfontein 407 JR was previously Holding 30).

- It should also be noted the change of land use activity under ECA incorporated all necessary services and infrastructure required by the development (even those outside the specific property).
- A copy of the Kengies Ext 40 Exemption Approval as well as other associated approvals as well as the approved roads and stormwater plan are included in Appendix I5 as requested.
- In addition, confirmation that this stormwater system was approved by COJ and JRA are also included.

- **Requests for additional impacts to be assessed from GDARD:**
  - The comments dated 12 August 2021 requested additional impacts be assessed:
    - **Impacts to Hydrological System and Catchment**: This was identified to have a **positive low-medium** impact due to the implementation of the bio-engineered regional stormwater channel as well as the necessary attenuation on site.
    - **Increased stormwater due to impervious surfaces**: This was identified to have a negative, low impact which could be mitigated through the implementation of the necessary attenuation on site which would ensure the post development flow was not greater than the pre-development levels.
    - **Decreased groundwater recharge due to impervious surfaces**: This was identified to have a negative, low impact which could be mitigated through the riparian buffer as well as the attenuation on site which would channel stormwater to areas where some infiltration to groundwater could take place.
    - **Impacts to erven due to wetland/drainage line features** - The wetland feature identified on site is due to the existing poor stormwater management of the area. Firstly, due to the berm (which acts as a dam wall), stormwater that should flow down the drainage line is dammed and forced outward. Secondly, water from the south of the site is not managed and also feeds this wetland. As part of the development, the bio-engineered, stormwater channel will be completed and as such, the damming will no longer occur. In addition, the stormwater system will capture stormwater from the southern property. In addition, as discussed with the Departmental officials on 3 September 2021, the site will be filled and will utilize raft foundations (or equivalent) which will therefore accommodate any subsurface flow that may occur. As the design incorporates this, the impact to the erven in that area is expected to be low after mitigation.
- Queries regarding the alternatives assessed from GDARD:
  - According to the 2014 EIA Regulations, alternatives are defined as:

    "*Different means of meeting the general purpose and requirements of the activity, which may include alternatives to the-*
    (a) property on which or location where the activity is proposed to be undertaken;
    (b) type of activity to be undertaken;
    (c) design or layout of the activity;
    (d) technology to be used in the activity; or
    (e) operational aspects of the activity;
    and includes the option of not implementing the activity"
  - The Regulations do not therefore prescribe the type of alternatives that need to be assessed. In this case, alternative layouts were assessed where the main differences between the proposal and alternative is the type of residential development.
  - Whilst neither layout takes into account the wetland feature identified on site, it should be noted that that feature exists due to the existing poor stormwater management of the area.
    - Firstly, due to the berm (which acts as a dam wall), stormwater that should flow down the drainage line is dammed and forced outward.
    - Secondly, water from the south of the site is not managed and also feeds this feature.
  - As part of the development, the bio-engineered, stormwater channel will be completed and as such, the damming will no longer occur. In addition, the stormwater system will capture stormwater from the southern property. Therefore, even if this feature was included in the layout, it would no longer occur post development as the main driver of this area (poorly managed stormwater) would be managed through the completed bio-engineered regional channel.
  - Further, stormwater from the southern property will be captured as part of the internal stormwater pipes and released into the stormwater attenuation pond.
  - In addition, if the wetland feature was removed from the development, it would take out around 10 units. This would seriously compromise the economic viability of the development and would effectively sterilize the development. This would have negative multiplier effects as there would be a loss of approximately R95 million investment in the area. There would also be a loss of the associated employment opportunities (200 construction related (temporary) jobs and 31 operational (permanent) jobs).
  - Further, the bio-regional stormwater channel would not be completed and stormwater in the area would remain an issue.

- The development of an alternative that removes the wetland feature from the development footprint is therefore not seen as viable and has not included in the assessment of alternatives

- **Support of the proposed bio-engineered stormwater channel from GDARD:**
  - Noted. This recommendation is included in the Basic Assessment Report.
- Confirmation from SAHRA that they have no objections to the proposed development.
  - Your comment is included in the Comments and Responses Report. In addition, it can be noted that the EMPr includes a chance find procedure for any heritage sites or remains. As part of this, should any items be uncovered on site, SAHRA will be notified.
  - SAHRA will also be notified of the Department's decision as requested.

2. Impacts that may result from the Construction and Operational Phase

Briefly describe the methodology utilised in the rating of significance of impacts

Impacts were identified in a number of ways including the following:

- Impacts associated with triggered activities contained in Listing Notice 1 and Listing Notice 3 of the EIA Regulations, 2014 (as amended) for which authorisation has been applied for;
- Impacts identified by specialists;
- An assessment of the project activities and components; and
- Issues highlighted by I&APs (both the general public and authorities).

The significance of the identified impacts was determined using the approach outlined below which is line with the requirements of the EIA Regulations, 2014. Each impact was assessed for both the Proposal as well as Alternative 1.

The **significance** of an impact is defined as the combination of the **consequence** of the impact occurring and the **probability** that the impact will occur. The nature and type of impact may be direct or indirect and may also be positive or negative, refer to **Table 2**: below for the specific definitions.

Table 2: Nature and type of impact.

IMPACT	**Nature and Type of Impact:**		
	Direct	Impacts that are caused directly by the activity and generally occur at the same time and place as the activity	✓/✖
	Indirect	Indirect or induced changes that may occur as a result of the activity. These include all impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity	✓/✖
	Cumulative	Those impacts associated with the activity which add to, or interact synergistically with existing impacts of past or existing activities, and include direct or indirect impacts which accumulate over time and space	✓/✖
	Positive	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes will benefit significantly, and includes neutral impacts (those that are not considered to be negative	✓
	Negative	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes will be comprised	✖

Table 3: presents the defined criteria used to determine the **consequence** of the impact occurring which incorporates the extent, duration and intensity (severity) of the impact.

Table 3: Consequence of the Impact occurring.

CONSEQUENCE	**Extent of Impact:**	
	Site	Impact is limited to the site and immediate surroundings, within the study site boundary or property (immobile impacts)
	Neighbouring	Impact extends across the site boundary to adjacent properties (mobile impacts)
	Local	Impact occurs within a 5km radius of the site
	Regional	Impact occurs within a provincial boundary
	National	Impact occurs across one or more provincial boundaries
	Duration of Impact:	
	Incidental	The impact will cease almost immediately (within weeks) if the activity is stopped, or may occur during isolated or sporadic incidences

	Short-term	The impact is limited to the construction phase, or the impact will cease within 1 - 2 years if the activity is stopped
	Medium-term	The impact will cease within 5 years if the activity is stopped
	Long-term	The impact will cease after the operational life of the activity, either by natural processes or by human intervention
	Permanent	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient
	Intensity or Severity of Impact:	
	Low	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes are not affected
	Low-Medium	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes are modified insignificantly
	Medium	Impacts affect the environment in such a way that natural, cultural and/or social functions and processes are altered
	Medium-High	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes are severely altered
	High	Impacts affect the environment in such a way that natural, cultural and / or social functions and processes will permanently cease

The probability of the impact occurring is the likelihood of the impacts actually occurring and is determined based on the classification provided in **Table 4**.

Table 4: Probability and confidence of impact prediction

PROBABILITY	**Probability of Potential Impact Occurrence:**	
	Improbable	The possibility of the impact materialising is very low either because of design or historic experience
	Possible	The possibility of the impact materialising is low either because of design or historic experience
	Likely	There is a possibility that the impact will occur
	Highly Likely	There is a distinct possibility that the impact will occur
	Definite	The impact will occur regardless of any prevention measures

The **significance** of the impact is determined by considering the consequence and probability without taking into account any mitigation or management measures and is then ranked according to the ratings listed in **Table 5:.** The level of confidence associated with the impact prediction is also considered as low, medium or high (**Table 6:**).

Table 5: Significance rating of the impact.

SIGNIFICANCE	**Significance Ratings:**	
	Low	Neither environmental nor social and cultural receptors will be adversely affected by the impact. Management measures are usually not provided for low impacts
	Low-Medium	Management measures are usually encouraged to ensure that the impacts remain of Low-Medium significance. Management measures may be proposed to ensure that the significance ranking remains low-medium
	Medium	Natural, cultural and/or social functions and processes are altered by the activities, and management measures must be provided to reduce the significance rating
	Medium-High	Natural, cultural and/or social functions and processes are altered significantly by the activities, although management measures may still be feasible

	High	Natural, cultural, and/or social functions and processes are adversely affected by the activities. The precautionary approach will be adopted for all high significant impacts and all possible measures must be taken to reduce the impact

Table 6: Level of confidence of the impact prediction

	Level of Confidence in the Impact Prediction:	
CONFIDENCE	**Low**	Less than 40% sure of impact prediction due to gaps in specialist knowledge and/or availability of information
	Medium	Between 40 and 70% sure of impact prediction due to limited specialist knowledge and/or availability of information
	High	Greater than 70% sure of impact prediction due to outcome of specialist knowledge and/or availability of information

Once significance rating has been determined for each impact, management and mitigation measures must be determined for all impacts that have a significance ranking of Medium and higher in order to attempt to reduce the level of significance that the impact may reflect.

The EIA Regulations, 2014 specifically require a description is provided of the degree to which these impacts:

- can be reversed;
- may cause irreplaceable loss of resources; and
- can be avoided, managed or mitigated.

Based on the proposed mitigation measures the EAP will determined a mitigation efficiency (**Table 7**:) whereby the initial significance is re-evaluated and ranked again to affect a significance that incorporates the mitigation based on its effectiveness. The overall significance is then re-ranked and a final significance rating is determined.

Table 7: Mitigation efficiency

	Mitigation Efficiency	
MITIGATION EFFICIENCY	**None**	Not applicable
	Very Low	Where the significance rating stays the same, but where mitigation will reduce the intensity of the impact. Positive impacts will remain the same
	Low	Where the significance rating reduces by one level, after mitigation
	Medium	Where the significance rating reduces by two levels, after mitigation
	High	Where the significance rating reduces by three levels, after mitigation
	Very High	Where the significance rating reduces by more than three levels, after mitigation

The reversibility is directly proportional the “Loss of Resource” where no loss of resource is experienced, the impact is completely reversible; where a substantial “Loss of resource” is experienced there is a medium degree of reversibility; and an irreversible impact relates to a complete loss of resources, i.e. irreplaceable (**Table 8:**).

Table 8: Degree of reversibility and loss of resources

	Loss of Resources:	
ABILITY & LOSS OF	**No Loss**	No loss of social, cultural and/or ecological resource(s) are experienced. Positive impacts will not experience resource loss

	Partial	The activity results in an insignificant or partial loss of social, cultural and/or ecological resource(s)
	Substantial	The activity results in a significant loss of social, cultural and/or ecological resource(s)
	Irreplaceable	The activity results in the complete and irreplaceable social, cultural and/or ecological loss of resource(s)
	Reversibility:	
	Irreversible	Impacts on natural, cultural and/or social functions and processes are irreversible to the pre-impacted state in such a way that the application of resources will not cause any degree of reversibility
	Medium Degree	Impacts on natural, cultural and/or social functions and processes are partially reversible to the pre-impacted state if less than 50% resources are applied
	High Degree	Impacts on natural, cultural and/or social functions and processes are partially reversible to the pre-impacted state if more than 50% resources are applied
	Reversible	Impacts on natural, cultural and/or social functions and processes are fully reversible to the pre-impacted state if adequate resources are applied

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Please note that the impact assessment provided below for construction and operational phases separately, and is a summary only and that the full impact assessment is contained in **Appendix I.**

The full impact assessment provides an overview of both the probability of the impact occurring as well as the mitigation efficiency and as such gives an indication of the risk of the impact occurring as well as the risk that the mitigation will not be implemented/or be effective. Impacts associated with the proposal, alternative and no-go alternative are included in one table in order to allow for easy comparison and assessment.

Table 9: Summary Impact Assessment – Construction Phase

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
CONSTRUCTION PHASE								
Atmospheric Emissions	Negative	Dust emissions	Proposal	Yes	Direct	*Low*	• A speed limit of 20km/h must be maintained on all dirt roads. • Dust suppression by means of either water or biodegradable chemical agent is required.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Emissions from vehicles and equipment (CO2, NOx, SOx, VOC's etc.)	Proposal	Yes	Direct	*Low*	• In terms of transportation of workers and materials, collective transportation arrangements should be made to reduce individual car journeys where possible. • All vehicles used during the project should be properly maintained and in good working order. • All vehicles and other machinery should comply with road worthy requirements and comply with legislation in terms of allowable emissions.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Noise	Proposal	No	Direct	*Low*	• Equipment and/or machinery which will be used must comply with the manufacturer's specifications on acceptable noise levels. • Construction activities should be limited to daytime only.	*Low*
			Alternative 1	No	Direct	*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
Surface Water	Negative	Water quality	Proposal	No	Direct	*Low*	The general measures should be implemented: • Chemical toilets must be supplied and maintained during the construction phase • Ablution facilities (chemical toilets) are to be provided by the Contractor, at a ratio of 1:10. • Ablution facilities (chemical toilets) must be erected within 100m from all workplaces but within the development footprint. • Toilets are to be secured to the ground, and must have a closing mechanism. • Toilet paper must be provided at these facilities and must be serviced once per week. • Certified contractors to maintain and remove chemical toilets regularly. • The contractor must ensure that spillage does not occur when toilets are cleaned/serviced and contents must be properly stored and disposed of. • Discharge of waste into the environment and/or burial of waste are strictly prohibited. • Sanitary arrangements must be to the satisfaction of the PM, ECO, the local authorities and the applicable legal requirements. • Drip trays must be placed under all vehicles when immobile for longer than 24 hours. Vehicles suspected of leaking must be monitored and conduct a pre start-up inspection checklist. • Drip trays must be checked and replaced for vehicles standing (parked) for prolonged periods. • Drip trays must be of a sufficient size and volume to collect any hydrocarbon leakages from a stationary vehicle. • Spill kits (absorbent material) must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site. • Spilled substances must be contained in impermeable containers for removal to a	*Low*
			Alternative 1			*Low*		*Low*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
CONSTRUCTION PHASE								
							licensed hazardous waste site. • Significant spills should be reported to the Project Manager or Contractors Manager and ECO who should report this to the relevant authority	
			No-Go Option	Not Applicable	Not Applicable	*None*	None required. However, it should be noted that the existing state of the wetland is poor and will continue to deteoriate without rehabilitation.	*None*
	Positive	Stormwater and erosion	Proposal	Yes	Direct	*+Medium*	• T**he Wetland Verification noted that the finalisation of the bio-engineered stormwater drainage channel is thus essential and supported from a wetland and aquatic resource management point of view**. In addition, the following general measures should be implemented: • Instability and erosion of steep slopes must be stabilised immediately. Re-vegetation in consultation with landscape architect and ECO should be done if and where required. • To reduce the loss of material by erosion, disturbance must be kept to a minimum. • Where possible, natural vegetation should be retained to reduce the risk of erosion. • Silt fences must be used to stabilise the site, reduce erosion and silt entering the natural environment. No unchecked silt may enter the natural environment. • Proper stormwater management as per the approved stormwater management plan (including bio-engineered regional plan). • Increased run-off during construction should be managed using berms, temporary cut-off drains, attenuation ponds or other suitable structures, in consultation with the ECO and resident Engineer. • Stormwater management system is to be installed as soon as possible following site establishment, to attenuate stormwater during the construction phase, as well as during the operational phase. • Surface-water run-off and stormwater must be directed away from trenches and areas of excavation. • Stormwater and erosion control BMPS included in the Stormwater Management plan must be adhered to.	*+Medium*
			Alternative 1			*+Medium*		*+Medium*
	Negative		No-Go Option	No	Not Applicable	*Medium*	None required. However, it should be noted that the stormwater system of the area requires is not yet finalised which causes negative impacts to the stormwater of the Kengies area.	*Medium*
	Negative	Biota	Proposal	No	Indirect	*Low*	The following general measures should be implemented: • Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site; • No trapping, killing or poisoning of any wildlife should be allowed on site; • Staff should be educated about the sensitivity of faunal species and measures should be put in place to deal with any species that are encountered during the construction process. The intentional killing of any animals including snakes, insects, lizards, birds or other animals should be strictly prohibited.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
Waste Generation	Negative	Domestic waste	Proposal	Yes	Direct	*Low*	• Waste recycling to be put in place. • Solid waste shall only be stored in the designated general waste storage area which must be enclosed and impermeable. •All solid waste shall be disposed of by a certified contractor, off-site, at an approved landfill site. The Contractor shall supply the ECO with a certificate of disposal for auditing purposes.	*Low*
			Alternative 1			*Low*		*Low*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	**Description**	**Alternative**	**Cumulative**	**Type**	**Significance (A + B + C) X P**	**Description and/or Mitigation and Management Measures (if applicable)**	**Significance**
CONSTRUCTION PHASE								
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Construction waste	Proposal	Yes	Direct	*Low*	• Litter (from outside the camp included) and concrete bags etc. must be collected and put into suitable closed bins on a daily basis. • Construction rubble must be disposed of at a registered site • No Construction rubble may be used for infilling.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Hazardous waste	Proposal	Yes	Direct	*Low*	• The classification of waste determines the handling methods and the ultimate disposal of the material. The contractor shall manage hazardous waste that are anticipated to be generated by his operations as follows: Characterise the waste to determine if it is general or hazardous. Obtain and provide an acceptable container with a label. Place hazardous waste material in the container. Inspect the container on a regular basis Haul the full container to the licenced and correct disposal site. Provide documentary evidence of proper disposal of the waste. • Only temporary storage of waste is allowed (once of storage of waste for a period less than 90 days). The volume of material should be limited to less than 80m3 of hazardous waste. Should this be exceeded the Norms and Standards for the Storage of Waste will need to be complied with.	*Low*
			Alternative 1	Yes	Direct	*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
Soil Alteration	Negative	Loss of topsoil	Proposal	Yes	Direct	*Medium*	• Top soil should be separated and re-used where possible.	*Low-Medium*
			Alternative 1			*Medium*		*Low-Medium*
			No-Go Option	Yes	Direct	*Low-Medium*	The site is degraded by historic land use. It is likely that there will be a continued loss of topsoil should the development not proceed as the site will remain in its degraded state.	*Low-Medium*
	Negative	Loss of land capability	Proposal	Yes	Direct	*Low-Medium*	•According to the Gauteng Agricultural Potential Atlas IV, the agricultural potential of the site is moderate. However, the site has not been used for agriculture and is degraded. The site is also identifed as urban in terms of the GPEMF and is surrounded by residential uses. Therefore, whilst the site may have previously had some potential, it is not located in an area conducive to farming. The development footprint is also fairly small and thus would not provide enough area for farming practices. Therefore, it is not expected to be a significant loss.	*Low-Medium*
			Alternative 1			*Low-Medium*		*Low-Medium*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Alteration of topography	Proposal	No	Direct	*Low-Medium*	Some of the Topography within the development footprint will be altered as part of the development. In order to ensure the change in topography does not impact stormwater, the following must be implemented: • Stormwater management measures must be implemented to ensure these designs do not impact on stormwater.	*Low-Medium*
			Alternative 1			*Low-Medium*		*Low-Medium*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
CONSTRUCTION PHASE								
	Negative	Soil pollution	Proposal	No	Direct	*Low*	• Drip trays must be placed under all vehicles when immobile for longer than 24 hours. Vehicles suspected of leaking must be monitored and conduct a pre start-up inspection checklist. '• All vehicle/equipment maintenance and washing must be done in the workshop area, equipped with a bund wall and grease trap oil separator. • Workshop area must be monitored for fuel and oil spills. • Drip trays must be checked and replaced for vehicles standing (parked) for prolonged periods. • Drip trays must be of a sufficient size and volume to collect any hydrocarbon leakages from a stationary vehicle. • Spill kits (absorbent material) must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site. • Spilled substances must be contained in impermeable containers for removal to a licensed hazardous waste site. • Significant spills should be reported to the Project Manager or Contractors Manager and ECO who should report this to the relevant authority. • Waste must be managed in line with the requirements of the EMPr.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
Resource Consumption	Negative	Electricity consumption	Proposal	Yes	Direct	*None*	•During the construction phase the contractors will mainly make use of generators.	*None*
			Alternative 1			*None*		*None*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Water consumption	Proposal	Yes	Direct	*Low-Medium*	• Enforce water saving strategies. • Environmental awareness training.	*Low*
			Alternative 1			*Low-Medium*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Fuel consumption	Proposal	Yes	Direct	*Low-Medium*	• Record and monitor fuel consumption regularly • Reduce theft of fuel (increase security)	*Low*
			Alternative 1			*Low-Medium*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Raw materials consumption	Proposal	Yes	Direct	*Low-Medium*	• Promote effective use of raw material.	*Low*
			Alternative 1			*Low-Medium*		*Low*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
CONSTRUCTION PHASE								
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
Effects on Biodiversity	Negative	Loss of habitat due to Digging and laying foundations	Proposal	Yes	Direct	*Low-Medium*	Both layouts will result in a loss of habitat however, an ecological assessment was undertaken and found that the site is highly disturbed and already developed in parts and the loss of habitat is not significant. The following mitigation measures suggested by the specialist will be undertaken: '• Proper stormwater management should be implemented	*Low*
			Alternative 1			*Low-Medium*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required. However, please note that the site is highly disturbed and degraded in parts.	*None*
		Loss of habitat due to construction camps & lay down areas	Proposal	Yes	Direct	*Low-Medium*	Both layouts will result in a loss of habitat however, an ecological assessment was undertaken and found that the site is highly disturbed and already developed in parts and the loss of habitat is not significant.	*Low*
			Alternative 1			*Low-Medium*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required. However, please note that the site is highly disturbed and degraded in parts.	*None*
		Loss of habitat - Stochastic events such as fire	Proposal	Yes	Direct	*Low*	Both layouts will result in a loss of habitat however, an ecological assessment was undertaken and found that the site is highly disturbed and already developed in parts and the loss of habitat is not significant. The following mitigation measures suggested by the specialist will be undertaken: '•Fires shall only be permitted in specially designated areas and under controlled circumstances.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required. However, please note that the site is highly disturbed and degraded in parts.	*None*
	Negative	Direct mortality of fauna - Staff or construction workers poaching and hunting	Proposal	No	Direct	*Low*	Both layouts are similar and thus impacts in regards to fauna mortality are similar. An ecological assessment and did not identify any sensitive fauna on site. The following mitigation measures suggested by the specialist will be undertaken: '• Snaring and hunting of fauna by construction workers on or adjacent to the study area are strictly prohibited.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option			*None*	None required. However, please note that the site is highly disturbed and degraded in parts.	*None*
		Direct mortality of fauna - Intentional killing of fauna	Proposal	No	Direct	*Low-Medium*	Both layouts are similar and thus impacts in regards to fauna mortality are similar. An ecological assessment and did not identify any sensitive fauna on site. The following mitigation measures suggested by the specialist will be undertaken: '•Killing of fauna on or adjacent to the study area are strictly prohibited. Should any fauna species be found on site, the ECO should be conducted asap to provide recommendation or mitigation measures. I&APs have also raised concerns regarding the impact to Cane Rats. It is likely that Cane Rats on site will move off site during construction and may enter adjacent developments. They may be mis-identified as rats and thus poisoned. In order to reduce this impact, the following is recommended: '• Cane Rat Information Documents/Posters should be developed and specific training regarding this species provided to construction workers. In addition, information documents should be provided to adjacent developments so that they are aware of the species.	*Low*
			Alternative 1			*Low-Medium*		*Low*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
CONSTRUCTION PHASE								
			No-Go Option			*None*	None required. However, please note that the site is highly disturbed and degraded in parts.	*None*
	Negative	Disruption of ecological life cycles due to the restriction of species movement - Open trenches and other linear barriers	Proposal	Yes	Direct	*Low*	Trenches and other linear barriers should not be kept open for to long, especially not staying open over night.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option			*None*	None required	*None*
		Disruption of ecological life cycles due to the restriction of species movement - Infrastructure	Proposal	Yes	Direct	*Low-Medium*	Stormwater and road infrastructure should be designed in such a way that it will have minimal impact on the environment.	*Low*
			Alternative 1			*Low-Medium*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Disruption of ecological life cycles due to noise and lighting - Noise during construction	Proposal	Yes	Direct	*Low*	Construction must be restricted to hours of 07:00 and 17:00. Should construction activities need to continue over a weekend/pubic holiday or is expected to be excessively noisy, all Interested and Affected Parties and the ECO must be notified in advance.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Disruption of ecological life cycles due to noise and lighting - Light during construction	Proposal	Yes	Direct	*Low-Medium*	Construction must be restricted to hours of 07:00 and 17:00. Should construction activities need to continue after hours is, all Interested and Affected Parties and the ECO must be notified in advance. Excessive lighting during construction should be avoided.	*Low*
			Alternative 1			*Low-Medium*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Introduction of alien flora affecting native faunal assemblages - Vehicles and machinery	Proposal	Yes	Direct	*Low*	Alien, invasive species found within the construction area should be eradicated as far as possible and disposed of at a registered site. Measures to prevent siltation from entering the wetland area, should be implemented throughout the construction phase.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Introduction of alien flora affecting native faunal assemblages -	Proposal	Yes	Direct	*Low*	Alien, invasive species found within the construction area should be eradicated as far as possible and disposed of at a registered site. Measures to prevent siltation from entering the wetland area, should be implemented throughout the construction phase. \	*Low*
			Alternative 1			*Low*		*Low*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
CONSTRUCTION PHASE								
		soil disturbances	No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
Incidents, accidents and potential emergency situations	Negative	Pollution incidents	Proposal	No	Direct	*Low*	• Spill kits to be located in strategic areas for when needed • Regular site and plant inspection must be conducted • Environmental awareness training	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Health and safety	Proposal	No	Direct	*Low*	• 24 hour security and access control. • Health and Safety awareness training. • Contractor to submit a Health and Safety Plan, prepared in accordance with the Health and Safety Specification, for approval prior to the commencement of work. • A Safety Agent should be appointed • A Dedicated Occupational Health and Safety system to be implemented by Contractor's Safety Officer. To be monitored and audited by the Client's Safety Agent, in terms of the Construction Regulations (2003).	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Storage of hydrocarbons	Proposal	No	Direct	*Low*	• Best practice regarding storage of substances • Spill kits to be located in strategic areas for when needed • Environmental awareness training • Firefighting equipment must be accessible on site at all times. • Display of emergency numbers	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Fire	Proposal	No	Direct	*Low*	• Adhere to the appropriate emergency procedures • Firefighting equipment must be accessible on site at all times. • Display of emergency numbers • In addition, designated smoking areas should be provided and there should be zero tolerance to smoking outside these areas. Cooking over open flames is not allowed.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	No	Direct	*Low*	The site is currently unoccupied and the risk for fire remains.	*Low*
Social	Negative	Visual impact	Proposal	Yes	Direct	*Low*	During construction, the site should be screened or walled off.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Safety and security	Proposal	No	Direct	*Low*	• 24 hour access control to the site and 24 hour security. • Workers found to be engaging in activities such as excessive consumption of alcohol, drug use or selling of any such items on site must be disciplined.	*Low*
			Alternative 1			*Low*		*Low*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
CONSTRUCTION PHASE								
			No-Go Option	No	Direct	*Low*	The site is currently unoccupied. Should the develop not take place, there may be further safety and security issues in the area.	*Low*
	Negative	Traffic disruptions	Proposal	No	Direct	*Low*	• Traffic calming measures and appropriate signage to be implemented. • Speed limits on all existing roads must be adhered to at all times.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Loss of cultural heritage	Proposal	No	Direct	*Low*	A Heritage Impact Assessment was undertaken and the following mitigation measures recommended: •Implementation of the chance find procedure.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Loss of sense of place	Proposal	No	Direct	*Low*	• Suitable screening to be put in place during construction to minimise visual impacts. • No littering to be allowed. • Good housekeeping practices to be followed	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Positive	Change of land use	Proposal	Yes	Direct	***+Medium***	The Conditions of Establishment have been approved. The proposed change in land use is in line with the Region A Spatial Development Plan and the COJ 2040 Spatial Development Framework. No mitigation measures other than the townplanning process is required.	***+Medium***
			Alternative 1			***+Medium***		***+Medium***
	Not Applicable		No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
Economic	**Positive**	Decline/increase in economy	Proposal	Yes	Direct	***+Medium***	The proposed CAPEX value of the development is R95 000 000.00. This will have numerous multiplier effects in the local community. In order to ensure that this benefits the local community, it is recommended that local labour and suppliers are used where possible.	***+Medium***
			Alternative 1			***+Medium***		***+Medium***
	Negative		No-Go Option			*Medium*	Should the development not proceed, the benefits to the local community will be long term and negative. Further, the goals of the GSDF and Regional SDP will also not be met. There are no mitigation measures available.	*Medium*
	Positive	Decline/increase in property value	Proposal	No	Direct	***+Medium***	The development of the proposed development will increase the property value of the site overall. Further, it will have a knock on effect and is likely to increase the value of neighbouring properties as well. No mitigation measures are required.	***+Medium***
			Alternative 1			***+Medium***		***+Medium***
	Negative		No-Go Option			*Medium*	The site was is vacant and is degraded and without development, the property value is likely to decrease. This will have knock on effects on the surrounding properties. No	*Medium*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
CONSTRUCTION PHASE								
							mitigation, save for development of the site, is available.	
	Positive	Employment	Proposal	Yes	Direct	*+Medium*	The proposed development will result in approximately 200 construction related employment opportunities for the local community. Local labour should be utilised as far as possible.	*+Medium*
			Alternative 1			*+Medium*		*+Medium*
	Negative		No-Go Option			*Medium*	Should the development not proceed, the benefits to the local community will be long term and negative as potential employment opportunities will be lost. No mitigation measures are available.	*Medium*

Table 10: Summary Impact Assessment – Operational Phase

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
OPERATIONAL PHASE								
Atmospheric Emissions	Not Applicable	Dust emissions	Proposal	Not Applicable	Not Applicable	*None*	Impacts not applicable to the operational phase. No mitigation required.	*None*
			Alternative 1			*None*		*None*
			No-Go Option			*None*	None required	*None*
	Negative	Emissions from vehicles and equipment (CO2, NOx, SOx, VOC's etc.)	Proposal	Not Applicable	Not Applicable	*None*	Impacts not applicable to the operational phase. No mitigation required. Whilst residents will utilize cars, they are likely to own these cars already and will not be generating additional emissions from what they do already.	*None*
			Alternative 1			*None*		*None*
			No-Go Option			*None*	None required	*None*
	Negative	Noise	Proposal	No	Direct	*Low*	• The proposed residential development is in line with activities and uses in the area and will not provide significant noise pollution. The Managing Company/Body Corporate should develop rules and regulations to manage noise in line with applicable by-laws.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
Surface Water	Negative	Water quality	Proposal	No	Direct	*Low*	• A Outline Scheme Report has been undertaken and noted that sewer will connect to an existing sewer line and be treated at an existing Treatment works. Maintenance and management of the sewer connection must be undertaken as per COJ's requirements.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Positive	Stormwater and erosion	Proposal	Yes	Direct	*+Medium*	• T**he Wetland Verification noted that the finalisation of the bio-engineered stormwater drainage channel is thus essential and supported from a wetland and aquatic resource management point of view**. In addition, the following general measures should be implemented: • Maintenance of the stormwater management system as per the Bio-regional stormwater management plan's BMPs to be undertaken.	*+Medium*
			Alternative 1			*+Medium*		*+Medium*
	Negative		No-Go Option	No	Not Applicable	*Medium*	The existing stormwater of the area is dependent on the completion of the bio-engineered regional stormwater system. Currently, there are a number of stormwater issues faced by the area.	*Medium*
	Negative	Biota	Proposal	No	Indirect	*Low*	• Rehabilitation of construction impacted area, holes in the armoring will be filled with in-situ topsoil, and vegetation as per the Stormwater Management Plan. '• Buffer area to be maintained to provide habitat. '• Environmental awareness of Cane Rats within the estate so that residents are aware of them. '• Environmentally sensitive pest control.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
Waste Generation	Negative	Domestic waste	Proposal	Yes	Direct	*Medium*	• Recyclable waste streams must be separated from other waste streams. Waste to be separated into recyclable and non-recyclable waste. Waste separation needs to occur before waste is collected. • Solid waste shall only be stored in the designated general waste storage area which must be enclosed and impermeable. • All solid waste shall be disposed of by a certified contractor, off-site, at an approved	*Low*
			Alternative 1			*Medium*		*Low*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
OPERATIONAL PHASE								
							landfill site if no municipal services are available. • Avoidance, reduction, re-use and recycling should be practiced wherever possible.	
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Not Applicable	Construction waste	Proposal	Not Applicable	Not Applicable	*None*	Impacts not applicable to the operational phase. No mitigation required.	*None*
			Alternative 1			*None*		*None*
			No-Go Option			*None*	None required	*None*
	Negative	Hazardous waste	Proposal	Not Applicable	Not Applicable	*None*	No hazardous waste is expected during operation.	*None*
			Alternative 1			*None*		*None*
			No-Go Option			*None*	None required	*None*
Soil Alteration	Negative	Loss of topsoil	Proposal	Not Applicable	Not Applicable	*None*	Impacts not applicable to the operational phase. No mitigation required.	*None*
			Alternative 1			*None*		*None*
			No-Go Option	Yes	Direct	*Low-Medium*	The site is highly degraded by historic land use. It is likely that there will be a continued loss of topsoil should the development not proceed as the site will remain in its degraded state,	*Low-Medium*
	Not Applicable	Loss of land capability	Proposal	Not Applicable	Not Applicable	*None*	Impacts not applicable to the operational phase. No mitigation required.	*Medium*
			Alternative 1			*None*		*Medium*
			No-Go Option			*None*	None required	*None*
	Not Applicable	Alteration of topography	Proposal	Not Applicable	Not Applicable	*None*	Impacts not applicable to the operational phase. No mitigation required.	*None*
			Alternative 1			*None*		*None*
			No-Go Option			*None*	None required	*None*
	Negative	Soil pollution	Proposal	Not Applicable	Not Applicable	*None*	Impacts not applicable to the operational phase. No mitigation required.	*Low*
			Alternative 1			*None*		*Low*
			No-Go Option			*None*	None required	*None*
Resource Consumption	Negative	Electricity consumption	Proposal	Yes	Direct	*Medium*	• Promote effective electricity consumption.	*Low-Medium*
			Alternative 1			*Medium*		*Low-Medium*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Water consumption	Proposal	Yes	Direct	*Medium*	• Promote effective water conservation measures.	*Low*
			Alternative 1			*Medium*		*Low*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
OPERATIONAL PHASE								
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Fuel consumption	Proposal	Not Applicable	Not Applicable	*None*	Impacts not applicable to the operational phase. No mitigation required.	*None*
			Alternative 1			*None*		*None*
			No-Go Option			*None*	None required	*None*
	Negative	Raw materials consumption	Proposal	Yes	Direct	*Low-Medium*	• Promote effective use of raw material.	*Low*
			Alternative 1			*Low-Medium*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
Effects on Biodiversity	Negative	Loss of existing habitat due to loss of vegetation - stochastic events like fire	Proposal	No	Direct	*Low*	Fire extinguishers must be placed on the property.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option			*None*	None required	*None*
	Negative	Loss of fauna - Intentional killing of fauna	Proposal	No	Direct	*Low*	• 'It is not expected that any fauna will be found on site during operation. The Body Corporate/Managing Company must include the requirement in their rule book that should any be found that the relevant organisation be called to safely remove the species. '• Environmental awareness of Cane Rats within the estate so that residents are aware of them. '• Environmentally sensitive pest control.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option			*None*	None required	*None*
	Negative	Disruption of ecological life cycles due to the restriction of species movement - infrastructure	Proposal	No	Direct	*Low-Medium*	Stormwater and road iInfrastructure should be designed in such a way that it will have minimal impact on the environment. Maintenance should be undertaken as per the requirements of the stormwater management plan.	*Low*
			Alternative 1			*Low-Medium*		*Low*
			No-Go Option			*None*	None required	*None*
Incidents, accidents and potential emergency situations	Negative	Pollution incidents	Proposal	No	Direct	*Low*	• Sewer connection pipe must be managed and maintained in line with COJ requirements.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Health and safety	Proposal	No	Direct	*Low*	• 24 hour security and access control.	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Storage of hydrocarbons	Proposal	No	Direct	*None*	Impacts not applicable to the operational phase. No mitigation required.	*None*
			Alternative 1			*None*		*None*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
OPERATIONAL PHASE								
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Negative	Fire	Proposal	No	Direct	*Low*	• Adhere to the appropriate emergency procedures • Firefighting equipment must be accessible on site at all times. • Display of emergency numbers	*Low*
			Alternative 1			*Low*		*Low*
			No-Go Option	No	Direct	*Low*	The site is currently unoccupied. Should the develop not take place, the potential for fires on site and on neighbouring properties remains as is.	*Low*
Social	Negative	Visual impact	Proposal	Not Applicable	Not Applicable	*None*	As the development is in line with the development goals of the area and the existing residential developments in the area, no visual impact is expected during operation.	*None*
			Alternative 1			*None*		*None*
			No-Go Option			*None*	None required	*None*
	Positive	Safety and security	Proposal	No	Direct	*+Low*	Due to the development of the site, safety and security in the area is likely to improve. In addition, the following will be implemented which will assist with this: '• 24 hour access control to the site and 24 hour security.	*+Low*
			Alternative 1			*+Low*		*+Low*
	Negative		No-Go Option	No	Direct	*Low*	The site is currently unoccupied . Should the develop not take place, there may be further safety and security issues in the area.	*Low*
	Negative	Traffic disruptions	Proposal	No	Direct	*Low-Medium*	•Access to the development to be undertaken as per the Traffic Impact Statement. '• No new roads are required as the proposed development will only generate 51 new trips.	*Low*
			Alternative 1			*Low-Medium*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
	Not Applicable	Loss of cultural heritage	Proposal	Not Applicable	Not Applicable	*None*	Impacts not applicable to the operational phase. No mitigation required.	*None*
			Alternative 1			*None*		*None*
			No-Go Option			*None*	None required	*None*
	Negative	Loss of sense of place	Proposal	Not Applicable	Not Applicable	*None*	As the development is in line with the development goals of the area and the existing residential developments in the area, no impacts to sense of place is expected during operation.	*None*
			Alternative 1			*None*		*None*
			No-Go Option			*None*	None required	*None*
	Positive	Change of land use	Proposal	Yes	Direct	*+ Medium*	The Conditions of Establishment have been approved. The proposed change in land use is in line with the Region A Spatial Development Plan and the COJ 2040 Spatial Development Framework. No mitigation measures other than the townplanning process is required.	*+ Medium*
			Alternative 1			*+ Medium*		*+ Medium*
	Not Applicable		No-Go Option	Not Applicable	Not Applicable	*None*	None required	*None*
Economic	**Positive**	Decline/increase in economy	Proposal	Yes	Direct	*+ Medium*	Once operational the development will provide housing opportunities in the area and thus will contribute to the economy in the area as people living in the area will likely purchase goods in nearby stores etc. This will have an economic multiplier effect in the local community. No mitigation measures are required.	*+ Medium*
			Alternative 1			*+ Medium*		*+ Medium*
	Negative		No-Go Option			*Medium*	Should the development not proceed, the benefits to the local community will be long term and negative. Further, the goals of the COJ SDF 2040 and Regional SDP will also not be	*Medium*

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
OPERATIONAL PHASE								
							met. There are no mitigation measures available,	
	Positive	Decline/increase in property value	Proposal	No	Direct	*+ Medium-High*	The development of the a residential development will increase the property value of the site overall. Further, it will have a knock on effect and is likely to increase the value of neighbouring properties as well. No mitigation measures are required. Due to the market preference for clusters, there is a increased positive benefit for the proposal.	*+ Medium-High*
			Alternative 1			*+ Medium*		*+ Medium*
	Negative		No-Go Option			*Medium*	The site was previously is vacant and degraded and without development, the property value is likely to decrease. This will have knock on effects on the surrounding properties. No mitigation, save for development of the site, is available.	*Medium*
	Positive	Employment	Proposal	Yes	Direct	*+ Medium*	The proposed development will result in approximately 31 permanent full time operation related employment opportunities for the local community. Local labour should be utilised as far as possible.	*+ Medium*
			Alternative 1			*+ Medium*		*+ Medium*
	Negative		No-Go Option			*Medium*	Should the development not proceed, the benefits to the local community will be long term and negative as potential employment opportunities will be lost. No mitigation measures are available.	*Medium*

In addition, the comments from GDARD dated 12 August 2021 requested additional impacts be assessed including:

- Impacts affecting the hydrological cycle of the system as well as the catchment area,
- How the impervious areas are further going to increase surface runoff while decreasing groundwater recharge?
- Pre-development impacts leading to the erosion,
- How the proposed bio-engineered drainage channel will assist in simulating the pre-degraded state of the wetland, whilst preserving some of the features of predevelopment hydraulic patterns such as pollutant removal features of natural receiving features
- The proposed stormwater approach should also seek to simulate natural features of the drainage systems (which is the proposal) and provide onsite management to address water quality goals.
- Impacts associated with the erven that will be located within the wetland and 30m buffer.

As per the requirements of Section E, a detailed impact assessment was undertaken and included in the Basic Assessment Report. This assessment included a number of aspects including impacts to surface water and therefore already assessed the pre-development impacts leading to erosion as well as how the proposed bio-engineered drainage line will assist the wetland/drainage line feature (under Stormwater and Erosion).

As part of this, it found that there was a positive medium impact related to the development in terms of stormwater and erosion due to the finalisation of the bio-regional plan which was supported by the Wetland Specialist. In contrast, the no-go alternative (i.e. leaving the system in its current state) was assessed as having a negative, medium impact as the continued poor management of stormwater on site and in the Kengies region would result in increased erosion.

In addition, based on the comments received from the Department, the Impact Assessment table has been updated to include some of the items identified by the Department including:

- Impacts to Hydrological System and Catchment
- Increased stormwater due to impervious surfaces
- Decreased groundwater recharge dye to impervious surfaces
- Impacts to erven due to wetland/drainage line features

The following impacts were identified and are included in the Impact Table for the Operation Phase below:

- **Impacts to Hydrological System and Catchment**: This was identified to have a positive **low-medium** impact due to the implementation of the bio-engineered regional stormwater channel as well as the necessary attenuation on site.
- **Increased stormwater due to impervious surfaces**: This was identified to have a negative, low impact which could be mitigated through the implementation of the necessary attenuation on site which would ensure the post development flow was not greater than the pre-development levels.
- **Decreased groundwater recharge due to impervious surfaces**: This was identified to have a negative, low impact which could be mitigated through the riparian buffer as well as the attenuation on site which would channel stormwater to areas where some infiltration to groundwater could take place.
- **Impacts to erven due to wetland/drainage line features** - The wetland feature identified on site is due to the existing poor stormwater management of the area. Firstly, due to the berm (which acts as a dam wall), stormwater that should flow down the drainage line is dammed and forced outward. Secondly, water from the south of the site is not managed and also feeds this wetland. As part of the development, the bio-engineered, stormwater channel will be completed and as such, the damming will no longer occur. In addition, the stormwater system will capture stormwater from the southern property. In addition, as discussed with the Departmental officials on 3 September 2021, the site will be filled and will utilize raft foundations (or equivalent) which will therefore accommodate any subsurface flow that may occur. As the design incorporates this, the impact to the erven in that area is expected to be low after mitigation.

Table 11: Additional Hydrological and Geo-hydrological Impacts

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
OPERATIONAL PHASE								
Additional Hydrological and Geo-hydrological Impacts	**Positive**	Impacts to Hydrological System and Catchment	Proposal	Yes	Direct	***+ Low-Medium***	• Due to the existing stormwater issues in the area, the Wetland Verification noted that the finalisation of the bio-engineered stormwater drainage channel is thus essential and supported from a wetland and aquatic resource management point of view. It is thus expected that impacts to the hydrological system will be positive due to the implementation of the bio-engineered stormwater channel.	***+ Low-Medium***
			Alternative 1			***+ Low-Medium***		***+ Low-Medium***
	Negative		No-Go Option	No	Not Applicable	*Medium*	None required. However, it should be noted that the stormwater system of the area requires is not yet finalised which causes negative impacts to the hydrological system of the area.	*Medium*
	Negative	Increased stormwater due to impervious surfaces	Proposal	Yes	Direct	*Medium*	• Proper stormwater management as per the approved stormwater management plan (including bio-engineered regional plan). This must include attenuation to ensure stormwater is at pre-development levels.	*Low*
			Alternative 1			*Medium*		*Low*
			No-Go Option	Not Applicable	Not Applicable	*None*	None required. However, it should be noted that the existing state of the wetland is poor and will continue to deteriorate without rehabilitation.	*None*
	Negative	Decreased groundwater recharge dye to impervious surfaces	Proposal	Yes	Indirect	*Low*	Development to incorporate the riparian buffer and include the necessary attenuation on site so to allow for infiltration to groundwater could take place.	*Low*
			Alternative 1			*Low*		*Low*
	None		No-Go Option	Not Applicable	Not Applicable	*None*	None required.	*None*
	Negative	Impacts to erven due to wetland/drainage line features	Proposal	No	Direct	*Low-Medium*	• Proper stormwater management as per the approved stormwater management plan (including bio-engineered regional plan). This must include attenuation to ensure stormwater is at pre-development levels. '• In addition, as agreed with the Departmental officials on 3 September 2021, the site will be filled and will utilize raft foundations (or equivalent) which will therefore accommodate any subsurface flow that may occur. As the design incorporates this, the impact to the erven in that area is expected to be low after mitigation.	*Low*
			Alternative 1			*Low-Medium*		*Low*
	None		No-Go Option	Not Applicable		*None*	None required.	*None*
	Positive	Impact of the Bio-regional channel	Proposal	Yes	Direct	***+Medium***	• T**he Wetland Verification noted that the finalisation of the bio-engineered stormwater drainage channel is thus essential and supported from a wetland and aquatic resource management point of view**. In addition, the following general measures should be implemented: • Instability and erosion of steep slopes must be stabilised immediately. Re-vegetation in consultation with landscape architect and ECO should be done if and where required. • To reduce the loss of material by erosion, disturbance must be kept to a minimum. • Where possible, natural vegetation should be retained to reduce the risk of erosion. • Silt fences must be used to stabilise the site, reduce erosion and silt entering the natural environment. No unchecked silt may enter the natural environment. • Proper stormwater management as per the approved stormwater management plan (including bio-engineered regional plan). • Increased run-off during construction should be managed using berms, temporary cut-off drains, attenuation	***+Medium***

	IMPACTS					RANKING WITHOUT MITIGATION	IMPLEMENTATION OF MANAGEMENT MEASURES	RANKING WITH MITIGATION
	Nature	Description	Alternative	Cumulative	Type	Significance (A + B + C) X P	Description and/or Mitigation and Management Measures (if applicable)	Significance
OPERATIONAL PHASE								
			Alternative 1			***+Medium***	ponds or other suitable structures, in consultation with the ECO and resident Engineer. • Stormwater management system is to be installed as soon as possible following site establishment, to attenuate stormwater during the construction phase, as well as during the operational phase. • Surface-water run-off and stormwater must be directed away from trenches and areas of excavation. • Stormwater and erosion control BMPS included in the Stormwater Management plan must be adhered to. • The site must be filled and will utilize raft foundations to allow for subsurface flow.	***+Medium***
	Negative		No-Go Option	No	Not Applicable	*Medium*	None required. However, it should be noted that the stormwater system of the area requires is not yet finalised which causes negative impacts to the stormwater of the Kengies area.	*Medium*

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

The following specialist studies were utilized in the compilation of the impact assessment:

- Baseline Ecological Habitat Assessment by Prism EMS (**Appendix G1**);
- Heritage Impact Assessment by HCAC Heritage Consultants (**Appendix G2**); and
- Wetland Verification (**Appendix G3**).

In addition to the environmental specialist studies above, the following technical studies were also undertaken and informed the assessment of impacts:

- Traffic Impact Statement (**Appendix G4**);
- Outline Scheme Report (**Appendix G4**); and
- Stormwater Management Plan (**Appendix G5**).

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

The following gaps and/or assumptions were associated with the specialist studies.

Baseline Ecological Habitat Assessment:

- All information provided for the Ecological Habitat Assessment was assumed to be correct. This includes all GIS data and website information used to determine all previous recordings of Fauna and Flora species potentially occurring on site.
- The study was limited to a snapshot view during one site visit and aimed only to confirm the desktop assessment. No detailed plant species lists, or faunal trapping was therefore undertaken as the site had some disturbed sections, and alterations have impacted the site.

Heritage Impact Assessment:

- The authors acknowledge that the brief literature review is not exhaustive on the literature of the area.
- Due to the subsurface nature of archaeological artefacts, the possibility exists that some features or artefacts may not have been discovered/recorded during the survey and the possible occurrence of unmarked graves and other cultural material cannot be excluded. Similarly, the depth of the deposit of heritage sites cannot be accurately determined due its subsurface nature. This report only deals with the footprint area of the proposed development and consisted of non-intrusive surface surveys.
- This study did not assess the impact on medicinal plants and intangible heritage as it is assumed that these components would have been highlighted through the public consultation process if relevant. It is possible that new information could come to light in future, which might change the results of this Impact Assessment.

Wetland Verification

- The study was limited to a snapshot view during one site visit. The field investigation was undertaken during February (summer) and May (Autumn) 2021 to assess and confirm any wetland zones present on the survey area. Weather conditions during the survey were favourable for recordings. It is not expected that the duration, date or season would affect the outcome of the study.
- The delineations and field recordings were recorded by handheld GPS.
- It must be noted that, during the process of converting spatial data to final output drawings, several steps are followed that may affect the accuracy of areas delineated. Due care has been taken to preserve accuracy. Printing or other forms of reproduction may also distort the scale indicated in maps.
- It is unlikely that more surveys would alter the outcome of this study radically.

3. Impacts that may result from the Decommissioning and Closure Phase

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

It is not expected that the proposed development will be decommissioned. As such, impacts related to decommissioning and closure are not applicable.

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

Not applicable.

Where applicable indicate the detailed financial provisions for rehabilitation, closure and ongoing post decommissioning management for the negative environmental impacts.

Not applicable.

4. Cumulative Impacts

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:

Cumulative impacts are those impacts that are created as a result of the combination of impacts of the proposed project, with impacts of other projects or operations, to cause related impacts, as well as a single impact over a certain time period which then results in the accumulation of negative/ positive impacts making the significance higher. These impacts occur when the incremental impact of the project, combined with the effects of other past, present and reasonably foreseeable future projects, are cumulatively considered.

Cumulative impacts are included in the detailed impact assessment included in **Appendix I** but in summary, the following impacts have been considered as cumulative for each phase of development:

Construction Phase:

- Dust emissions
- Emissions from vehicles and equipment (CO2, NOx, SOx, VOC's etc.)
- **Stormwater and Erosion (*positive*)**
- Domestic Waste
- Construction waste
- Hazardous Waste
- Loss of topsoil
- Loss of land capability
- Electricity consumption
- Water consumption
- Fuel consumption
- Raw materials consumption
- Loss of habitat
- Direct mortality of fauna
- Disruption of ecological life cycles due to the restriction of species movement
- Disruption of ecological life cycles due to noise and lighting
- Introduction of alien flora affecting native faunal assemblages
- Visual Impact
- **Change in Land use (*positive*)**
- **Decline/increase in property value (*positive*)**
- **Decline/increase in economy (*positive*)**
- **Employment (*positive*)**

Operational Phase:

- **Stormwater and Erosion (*positive*)**
- Domestic Waste
- Electricity consumption
- Water consumption
- Fuel consumption
- Raw Material Consumption
- **Change in Land use (*positive*)**

- **Decline/increase in property value (*positive*)**
- **Decline/increase in economy (*positive*)**
- **Employment (*positive*)**

Additional impacts which are cumulative in nature:

- **Impacts to Hydrological System and Catchment (positive)**
- Increased stormwater due to impervious surfaces
- Decreased groundwater recharge due to impervious surfaces
- Impacts to erven due to wetland/drainage line features
- **Impact of the Bio-regional channel (positive)**

It should be noted that even considering their cumulative nature, these impacts could be satisfactorily mitigated.

5. Environmental Impact Statement

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Proposal

The proposed development of Portion 565 (a portion of Portion 19) of the Farm Zevenfontein No. 407-JR, City of Johannesburg, Gauteng Province, to be known as Kengies Extension 35, involves the development of fifty-one (51) "Residential 2" erven which have a combined area of 1.17 hectares (ha). The following land use control details are applicable:

- Zoning: Residential 2 (dwelling units, residential buildings)
- Density: 26 units/ha
- Floor area ratio (FAR): 0.8 percent
- Coverage: 60%
- Height restriction: 2 storeys
- Building line: 2m on common boundaries, 3m on Frederick Road

In addition, one (1) "Special" erf for Private Roads, Guardhouse and Access Control Measures (0.51ha) and one (1) "Private Open Space" erf of 0.35ha will be developed. All necessary access, internal roads and services will also be put in place.

This includes the finalisation of the bio-engineered regional stormwater channel which passes through the site. This channel forms part of the Regional Stormwater Plan for the area which was developed to deal with historic issues such as erosion, deposited silt on downstream properties, and unnatural flooding scenarios. This bio-engineered regional stormwater channel includes Erosion control blankets (Geo fabric), Armoring which comprises of the Armoflex DN 140 system and then filling with in-situ topsoil, and vegetation.

The design of the bio-engineered regional stormwater channel aimed to:

- Maintain as accurately as possible natural water infiltration and flows;
- Use water sensitive urban design principals;
- Use best practice urban stormwater quality and quantity management; and
- Address temporary and permanent erosion prevention, sediment control and control of other development activities that can cause pollution.

It should be noted that the proposed regional system has already been implemented throughout, with the development of the section through Portion 565 (a portion of Portion 19) of the Farm Zevenfontein No. 407-JR (Kengies Extension 35), being the last section to be developed. The completion of the system will ensure proper stormwater management in the area.

Two alternatives are assessed as part of the Basic Assessment Process in addition to the No-Go Alternative. These included:

- Proposal; and
- Alternative 1.

The main differences between the proposal and alternative is the type of residential development. In the Proposal, a cluster development will take place and will include the development of 51 separate erven which is in line with market research for the area.

It should be noted that whilst the proposal does not take into the wetland feature on site, this is not expected to have significant impact as the feature is due to the existing poor stormwater management of the area. As part of the development, the bio-engineered, stormwater channel will be completed and as such, the damming will no longer occur. In addition, the stormwater system will capture stormwater from the southern property. Therefore, even if this feature was included in the layout, it would no longer occur post development as the main driver of this area (poorly managed stormwater) would be managed through the completed bio-engineered regional channel.

In addition, if the wetland feature was removed from the development, it would take out around 10 units. This would seriously compromise the economic viability of the development and would effectively sterilize the development. This would have negative multiplier effects as there would be a loss of approximately R95 million investment in the area. There would also be a loss of the associated employment opportunities (200 construction related (temporary) jobs and 31 operational (permanent) jobs).

The proposal is preferred from a business perspective as it maximises the use of the site and is in line with the market requirements for the area. It thus improves the socio-economic benefits associated with the development.

Based on the findings of the specialist studies and impact assessment and taking into account the successful implementation of the EMPr, it is felt that the Proposal should be authorised. In addition, the **bio-engineered stormwater channel** must be completed on the site so to ensure proper stormwater management in the area. **Further, in order to allow for subsurface drainage and as agreed with the Department during the meeting held on 3 September 2021, the site must be filled and raft (or equivalent) foundations utilized.**

The reasons for this opinion are discussed in more detail in the following subjections:

1. Need for the Project

In terms of the need and desirability of the project, it should be noted that the proposed development will further the objectives of the Region A Regional Spatial Development Plan (RSDF) by creating intensification of developments within Sub Area 4 which is in line with the objectives for this area. It is also in line with the City of Johannesburg Spatial Development Framework 2040. A large extent of the proposed development falls within Zone 1: Urban Development Boundary (UDB) of the Gauteng Provincial Environmental Management Framework (GPEMF). The intention of this zone is "*to streamline urban development activities in it and to promote development infill, densification and concentration of urban development within the urban development zones as defined in the COJ Spatial Development Framework (GSDF), in order to establish a more effective and efficient city region that will minimise urban sprawl into rural areas*."

Whilst a section, does fall within Zone 2, this section relates to the watercourse on site. As discussed above, a regional bio-engineered stormwater system has been developed for the Kengies area and this property is the last section which requires development. The aim of this bio-regional stormwater system is to

- Maintain as accurately as possible natural water infiltration and flows
- Use water sensitive urban design principals
- Use best practice urban stormwater quality and quantity management
- Address temporary and permanent erosion prevention, sediment control and control of other development activities that can cause pollution

Without the finalisation of this bio-regional stormwater system (which needs to function as a whole) and the necessary attenuation, the area will continue to experience stormwater capacity issues which will impact on neighbours downstream of the site.

Lastly from a socio-economic perspective, the proposed development will benefit the area as it will result in approximately R95 million investment in the area which will have numerous economic multiplier effects that will benefit the region positively. The proposed development will also result in 200 construction related (temporary) jobs and 31 operational (permanent) jobs.

2. Sensitivity

In order to better understand the environmental sensitivity and the potential impacts related to the development the following specialist studies have been undertaken:

- Baseline Ecological Habitat Assessment;
- Heritage Impact Assessment; and
- Wetland Verification.

In summary, the Baseline Ecological Habitat Assessment found that from a desktop perspective, the proposed development occurs within the Egoli Granite Grassland (Endangered) vegetation type and an Ecological Support Area. The study however found that the project area has been severely altered. Three main habitat types were identified within the study site, namely, Disturbed vegetation; Artificial wetland; and Grassland. The habitats

identified were identified as having a low to very low sensitivity and no Species of Conservation Concern was identified on site. In conclusion, the specialist noted that the proposed development is unlikely to have a high impact on the study site due to low to very low sensitivity on site. Aspects such as human activities in and around the study site, presence of alien invasive species on site, lack of habitat for most fauna species and the presence of feral animals in the area have impacted on the existing sensitivity. A number of mitigation measures were recommended and have been included in the Environmental Management Programme. Overall, the study did not find any reasons that the development should not proceed.

In addition, a Heritage Impact Assessment was undertaken. The study area was assessed both on desktop level and by a field survey which was conducted as a non-intrusive pedestrian survey to cover the extent of the study area. The study noted that the study area is located in a densely developed residential area and surrounding developments and road construction as well as dumping activities which would have impacted on surface evidence of heritage site if any ever occurred in the area. No structures older than 60 years or archaeological finds of significance were identified. Further, based on the SAHRA Paleontological map the area is of insignificant paleontological sensitivity and no further studies are required for this aspect. Therefore, the study concluded that no significant heritage resources will be affected by the development and therefore the impact of the project on heritage resources are low and the project can commence based on the implementation of the recommendations in this report and the approval of SAHRA. The main recommendation included in the study (Implementation of a chance find procedure for the project) has been included in the EMPr.

Lastly, a Wetland Verification was undertaken. The Wetland Specialist found that the site is highly impacted on by stormwater influx onto the site. In particular, the incomplete regional bio-engineered stormwater drainage channel and associated remnants inclusive of a bermed area to the east of the uncompleted channel and depression area has contributed to the development of simulated wetland conditions in this area. This is a combination of sheet flow related to stormwater and subsurface interflow culminating next to the incomplete regional bio-engineered stormwater drainage channel. The additional water input from the channel and poor performance of the uncompleted bio-engineered stormwater drainage channel further contributes to water influx in the section next to the channel. Stormwater management is therefore of critical importance to secure and protect the site as well as the downstream channel and total system functionality. The finalisation of the bio-engineered stormwater drainage channel is thus essential and supported from a wetland and aquatic resource management point of view. The study recommended that all conditions of the WUL for the regional bio-engineered stormwater drainage channel should be adhered to. In conclusion, the Study found that the development may go-ahead and the bio-engineered stormwater drainage channel must be completed as part of the development of Kengies Ext 35.

A compositive sensitivity map has been compiled on the basis of these studies and is provided in **Figure 10** (as part of the Executive Summary). Overall, the site has **a low to very low sensitivity**. An A3 version of this map is provided in Appendix A3.

It should be noted that the wetland feature is identified as having a **low** sensitivity. This is due to the fact that the feature exists due to the existing poor stormwater management of the area.

3. Impact Assessment

A detailed impact assessment has been undertaken and assessed the types of impact, duration of impacts, likelihood of potential impacts as well as the overall significance of the impact occurring (**Appendix I**). Most impacts have a low significance once mitigation measures were applied (please see **Table 12** below for the impact summary for the proposal). The following can be noted:

- During construction, dust emissions and emissions from vehicles will occur but will be of a low significance. A number of mitigation measures will be implemented and will further reduce the intensity of these impacts. During operation, no dust emissions are expected. Vehicle emissions are not expected as residents that move into the development would have existing cars and thus emissions in the Gauteng region will not be changed.
- Noise impacts will occur throughout construction but will be of a low significance. Mitigation measures will further reduce the significance of this impact. The proposed residential development is in line with activities and uses in the area and will not provide significant noise pollution during operation. The Managing Company/Body Corporate should develop rules and regulations to manage noise in line with applicable by-laws.
- The proposed development is adjacent to a watercourse which is currently degraded and impacted by stormwater flow. This section of the watercourse is the last section of the system that required canalisation as part of the bio-engineered stormwater system and has contributed to simulated wetland conditions on site. The Wetland Verification found that stormwater management is therefore of critical importance to secure and protect the site as well as the downstream channel and total system functionality. The finalisation of the bio-engineered stormwater drainage channel is thus essential and supported from a wetland and aquatic resource management point of view. As such, impacts related to stormwater and erosion are expected to be of a positive medium significance for both construction and operation as it will contribute to better functioning of the system. Impacts to water quality and biota are

expected to be of low significance during operation and construction. General mitigation are included in the EMPr.

- Waste in the form of domestic waste, hazardous waste and construction waste will be generated. However, the impacts related to this can be mitigated to 'low' with the implementation of a number of mitigation measures. During operation, domestic waste will be generated. Impacts related to waste generation can be mitigated to a low significance.
- Whist, soil alteration impacts such as loss of topsoil, loss of land capability, alteration of topography, soil erosion and soil pollution will occur and have a medium to low-medium significance before mitigation, these are not felt to be significant due to the currently degraded nature of the site. Where possible, mitigation measures have been suggested to reduce the significance of the impacts to low-medium. During operation, impacts related to soil alteration are not expected as impacts will be undertaken during construction.
- In terms of resource consumption, limited electricity usage is expected during construction as generators will likely be used. Further, in terms of water consumption, fuel consumption and raw material consumption, impacts can be considered to be of a low-medium significance. Conservation measures should be implemented where possible and environmental education should be undertaken. Impacts after mitigation are expected to be low. During operation, electricity, water and raw material consumption will take place but will be of a low-medium to low significance after mitigation. Fuel consumption is not expected during operation, as those residents who have cars, will have had these prior to moving into the development.
- Impacts related to effects on biodiversity were also assessed. These included Loss of Habitat due to loss of vegetation, Direct mortality of fauna and flora, Disruption of ecological life cycles due to the restriction of species movement, Disruption of ecological life cycles due to noise and lighting and Introduction of alien flora affecting native faunal assemblages. Based on the Baseline Ecological Habitat Assessment which found that the study site was disturbed, the significance of these impacts was found to be low after mitigation. A number of mitigation measures have been included in the EMPr. During operation, the following impacts were identified: Loss of existing habitat due to loss of vegetation, Direct mortality of fauna and Disruption of ecological life cycles due to the restriction of species movement. These impacts were identified as medium to low-medium to low significance but in all cases, the specialist noted that impacts could be satisfactorily reduced to low levels. Mitigation measures have been included in the EMPr and will be implemented.
- Potential impacts related to pollution incidents, health and safety, storage of hydrocarbons and fire may occur during construction but can be mitigated through the implementation of the site specific EMPr and will thus have a low significance. During operation, some pollution incidents may still occur however these will have a low significance as maintenance of the sewer line will be as per the requirements of the COJ. Health and safety impacts may still occur. These can be mitigated through the 24 hour access control. Fire is a possible impact during operation but would be incidental in nature. Overall, the significance of this expected to be low.
- During construction, the main social impacts will be visual impacts, safety and security, traffic disruptions, loss and loss of sense of place. All these impacts can be successfully mitigated to a low significance. A positive impact related to the change of land use is expected as currently the site is degraded. Further, the development of the site will further the objectives of the Regional SDP and COJ 2040 SDF. During operation, there will be a positive impact related to safety and security as the development of the site is expected to improve safety in the area. All other impacts can be mitigated to a low significance.
- During construction and operation, a number of positive economic impacts will occur relating to an increase in economy and increased employment. These have a medium level of significance after mitigation. These economic impacts are more significant for the proposal as it is in line with the market requirements of the area.

In addition, at the request of the Department, the following additional impacts were assessed **Impacts to Hydrological System and Catchment**: This was identified to have a positive **low-medium** impact due to the implementation of the bio-engineered regional stormwater channel as well as the necessary attenuation on site.

- **Increased stormwater due to impervious surfaces**: This was identified to have a negative, low impact which could be mitigated through the implementation of the necessary attenuation on site which would ensure the post development flow was not greater than the pre-development levels.
- **Decreased groundwater recharge due to impervious surfaces**: This was identified to have a negative, low impact which could be mitigated through the riparian buffer as well as the attenuation on site which would channel stormwater to areas where some infiltration to groundwater could take place.
- **Impacts to erven due to wetland/drainage line features** - The wetland feature identified on site is due to the existing poor stormwater management of the area. Firstly, due to the berm (which acts as a dam wall), stormwater that should flow down the drainage line is dammed and forced outward. Secondly, water from the south of the site is not managed and also feeds this wetland. As part of the development, the bio-engineered, stormwater channel will be completed and as such, the damming will no longer occur. In addition, the stormwater system will capture stormwater from the southern property. In addition, as discussed with the Departmental officials on 3 September 2021, the site will be filled and will

utilize raft foundations (or equivalent) which will therefore accommodate any subsurface flow that may occur. As the design incorporates this, the impact to the erven in that area is expected to be low after mitigation.

Based on the impact assessment undertaken as well as the findings of the specialist studies and the need for the project, it is the opinion of the EAP, that the impacts related to the proposed development can be satisfactorily mitigated and that **the Proposal be approved**.

Alternative 1

With the Alternative, a Sectional title development would be put in place which is not in line with the market requirements of the area. Therefore, from a socio-economic perspective, Alternative 1 is not preferred.

1. Need for the Project

The need for both alternatives is the same and thus the full discussion provided above is not repeated here. In summary, the development is in line with the objectives of both the Regional A SDP and COJ 2040 SDF. It will have a positive economic effect in the area (although not to the same extent as with the proposal as it is not in line with the market requirements of the area).

2. Sensitivity

As mentioned in the previous Impact Statement, a Baseline Ecological Habitat Assessment, Heritage Impact Assessment and Wetland Verification were undertaken and found that the site was disturbed by previous activities. A number of mitigation measures were recommended and have been included in the EMPr.

As with the Proposal, a compositive sensitivity map has been compiled and is provided in Appendix A3. It should be noted that the wetland feature is identified as having a **low** sensitivity. This is due to the fact that the feature exists due to the existing poor stormwater management of the area.

3. Impact Assessment

A detailed impact assessment has been undertaken for Alternative 1 and assessed the types of impact, duration of impacts, likelihood of potential impacts as well as the overall significance of the impact occurring (**Appendix I**). Based on the impact assessment, Alternative 1 is **not preferred** for the following reason:

- The layout of the alternative is such that it is not in line with the market requirements of the area and therefore reduces potential positive socio-economic impacts.

Please see **Table 13** below for the impact summary for Alternative 1.

Based on the impact assessment undertaken as well as the findings of the specialist studies, it is the opinion of the EAP, that Alternative 1 **NOT BE AUTHORISED.**

Alternative 2

No-go (compulsory)

The No-Go option involves the option of not developing and the site and associated bio-engineered stormwater system.

1. Need for the Project

Should the No-go Option be selected, the objectives of both the COJ 2040 SDF and Region A Regional Spatial Development Plan will not be met on the specific property. Further, there will be a loss of positive benefits associated with the development including the general improvement of the area, improvements related to services and increases in the local economy. **Lastly, there will be continued issues related to stormwater and erosion on the site and downstream properties as the bio-engineered stormwater system will not be completed and will thus result in continued mis-management of the stormwater. Therefore, from a needs perspective, the No-go option is NOT preferred.**

2. Impact Assessment

A detailed impact assessment has been undertaken for No-Go Alternative and assessed the types of impact, duration of impacts, likelihood of potential impacts as well as the overall significance of the impact occurring (**Appendix I**).

Based on the impact assessment, the no-go option is **not preferred** for a number of reasons.

- Firstly, and most importantly, the no-go option will result in a loss of the social and economic benefits associated with the proposed development. This **cannot be mitigated to a satisfactory level.**
- Secondly, as the site is vacant, the option of not developing the site may result in additional safety and security impacts. This would have additional effects on fire safety, property value, soil erosion etc.
- Lastly, there will be continued issues related to stormwater and erosion on the site and downstream properties as the bio-engineered stormwater system will not be completed and will thus result in continued mis-management of the stormwater. This **cannot be mitigated to a satisfactory level.**

Based on the impact assessment undertaken as well as the need for the project, it is the opinion of the EAP, that the No-Go Option **NOT BE AUTHORISED.**

6. Impact Summary of the Proposal or Preferred Alternative

For proposal:

Please see **Table 12** for a summary of the impact assessment undertaken. In general, most negative impacts from both construction and operation could be mitigated to a low significance with the implementation of the proposed mitigation measures which are included in the EMPr. Further, numerous social and economic benefits are related to proposal which have a medium to medium-high significance. **For this reason, the Proposal is preferred.**

Table 12: Impact Summary for the Proposal

Impacts	Comment
Atmospheric Emissions	During construction, dust emissions and emissions from vehicles will occur but will be of a low significance. A number of mitigation measures will be implemented and will further reduce the intensity of these impacts. During operation, no dust emissions are expected. Vehicle emissions are not expected as residents that move into the development would have existing cars and thus emissions in the Gauteng region will not be changed.
Noise	Noise impacts will occur throughout construction but will be of a low significance. Mitigation measures will further reduce the significance of this impact. During operation, the proposed residential development is in line with activities and uses in the area and will not provide significant noise pollution. The Managing Company/Body Corporate should develop rules and regulations to manage noise in line with applicable by-laws.
Impacts to surface water and Impacts to Hydrological System and Catchment	The proposed development is adjacent to a watercourse which is currently degraded and impacted by stormwater flow. This section of the watercourse is the last section of the system that required canalisation as part of the bio-engineered stormwater system and has contributed to simulated wetland conditions on site. The Wetland Verification found that stormwater management is therefore of critical importance to secure and protect the site as well as the downstream channel and total system functionality. The finalisation of the bio-engineered stormwater drainage channel is thus essential and supported from a wetland and aquatic resource management point of view. As such, impacts related to stormwater and erosion are expected to be of a positive medium significance for both construction and operation as it will contribute to better functioning of the system. Impacts to water quality and biota are expected to be of low significance during operation and construction. General mitigation measures are included in the EMPr. In addition, at the request of the Department, the following additional impacts were assessed: • **Impacts to Hydrological System and Catchment:** This was identified to have a positive low-medium impact due to the implementation of the bio-engineered regional stormwater channel as well as the necessary attenuation on site. • **Increased stormwater due to impervious surfaces**: This was identified to have a negative, low impact which could be mitigated through the implementation of the necessary attenuation on site which would ensure the post development flow was not greater than the pre-development levels. • **Decreased groundwater recharge due to impervious surfaces**: This was identified to have a negative, low impact which could be mitigated through the riparian buffer as well as the attenuation on site which would channel stormwater to areas where some infiltration to groundwater could take place. • **Impacts to erven due to wetland/drainage line features** - The wetland feature

	identified on site is due to the existing poor stormwater management of the area. Firstly, due to the berm (which acts as a dam wall), stormwater that should flow down the drainage line is dammed and forced outward. Secondly, water from the south of the site is not managed and also feeds this wetland. As part of the development, the bio-engineered, stormwater channel will be completed and as such, the damming will no longer occur. In addition, the stormwater system will capture stormwater from the southern property. In addition, as discussed with the Departmental officials on 3 September 2021, the site will be filled and will utilize raft foundations (or equivalent) which will therefore accommodate any subsurface flow that may occur. As the design incorporates this, the impact to the erven in that area is expected to be low after mitigation.
Waste Generation	During construction, waste in the form of domestic waste, hazardous waste and construction waste will be generated. However, the impacts related to this can be mitigated to 'low' with the implementation of a number of mitigation measures. During operation, domestic waste will be generated. Impacts related to waste generation can be mitigated to a low significance.
Soil Alteration	Whist, soil alteration impacts such as loss of topsoil, loss of land capability, alteration of topography, soil erosion and soil pollution will occur and have a medium to low-medium significance before mitigation, these are not felt to be significant due to the currently degraded nature of the site. Where possible, mitigation measures have been suggested to reduce the significance of the impacts to low-medium. During operation, impacts related to soil alteration are not expected as impacts will be undertaken during construction.
Resource Consumption	In terms of resource consumption, limited electricity usage is expected during construction as generators will likely be used. Further, in terms of water consumption, fuel consumption and raw material consumption, impacts can be considered to be of a low-medium significance. Conservation measures should be implemented where possible and environmental education should be undertaken. Impacts after mitigation are expected to be low. During operation, electricity, water and raw material consumption will take place but will be of a low-medium to low significance after mitigation. Fuel consumption is not expected during operation, as those residents who have cars, will have had these prior to moving into the development and thus no additional fuel consumption is expected.
Effects on Biodiversity	Impacts related to effects on biodiversity were also assessed. These included Loss of Habitat due to loss of vegetation, Direct mortality of fauna and flora, Disruption of ecological life cycles due to the restriction of species movement, Disruption of ecological life cycles due to noise and lighting and Introduction of alien flora affecting native faunal assemblages. Based on the Baseline Ecological Habitat Assessment which found that the study site was disturbed, the significance of these impacts was found to be low after mitigation. A number of mitigation measures have been included in the EMPr. During operation, the following impacts were identified: Loss of existing habitat due to loss of vegetation (stochastic events), Direct mortality of fauna and Disruption of ecological life cycles due to the restriction of species movement. These impacts were identified as medium to low-medium to low significance but in all cases, the specialist noted that impacts could be satisfactorily reduced to low levels. Mitigation measures have been included in the EMPr and will be implemented.
Incidents, accidents and potential emergency situations	Potential impacts related to pollution incidents, health and safety, storage of hydrocarbons and fire may occur during construction but can be mitigated through the implementation of the site specific EMPr and will thus have a low significance. During operation, some pollution incidents may still occur however these will have a low significance as maintenance of the sewer line will be as per the requirements of the COJ. Health and safety impacts may still occur. These can be mitigated through the 24 hour access control. Fire is a possible impact during operation but would be incidental in nature. Overall, the significance of this expected to be low.
Social	During construction, the main social impacts will be visual impacts, safety and security, traffic disruptions, loss and loss of sense of place. All these impacts can be successfully mitigated to a low significance. A positive impact related to the change of land use is expected as currently the site is degraded. Further, the development of the site will further

	the objectives of the Regional SDP and COJ 2040 SDF. During operation, there will be a positive impact related to safety and security as the development of the site is expected to improve safety in the area. All other impacts can be mitigated to a low significance.
Economic	During construction and operation, a number of positive economic impacts will occur relating to an increase in economy and increased employment. These have a medium level of significance after mitigation. These economic impacts are more significant for the proposal as it is in line with the market requirements of the area.

For alternative:

A detailed impact assessment has been undertaken for Alternative 1 and assessed the types of impact, duration of impacts, likelihood of potential impacts as well as the overall significance of the impact occurring (Appendix I). Based on the impact assessment, Alternative 1 is not preferred for a number of reasons:

- The layout of the alternative is such that it is not in line with the market requirements of the area and therefore reduces potential positive socio-economic impacts.

Table 13 below provides a summary of the impacts assessed.

Table 13: Impact Summary for Alternative 1

Impacts	Comment
Atmospheric Emissions	As with the proposed alternative, Alternative 1 will have similar atmospheric emissions: • During construction, dust emissions and emissions from vehicles will occur but will be of a low significance. A number of mitigation measures will be implemented and will further reduce the intensity of these impacts. • During operation, no dust or vehicle emissions are expected.
Noise	As with the proposed alternative, Alternative 1 will have similar noise impacts which will occur throughout construction but will be of a low significance. Mitigation measures will further reduce the significance of this impact. Noise impacts during operation will occur but will be in line with the current noise levels and are not expected to be significant. .
Impacts to surface water and Hydrological System and Catchment	As with the proposed alternative, Alternative 1 will have similar impacts to surface water. The proposed development is adjacent to a watercourse which is currently degraded and impacted by stormwater flow. This section of the watercourse is the last section of the system that required canalisation as part of the bio-engineered stormwater system and has contributed to simulated wetland conditions on site. The Wetland Verification found that stormwater management is therefore of critical importance to secure and protect the site as well as the downstream channel and total system functionality. The finalisation of the bio-engineered stormwater drainage channel is thus essential and supported from a wetland and aquatic resource management point of view. As such, impacts related to stormwater and erosion are expected to be of a positive medium significance for both construction and operation as it will contribute to better functioning of the system. Impacts to water quality and biota are expected to be of low significance during operation and construction. General mitigation measures are included in the EMPr. In addition, at the request of the Department, the following additional impacts were assessed and were the same for both the proposal and the alternative: • **Impacts to Hydrological System and Catchment:** This was identified to have a positive low-medium impact due to the implementation of the bio-engineered regional stormwater channel as well as the necessary attenuation on site. • **Increased stormwater due to impervious surfaces**: This was identified to have a negative, low impact which could be mitigated through the implementation of the necessary attenuation on site which would ensure the post development flow was not greater than the pre-development levels. • **Decreased groundwater recharge due to impervious surfaces**: This was identified to have a negative, low impact which could be mitigated through the riparian buffer as well as the attenuation on site which would channel stormwater to areas where some infiltration to groundwater could take place. • **Impacts to erven due to wetland/drainage line features** - The wetland feature identified on site is due to the existing poor stormwater management of the area. Firstly, due to the berm (which acts as a dam wall), stormwater that should flow down the drainage line is dammed and forced outward. Secondly, water from the south of the site is not managed and also feeds this wetland. As part of the development, the bio-engineered, stormwater channel will be completed and as such, the damming will no longer occur. In addition, the stormwater system will capture stormwater from the southern property. In addition, as discussed with the Departmental officials on 3 September 2021, the site will be filled and will utilize raft foundations (or equivalent) which will therefore accommodate any subsurface flow that may occur. As the design incorporates this, the impact to the erven in that area is expected to be low after mitigation.

Waste Generation	As with the preferred alternative, waste in the form of domestic waste, hazardous waste and construction waste will be generated. However, the impacts related to this can be mitigated to 'low' with the implementation of a number of mitigation measures. During operation, domestic waste will be generated. Very small volumes of hazardous waste may also be generated. Impacts related to waste generation can be mitigated to a low significance
Soil Alteration	As with the proposal, whist, soil alteration impacts such as loss of topsoil, loss of land capability, alteration of topography, soil erosion and soil pollution will occur and have a medium to low-medium significance before mitigation, these are not felt to be significant due to the currently degraded nature of the site. Where possible, mitigation measures have been suggested to reduce the significance of the impacts to low-medium. During operation, no impacts are expected.
Resource Consumption	In terms of resource consumption, the usage between the proposal and alternative are expected to be similar. As noted, some electricity usage is expected during construction. Further, in terms of water consumption, fuel consumption and raw material consumption, impacts can be considered to be of a low-medium significance. Conservation measures should be implemented where possible and environmental education should be undertaken. Impacts after mitigation are expected to be low. During operation, electricity, water, fuel and raw material consumption will take place but will be of a low-medium to low significance after mitigation. Further, in order to reduce water consumption, grey water recycling will take place and will reduce the water requirements of the development.
Effects on Biodiversity	Impacts related to effects on biodiversity were also assessed and are similar to the proposed layout. These included Loss of Habitat due to loss of vegetation, Direct mortality of fauna and flora, Disruption of ecological life cycles due to the restriction of species movement, Disruption of ecological life cycles due to noise and lighting and Introduction of alien flora affecting native faunal assemblages. Based on the Baseline Ecological Habitat Assessment which found that the study site was disturbed, the significance of these impacts was found to be low after mitigation. A number of mitigation measures have been included in the EMPr. During operation, the following impacts were identified: Loss of existing habitat due to loss of vegetation (stochastic events), Direct mortality of fauna and Disruption of ecological life cycles due to the restriction of species movement. These impacts were identified as medium to low-medium to low significance but in all cases, the specialist noted that impacts could be satisfactorily reduced to low levels. Mitigation measures have been included in the EMPr and will be implemented.
Incidents, accidents and potential emergency situations	The Potential impacts related to pollution incidents, health and safety, storage of hydrocarbons and fire may occur during construction but can be mitigated through the implementation of the site specific EMPr and will thus have a low significance. These are the same as the proposal. During operation, Health and safety impacts may still occur but can be satisfactorily mitigated. Fire is a possible impact during operation but would be incidental in nature. Overall, the significance of this expected to be low. In all cases, there is no difference between the proposal and the alternative.
Social	As with the proposal, during construction, the main social impacts will be visual impacts, safety and security, traffic disruptions, loss and loss of sense of place. All these impacts can be successfully mitigated to a low significance. A positive impact related to the change of land use is expected as currently the site is degraded. Further, the development of the site will further the objectives of the COJ 2040 SDF and Regional SDP. During operation, there will be a positive impact related to safety and security as the development of the site is expected to improve safety in the area. All other impacts can be mitigated to a low significance. There is no difference between alternatives.
Economic	During construction, a number of positive economic impacts will occur relating to an increase in economy and increased employment. Both these have a medium-high significance after mitigation. However, due to the fact that the alternative is not in line with the market requirements for the area, the positive impacts related to local economy will not be as great. It is for this reason that **Alternative 1 is not preferred.**

Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

When assessing the alternatives, the following was assessed:

- The results of the impact assessment; and
- The need for the project.

Taking into account the findings of the specialist study, a detailed impact assessment was undertaken for both the Proposal and the alternative (Alternative 1) as well as the No-Go Option. A summary of the findings is provided in **Table 12** and **Table 13** above. They show that the following impacts were expected to be similar for both the alternative and the proposal:

- Atmospheric Emissions;
- Noise;
- Surface Water;
- Waste Generation;
- Soil Alteration;
- Resource Consumption;
- Effects on Biodiversity;
- Incidents, accidents and potential emergency situations; and
- Social.

Where impacts differed was in the economic sense in that due to the fact that the alternative is not in line with market requirements and thus will have a reduced economic benefit. **Therefore, based on the findings of the specialist study and impact assessment and taking into account the successful implementation of the EMPr, it is felt that Proposal should be authorised.**

7. Spatial Development Tools

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

The following spatial development tools were applied and/or considered:

- The GDARD C-PLAN and environmentally sensitive layers were utilized during the compilation of this report to identify biodiversity specialist reports as well as possible sensitive areas within the area. A section of the site falls within an ESA. The Baseline Ecological Habitat Assessment however was undertaken and noted that the site is degraded and therefore no longer representative of CBA area.
- The South African National Biodiversity Institute (SANBI) provides a database, namely the Botanical Database of Southern Africa (BODATSA) which was used by the Ecological specialist to determine sensitive flora species on site.
- Data from the South African Bird Atlas Project (SABAP2 was also utilized to identify potentially occurring bird species in and around the site.
- The FitzPatrick Institute of African Ornithology - Virtual Museum website was also utilized.
- The Gauteng Provincial Environmental Management Framework was utilized in the compilation of this report. The site mostly falls within Zone 1 – Urban Development Zone and is thus intended for streamlining of development and densification. A section falls within Zone 2 – Sensitive Zone and relates to the formalisation of the stormwater system.
- The City of Johannesburg Spatial Development Framework 2040 was consulted as Spatial Development Tool and it was found that the area occurs within a Consolidation zone.
- The Reginal Spatial Development Plan was also assessed. The proposed development falls within the Sub-Area 4.

8. Recommendation of the Practitioner

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner as bound by professional ethical standards and the code of conduct of EAPASA).	YES ✓	NO

If "NO", indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):

Not applicable.

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

The following are recommended conditions for inclusion in the EA:

- The **proposed layout** should be implemented;
- **The finalisation of the bio-engineered regional stormwater channel must be undertaken**.
- **The site should be filled and raft foundations (or equivalent) utilized so to allow for any subsurface flow.**
- A copy of the Final SDP must be submitted to GDARD once finalised as part of the townplanning process.
- An Environmental Control Officer (ECO) should be appointed to ensure compliance to the authorisation and EMPr. Weekly construction monitoring together with six-monthly full environmental audits is recommended;
- As required by the Baseline Ecological Habitat Assessment, the following should be undertaken:
  - Minimising the further loss of fauna and flora habitat by strictly keeping construction activities within the footprint of the proposed study area.
  - All construction activities including laydown areas and service roads should strictly be kept within the study area;
  - A qualified environmental control officer (ECO) should be appointed during the construction phase. The ECO should during the pre-construction phase identify species that will be directly impacted during the construction phase. This includes species of fauna found during the construction phase.
  - Areas on site that will be denuded during the construction phase should be vegetated with indigenous vegetation to prevent the loss of topsoil due to erosion activities such as wind and flooding; and
  - An alien vegetation management plan for the site should be compiled and implemented throughout the construction phase.
  - Should any fauna species be found during the construction phase, activities should stop until the specific species move away. Should the species not move away, a sufficient specialist should be consulted to implement the correct form of action (example ECO);
  - A waste management plan should be compiled and implemented on site for any type of waste to be collected and stored adequately. It is also recommended that all waste on site should be removed on a weekly basis to prevent rodents and any other form of pest entering the site;
  - No Trapping, killing or poisoning of any form of wildlife found on site is allowed;
  - Measures should be put in place on site so that all employees are fully aware on how to handle a situation for when encountered by a species. The killing of any animals found on site, such as lizards, birds and even snakes should be strictly prohibited; and
  - No domesticated animals such as cats and dogs are allowed on site during both the pre-construction and construction phase.
- As required by the Heritage Impact Assessment:
  - Implementation of a chance find procedure;
- As required by the Wetland Verification:
  - The finalisation of the bio-engineered stormwater drainage channel must be undertaken.
  - The buffering of the system should tie in with the adjacent completed system.
  - The bio-engineered stormwater drainage channel and associated buffer should be rehabilitated to tie in with the existing features.
  - The conditions of the Water Use License (WUL) must be adhered to.
- As required by the Stormwater Management Plan:
  - The Attenuation pond and stormwater pipes are to be cleaned and de-sludged at the beginning of the raining season, at least once a month during the raining season and at the end of the raining season. No shrubs or other elements that occupy a large volume (whether organic or inorganic) are to be placed within the attenuation pond enclosure
  - Appropriate signage to be erected on site by the developer.
  - Both the Channel and pond areas are to be fenced in.
  - Pond piped outlets are to be covered with a caged / metal grid so as to prevent a vortex from

forming.

- Site Entry Best Management Practices (BMPs)
  - Access to and from the work site must be controlled so as to prevent migration of sediments off the work site.
- Perimeter Sediment Control BMP's
  - Temporary sediment control fences should be installed prior to commencement with construction to provide a physical barrier to sediment movement and reducing run off velocities.
  - Filtration bags (eg.sandbags) may be used as an alternative.
  - Vegetated buffers must be placed along the sides of the corridor as a permanent measure against sediment entering the stormwater corridor.
  - Storm drain inlets are to be temporarily protected by means of filtration berms or a sand bag barrier.
- Stormwater Control BMP's
  - Temporary Interceptor Dikes and swales must be used during rain storms
  - Alternatively Stormwater barriers in the form of sand bag check dams could be used.
  - Attenuation pond should have a silt trap which will form part of the permanent perimeter Sediment Control BMP's of the individual developments.
- Erosion Prevention BMP's
  - Due to the highly eroding characteristics of the in-situ soils a three tier environmentally sensitive erosion prevention channel has been devised. This system includes the following components
  - Erosion control blanket (Geo fabric)
  - Armoring which comprises the Armoflex DN 140 system which has big holes in each block and allows the natural water infiltration to remain at the same levels. Furthermore it allows for the movement of micro organisms and other bio diversities through the medium.
  - Finally the holes in the armoring will be filled with in-situ topsoil, and vegetation as per the list supplied by Exigent engineering consultants will be established.
- As required by the Traffic Impact Statement:
  - The study found that the proposed residential development will generate 51 trips, during the weekday morning and weekday afternoon peak hours respectively. Thus, no external road upgrade is required to accommodate the development trips.
  - The following site assess is required:
  - Access from Frederick Road;
  - Two inbound lanes (total width 6.0m). Note, in the event the lanes are separated in future by means of an island, then one lane to have a minimum width of 4.5m;
  - One outbound lane, with a minimum width of 4.5m;
  - A minimum throat length of 10.0m; and
  - Bellmouth radii intersecting with council road is 10.0m.

DESIRABILITY

9. The Needs and Desirability of the Proposed Development (As Per Notice 792 Of 2012, or the updated version of this Guideline)

The need and desirability of the proposed development was assessed in terms of Notice 891 of 2014 which is the updated guideline available regarding need and desirability. In line with this, the consideration of "need and desirability" included consideration of the strategic context of the proposed development along with the broader societal needs and the public interest.

In terms of the need and desirability of the project, it should be noted that the proposed development will further the objectives of the Region A Regional Spatial Development Plan (RSDF) by creating intensification of developments within Sub Area 4 (characterised by high-density urban residential components and well-defined mixed-use nodes). Objectives for this area include "*Promote the development of a sustainable spatial structure to ensure the efficiency, compatibility and integration of various land uses in the sub area*." In line with this, the RSDF includes the following intervention: "*Support land use intensification and mixed-use developments within demarcated nodal areas in the sub area*." The proposed development is therefore in line with the RSDF.

In addition, the site occurs within the Urban Development Boundary identified in Region A RDSF and thus residential infill is promoted.

The development also occurs within the Consolidation Zone within the City of Johannesburg Spatial Development Framework 2040. According to the SDF, this area must be the focus of urban consolidation, infrastructure maintenance, controlled growth, urban management, addressing backlogs (in social and hard infrastructure) and structural positioning for medium to longer term growth. The policy intent in these areas would be to ensure existing and future development proposals are aligned as far as possible with the broader intent of

the SDF, specifically in terms of consolidating and diversifying development around existing activity nodes and public transport infrastructure. In this broad area, new development that does not require bulk infrastructure upgrades should be supported. The proposed Kengies Ext 35, does not require bulk infrastructure upgrades and is thus in line with the objectives for the consolidation zone.

Lastly, a large extent of the proposed development falls within Zone 1: Urban Development Boundary (UDB) of the Gauteng Provincial Environmental Management Framework (GPEMF). The intention of this zone is "*to streamline urban development activities in it and to promote development infill, densification and concentration of urban development within the urban development zones as defined in the COJ Spatial Development Framework (GSDF), in order to establish a more effective and efficient city region that will minimise urban sprawl into rural areas*."

Whilst a section, does fall within Zone 2, this section relates to the watercourse on site. As discussed above, a regional bio-engineered stormwater system has been developed for the Kengies area and this property is the last section which requires development. The aim of this bio-regional stormwater system is to

- Maintain as accurately as possible natural water infiltration and flows
- Use water sensitive urban design principals
- Use best practice urban stormwater quality and quantity management
- Address temporary and permanent erosion prevention, sediment control and control of other development activities that can cause pollution

Without the finalisation of this bio-regional stormwater system (which needs to function as a whole) and the necessary attenuation, the area will continue to experience stormwater capacity issues which will impact on neighbours downstream of the site.

Lastly from a socio-economic perspective, the proposed development will benefit the area as it will result in approximately R95 million investment in the area which will have numerous economic multiplier effects that will benefit the region positively. The proposed development will also result in 200 construction related (temporary) jobs and 31 operational (permanent) jobs.

Further, a detailed impact assessment process including specialist assessment has been undertaken and shows that impacts related to the proposed development can be satisfactorily mitigated. In addition, the construction of the proposed development will result in employment opportunities in the area. The following questions have also been addressed in line with the Guideline for Need and Desirability (Notice 891 of 2014).

Table 14: Need and Desirability

Question from the Need and Desirability Guideline	Response
Securing ecological sustainable development and use of natural resources	
How will this development (and its separate elements / aspects) on the ecological integrity of the area?	A Baseline Ecological Status Assessment was undertaken and did not envision significant negative impacts due to existing disturbed nature of the site. Further, the wetland verification noted that the finalisation of the stormwater system was integral to improved functioning of the system. He thus recommended the development proceed. Therefore, it is not expected that the proposed development will negatively impact on the ecological integrity of the area as the site is not pristine and has been degraded by historical use..
How were the following ecological integrity considerations taken into account? • Threatened Ecosystems • Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure, • Critical Biodiversity Areas ("CBAs") and Ecological Support Areas ("ESAs") • Conservation targets,	A Site Verification Assessment was undertaken and included assessment of sensitivity was undertaken initially to identify listed activities and determine necessary specialist studies. This included an assessment of the following: • Threatened ecosystems; • CBAs and ESAs; • Sensitive features such as wetlands; and • Agricultural Potential. Based on this, a Baseline Ecological Habitat Assessment was undertaken and included in the BAR. The study did not envision significant negative

• Environmental Management Framework, • Spatial Development Framework, and • Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.	impacts due to existing disturbed nature of the site. Further, the wetland verification noted that the finalisation of the stormwater system was integral to improved functioning of the system. He thus recommended the development proceed.
How will this development disturb or enhance ecosystems and / or result in the loss or protection of biological impacts that could not be avoided altogether, what measures were explored to minimize and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	A Baseline Ecological Status Assessment was undertaken and did not envision significant negative impacts due to existing disturbed nature of the site. Further, the wetland verification noted that the finalisation of the stormwater system was integral to improved functioning of the system. He thus recommended the development proceed. Further, mitigation measures suggested by the specialists have been incorporated into the EMPr.
How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimize and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	Potential pollution has been assessed as part of the impact assessment and is not expected to be significant in either the construction or operation phase.
What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimize, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	During construction, construction waste will be produced whilst during operation, domestic waste related to the proposed development will be produced. The EMPr includes a waste management plan that aims to ensure measures to minimize, reuse and/or recycle the waste are incorporated into the development.
How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimize and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	The proposed development does not involve the mining of non-renewable resources. However, some natural resources will be required during construction. A detailed impact assessment was undertaken and did not find significant impact to natural resources.
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardize the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimize the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts? • Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. de-materialized growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without	A Baseline Ecological Status Assessment was undertaken and did not envision significant negative impacts due to existing disturbed nature of the site. The location of the site is in line with the GPEMF, RSDP, and COJ SDF for the area. Further, energy saving measures will also be incorporated at the detailed design phase to minimise energy requirements. • Buildings must comply with NHBRC requirements

compromising their quest to improve their quality of life) • Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources this the proposed development alternative?). • Do the proposed location, type and scale of development promote a reduced dependency on resources?	
How were a risk-averse and cautious approach applied in terms of ecological impacts? • What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? • What is the level of risk associated with the limits of current knowledge? • Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	A risk-averse and cautious approach has been undertaken. The following has reference: • The specialist studies will identify gaps which will then be noted in both the specialist report and BAR. • The impact assessment which was undertaken will specifically deal with gaps identified by specialists and/or lack of information through the assessment of 'Level of Confidence'. • The EMPr provides numerous mitigation measures to ensure that impacts identified to be a 'low' risk can be further mitigated.
How will the ecological impacts resulting from this development impact on people's environmental right in terms following: • Negative impacts e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimize, manage and remedy negative impacts? • Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?	A detailed impact assessment was undertaken and did not identify any significant impacts to people's environmental rights. Whilst part of the site falls within an ESA area, the site is degraded and is no longer representative. Further, the wetland verification noted that the finalisation of the stormwater system was integral to improved functioning of the system. He thus recommended the development proceed.
Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?	A detailed impact assessment was undertaken and did not identify any significant impacts to ecosystem services as the site is historically disturbed. A Heritage Impact Assessment was also undertaken and did not identify any heritage on site. Lastly, there will be positive economic impacts related to the development.
Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	It is not expected that the development will negatively impact on the ecological integrity objectives of the area. The site is degraded and is not sensitive. Whilst some part of the site is classified as an ESA, the site itself is degraded and is no longer sensitive. Further, the wetland verification noted that the finalisation of the stormwater system was integral to improved functioning of the system. He thus recommended the development proceed. More information is provided in the specialist studies and impact assessment.
Considering the need to secure ecological integrity and a healthy biophysical environment, describe how	Two alternatives are assessed as part of the Basic Assessment Process in addition to the No-Go

the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the "best practicable environmental option" in terms of ecological considerations?	Alternative. These included: • Proposal; and • Alternative 1. The main differences between the proposal and alternative is the type of residential development. In the Proposal, a cluster development will take place and will include the development of 51 separate erven which is in line with market research for the area. The proposal is preferred from a business perspective as it maximises the use of the site and is in line with the market requirements for the area. It thus improves the socio-economic benefits associated with the development. Based on the findings of the specialist studies and impact assessment and taking into account the successful implementation of the EMPr, it is felt that the Proposal should be authorised, as the Proposal has been identified as the Best Practicable Environmental Option as it improves the socio-economic benefits associated with the development. Both the proposal and alternative had similar impacts in terms of other aspects which were assessed.
Promoting justifiable economic and social development	
What is the socio-economic context of the area, based on, amongst other considerations, the following considerations? • The IDP (and its sector plans' vision, objectives, strategies, indicators and targets) and any strategic plans, frameworks of policies applicable to the area, • Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.). • Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and • Municipal Economic Development Strategy ("LED Strategy").	The proposed development will further the objectives of the Region A Regional Spatial Development Plan (RSDF) by creating intensification of developments within Sub Area 4 which is in line with the objectives for this area. It is also in line with the City of Johannesburg Spatial Development Framework 2040. A large extent of the proposed development falls within Zone 1: Urban Development Boundary (UDB) of the Gauteng Provincial Environmental Management Framework (GPEMF). The intention of this zone is "*to streamline urban development activities in it and to promote development infill, densification and concentration of urban development within the urban development zones as defined in the COJ Spatial Development Framework (GSDF), in order to establish a more effective and efficient city region that will minimise urban sprawl into rural areas*." Whilst a section, does fall within Zone 2, this section relates to the watercourse on site. As discussed above, a regional bio-engineered stormwater system has been developed for the Kengies area and this property is the last section which requires development. The aim of this bio-regional stormwater system is to • Maintain as accurately as possible natural water infiltration and flows • Use water sensitive urban design principals • Use best practice urban stormwater quality and quantity management • Address temporary and permanent erosion prevention, sediment control and control of
Considering the socio-economic context, what will the socio-economic impacts be of the development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area? • Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?	
How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	

	other development activities that can cause pollution Without the finalisation of this bio-regional stormwater system (which needs to function as a whole) and the necessary attenuation, the area will continue to experience stormwater capacity issues which will impact on neighbours downstream of the site. Lastly from a socio-economic perspective, the proposed development will benefit the area as it will result in approximately R95 million investment in the area which will have numerous economic multiplier effects that will benefit the region positively. The proposed development will also result in 200 construction related (temporary) jobs and 31 operational (permanent) jobs.
Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?	A detailed impact assessment has been undertaken and all identified impacts can be satisfactorily mitigated. Significant inequitable (intra- and inter-generational) impacts are not expected.
In terms of location, describe how the placement of the proposed development will: • Result in the creation of residential and employment opportunities in close proximity to or integrated with each other • Reduce the need for transport of people and goods • Result in access to public transport or enable non-motorized and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport), • Compliment other uses in the area • Be in line with the planning for the area, • for urban related development, make use of underutilized land available with the urban edge • optimize the use of existing resources and infrastructure, • opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement), • discourage “urban sprawl” and contribute to compaction/densification, • contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs, encourage environmentally sustainable land development practices and processes, take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.), • the investment in the settlement or area in question will generate the highest socio=economic returns (i.e an area with high economic potential), • impact on the sensitivities of the area, and • in terms of the nature, scale and location of the development promote or act as a	The location of the proposed development considered a number of aspects including: • Available land; and • Alignment to various planning documents GPEMF, RSDP and COJ SFP. • The site falls within an existing residential node. The following can also be noted: • The site is disturbed by historic uses. • A Heritage Impact Assessment was also undertaken to ensure the proposed development does not impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics of the site. No significant heritage resources were identified on site. • The proposed development will create employment during construction and operation. • It also compliments other land uses in the area.

catalyst to create a more integrated settlement?	
How were a risk-averse and cautious approach applied in terms of socio-economic impacts? • What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)? • What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge? • Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?	Other than the Heritage Impact Assessment, no social or economic specialist studies were triggered and are required. However, a risk-averse and cautious approach has been undertaken. The following has reference: • The Heritage Impact Assessment identified gaps which have been noted in both the specialist report and BAR. • The impact assessment specifically deals with gaps identified by specialists and/or lack of information through the assessment of 'Level of Confidence'. • The EMPr provides numerous mitigation measures to ensure that impacts identified to be a 'low' risk can be further mitigated.
How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following: • Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimize, manage and remedy negative impacts? • Positive impacts. What measures were taken to enhance positive impacts?	A detailed impact assessment has been undertaken and it is not expected that there will be negative socio-economic impacts associated with the development. Instead, the CAPEX value of the project is about R95 million and will create numerous multiplier effects in the area. Further, approximately 200 construction-related and 31 operation-related jobs will be created.
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilization of natural resources, etc.)?	A detailed impact assessment was undertaken and included an assessment of social and economic impacts as well as ecological impacts. Based on the type of proposed development, it is not expected that the socio-economic impacts will result in significant ecological impacts.
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	Two alternatives are assessed as part of the Basic Assessment Process in addition to the No-Go Alternative. These included: • Proposal; and • Alternative 1. These alternatives were assessed and the Proposal has been identified as the Best Practicable Environmental Option due to alignment with market requirements in the area.
What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons (who are the beneficiaries and is the development located appropriately)? Considering the need for social equity and justice, do the alternatives identified, allow the "best practicable environmental option" to be selected, or is there a need for other alternatives to be considered?	A detailed BAR process is currently being undertaken. This includes the assessment of alternatives, compilation of a detailed impact assessment and undertaking relevant specialist studies. Two alternatives are assessed as part of the Basic Assessment Process in addition to the No-Go Alternative. These included: • Proposal; and • Alternative 1. These alternatives were assessed and the Proposal has been identified as the Best Practicable Environmental Option due to alignment with market requirements in the area.

What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?	A number of specialist studies have been undertaken to ensure that the proposed development is sustainable and does not result any negative impacts to disadvantaged persons.
What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	In identifying the potential impacts associated with the development, the full lifecycle was assessed as well as the findings of specialist studies. Further, the full EMPr includes the roles and responsibilities for the development and ensures that the responsibility of the implementation of the EMPr falls to the developer.
What measures were taken to: • ensure the participation of all interested and affected parties, • provide all people with an opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation • ensure participation by vulnerable and disadvantaged persons, • promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means, • ensure openness and transparency, and access to information in terms of the process, • ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge, and • ensure that the vital role of women and youth in environmental management and development were recognized and their full participation therein were promoted?	A detailed public participation process is being undertaken as part of the BAR process. As part of this, a detailed Interested and Affected Party (I&AP) Database was compiled and included City of Johannesburg Department of Water and Sanitation, and Gauteng Department of Agriculture and Rural Development (GDARD). In addition, the I&AP database included the affected ward councillor of the area. These I&APs have been notified of the BAR process and provided with an opportunity to comment on the Report.
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low-middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)	The proposed development will further the objectives of both the COJ SDF and Region A Regional Spatial Development Plan by densification and infill of identified consolidation areas. It will also improve stormwater management in the area.
What measures have been taken to ensure that current and / or future workers will be informed of work that potentially might be harmful to human health or the or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?	A site specific EMPr has been compiled and includes include an Environmental Awareness Plan. As part of this, workers will be informed of their rights to refuse work that might be harmful to human health or the environment.
Describe how the development will impact on job creation in terms of, amongst other aspects: • the number of temporary versus permanent jobs that will be created, • whether the labour available in the area will be able to take up the job opportunities (i.e. do the required skills match the skills	A detailed impact assessment has been undertaken and it is not expected that there will be negative socio-economic impacts associated with the development. Instead, the CAPEX value of the project is about R95 million and will create numerous multiplier effects in the area. Further, approximately 200 construction-related and 31 operation-related

available in the area), • the distance from where labourers will have to travel, • the location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits); and • the opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.)	jobs will be created. The following can be noted in regards to this: • The EMPr includes the requirement that local employment should be encouraged to promote skills transfer and development. This will enhance the general area and provide job opportunities to potential job seekers and manage it in the best suitable way. • An assessment of the social environment of the area suggests that there is labour available in the area. • The proposed development occurs in close proximity to numerous residential developments and thus, the distance labourers will have to commute is not expected to be significant. • The proposed development will not result in any losses of any jobs and job-related opportunity costs are not expected.
What measures were taken to ensure: • That there were intergovernmental coordination and harmonization of policies, legislation and actions relating to the environment, and • That actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?	National Legislation i.e. NEMA, NWA, NHRA, NEM:BA were consulted in the preparation of this BAR Report. Provincial guidelines also formed part of the literature review. Spatial development tools also aided the EAP to assess and provide information pertaining to the proposed development. Any comments received from I&APs or organs of state are included in the comments and response register.
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	The site specific EMPr includes realistic and achievable mitigation measures which aim to reduce any negative impacts as well as to enhance any positive benefits associated with the project.
What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?	The site specific EMPr includes detailed roles and responsibilities. In addition, a penalty system for contractors will be included.
Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	Two alternatives are assessed as part of the Basic Assessment Process in addition to the No-Go Alternative. These included: • Proposal; and • Alternative 1. A detailed assessment of alternatives was undertaken and took into account the following: • The findings of the specialist studies; • The results of the impact assessment; and • The need for the project.

10. The Period for which the Environmental Authorisation is Required (Consider when the Activity is Expected to be Concluded)

The proposed period for which the environmental authorization should be valid prior to operation is 10 years with an option to extend if necessary. Should construction not commence within this period, the authorization will lapse, and new authorization process would be required.

However, once the project has commenced, it cannot be seen to have an expiry date (i.e. during the operational phase), because of the nature of the project and because the project is intending to construct permanent infrastructure on the proposed site.

11. Environmental Management Programme (EMPr) (must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers "Yes" to Point 7 above, then an EMP is to be attached to this report as an Appendix

EMPr attached	YES ✓

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate (this list is inclusive, but not exhaustive):

It is required that if more than one item is enclosed that a table of contents is included in the appendix

Appendix A: Site plan(s) – (must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)

Appendix A1 – Site Plan for Proposal and Alternative

Appendix A2 - Locality Maps

Appendix A3 - Sensitivity Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix E1 – Proof of site notice

Appendix E2 – Written notices issued as required in terms of the regulations

Appendix E3 – Proof of newspaper advertisements

Appendix E4 –Communications to and from interested and affected parties

Appendix E5 – Minutes of any public and/or stakeholder meetings

Appendix E6 - Comments and Responses Report

Appendix E7 –Comments from I&APs on Basic Assessment (BA) Report

Appendix E8 –Comments from I&APs on amendments to the BA Report

Appendix E9 –I&AP Database

Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information

Appendix F1: WULA Technical Report

Appendix G: Specialist reports

Appendix G1: Baseline Ecological Habitat Assessment

Appendix G2: Heritage Impact Assessment

Appendix G3: Wetland Verification

Appendix G4: Traffic Impact Statement

Appendix G5: Outline Services Report

Appendix G6: Stormwater Management Plan

Appendix H: EMPr

Appendix I: Other information

Appendix I1: Impact Assessment

Appendix I2: Curricula Vitae and Company Profile

Appendix I3: Site Verification Report

Appendix I4: Public Participation Plan and approval

CHECKLIST

To ensure that all information that the Department needs to be able to process this application, please check that:

- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed.