



APPENDIX H

ENVIRONMENTAL MANAGEMENT PLAN

For the

Application for Environmental Authorisation for the
Tergniet Residential Development and associated
infrastructure on Farm 136, Portion 38 situated in
Tergniet, Western Cape Province

Prepared for

PIETER DE KLERK

May 2026



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1. BACKGROUND

Digital Soils Africa (DSA) has been appointed by Mr. Pieter de Klerk to conduct the Basic Assessment (BA) process for the proposed Tergniet Residential Development and associated infrastructure on Farm 136, Portion 38 situated in Tergniet, Western Cape Province.

Mr. de Klerk propose the development that will consist of 133 units (was originally 144 units) with four different typologies on either side of Robertson Avenue. The proposed development will also include the development and installation of associated structures and infrastructure, including engineering services. The total erven area covered in Site A will be approximately 3.13Ha and approximately 2.83Ha in Site B. The property is 10.1362 Ha in total, but not all is developable, due to the Robertson Avenue that separates the property and associated servitudes.

Thus, the purpose of this development is, therefore, to establish residential units on Farm 136, Portion 38. Thereafter units will be sold under a sectional title (the separate ownership of a unit within the complex).

Infrastructure such as stormwater drainage channels, water supply, sanitation, and access road will be connected to the existing services of the Mossel Bay Local Municipality.

In terms of the National Environmental Management Act 107 of 1998 ("NEMA"), environmental authorisation must be obtained before any person can conduct activities that cause damage to the environment.

DSA was appointed by the Applicant as the independent environmental assessment practitioner (EAP) to undertake the Environmental Application and apply for GNR 327 listed activities and the submission of the Basic Assessment Report.

DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Environmental Assessment Practitioner (EAP): Natalia Sharp

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EAP qualifications: B.Sc (Botany and Zoology) (UFS); B.Sc. (Hons) Limnology (UFS); Masters in Environmental Management: Evaluation of Phytoplankton as an indicator in a biomonitoring program, with special reference to the Modder River.

EAP Registrations/Associations: SACNASP (123443) & EAPASA (2020/230)

Natalie Sharp is the project manager and senior Environmental Assessment Practitioner leading this project and is registered as an Environmental Assessment Practitioner (EAP) with the Certification Board for Environmental Assessment Practitioners of South Africa (EAPSA) (Registration Number: 2020/230) and as a Professional Natural Scientist (Pri.Sci.Nat) with the South African Council for Natural Scientific Professions (SACNASP) (Registration Number: 123443) (see Appendix A for detailed CV and qualifications). Natalie Sharp has worked in the environmental industry for over seventeen years.

SUMMARY OF THE CV

NATALIA SHARP

Personal Details	Date of birth: 12 August 1979 Nationality: South African Identity number: 790812 000 7080 Gender: Female Languages: English / Afrikaans
Qualifications:	BSc (2000) UFS – Zoology and Botany BSc Honors (2001) UFS - Limnology Masters in Environmental Management (2003) UFS - Evaluation of Phytoplankton as an indicator in a biomonitoring program, with special reference to the Modder River.
Experience (Seventeen years' experience in environmental law)	During the 2 years associated with the Centre for Environmental Management intense training was provided for equipping Natalia Sharp with adequate knowledge in terms of biomonitoring water systems and scientific report writing for research done by her through the Centre. Various scientific contributions were made

and environmental management) during these few years which included formal reports to Bloem Water and seminars providing management principles for polluted water bodies, thus providing her with additional regulatory and environmental skills.

During the 5 years associated with the DME, now changed to the Department of Mineral Resources (DMR), vast knowledge was gained in terms mine environmental management, the development, rehabilitation and closure of mining and prospecting areas. Environmental Management Programmes, Environmental Performance Assessment Reports, and Closure Reports were scrutinized continually. Therefore, adequate expertise was gained to assist the applicants with relevant environmental and mining advice and providing her with adequate knowledge to evaluate environmental impacts relating to mining.

During the 11 years associated with SES (Stellenryck Environmental Solutions), Natalia Sharp has obtained immense understanding in completing environmental impact assessments, not only associated with mining projects, but also for a wide variety of different developing projects such as Light Industrial developments, Road upgrade projects, bush clearing for agricultural developments, and applications for exemptions, and so forth. She has excellent experience in writing environmental reports, which ranges from Scoping Reports, Environmental Management Plans, Environmental Awareness Plans, Mining Work Programs, Closure Plans, Risk Assessments, Performance Evaluations on projects, and Plan of Study reports. She has also been involved in performing biomonitoring on river systems associated with some of the projects, completing it by obtaining all the data and writing the Biomonitoring Report for the relevant Department. This is mainly attributed to her Limnology background and she is competently able to add value to this field in her current position.

Previous Employment

Centre for Environmental Management University of the Free State: Lab Assistant [2001 – 2003]

Mine Environmental Management [2003-2005] at the Department of Mineral Resources: Environmental Officer

Mine Environmental Management [2005-2008] at the Department of Mineral Resources: Senior Environmental Officer

Stellenryck Environmental Solutions: Senior Environmental Practitioner [2008-2019]

Digital Soils Africa Pty Ltd: Senior Environmental Practitioner [currently]

Digital Soils Africa Pty Ltd (DSA) is an independent environmental consulting firm that is also soil specialists, focussing on all soil solutions in the agricultural and environmental fields. The specialists are SACNASP registered and recognized leaders in their fields of study.

The soil specialist services provided include soil surveys, soil erosion mitigation, fertilization management, soil and land capability studies, and wetland delineation amongst others, while the fields of specialization are hydropedology and digital soil mapping. Together the directors have 25 years of experience.

Prof. Johan van Tol is currently the national leading researcher on hydropedology. He is a Y1 NRF rated researcher, who boasts 34 peer reviewed scientific publications and has put his research to work in more than 30 consultancy reports. He is also a SACNASP registered scientist.

Dr. George van Zijl is Africa's foremost Digital Soil Mapper. For his PhD he developed a DSM protocol for use in southern Africa, and has subsequently improved the methodology to include machine learning such as shown in the mapping of Ntabelanga catchment and City of Joburg Hydropedological mapping. He has served on the scientific committee for international DSM conferences. George has conducted more than 60 consultancy projects and is a SACNASP registered scientist.

Dr. Darren Bouwer boasts 11 years of experience as a soil scientist. His PhD incorporated chemical measurements into hydropedological assessments, which improves flow path determination. He has also completed a post-doctorate at Ghent University, Belgium, where he specifically worked on hydropedological modelling. Darren is a SACNASP registered scientist and has completed more than 45 consultancy reports.

PURPOSE OF THE DOCUMENT

This document serves as a programme to manage the environmental impacts during the pre-construction, construction, and operational phases of the proposed development. This document will provide mitigation measures to prevent, reduce, avoid, or rehabilitate and mitigation measures must be implemented during all phases of the development. The objective will be to limit the negative impacts and increase positive impacts.

The Environmental Management Plan (EMP) will also:

- Provide applicable legislative framework;
- Provide management objectives, and actions to achieve such objectives;
- List roles and responsibilities;
- Provide record-keeping methods, auditing or review, and report writing;

SITE LOCALITY

The property is located inside the urban edge and is bound by the railway line to the south and existing residential erven on the other boundaries. Robertson Avenue separates the property into two sections, the Western Site (herein after referred to as Site A) and the Eastern Site (herein after referred to as Site B). This property is located approximately 500 m east of the coastal settlement of Tergniet and approximately 660 m south of the N2 highway. The closest perennial water resource is the Great Brak River estuary, approximately 2.4 km east of the property. The property is 10.1362 Ha in total, but not all is developable, due to the Robertson Avenue that separates the property and associated servitudes.

The proposed development will transform the entire site into a residential development. Type 1 units will consist of side-by-side (horizontal duplex) units with 3 bedrooms (on the first floor and living area on the ground floor), thus double storey units with a single garage and parking bay for a second car.



FIGURE 1: SITE LOCATION: SITE IS INDICATED AS THE RED POLYGON

The 21 digit Surveyor General code:

C051 0000 00000136 00038

The property belongs to Marthinus Theodorus Janse van Rensburg and Martha Maria Aletta Jansen van Rensburg.

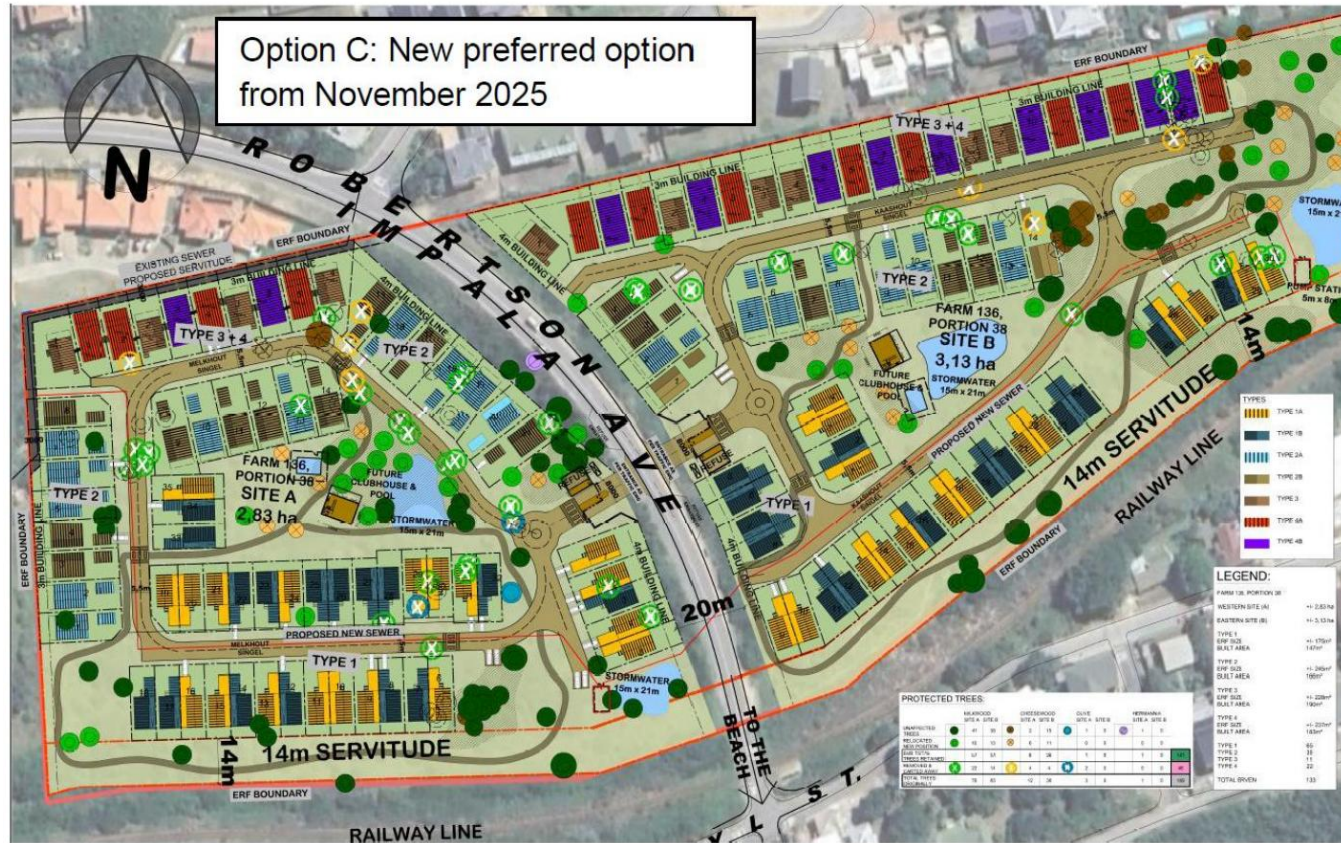


FIGURE 2: SITE DEVELOPMENT PLAN

DESCRIPTION OF THE PROPOSED LISTED ACTIVITIES

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1	Describe the portion of the proposed development to which the applicable listed activity relates.
GNR 327: Activity 9 (i) & (ii):	the development of infrastructure exceeding 1000m in length for the bulk transportation of water or storm water: (i) With an internal diameter of 0.36m or more, or (ii) With a peak throughput of 120 litres per second or more	The development will lead to infrastructure for the bulk transportation for water and stormwater with maximum pipeline flow velocities of 3.5m/s and minimum pipe diameter of 450mm that could exceed 1km in length.
GNR 327: Activity 27:	The clearance of an area of 1 Ha or more, but less than 20Ha of indigenous vegetation.	The Hartenbos Dune Thicket was disturbed 35 years ago and the area was used as agricultural lands. Following the long-term prior disturbance of the site, the thicket clumps were able to recover relatively well, while the associated asteraceous fynbos matrix was unable to recover, leaving open degraded areas between more intact thicket on the site. The property falls outside of designed CBA areas but the vegetation type is considered endangered.
GNR 327: Activity 28:	Residential, mixed, retail, commercial, industrial or institutional development where such land was used for agriculture or after 1 April 1998 and where such development (i) will occur within an urban area, where the total land to be development is bigger than 5Ha; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1Ha.	The property is 10.1362 Ha in total, but not all is developable. The total erven area covered in Site A of the site will be about 3.13Ha and about 2.83Ha in Site B.
Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3	Describe the portion of the proposed development to which the applicable listed activity relates.
GNR 324: Activity 4:	The clearance of an area of 300ha square metres or more of indigenous vegetation I (ii) within critical biodiverse areas identified in bioregional plans	According the WCBSP 2023 the site is located within a CBA 1 area (based on the fact that the site can potentially act as a refuge area for the Bontebok)

LEGISLATIVE REVIEW

ENVIRONMENTAL ASSESSMENTS UNDERTAKEN FOR THE DEVELOPMENT

In terms of the National Environmental Management Act 107 of 1998 (“NEMA”), environmental authorization must be obtained before any person can conduct activities that cause damage to the environment. The intention of environmental legislation is to regulate the interaction of human life with the natural environment. The purpose of environmental legislation is to protect and preserve the environment for current and future generations. The following Acts and Regulations apply to the proposed project:

LEGISLATION

1. Section 24 of the **Constitution of the Republic of South Africa Act (No 108 of 1996)** states that everyone has the right:
 - (ii) to an environment that is not harmful to their health or well-being;
 - (iii) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources, while promoting justifiable economic and social development.
2. The **National Environmental Management Act (Act No 107 of 1998)**. NEMA is based on the concept of sustainable development and the objective is to provide for cooperative environmental governance, by providing the legal framework for environmental planning and development.

NEMA has basic principles that state:

- That all the principles throughout the Republic apply to the actions of all organs of state that may significantly affect the environment;
- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
- Development must be socially, environmentally and economically sustainable.
- Sustainable development requires consideration of all relevant factors.

-
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.
 - There should be equal access to environmental resources, benefits and services to meet basic human needs and the Government should promote public participation when making decisions about the environment;
 - Decisions must be taken openly and transparently and there must be access to information;
 - Communities must be given environmental education;
 - Workers have the right to refuse to do work that is harmful to their health or the environment;
 - The role of youth and women in environmental management must be recognized;
 - The person or company who pollutes the environment must pay to clean it up;
 - The environment is held in trust by the state for the benefit of all South Africans; and
 - The utmost caution should be taken when permission for new developments is granted.
3. The **Environmental Impact Assessment Regulations**: 324, 325, 326 & 327 of 7 April 2017. The purpose of these Regulations is to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the preparation, evaluation, submission, processing, and consideration of, and decision on, applications for environmental authorizations for the commencements of listed activities, subjected to environmental impact assessment, to avoid or mitigate detrimental impacts on the environment, and to optimize positive environmental impacts, and for matters pertaining thereto.

Duty of Care

Chapter 7 of the NEMA prescribed a general 'duty of care' and the requirement to remediate environmental damage. Section 28(1) of NEMA states:

Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or insofar as such harm to the environment is authorized by law or cannot reasonably be avoided or stopped, to minimize and rectify such pollution or degradation of the environment.

The Duty of Care can, inter alia, be enforced through directives issued by the competent authority.

In terms of 2014 NEMA EIA Regulations, as amended, the activities listed in the above Table is triggered by this proposed development, thereby requiring an EA from the Department of Economic Development, Environmental Affairs and Tourism (DEDEAT).

4. The **National Water Act (No. 36 of 1998)**. The major objectives of the National Water Act are to:

- Aid in providing basic human needs;
- Meet the growing demand for water sustainably;
- Ensure equal access to water and use of water resources
- Protect the quality of water of natural resources;
- Foster social and economic development; and
- Conserve aquatic and related ecosystems.

No water features occurs on the site.

In terms of the stormwater, Element Consulting Engineers indicated that stormwater design on this proposed development is notable, not only from an engineering perspective, but also from an environmental perspective, due to the moderate gradients present. A formal stormwater reticulation system will be provided by a combination of surfaced roadways, kerbs, channels, cut-off drains, inlet structures, outlet structures, concrete stormwater pipes and various minor structures. Energy dissipation will be performed as standard practice with gabion mattresses at all outlets. All pipe outlets will be standard concrete headwalls. Litter traps will be provided at all stormwater outlets and will be cleaned on a regular basis by the estate's landscaping and maintenance teams

The Department of Water and Sanitation will be consulted and if an application for a water use license must be applied for, then the necessary applications must be carried out.

5. The **National Environmental Management: Biodiversity Act**:

The act provides the framework for: i) the management and conservation of biological diversity within the Republic and the components of such biological diversity; ii) the use of indigenous biological resources in a sustainable manner; and iii) the fair and equitable sharing among stakeholders of benefits arising from bioprospecting involving indigenous biological resources.

The act also provides for co-operative governance in biodiversity management and by establishing a South African National Biodiversity Institute, the objectives of the Act can be achieved.

Three Regulations are applicable: 1) Threatened and Endangered Ecosystems, 2) ToPs (2008) (Threatened or Protected species), and 3) AIS (Alien and Invasive Species).

6. The **National Environmental Management: Protected Areas Act**:

The Protected Areas Act provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. It provides for the establishment of a national register of all national, provincial and local protected areas and the management of those areas. The Act also provides for the governance and functions of South African National Parks and matters in connection therewith.

7. **National Environmental Management Waste Act, 2008 (act 59 of 2008)**:

The purpose of the Act is to regulate waste management to protect the health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for:

- Securing ecologically sustainable developments;
- Provide for institutional arrangements and planning matters;
- National norms and standards for regulating the management of waste by all spheres of government;
- To provide for specific waste management measures;
- To provide for the licensing and control of waste management activities;
- To provide for the remediation of contaminated land;
- To provide for the national waste information system;
- To provide for compliance and enforcement.

8. **Bio-regional Plans**:

In terms of the provincial and local protected areas, the proposed development is situated within the Western Cape Biodiversity Spatial Plan (WCBSP) of 2023 with an area that has been identified as a Critical Biodiversity Area 1 (due to the possibility that the site can potentially acts as a refuge for Bontebok).

The Subtropical Thicket Ecosystem Project (STEP) & ECBCP aims to integrate the natural environment into land-use decisions at the municipal level to facilitate achieve sustainable development. The objectives of the STEP are:

- To provide a conservation planning framework and implementation strategy for the conservation of subtropical thicket;
- To suggest and prioritize explicit conservation actions;
- To provide spatial biodiversity information for incorporation into regional, provincial and national land-use planning frameworks;
- To provide a capacity-building service in the application of the spatial conservation planning products, especially in the local government sphere; and
- To create an awareness of the value and plight of the Thicket Biome.

In terms of the STEP programme the conservation status of the land concerned is rated 'Vulnerable'. These are ecosystems that cover much of their original extent but where further disturbance or destruction could harm their health or functioning. These ecosystems can withstand only limited loss of natural area through disturbance or development.

However, one must consider site-specific parameters and the surrounding land use and conservation value to determine the biodiversity importance of a site and not just rely on desktop studies. Therefore a terrestrial assessment was conducted by Confluence, the appointed specialists.

The plant SCC *Hermannia lavandulifolia* is not a significant population on the site, nor is it an irreplaceable species as it is common elsewhere and seems to thrive in disturbed areas. For all these reasons, the site ecological importance (SEI) is not high, but rather Medium over the majority of the site

A number of animal SCC were flagged for the site by the DFFE Screening tool and the site was given a high sensitivity. The WCBSP also shows that a CBA1 area is mapped for the whole property due to the potential of the site to act as refuge for the Bontebok. However, the animal specialist assessment noted that the Bontebok National Park contains all known populations of the subspecies in the Western Cape. As the present site is small with poor connectivity to larger natural sites and is placed far away from the National Park, it is not likely to support the needs of a translocated population. Three faunal SCC are likely to occur and could have all their life processes provided for, even in a less than 5ha area. Site sensitivity is therefore verified as High.

To the author's knowledge, there are no definite plans from any authority to restore this section of the environment. Considering that this site was previously used for agricultural purposes may also indicate that the socio-economic benefits outweigh the environmental impact of this site.

9. The **National Forests Act No. 84 of 1998 (NFA) & List of Protected Tree Species under the National Forest Act, 1998 (Act No. 84 of 1998).**

The purposes of this Act are to promote the sustainable management and development of forests for the benefit of all. The Act also provides special measures for the protection of certain forests and trees and promotes the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes.

According to the Act, a natural forest is defined as a group of indigenous trees whose crowns are largely contiguous or which have been declared by the Minister to be a natural forest under section 7(2). No person may cut, disturb, damage or destroy any indigenous tree in a natural forest; or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any tree, or any forest product derived from a tree within a natural forest.

The principals of the Act indicate that:

- a) Natural forests must not be destroyed save in exceptional circumstances where, in the opinion of the Minister, proposed new land use is preferable in terms of its economic, social or environmental benefits;
 - b) A minimum area of each woodland type should be conserved; and
 - c) Forests must be developed and managed so as to-
 - (i) conserve biological diversity, ecosystems and habitats;
 - (ii) sustain the potential yield of their economic, social and environmental benefits;
 - (iii) promote the fair distribution of their economic, social, health and environmental benefits;
 - (iv) promote their health and vitality;
 - (v) conserve natural resources, especially soil and water;
 - (vi) conserve heritage resources and promote aesthetic, cultural and spiritual values; and
 - (vii) advance persons or categories of persons disadvantaged by unfair discrimination.
- Page 15 of 82 (4) The Minister must determine the minimum area of each woodland type to be conserved in terms of subsection (3)(b) based on scientific advice.

The majority of the indigenous vegetation on site belongs to thicket vegetation types / communities, with Milkwood trees (*Sideroxylon inerme inerme*) were very common on the site, and in some patches cheesewood trees (*Pittorporum viridiflorum*) were also common, which would require a permit to be removed, cut or disturbed from the Department of Forestry, Fisheries, and the Environment (DFFE).

10. Eastern Cape the Provincial Nature Conservation Ordinance of 1974 (PNCO)

The Provincial Nature Conservation Ordinance (PNCO) protects the endangered and protected flora outside of protected areas. Species classified as Schedule 3 are endangered species. Species classified as schedule 4 are protected species. A permit is required for the removal or destruction of species on the PNCO list.

11. The National Heritage Resources Act (No 25 of 1999):

The basic objectives of the National Heritage Resources Act are to set norms and maintain essential national standards and general principles for the governing and management of heritage resources in the Republic and to protect heritage resources of national significance.

The South African Heritage Resources Agency (SAHRA) has been established to coordinate and promote the management of heritage resources at the national level.

According to Section 38 of the National Heritage Resources Act, (no. 25 of 1999) the development falls within the threshold (development of a site exceeding 5000m²) of notifying/applying to the responsible heritage resources authority, thus the online application to SAHRA was made.

12. Occupational Health and Safety Act (No 85 of 1993):

The act provides for the health and safety of persons at work and the health and safety of persons in connection with the use of machinery, the protection of persons other than persons at work, against hazards to health and safety arising out of or in connection with the activities of persons at work. The EMPs should provide measures to ensure that the objectives of the Act are met on this site.

13. Spatial Planning and Land Use Management Act (No. 16 of 2013):

The Act provides a framework for spatial planning and land use management in South Africa. It further provides the framework to:

- Specify the relationship between spatial planning and the land use management system and other kinds of planning;

- Provide for inclusive, developmental, equitable and efficient spatial planning in the different spheres of government;
- Provide a framework for the monitoring, coordination and review of the spatial planning and land use management system;
- Provide a framework for policies, principles, norms and standards for spatial development planning and land use management;
- Address past spatial and regulatory imbalances;
- Promote greater consistency and uniformity in the application procedures and decision-making by authorities responsible for land use decisions and development applications;
- Provide for the establishment, functions and operations of Municipal Planning Tribunals;
- Provide for the facilitation and enforcement of land use and development measures;

14. Alien and Invasive Species Regulations, 1 August 2014

Regulations regarding alien and invasive species.

15. National Road Traffic Act, 1996 (Act 93 of 1996):

Regulations relating to the transport of dangerous goods and substances by road.

16. Mossel Bay Municipality Integrated Development Plan:

The Mossel Bay Local Municipality Integrated Development Plan dated 2025/2026 noted nine strategic objectives that focus the municipality's effort towards:

Basic services delivery & infrastructure development

1. Creating an inclusive, responsive and healthy environment conducive for living and sustainable growth;
2. To manage land-use and development in line with the Spatial Development Framework;

Spatial development & Environment

3. To render efficient environmental health and disaster management services;

Community safety & security

4. To provide efficient public safety and law enforcement services;

Community development & education

5. To provide recreation facilities and opportunities and programmes aimed to facilitate and promote community development and social cohesion;

Economic development & tourism

6. To facilitate economic and tourism development to the benefit of the town and all residents;

Municipal administration governance communication

7. Embed good governance through sound administrative practices and improved stakeholder relations;

Municipal transformation and institutional development

8. To maintain a skilled, capable and diverse workforce in a good working environment;

Financial viability and management

9. Embed financial viability and sustainability through good financial management principles and practices.

17. Mossel Bay Spatial Development Framework

According to the Mossel Bay Municipal Spatial Development Framework (SDF) and the Conceptual Development Framework (CDF) for the Klein Brak / Reebok / Tergniet coastal settlement, the area in which Farm 136, Portion 38 is located is designated for urban residential expansion and infill development within the existing urban edge. A formal land-use application for rezoning from Agriculture to Subdivisional Area for 133 group housing units, open spaces and internal roads has been submitted for Portion 38, confirming that the property falls within an SDF-supported urban development zone.

The SDF identifies Tergniet as part of a priority coastal settlement suitable for managed residential growth, provided that environmental constraints are respected. This SDF designation directly supports the proposed rezoning and development concept currently under municipal consideration.

MOTIVATION FOR THE NEED AND DESIRABILITY FOR THE PROPOSED DEVELOPMENT

The site is however located within a dedicated residential area within the Tergniet town. The proposed site is located within the Town Planning Scheme of the Mossel Bay Local Municipality and has been earmarked for township development in line with optimizing vacant land within urban areas.

The proposed residential development/-t on Portion 38 of Farm 136 in Tergniet is already the subject of a formal land-use application (Application no: 58-04/2025) to Mossel Bay Municipality, including rezoning, subdivision, departures, and approval of a Site Development Plan for 133 group-housing units. The application is open for public inspection and comment, and a public meeting has been scheduled.

The detailed discussion on the 'Need and Desirability' of the project can be viewed in Section E of the Basic Impact Assessment Report.

The proposed residential development on Portion 38 of Farm 136 can align strongly with the Western Cape Provincial Spatial Development Framework (PSDF) because it supports compact settlement growth, efficient land use, coastal-node consolidation, and infrastructure-led development—core principles of the PSDF.

PROJECT DESCRIPTION

Mr. Pieter de Clerk would like to establish a residential development on Portion 38 of Farm No. 136 ("the property") in Tergniet, Western Cape (**Figure 3**). The property is located inside the urban edge and is bound by the railway line to the south and existing residential erven on the other boundaries. Robertson Avenue separates the property into two sections, the Western Site (herein after referred to as Site A) and the Eastern Site (herein after referred to as Site B). This property is located approximately 500 m east of the coastal settlement of Tergniet and approximately 660 m south of the N2 highway. The closest perennial water resource is the Great Brak River estuary, approximately 2.4 km east of the property. The property is 10.1362 Ha in total, but not all is developable, due to the Robertson Avenue that separates the property and associated servitudes.



FIGURE 3: LOCATION OF THE PROPOSED RESIDENTIAL DEVELOPMENT

The proposed development will consist of 133 units with four different typologies on either side of Robertson Avenue. The proposed development will also include the development and installation of associated structures and infrastructure, including engineering services. The total erven area covered in Site A will be approximately 3.13Ha and approximately 2.83Ha in Site B.

The four types of residential development typologies will include a mix of:

- Type 1: erven size is $\pm 175\text{m}^2$ and the built area is 147m^2 for 75 units;
- Type 2: erven size is $\pm 245\text{m}^2$ and the built area is 166m^2 for 25 units;
- Type 3: erven size is $\pm 228\text{m}^2$ and the built area is 190m^2 for 18 units;
- Type 4: erven size is $\pm 237\text{m}^2$ and the built area is 163m^2 for 16 units.

The Spatial Development Plan (SDP) for Site A (western side of the property) includes 41 Type 1 units, 21 Type 2 units and 10 Type 3&4 units. Site B (eastern side of the property) includes 24 Type 1 units, 14 Type 2 units and 24 Type 3&4 units. The proposed development will transform the entire site into a residential development. Type 1 units will consist of side-by-side (horizontal duplex) units with 3 bedrooms (on the first floor and living area on the ground floor), thus double storey units with a single garage and parking bay for a second car. The types are illustrated below.



FIGURE 4: TYPE 1 DESIGN

Type 2 units will be similar to Type one development with 3 bedrooms, double storey and a single garage and parking bay for a second car but will be stand-alone units.

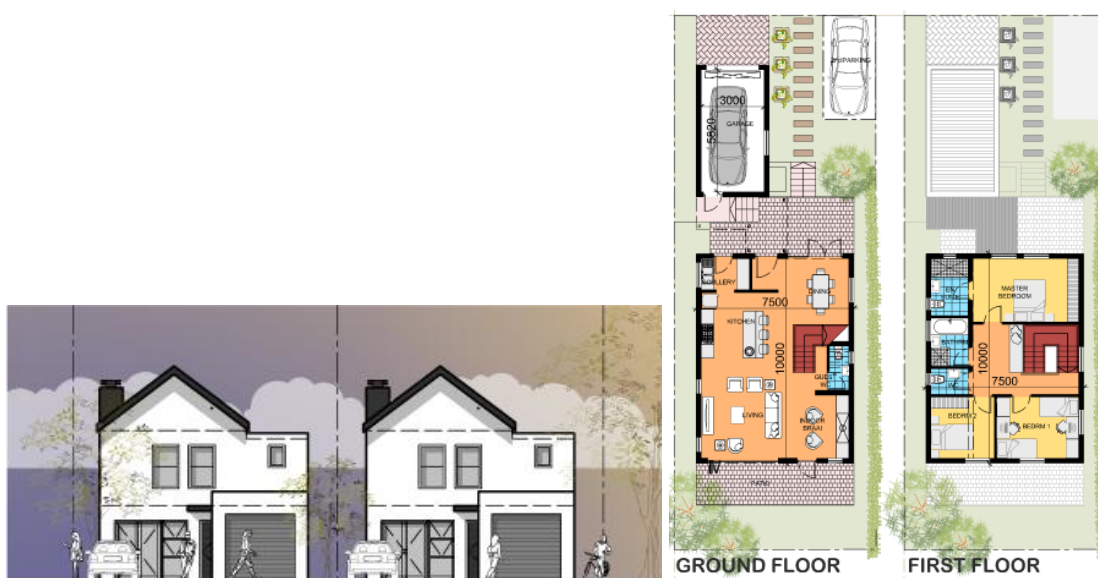


FIGURE 5:TYPE 2 DESIGN

Type 3 units will consist of a ground, first and second floor, with a double garage on the ground floor. The units will have 3 bedrooms on the second floor and living space on the first floor and will be stand-alone units.

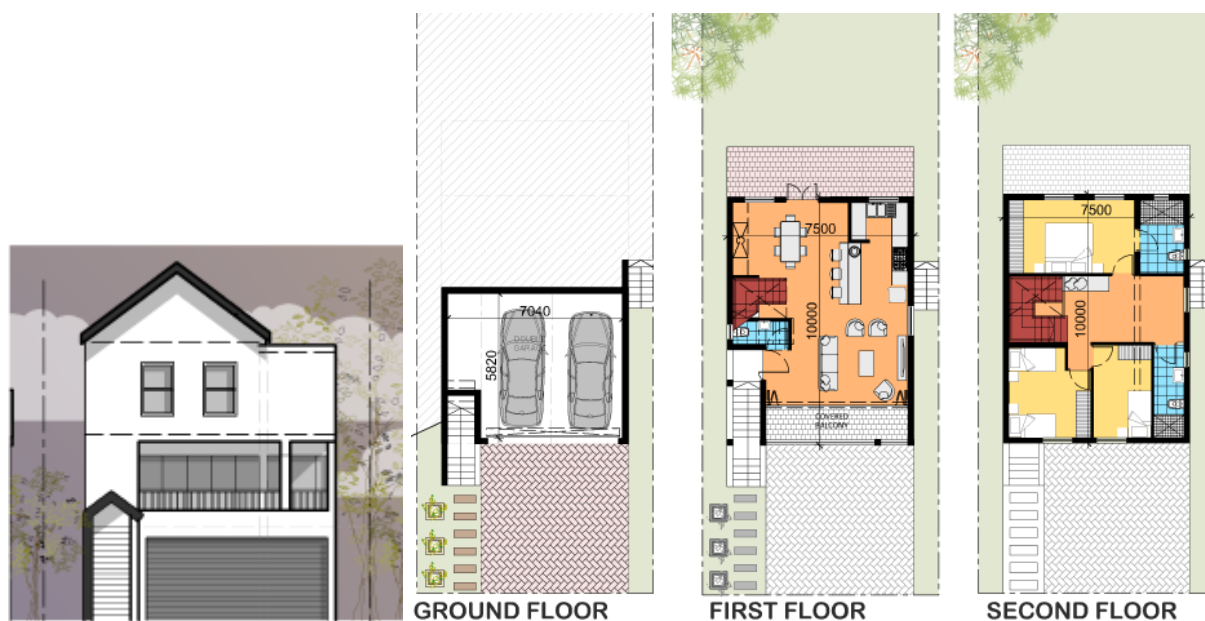


FIGURE 6: TYPE 3 DESIGN

Type 4 units will consist of a double storey unit, with a double garage and hobby room on the ground floor and the 3 bedrooms and living area on the first floor.

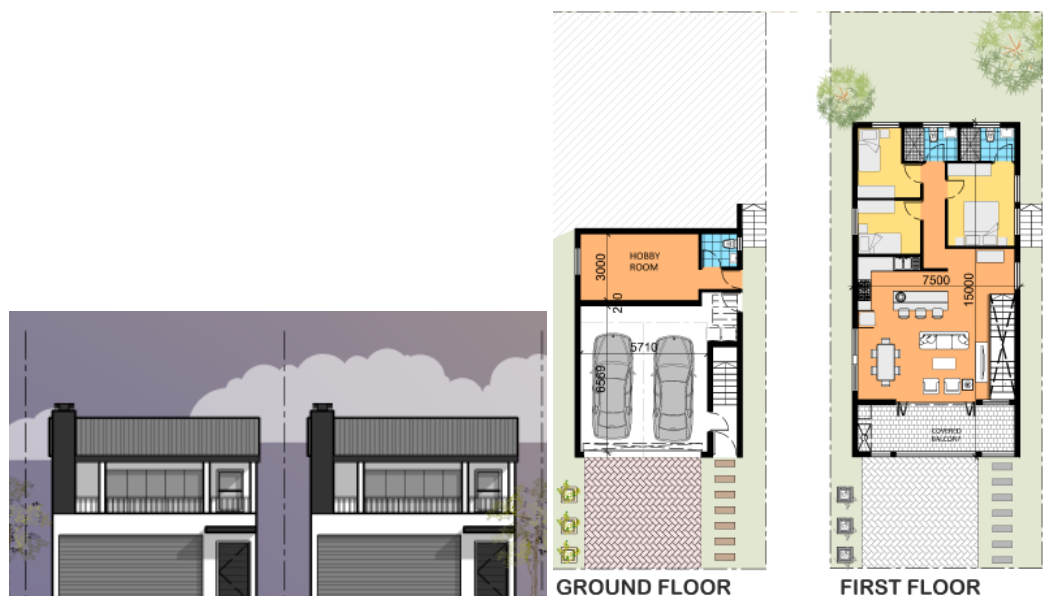


FIGURE 7: TYPE 4 DESIGN

During the designing and infrastructure placement phase, several factors will be considered (e.g. the terrain, the location of Milkwood trees, Cheesewood trees, Olive trees and *Hermannia*) to inform the SDP with the aim to preserve these species and to incorporate them into open space areas.

Access to the site:

In terms of access to the site and according to the Traffic Impact Assessment (TIA) done by Element Consulting Engineers, the access to both Sites (Site A and Site B) of the development is proposed from Robertson Avenue and the specific access point proposed is located at the point approximately halfway between the railway crossing and Steenbras Street. According to the TIA, the layout provides for an acceptably spaced intersection layout of 109m to the railway crossing and 109m to the Steenbras Street intersection with a speed limit of 60km/h on Robertson Avenue, a minor collector road.

The TIA envisaged the development of 133 medium density residential erven, which is a scenario that can be viewed as the ultimate scenario as no additional development will be possible on the site when fully developed.

Services:

Services (electricity, potable water & waste removal) will be provided for by Mossel Bay Municipality.

Electricity

According to KLS Consulting Engineers, for the proposed new residential development, a supply of 786kVA would be required based on the development load calculations in accordance with regulations:

Type 1 erven (175m²) of qty 75 – $4500\text{VA} \times 75 = 338\text{kVA}$

Type 2 erven (245m²) of qty 35 – $6000\text{VA} \times 35 = 210\text{kVA}$

Type 3 erven (228m²) of qty 24 – $7000\text{VA} \times 24 = 168\text{kVA}$

Type 4 erven (237m²) of qty 10 – $7000\text{VA} \times 10 = 70\text{kVA}$

Total kVA = 786kVA

In terms of electrical services, the Mossel Bay Municipality indicated to KLS Consulting Engineers that 1000kVA requirement is available for the proposed development.

Potable Water Supply

In terms of bulk water availability, Element Consulting Engineers indicated that approximately 65kl/day for the Average Annual Daily Demand (AADD) is required for this development. A report from GLS was requested and received, confirming the availability of bulk water for the development. A letter was requested from the Mossel Bay Municipality to confirm the allocation and availability of bulk water for this development.

Sewerage

According to Element Consulting Engineers, the Mossel Bay Municipality has recently commenced with the phased implementation of a sewer network for the study area. A number of phases have been completed. This new municipal sewer network provides a bulk 250mm sewer line on the northern and western boundaries of this development property (Farm 136, portion 38). The Average Dry Weather Flow (ADWF) created by the proposed development is calculated at approximately 59kl/day.

In terms of the capacity in municipal pump stations, the designs of the Seester Street and Dolphin Crescent pump stations were performed to accommodate the entire masterplan study area, inclusive of this portion of development land. Sufficient capacity is hence available in the Dolphin Crescent and Seester pump stations to accommodate this development, according to Element Consulting Engineers.

Stormwater Management

In terms of the stormwater, Element Consulting Engineers indicated that stormwater design on this proposed development is notable, not only from an engineering perspective, but also from an environmental perspective, due to the moderate gradients present. A formal stormwater reticulation system will be provided by a combination of surfaced roadways, kerbs, channels, cut-off drains, inlet structures, outlet structures, concrete stormwater pipes and various minor structures. Energy dissipation will be performed as standard practice with gabion mattresses at all outlets. All pipe outlets will be standard

concrete headwalls. Litter traps will be provided at all stormwater outlets and will be cleaned on a regular basis by the estate's landscaping and maintenance teams.

The system rests on three legs, namely the minor system, the major system and the emergency system. Minor storms and normal flow-off are catered for in the normal road prism and piped system. Major storms are routed through a linked system of road prisms and public open spaces, using attenuation techniques. The emergency system recognizes failure of the minor and major systems and provides for emergency runoff by providing continuous overland flow routes to minimize flooding of residential areas.

The proposed stormwater drainage zones were designed into Site A and Site B (**Figure 8**).

At Site A, it was estimated that 1:2-year peak flow of $0.278\text{m}^3/\text{s}$ and 1:50-year peak flow of $0.786\text{m}^3/\text{s}$. The internal stormwater network for Site A was designed to gravitate to the south-eastern boundary of the development property, which is the lowest point on Site A. The formal internal stormwater reticulation system for Site A will discharge into a proposed internal detention pond on the south-eastern corner of Site A, which will have a 351m^3 capacity (the detention pond may also be split into a detention pond system – more than one smaller pond, as indicated on the SDP). The detention pond will be a focus point in the landscaping to beautify the open space areas.

Water from the detention pond will leach into the sand bed which has a very high seepage rate. The flood outlet from the internal detention pond will drain into a new stormwater culvert underneath Robertson Avenue to Site B of the development.

At Site B, it was estimated that 1:2 year peak flow of $0.321\text{m}^3/\text{s}$ and 1:50 Year peak flow of $0.897\text{m}^3/\text{s}$.

The internal stormwater network for Site B was designed to gravitate to the south-eastern boundary of Site B, which is the lowest point. The formal internal stormwater reticulation system for Site B will discharge into a proposed internal detention pond on the south-eastern corner of Site B, which will have a 398m^3 capacity (refer SDP). Likewise with Site A, the detention pond may also be split into a detention pond system – more

than one smaller ponds, which will be the focus point in the landscaping. The outlet from the internal detention pond will drain in the existing natural drainage line towards the east along the railway line.



FIGURE 8: PROPOSED BULK STORMWATER DESIGN WITH DETENTION PONDS (SOURCE: ELEMENT CONSULTING ENGINEERS)

Site History

In terms of the environmental sensitivity, historical imagery of the site indicated that it was subjected to agricultural clearing all natural vegetation for 35 years between 1939 and 1974. By 1989 imagery indicated that agriculture was abandoned, and woody vegetation was visible, however it is not possible to know if this was predominantly indigenous or invasive woody plant species. In 2013 there seems to have been some alien vegetation clearing activity after which no further activities took place on the site to present day.

The site is surrounded by residential developments and the only open corridor remaining by 2019 was an open piece of land with one building along the western boundary of the site. According to Confluent Environmental (Pty) Ltd, who conducted the terrestrial biodiversity site verification report, even though this piece of open land still exists today, the property further west is now also being developed effectively removing the connectivity to a wider open space network and isolating Farm 38 / 136.

By 2024 (the time of completion of this report), the site had been left to recover passively (apart from the one likely alien clearing event in 2013) since at least 1989, which amounts to at least 35 years. This means that the vegetation on the site is considered natural vegetation, despite the long history of disturbance on the property (Confluent, 2024).

An application to rezone the site from Agriculture to Residential Use has been submitted to the Mossel Bay Local Municipality as the site will be regarded as residential infill development in Tergniet (**Figure 9**).



FIGURE 9: LOCATION OF THE SITE IN TERMS OF THE TOWN PLAN SCHEME OF TERGNIET

METHOD STATEMENT & ACTIVITY SPECIFIC MANAGEMENT PLAN

The Method Statements set out the materials, labour, and method that the contractor proposes using to carry out an activity, identified by the Environmental Officer and/or Project Manager. The Method Statements contain sufficient detail such that the Environmental Officer and Project Manager can assess whether the Contractor's proposal is following the requirements of the Environmental Management Plan. The contractor must sign each Method Statement along with the Environmental Officer and Project Manager to formalize the approved Method Statement. Method Statements and/or Management Plans must be submitted by the Contractor to the Project Manager and Environmental Officer for approval before the commencement of the activity.

The Method Statements for this project, as a minimum, must include:

- Soil Management and Erosion;
- Stormwater control;

- Flora & Fauna Management;
- Water Quality & Aquatic Health;
- Fires
- Waste

Method Statements must address the following aspects:

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

The Environmental Officer and/or Applicant must monitor the implementation of the Method Statements and activity-specific management plans during the operation phase of the project.

PLANNING AND DESIGN PHASE MANAGEMENT

Planning and design of the site were done by KLS Engineering in collaboration with GLS for the civil services and Engineering advice and services

An environmental application was completed by Digital Soils Africa (Pty) Ltd.

Once the final design has been decided on based on input from the engineers, SACNASP specialists and town planning company, all applicable applications to the various departments and the municipality were lodged.

PRE-CONSTRUCTION PHASE MANAGEMENT

The proposed development site should be demarcated before development to avoid unnecessary disturbance. The development perimeter must be demarcated using fixed beacons and a fence and the necessary safety signage will also be posted on the perimeter. Access control should be applied.



Should the activity be authorized, the overall goal for the construction phase is to manage the activities associated with the construction of the site in such a way that:

- The receiving environment is protected from degradation and harm;
- There is timeous detection of, and responses to, environmental change due to monitoring;
- The activity complies with all relevant legislation, permits, and authorizations.

Project activities in the Construction phase may include:

-
- Animal search and rescue;
 - Environmental awareness training;
 - Site clearing;
 - Stormwater control mechanisms;
 - Construction of buildings, infrastructure, concrete works, mechanical and electrical works;
 - Waste and wastewater management;
 - Traffic control;
 - Landscaping.

OPERATION PHASE MANAGEMENT

The overall goal for the operational phase is to manage the activities associated with the operation and maintenance of the site in such a way that:

- The development maintains its positive socio-economic impact;
- Management of open space/park areas is kept in good condition;
- Maintenance and repair of individual properties by private owners;
- The activity complies with all relevant legislation, permits, and authorizations;

Also from a development point of view, the overall goal would be to:

- Maintain infrastructure required for the development of individual plots;
- Maintain the services infrastructure;
- Conduct routine maintenance inspections;
- Repair and maintain infrastructure;
- Control waste

ORGANIZATIONAL REQUIREMENTS

The Applicant should be familiar with the requirements of the EMP and should execute all maintenance activities in an environmentally responsible manner.

This overview offers a perspective of the proposed organization of the EMP and the recommended responsibilities of key members of the project team. The ultimate responsibility and public accountability for the EMP and general environmental management reside with the Applicant.

The workers will be responsible for implementing the instructions from the site manager, and it is recommended that the site manager appoints a responsible worker to report back on a daily/weekly/monthly basis, ensuring compliance with the conditions of the EMP. If needed, provide a basic level of environmental training to the responsible worker/s.

If needed, an independent and external Environmental Control Officer (ECO) can be appointed by the Applicant to assist and advise on the implementation of the EMP and to conduct environmental audits no less than once every five (5) years unless otherwise instructed by the relevant authorities.

ROLES AND RESPONSIBILITIES

AUTHORITIES

The issuing of the necessary permits and authorizations is the responsibility of the authorities, in this case, WC DEADP. The authorities will also ensure that the Applicant complies with the conditions of the Environmental Authorisation and other permits/licenses/approvals.

Authorities are entitled to perform site inspections to ensure compliance with the conditions and in the case of non-compliance, the authorities may provide instructions to ensure an action plan with corrective measures is carried out or to cease with the project especially in the case of long-term non-compliance.

APPLICANT

The Applicant has the responsibility for environmental management during the construction and operational phase until the individual plots are sold. Thereafter it will be the responsibility of the new property owner.

The EMP becomes legally binding to the Applicant and everyone acting on behalf of the Applicant during the construction and operation activities. The activities are regarded as permanent therefore there is no provision made for decommissioning activities.

In summary, the Applicant is responsible for:

- Reviewing the environmental monitoring programme in the EMP or as recommended by the ECO;
- Ensuring that the required environmental audits are undertaken on a timely basis and that the results of the audits are communicated to all personnel that are responsible;
- Implementing an environmental monitoring programme approved by the authorities and providing such results to the authorities;
- Conducting regular site inspections and monitoring to ensure compliance with the EMP;
- Advising on actions to be taken in the event of incidents or public complaints;
- Keeping a complaint register on-site/on the property.

RESPONSIBLE CONTRACTOR

It is the responsibility of the Contractor to ensure that there is compliance with the environmental specifications contained in the BAR, EMP and EA. This implies that the Contractor must familiarise themselves with the documentation and understand the restrictions and conditions. If any infringements are noted, the ECO and Applicant must be notified before further action is taken.

The Contractor will also be responsible for the workforce on-site and could appoint a suitable site manager who must report to the Contractor.

SUB-CONTRACTORS

Sub-contractors must operate under the supervision of the Contractor and are liable for issues associated with their actions.

ENVIRONMENTAL CONTROL OFFICER

An Environmental Control Officer (ECO) must be appointed by the Applicant to advise and assist where necessary and to monitor the implementation of the EMP, as an external function. The ECO must have previous experience in environmental management and compliance monitoring.

The ECO should conduct an independent evaluation of compliance with the EMP, but is not responsible for enforcing the conditions of the EMP.

Specific responsibilities include:

- Undertake environmental site audits as determined by the responsible authority;
- Conduct monthly audits during vegetation clearing,
- Recommend environmentally appropriate solutions to environmental problems;
- Recommend additional environmental management measures, if applicable;
- To assist in environmental training for the staff;
- Help raise awareness for environmental sensitive issues and help foster an appropriate environmental attitude towards the environment;
- Respond to non-compliance and provide corrective actions and procedures;
- Assist the Applicant if liaising with authorities is required.
- Keep photographic compliance records,
- Demarcate protected tree species before clearing,
- Conduct a fauna search-and-rescue protocol,
- Keep a complaints register,
- Stop-work procedure if protected fauna encountered.

PROJECT ENGINEER

The PE main role is to monitor the Contractor's compliance with the Environmental Specifications daily and enforce compliance, therefore he must be familiar with the contents of the EMP and EA. The PE should designate the working areas and will become the mediator between the Contractor and the ECO and any advice from the ECO should be communicated to the Contractor.

If infringements are communicated, the ECO must propose actions to rectify the negative impacts and where no specific item is provided in the Schedule of Quantities for the actions recommended by the ECO, costing of measures should be undertaken before issuing site instructions. The PE should also allow for environmental protection works within the project budget and determine the imposition of penalties for infringement of the Environmental Specifications and implement it.

COMMUNITY LIAISON OFFICER

The primary role of the Community Liaison Officer (CLO) is to build and maintain mutually beneficial relationships between the Applicant and the surrounding community and to facilitate communications between the parties involved during this development. The CLO must coordinate activities that will involve the community with the proposed development and act as a mediator between the Applicant and the community to streamline operations, resolve issues, and improve communications.

MITIGATION MEASURES & MONITORING

The following maintenance and mitigation measures are recommended for implementation by the Applicant for the construction phase and the duration of the operational phase.

**Please note that this section will be amended and completed when all comment has been received from Commenting Authorities and interested and affected parties.*

TABLE 1: SUMMARY OF SIGNIFICANT IMPACT WITH AND WITHOUT MITIGATION DURING THE CONSTRUCTION AND OPERATIONAL PHASES.

Alternative:	Layout Option C	Access Option 1: Robertson Avenue
PLANNING, DESIGN AND DEVELOPMENT PHASE		
Potential impact and risk:	Noise generation during site preparation	Noise generation during site preparation
Nature of impact:	Construction leads to a higher amount of noise at the site and its surrounds. A radius of 50m is estimated to be the extent of this disturbance. Adult individuals of the SCC are able to disperse and are likely to move to adjacent gardens or further off to other natural areas. Nests and eggs are at risk. Disturbance during the breeding season may have an effect on the local population of the SCC.	Construction leads to a higher amount of noise at the site and its surrounds. A radius of 50m is estimated to be the extent of this disturbance. Adult individuals of the SCC are able to disperse and are likely to move to adjacent gardens or further off to other natural areas. Nests and eggs are at risk. Disturbance during the breeding season may have an effect on the local population of the SCC.
Significance rating of impact prior to mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -	Low -
Significance rating of impact after mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low -	Very Low -
Potential impact and risk:	Site preparation (vegetation clearance) for the residential development	Site preparation (vegetation clearance) for the residential development

Nature of impact:	During the site preparation vegetation will be cleared. This will lead to habitat destruction. The removal of vegetation will displace fauna and may have effects on Knysna Pale Copper Butterfly which may not have refugia in the greater landscape due to the lack of suitable Hartenbos Dune Thicket within the typical flight radius of butterflies (up to 5km for some species).	During the site preparation vegetation will be cleared. This will lead to habitat destruction. The removal of vegetation will displace fauna and may have effects on Knysna Pale Copper Butterfly which may not have refugia in the greater landscape due to the lack of suitable Hartenbos Dune Thicket within the typical flight radius of butterflies (up to 5km for some species).
Significance rating of impact prior to mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium-High -	Low -
Significance rating of impact after mitigation:(e.g. Low, Medium, Medium-High, High, or Very-High)	Medium -	Low -
Potential impact and risk:	Impact of Planning for the Inclusion of a Habitat Corridor Along the Southern Boundary of the Property in the SDP	Impact of Planning for the Inclusion of a Habitat Corridor Along the Southern Boundary of the Property in the SDP
Nature of impact:	SDP was revised to indicate protected trees that are to be retained / removed and is considered the preferred "Option C" layout. Despite consideration of protected trees, both layouts have a very similar footprint.	Not applicable
Significance rating of impact prior to mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	High +	Not applicable
Significance rating of impact after mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	High +	Not applicable
Potential impact and risk:	Loss of cultural heritage or paleontological artefacts	Loss of cultural heritage or paleontological artefacts
Nature of impact:	Loss or destruction of fossil finds or heritage sites	Not applicable
Significance rating of impact prior to mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -	Not applicable
Significance rating of impact after mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low -	Not applicable

Potential impact and risk:	Habitat and fauna negatively affected by the management of the construction site (i.e., staff, stockpiles, and equipment)	Habitat and fauna negatively affected by the management of the construction site (i.e., staff, stockpiles, and equipment)
Nature of impact:	The management of materials and staff on the site is also an important impact of development.	Not applicable
Significance rating of impact prior to mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium -	Not applicable
Significance rating of impact after mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -	Not applicable
Potential impact and risk:	Harm/Death of fauna, particularly soil-dwelling mammal SCC, due to construction related activities such as earthworks.	Harm/Death of fauna, particularly soil-dwelling mammal SCC, due to construction related activities such as earthworks.
Nature of impact:	Fauna may occur on site and be killed or seriously harmed during construction related activities.	Not applicable
Significance rating of impact prior to mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium -	Not applicable
Significance rating of impact after mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -	Not applicable
Potential impact and risk:	Permanent loss of Secondary Hartenbos Dune Thicket (EN) Habitat due to Earthworks and Other Construction Related Activities.	Permanent loss of Secondary Hartenbos Dune Thicket (EN) Habitat due to Earthworks and Other Construction Related Activities.
Nature of impact:	The proposed development on Portion 38 of 136 will result in the permanent loss of between 51 and 55% of the remaining vegetation on the site, and the transformation of at least 67 to 70% of the site.	Not applicable
Significance rating of impact prior to mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium -	Not applicable
Significance rating of impact after mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -	Not applicable

Potential impact and risk:	A loss of protected tree species (<i>Sidoxylon inerme inerme</i> & <i>Pittosporum viridiflorum</i>), and the VU SCC <i>Hermannia lavandulifolia</i> due to earthworks and other construction related activities.	A loss of protected tree species (<i>Sidoxylon inerme inerme</i> & <i>Pittosporum viridiflorum</i>), and the VU SCC <i>Hermannia lavandulifolia</i> due to earthworks and other construction related activities.
Nature of impact:	The proposed development footprint is within Hartenbos Dune Thicket which includes two protected tree species, <i>Sideroxylon inerme</i> (Milkwood) and <i>Pittosporum viridiflorum</i> (Cheesewood). These trees are protected under the National Forests Act (No. 84 of 1998),	Not applicable
Significance rating of impact prior to mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium -	Not applicable
Significance rating of impact after mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low -	Not applicable
OPERATIONAL PHASE		
Potential impact and risk:	Conservation conflict between wildlife and residential use of the property	Conservation conflict between wildlife and residential use of the property
Nature of impact:	Some wild animals are attracted to human developments, usually due to the presence of a resource (most notably food) that has become available within the footprint of the development.	Not applicable
Significance rating of impact prior to mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium -	Not applicable
Significance rating of impact after mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -	Not applicable
Potential impact and risk:	Harm/Death to wildlife due to collisions with vehicles	Harm/Death to wildlife due to collisions with vehicles
Nature of impact:	All fauna run the risk of being seriously harmed or killed due to collisions with vehicles on road infrastructure.	All fauna run the risk of being seriously harmed or killed due to collisions with vehicles on road infrastructure.
Significance rating of impact prior to mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -	Low -
Significance rating of impact after mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low -	Very Low -

Potential impact and risk:	A slow loss of thicket habitat, protected tree species, and plant species biodiversity due to landscaping and maintenance activities required.	A slow loss of thicket habitat, protected tree species, and plant species biodiversity due to landscaping and maintenance activities required.
Nature of impact:	During the operational phase, the site will undergo long-term transformation through landscaping, gardening vegetation trimming, invasive species control, garden planting, and the upkeep of paths, driveways, and stormwater infrastructure.	Not applicable
Significance rating of impact prior to mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium -	Not applicable
Significance rating of impact after mitigation: (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -	Not applicable

ENVIRONMENTAL MANAGEMENT PROGRAM

TABLE 0-2. ENVIRONMENTAL ASPECTS AND RELATED ACTIONS FOR THE PLANNING PHASE OF THE PROPOSED PROJECT.

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/ rehabilitation
1. Pre-construction phase									
1.1. Aspect: Site Preparation, Site Offices, Storage of Materials and Health and Safety									
1.1.1. Alignment with the environmental documentation									
Optimum Construction site management in order to limit environmental impacts									
	The developer must ensure this EMPr forms part of the contractual agreements with the Contractor(s) and sun-contractors for the execution of the proposed development.	Raise environmental awareness	EMPr available on-site	Once-off	Developer; Project Manager (PM); Environmental Officer (EO)	✓			
	Where possible, local labour, suppliers and contractors must be used. (<i>Social Specialist</i>)	Promote socio-economic environment	Proof of local labor	Once-off	Contractor; PM	✓	✓		✓
	An independent ECO must be appointed.	Promote independent assessment	ECO Appointed	Once-off	Contractor	✓			
1.1.2. Construction site management									
Optimum Construction site management in order to limit environmental impacts									

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	A suitable area for site offices and areas for the storage of equipment, materials and batching, etc. must be confirmed with the ECO.		Minimum impacts on sensitive habitats	On-site storage area	Once-off	Project Manager; EC; Contractor	✓		
	Posters presenting photographs of potential floral species of concern, must be erected on site.		Minimum impacts on sensitive habitats	Posters Present on-site	Once-off	Project Manager; EC; Contractor	✓		
	Environmental awareness training must be conducted for construction staff, concerning the prevention of accidental spillage of hazardous chemicals and oil, pollution of water resources (both surface and groundwater), air pollution and litter control.		Raise environmental awareness	Training Material available	Continuous, as required	Project Manager; EC; Contractor	✓	✓	
	Staff must be educated on the need to refrain from indiscriminate waste disposal and pollution of local soil and water resources.		Raise environmental awareness	Training Material available	Once-off	Project Manager; EC; Contractor	✓	✓	
	Waste separation at source must be implemented with colour coded bins and skips.		Minimize impacts on water resources	Color coded bins	Continuous, as required	Project Manager; EC; Contractor	✓	✓	✓
	Staff must be trained on reporting environmental incidents.		Raise environmental awareness	Training Material available	Once-off	Project Manager; EC; Contractor	✓	✓	✓
	The principal contractor is to provide a detailed security plan aimed towards ensuring the safety of the adjacent landowners.		Ensuring all construction camp activities	Site to be inspected. Plan to be provided to	Once-off	Contractor	✓		

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
			are outside of sensitive areas.	the ECO, Engineer and be kept in Site file					
	Construction netting or fencing must be used to clearly indicate construction areas (see example in. Access roads must be clearly marked so there is no confusion as to where the tracks are or how wide the road is. (<i>Terrestrial Specialist</i>))	Ensuring all construction camp activities are outside of sensitive areas.	Site to be inspected. Plan to be provided to the ECO, Engineer and be kept in Site file	Once-off	Contractor, ECO	✓	✓		
	Clear signs for “no-go” areas for vehicles and personnel should be placed strategically on the site and along access roads. No-go areas are anywhere outside of the direct area of influence of the construction phase such as the green spaces designated in the SDPs provided. (<i>Terrestrial Specialist</i>))	Ensuring all construction camp activities are outside of sensitive areas.	Site to be inspected. Plan to be provided to the ECO, Engineer and be kept in Site file	Once-off	Contractor, ECO	✓	✓		
	No construction workers are to be permitted to wander past the boundaries of the demarcated/cordoned-off construction footprint.	Ensuring all construction camp activities are outside of sensitive areas.	Site to be inspected.	Continuous	Contractor	✓	✓	✓	
1.1.3. Protection of the natural vegetation									
Protection of protected (Provincially and Nationally) species occurring on site and ensure sensitive ecosystems and habitats are protected during construction									

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	All sensitive areas likely to be intersected by the project must be identified, demarcated, photographed, and clearly marked prior to any construction works.		Protection of natural resources	Site inspection	Once-off	Developer; ECO; EO; Specialist	✓		
	Search and Rescue for SCC and bird nests must take place prior to commencement of construction with particular focus the plant species <i>Hermannia lavandulifolia</i> , bird species Knysna Warbler (<i>Bradypterus sylvaticus</i>) and mammal species - golden moles (<i>Chrysochloridae</i>) (<i>Terrestrial Specialist</i>) (<i>Animal Specialist</i>)		Protection of natural resources	Site inspection	Once-off	Developer; ECO; EO; Specialist	✓		
	In the event that SCC are encountered the removal and relocation of these species should be done under the care of a qualified ecologist after the required permits from WC DEADP must be obtained.		Protection of natural resources	Site inspection	Once-off	Developer; ECO; EO; Specialist	✓		

TABLE 0-3. ENVIRONMENTAL ASPECTS AND RELATED ACTIONS FOR THE CONSTRUCTION AND OPERATIONAL PHASE OF THE PROPOSED PROJECT.

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/ rehabilitation
2. Construction & Operational Phase									
2.1. Aspect: Site Preparation, site offices and Storage of Materials									
2.1.1. Site preparation activities									
	Site clearing must take in a phased manner. <i>(Terrestrial Specialist)</i>	The preservation of the vegetation on-site.	Site to be inspected.	Continuous	ECO		✓		
	Should any nests be found of the Knysna Warbler (<i>Bradypterus sylvaticus</i>) , construction is to be halted until the end of the breeding season (August- December). <i>(Terrestrial Specialist)</i>	Preservation of the Knysna Wabler	Site to be inspected.	Continuous	ECO	✓	✓		
	A dedicated search is to be conducted by a butterfly expert to confirm the presence or absence of Knysna Pale Copper Butterflies in October, November, and/or December or according to the discretion of the expert. Should any butterflies be found, the recommendations and mitigation measures as laid out by the butterfly expert are to supersede what is laid out in this report as it pertains to the butterfly. <i>(Terrestrial Specialist)</i>	Preservation of the Knysna Pale Copper Butterfly	Site to be inspected.	Continuous	ECO	✓	✓		
	If possible, construction activities should be limited to between 08:00 and 17:00 or in	Construction limited to 8:00 and 17:00.	Time limited construction	Continuous	ECO		✓		

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	conjunction with the ECO and neighbors of the project site.								
	Areas which are not to be constructed within two months must not be cleared to reduce risk of erosion.		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	ECO		✓	
	Progress of vegetation establishment must be monitored regularly by ECO, with slow recovery requiring intervention to ensure site recovery and integrity, as well as physical stability.		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	ECO		✓	
	Topsoil obtained as part of the site preparation activities will be stored until it can be used for landscaping.		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	ECO		✓	
	Weather reports must be checked daily to avoid heavy machinery and activities on the site during rainy weather. Following a significant rainfall event (excluding short periods of gentle, light rain), all construction on the site must cease temporarily. Following such an event, a survey of damage must first be conducted and appropriate mitigation put in place before the continuation of construction. (<i>Plant Specialist</i>)		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	Contractor, ECO		✓	
	Topsoil within new excavation areas must be stripped to a depth of ca. 30cm and kept in designated piles. Topsoil piles must be suitably		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	Contractor, ECO		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	covered with a geotextile. The topsoil piles must be clearly labelled so that they do not mix with subsoils excavated or any other construction material for the site. (<i>Plant Specialist</i>).								
	Where vegetation will be cleared to make way for construction, filled sandbags, silt socks or a silt fence must be used to reduce the intensity of water runoff and flow over the site and thereby reduce erosion potential. This should be placed around the perimeter of the downslope disturbance footprint and needs regular inspection and adaptive management to ensure the integrity of the system for reducing erosion. (<i>Terrestrial Specialist</i>) (<i>Plant Specialist</i>)		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	ECO		✓	
	Relevant permits must be obtained for the destruction and removal of heritage sites. Should a heritage site be encountered, excavation should stop, and the necessary destruction permits from the relevant Heritage Resources Authorities prior to site impact and destruction. (<i>Heritage Specialist</i>)		Preserve heritage resources	Permits available	Continuous	Contractor / ECO		✓	
2.1.2. Establishment of site offices and storage areas									

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	The construction camp is to be erected in accordance with the site plan compiled in the pre-construction phase.		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	ECO	✓	✓	
	The site plan must be submitted to the Department with the initial monitoring report.		The preservation of the vegetation on-site.	Site Plan	Continuous	ECO	✓	✓	
	The site offices are not to be placed within the 1:100 year flood line or within proximity to any water resources or sensitive areas.		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	ECO		✓	
	The size of the site offices should be minimized.		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	ECO		✓	
	A comprehensive fire management plan should be implemented so as to prevent any fire outbreaks.		The preservation of the vegetation on-site.	Site to be inspected.	Once-of	ECO	✓	✓	
2.1.3. Establishment of site offices and storage areas of hazardous materials									
Proper storage facilities for the storage of oils, paints, grease, fuel, chemicals, and any hazardous materials to be used must be provided to prevent migration of spillages into the surface and groundwater regime.									
	The location of storage areas must take prevailing wind direction, water resources, site topography and erosion potential into account.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
	Storage of these materials is to be done on or within impervious surfaces.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Storage must be designated, demarcated, fenced, and clearly marked as such.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
	Fire prevention equipment must always be available at all storage facilities.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
	Any water that collects in the bund must not be allowed to stand and must be removed and disposed of as liquidous waste immediately.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
	All fuel storage tanks (temporary or permanent) and associated facilities must be designed and installed in accordance with the relevant oil industry standards, National codes, Local Authority, and other relevant requirements.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
	The capacity and content of the tank must be clearly displayed and identified.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
	All waste fuel and chemical soiled rags must be stored in leak-proof containers and disposed of at an approved hazardous waste site.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
	All storage facilities (including any tanks) must be on an impermeable surface to ensure that accidental spillage does not pollute local soil or water resources. The facilities must also be protected from the ingress of stormwater from surrounding area.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible, the available MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes.		Protection of surface and groundwater	MSDSs available.	Continuous	Contractor		✓	
	A suitable Waste Disposal Contractor must be employed to remove waste oil. These wastes should only be disposed of at a licenced landfill site designed to handle hazardous wastes.		Protection of surface and groundwater	Proof that waste contractor is registered.	Continuous	Contractor		✓	
	All excess cement and concrete mixes are to be contained on the construction site prior to disposal off site at a licenced hazardous waste site.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
	Any spillage, which may occur, shall be investigated and immediate action must be taken. This must also be reported to the ECO and depending on the severity reported to the relevant authorities as stipulated in the conditions of the Environmental Authorisation.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
	Keep written records detailing: the type of spill; the corrective and remedial measures implemented in the stopping or reduction of the		Protection of surface and groundwater	Records of spills.	Continuous	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	spill; and the clean-up of the spill. Such progress reporting is important for monitoring and auditing purposes and the written reports may afterwards be used for training purposes in an effort to prevent similar future occurrences								
2.1.4. Access control and vehicular movement									
Access onto the site will be provided through a gravel road leading into and through the proposed developments. Additionally, numerous internal gravel roads will be constructed.									
	Strict site access control procedures must be implemented.	Ensure safety for all individuals on-site	Site to be inspected.	Continuous	Contractor			✓	
	A record must be kept of all people who enters and exits the facility.	Ensure safety for all individuals on-site	Record available.	Continuous	Contractor			✓	
	Ensure only legitimate entry into the development area takes place.	Ensure safety for all individuals on-site	Site to be inspected.	Continuous	Contractor			✓	
	Any Departmental unit (WC DEADP, DFFE, DWS etc) governing environmental precautions must be granted access to the development site at all times.	Compliance with monitoring requirements	Site to be inspected.	Continuous	Contractor			✓	
	Vehicle movement should be restricted to an absolute minimum that is required for the construction and operation. Unnecessary movement of vehicles will increase the degradation of paths and dirt roads leading to an increased erosion risk.	Limiting construction impacts	Site to be inspected.	Continuous	Contractor			✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/ rehabilitation
2.2. Aspect: Ecological Sensitivity of the development area									
Ensure sensitive ecosystems and habitats are protected during construction									
	All rubble, litter and any other type of waste must be removed from the site and regular monitoring of this is required on site.		Improve habitat quality	Site to be inspected.	Continuous	Contractor		✓	
	Soils and sands from excavation activities of the development must be stockpiled away from drainage, and possible drainage, areas.		Improve habitat quality	Site to be inspected.	Continuous	Contractor		✓	
	All construction-related waste/material should be appropriately disposed of after the construction has ceased.		Improve habitat quality	Site to be inspected.	Continuous	Contractor		✓	
	Fauna that are trapped in trenches, must be relocated on site and located as far as possible within the sensitive habitats.		Improve habitat quality	Site to be inspected.	Continuous	Contractor		✓	
	No protected fauna or flora may be harmed or removed without the necessary permits.		Improve habitat quality	Site to be inspected.	Continuous	Contractor		✓	
	Hunting, capturing and trapping of fauna must be prohibited.		Improve habitat quality.	Site to be inspected.	Continuous	Contractor		✓	
	No feeding of wildlife is permitted, and no disposal/discarding of any food waste (bones, scraps, fruit pips/cores) within the surrounding environment, especially the corridor, is allowed. (Terrestrial Specialist)		Limit changes to feeding pattern of indigenous animals and preventing them from becoming a nuisance.	Site to be inspected.	Continuous	Contractor, ECO, Homeowners Association		✓	✓

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	All food waste or general waste should be kept in a secure location which is not accessible to any wildlife. (<i>Terrestrial Specialist</i>)		Limit changes to feeding pattern of indigenous animals and preventing them from becoming a nuisance.	Site to be inspected.	Continuous	Contractor, ECO, Homeowners Association		✓	✓
	All infrastructure must be erected within the site boundaries.		Limiting construction footprint.	Site to be inspected.	Continuous	Contractor		✓	
	Re-use of organic materials (garden and kitchen remains) for improved soil condition: soil covered with compost of raw organic material (leaves, wood, chips, etc.) reduce evaporation and increase soil moisture retention.		Improve soil quality.	Site to be inspected.	Continuous	Contractor ECO		✓	✓
	All above-mentioned areas must be demarcated and cordoned off prior to the commencement of site clearance.		Limiting construction footprint.	Site to be inspected.	Continuous	Contractor		✓	
	No indigenous vegetation is to be collected or utilized for firewood.		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	Contractor	✓	✓	✓
	Care must be given to not unnecessarily clear or destroy indigenous vegetation and protected trees. Relevant permits must be obtained for the protected tree species (<i>Sidoxylon inerme inerme</i> & <i>Pittosporum viridiflorum</i>) (<i>Plant Specialist</i>)		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	Contractor, ECO		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/ rehabilitation
	Plan a rescue of selected trees within the SDP footprint prior to construction within a given section of the site. It might be useful to break the construction plan into sections, so that a rescue in one area can occur, while construction is ongoing in areas that have already been cleared. Trees that can be rescued are typically: - Seedlings and saplings (up to 1.5–2 m tall). - Small-medium trees with a DBH (diameter at breast height) up to 25cm, and no signs of stress. <i>(Plant Specialist)</i> The procedure for excavation, rescue, transplanting and aftercare and monitoring as stipulated in the Terrestrial & Plant Assessment report must be implemented.	The preservation of the vegetation on-site.	Site to be inspected.	Continuous	Contractor, ECO		✓		
	Compile a gardening guideline for homeowners which should be written into the constitution for the homeowners association. This should include the recommendations in this section. <i>(Plant Specialist)</i>	The preservation of the vegetation on-site.	Site to be inspected.	Continuous	Homeowners Association		✓	✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Landowners, garden services, and contractors must be informed that trimming, cutting or removal of protected tree species is an offence without the necessary permits. <i>(Plant Specialist)</i>		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	Homeowners Association		✓	✓
	All indigenous plant material removed from the cleared areas must be stockpiled for mulching. All remaining vegetation must be removed and disposed of at a registered landfill site.		The preservation of the vegetation on-site.	Site to be inspected.	Continuous	Contractor		✓	
	Notice boards must be erected informing construction workers on floral and faunal species of particular conservation concern. A relevant specialist should be notified when any of these species are observed during the construction phase		The preservation of the vegetation on-site.	Notice boards present. Site to be inspected.	Continuous	ECO		✓	
2.3. Control of alien and invasive plant species									
Ensure sensitive ecosystems and habitats are protected during construction									
	All alien invasive plants must be removed. The ECO must do regular follow-ups to ensure no alien invasive plants are located within the development footprint. <i>(Terrestrial Specialist)</i> <i>(Plant Specialist)</i>		Improvement of the quality of the natural resources	Site to be inspected.	Continuous	ECO Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Bare surfaces must be grassed as soon as possible after construction to minimise time of exposure. Locally occurring, indigenous grasses must be used where possible.		Improvement of the quality of the natural resources	Site to be inspected.	Continuous	ECO Contractor		✓	
	All alien invasive plants control work should only be undertaken by a competent contractor;		Improvement of the quality of the natural resources	Site to be inspected.	Continuous	ECO Contractor		✓	✓
2.4. Herbicide and pesticide limitation									
Ensure sensitive ecosystems and habitats are protected during construction									
	No herbicides are allowed to be used on indigenous vegetation.		Conservation of natural resources on site	Site to be inspected.	Continuous	Contractor		✓	
	Registered herbicides must strictly be applied to alien invasive vegetation only.		Conservation of natural resources on site	MSDS in site file.	Continuous	ECO Contractor		✓	
	Pesticides are not to be used during the construction or operational phase of the development.		Conservation of natural resources on site	Site to be inspected.	Continuous	ECO Contractor Developer		✓	✓
	General spraying of herbicides and pesticides must be prohibited.		Conservation of natural resources on site	Site to be inspected.	Continuous	ECO Contractor		✓	
2.5. Protection of the groundwater									
Ensure sensitive ecosystems and habitats are protected during construction									

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	As far as possible, indigenous plants or natural features must not be disturbed, destroyed or removed.		Conservation of natural resources on site	Site to be inspected.	Continuous	Contractor		✓	
	A stormwater management system which would ensure that surface runoff patterns are retained as is, especially pertaining to the drainage areas, must be developed, should the drainage areas and interspersed small depressions may be included within the development footprint without resulting in large impacts.		Conservation of natural resources on site	Site to be inspected.	Continuous	Contractor		✓	✓
	The storm water management system must include design of erosion prevention structures such as soakaways, attenuation areas and dissipation structures.		Conservation of natural resources on site	Site to be inspected.	Continuous	Contractor		✓	
	All structures and mitigation measures must be maintained throughout the lifetime of the development.		Conservation of natural resources on site	Site to be inspected.	Continuous	Contractor		✓	✓
2.6. Aspect: Erosion and sedimentation control									
Ensure sensitive ecosystems and habitats are protected during construction									
	Both temporary and permanent soil erosion control measures must be used during the construction and operation phases.		Conservation of sensitive areas	Site to be inspected.	Continuous	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Incorporate adequate erosion management measures to limit erosion and associated sedimentation of the water resource; management measures may include berms, silt fences, hessian curtains and stormwater diversion away from areas susceptible to erosion. <i>(Geotechnical Specialist)</i>		Conservation of sensitive areas	Site to be inspected.	Continuous	Contractor		✓	
	Excavated material and large sediment loads must be prevented from entering water resources and other sensitive areas.		Limited erosion Limited dust Limited sedimentation	Site to be inspected.	Continuous	Contractor		✓	
2.4. Aspect: Site Support Facilities									
2.4.1. General Management Measures									
Ensure a work environment that is safe and fair for all workers									
	Respect workers right to refuse to work in unsafe and unhealthy environment.		No complaints from workers	Site to be inspected.	Continuous	Contractor		✓	
	All work must be carried out under strict supervision and according to best practice.		No complaints from workers	Site to be inspected.	Continuous	Contractor		✓	
	Management must identify training requirements for the various work areas and undertake training of employees and contract workers in the respective areas.		No complaints from workers	Site to be inspected.	Continuous	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Local labour must be used to ensure the affected community get the most benefit from the job opportunities. (<i>Social Specialist</i>)		No complaints from workers	Site to be inspected.	Continuous	Contractor		✓	
	Training must be provided to local labourers in order to perform more specialised jobs. (<i>Terrestrial Specialist</i>)		No complaints from workers	Training material available.	Continuous	Contractor		✓	
2.4.2. Ablution facilities									
Ensure a work environment that is safe and fair for all workers									
	Workers must be provided with suitable ablution facilities.		No complaints from workers	Site to be inspected.	Continuous	Contractor		✓	
	Ablution facilities must be serviced regularly and service slips must be kept in the site file.		No complaints from workers	Site to be inspected.	Continuous	Contractor		✓	
	The Contractor is responsible for the erection and maintenance of adequate ablution facilities and for enforcing the use of these facilities.		No complaints from workers	Site to be inspected.	Continuous	Contractor / Engineer		✓	✓
	The Contractor must be responsible for ensuring that all ablution facilities are maintained in a clean and sanitary condition to the satisfaction of the Applicant.		No complaints from workers	Site to be inspected.	Continuous	Contractor		✓	✓
	Separate toilet facilities must be provided for males and females on site.		No complaints from workers	Site to be inspected.	Continuous	Contractor		✓	✓
	All ablutions are to be located as far away from watercourses and wetlands as possible.		No complaints from workers	Site to be inspected.	Continuous	Contractor		✓	✓
2.4.3. Fire prevention and control									

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/ rehabilitation
Ensure a work environment that is safe and fair for all workers									
	Fire prevention talks must be held.		Proof of Talk , i. e. minutes from meeting s or Tool Box Talks can be provided	Site to be inspected.	Continuous	Contractor		✓	
	Ensure adequate firefighting equipment is present on site.		Visual proof that firefighting equipment is on-site and not expired.	Site to be inspected.	Continuous	Contractor		✓	
	Ensure that all workers on site know the proper procedure in the incidence of a fire on site.		Proof of Fire Fighting Training and/or fire management in Induction Documents	Site to be inspected.	Continuous	Contractor		✓	
	Smoking must not be permitted in those areas considered a fire hazard.		No complaints from workers	Site to be inspected.	Continuous	Contractor		✓	
	Designated smoking areas must be provided within the site camp.		No complaints from workers	Site to be inspected.	Continuous	Contractor		✓	
2.4.4. Operation of the site									
To ensure that the site cause least disturbance to environment and any I&APs									

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Lighting and noise disturbance or any other form of disturbance on the person living lawfully in the vicinity must be kept to a minimum. (<i>Terrestrial Specialist</i>)		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Compliance with applicable municipal by-laws relating to noise control.		No incidents/complaints from I&APs	Complaints register	Continuous	Applicant / Contractor / Engineer / ECO. Once operational: Home Owners Association		✓	✓
	Maintain a Complaints Register, including the procedure which governs how complaints are received, managed and responses given must be implemented, and maintained. Establish a Residential Community Representative or Forum to resolve complaints/disputes or grievances.		Manage and record complaints	Complaints register	Continuous	Applicant / Contractor / Engineer / ECO	✓	✓	✓
2.4.5. Stockpiling									

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/ rehabilitation
To ensure minimum visual impairment. As well as to manage dust and sedimentation									
	Soil stockpiling areas must follow environmentally sensitive practices.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Excavated top soil, waste and debris should be stored in an appropriate location in the PAOI at a height not exceeding 2 m and thereafter removed and disposed of at a licensed landfill site to prevent any pollution to the surface run-off of the PAOI and surrounding areas.		Stockpiles does not exceed 2m in height	Site to be inspected.	Continuous	Contractor		✓	
	Excavated topsoil should be kept clean of alien invasive weeds;		Protection of the natural environment	Site to be inspected.	Continuous	Contractor		✓	
	Stockpiled topsoil should be free of deleterious matter such as large roots, stones, refuse, stiff or heavy clay and noxious weeds, which would adversely affect its suitability for planting.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Stockpiles not used in three (3) months after stripping must be seeded to prevent dust and erosion.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Stockpiling must remain within the construction boundaries.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Where stockpiling has occurred outside of the site boundaries, immediate action must be taken for the effective relocation of the stockpiles into the site boundaries.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	The careful positioning of soil piles, and runoff control, and planting of some vegetative cover after completion (indigenous groundcover, grasses etc.) must limit the extent of erosion occurring on the site.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Material stockpiles or stacks must be stable and well secured to prevent collapse of the stockpile and possible injury to workers or local residents.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Stripped topsoil must be stockpiled in areas agreed with by the Site Manager for later use in re-vegetation and must be adequately protected. Topsoil is considered to be the natural soil		No incidents/complaints from I&APs	Site to be inspected.	Continuous	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	covering, including all the vegetation and organic matter. The depth of the soil may vary and due to this reason the top 300 mm of soil must be removed and preserved as topsoil.		Limited erosion Limited dust						
	During earthworks, the top 50 cm of the topsoil must be removed and stockpiled during the construction period. This soil is to be replaced once activities have been completed. This is to maintain the existing seed bed and soil profiles as best as possible.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Topsoil stockpiles must not be subject to compaction greater than 1 500 kg/m ² and must not be pushed by a bulldozer for more than 50m.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Topsoil stockpiles must be monitored regularly to identify any alien plants. If any occurs, they must be removed before they germinate to prevent contamination of the indigenous seed bank.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
2.4.6. Stormwater management									
To minimise the impact of stormwater runoff on the receiving environment									

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Temporary stormwater management plan must be in place and structures must be accordingly used during construction.		Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Any areas damaged as a result of stormwater runoff from the construction site must be rehabilitated immediately.		Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Multiple discharge points that are reasonably spread out across the working areas to allow a diffuse spread of surface runoff, maximising the amount of infiltration.		Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Concentrated flows through buffer zones should be avoided through diffuse flow discharges, and runoff entering the buffer zone should not exceed 1.5m/sec to enhance the pollutant removal performance of buffers		Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Suitably-designed baffle structures (e.g. gabion/Reno mattresses) for large discharge points should be used to dissipate and control energy of temporary stormwater runoff.		Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
2.4.7. Dust suppression measures									
To ensure minimum visual impairment and dust related health risks.									
	Dust suppression measures must be implemented		No incidents/complaints from I&APs	Site to be inspected.	Continuous	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
			Limited erosion Limited dust						
	Minimise dust generation and nuisance impacts on surrounding residents and road users: Dust suppression through regular wetting of exposed surfaces, cleared areas, stockpiles and access roads must be undertaken during dry and windy conditions. Water bowsers or similar dust suppression measures must be used where necessary.		No excessive visible dust crossing the site boundary or affecting adjacent properties and roads.	Visual site inspections and absence of dust complaints.	Daily during dry, windy or high-traffic conditions and as required.	Contractor		✓	
	Minimise dust generation from construction vehicles: Construction vehicles transporting sand, soil, rubble or fine material must be covered with tarpaulins where necessary. Vehicle speeds on gravel surfaces must be limited to reduce dust generation.		Dust generation from vehicle movement minimised.	Visual inspection of vehicles and haul roads.	Continuous during construction.	Contractor		✓	
	Minimise traffic disturbance and protect residential amenity: Delivery vehicles and construction traffic must utilise approved access routes only, primarily via Robertson Avenue and designated site access points. No unnecessary use of adjacent residential streets shall be permitted.		Construction traffic restricted to approved routes.	Site inspections and complaints register.	Continuous during construction.	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Prevent nuisance impacts on surrounding residents: Construction activities generating excessive noise must be limited, as far as reasonably possible, to normal daytime working hours between 08:00 and 17:00 on weekdays. No excessive noise-generating activities should occur on Sundays or public holidays unless authorised.		Noise impacts minimised within surrounding residential area.	Complaints register and site inspections.	Continuous during construction.	Contractor		✓	
	Prevent unnecessary disturbance from idling machinery and equipment: Construction vehicles, generators and machinery must not be left idling unnecessarily and all equipment must be maintained in good working order to minimise noise emissions.		Reduction in unnecessary noise and emissions.	Site Inspections	Continuous during construction.	Contractor		✓	
	Prevent pollution and nuisance associated with open burning: No open burning of vegetation, cleared material, domestic waste or construction waste shall be permitted on site. All waste must be removed and disposed of at a licensed waste disposal facility.		No evidence of open burning on site.	Site inspections and waste disposal records	Continuous during construction.	Contractor		✓	
	Prevent erosion, dust generation and runoff from stockpile areas: Topsoil and construction material stockpiles must be located in designated areas away from stormwater flow paths and, where		Stable and managed stockpile areas with minimal dust and erosion.	Site inspections	Continuous during construction.	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	necessary, covered or stabilised to minimise wind erosion and dust generation.								
	Ensure effective response to community complaints: A complaints register must be maintained on site. All complaints relating to dust, noise, traffic or general nuisance must be recorded and responded to within 48 hours, with corrective measures implemented where necessary.		Complaints addressed timeously and recorded.	Complaints register available and up to date.	Continuous during construction.	Contractor		✓	
2.4.8. Vehicles									
Limit pollution due to vehicle movement									
	All mechanical equipment must be in good working order and adhere to relevant noise requirements of the Road Traffic Act.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	Safety measures that generate noise, including reverse gear alarms, must be adjusted to minimise noise.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	The vehicles must be in good working order and all leaks such as oil leaks must be repaired immediately.		No incidents/complaints from I&APs Limited erosion Limited dust	Site to be inspected.	Continuous	Contractor		✓	
	The strict enforcement of speed limits along all roads within the residential development. This speed limit should be reduced in areas where road-side visibility is reduced (i.e. due to dense vegetation). Speedbumps or other speed reducing techniques can be incorporated into the road design to assist in keeping speeds to a minimum. (<i>Animal Specialist</i>)		Prevent fauna from being killed on the roads	Speedbumps & speed signs	Continuous	Contractor		✓	
	Install & maintain proper road signage along the routes to be used.		Control traffic and limit accidents	Road signs	Continuous	Engineer		✓	✓
	Should a temporary access arrangement be required during construction, residents adjacent to the development must be informed. Quick access along the gravel road adjacent to Dolphin crescent entrance should not be used.		No incidents/complaints from I&APs	Site Planning and inspection	Continuous	Contractor / ECO	✓	✓	
2.5. Aspect: Waste management measures									
2.5.1. Sewage spillages									
To prevent or minimize the incidents and impact of potential sewage spillages that would be associated with the on-site sewer treatment facility.									

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Should a sewage spillage occur, it must be reported to the relevant departments immediately.		No incidents/complaints from I&Aps Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	✓
	Where contamination of the soil occurs, soil must be immediately removed to prevent further contamination.		No incidents/complaints from I&Aps Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	✓
	Should faulty infrastructure be identified, it must be replaced immediately after discovery.		No incidents/complaints from I&Aps Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	✓
	Records of all sewage spillages must be kept.		No incidents/complaints from I&Aps Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	✓
	An emergency preparedness plan must be in place for instances where spills occur that can be harmful to people or the receiving environment.		No incidents/complaints from I&Aps	Site to be inspected.	Continuous	Contractor		✓	✓

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
			Protection of surface and groundwater						
	No sewage waste is to be buried or left as is.		No incidents Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	✓
	Preventative measures must be undertaken during the construction of the infrastructure, securing all joints for minimum spillage occurrences.		No incidents/complaints from I&Aps Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	✓
2.5.2. Hazardous substances									
To ensure no waste poses health threats or causes pollution									
	All spills must be immediately cleaned up and treated accordingly as per the predefined hazardous spill protocol.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
	Hazardous waste (oils, effluent from corrosion protection activities) must be disposed of at registered landfill site.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
	Extra care must be taken to prevent any potentially hazardous substances from entering the groundwater and resources during rainfall events.		Protection of surface and groundwater	Site to be inspected.	Continuous	Contractor		✓	
2.5.3. General Waste									
Limit pollution due construction works									

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	Construction waste must be taken to the closest general waste landfill site.		Protection of natural resources	Site to be inspected.	Continuous	Contractor		✓	
	All rubble, litter and any other type of waste must be removed from the development footprint and areas directly adjacent to the construction areas and regular monitoring of core ecological areas must be undertaken.		Protection of natural resources	Site to be inspected.	Continuous	Contractor		✓	
	All waste and materials used during the construction phase must be removed; no waste is to be buried or burned or left at the site. Maintain general housekeeping.		Protection of natural resources	Site to be inspected.	Continuous	Contractor		✓	
2.5.4. Groundwater contamination									
Limit groundwater pollution due construction works and associated activities									
	If construction machinery or equipment is used during the construction works, they are not to be re-fuelled or washed on site.		Protection of natural resources	Site to be inspected.	Continuous	Contractor		✓	
	Precautions must be taken to prevent refuse from spreading from or on the site by placing dustbins strategically at the site.		Protection of natural resources	Site to be inspected.	Continuous	Contractor		✓	
	Washing of equipment must be restricted to urgent maintenance requirements only and must not occur near a watercourse.		Protection of natural resources	Site to be inspected.	Continuous	Contractor		✓	
	Drip trays must be placed under stationary construction vehicles.		Protection of natural resources	Site to be inspected.	Continuous	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/ rehabilitation
2.5.5. Cement and concrete batching									
Limit groundwater pollution due construction works and associated activities									
	Concrete mixing directly on the ground must not be allowed and must take place on impermeable surfaces in dedicated areas to the satisfaction of the Site Manager and ECO.		No spillages /incidents or complaint	Site to be inspected.	Continuous	ECO Contractor		✓	
	The concrete batching activities must be located in an area of low environmental sensitivity to be identified by the Site Manager and ECO.		No spillages /incidents or complaint	Site to be inspected.	Continuous	ECO Contractor		✓	
	All runoff from batching areas must be strictly controlled and cement-contaminated water must be collected, stored and disposed of at a registered landfill site authorised to deal with these substances.		No spillages /incidents or complaint	Site to be inspected.	Continuous	Contractor		✓	
	Contaminated water storage facilities must not be allowed to overflow and appropriate protection from rain and flooding must be implemented. The storage facilities must be completely closed systems such as JoJo tanks, with adequate capacities.		No spillages /incidents or complaint	Site to be inspected.	Continuous	Contractor		✓	
	Unused cement bags must be stored out of the rain where runoff won't affect them. Used / empty cement bags must be collected and stored		No spillages /incidents or complaint	Site to be inspected.	Continuous	Contractor		✓	

Nr.	Objectives	Mitigation Measures	Target/Standard	Indicator	Frequency	Responsibility	Phase applicable		
							Prior to construction	Construction	Operational/rehabilitation
	in weatherproof containers to prevent wind-blown cement dust and water contamination.								
	Used cement bags must not be used for any other purpose and must be disposed of on a regular basis at a registered landfill site.	No spillages /incidents or complaint	Site to be inspected.	Continuous	Contractor			✓	
	All excess concrete must be removed from site on completion of concrete works and disposed of at a registered landfill site. Washing of the excess concrete into the ground must not be allowed.	No spillages /incidents or complaint	Site to be inspected.	Continuous	Contractor			✓	
	All excess aggregate must be removed.	No spillages /incidents or complaint	Site to be inspected.	Continuous	Contractor			✓	

ENVIRONMENTAL AWARENESS TRAINING

The following environmental training and training on dealing with emergencies and remediation measures for such emergencies:

ENVIRONMENTAL TRAINING

- The Applicant or representative site manager will have one-on-one information sessions with employees working in specific sections of the site.
- Once a quarter all employees will participate in a walkthrough of the specific site area and be requested to highlight unattended environmental impacts to increase their assessment ability and focus on potential impacts in the entire area.
- Unattended impacts identified will be discussed and employees will be requested to provide solutions to such impacts. These solutions will be discussed and corrected if not in line with general environmental policies.
- Employees should attend 6 monthly or annual meetings to discuss any environmental aspect of concern and mechanisms to avoid such scenarios.
- Employees will attend one course/seminar/presentation on environmental awareness.

TRAINING ON DEALING WITH EMERGENCIES AND REMEDIATION MEASURES FOR SUCH EMERGENCIES

- An emergency protocol will be established and documented and will deal specifically with the line of authority and responsibility and contact details of dedicated persons, including that of the landowner/abutting landowners.
- Potential emergencies will be determined and documented for each section of the site and will be discussed with individuals/groups. Emergencies identified at the site are erosion after heavy precipitation, unauthorized clearing of land, alien vegetation infestation, and potential fire hazards.
- Remediation measures, provisional and/or permanent, which are aligned with the conditions of the EMP will be documented for identified emergencies and will be discussed with employees. Each employee will be provided with a short manual on how to deal with identified emergencies.
- The Applicant will provide an information session on dealing with emergencies and remediation of such emergencies once every two years by a recognized environmental practitioner (ECO) or representative site manager.
- Employees will be informed on suitable material/equipment available to deal with emergencies and the functions of this material/equipment.