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Version 2

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

In terms of
the National Environmental Management Act, 1998 (Act 107 of 1998, as amended) and the
Environmental Impact Assessment Regulations 2014 (as amended)

**For
The Residential Development of Kraaibosch Park**



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EMPr - KRAAIBOSCH PARK

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Table of Contents

1	INTRODUCTION.....	7
2	DEVELOPMENT PROPOSAL.....	8
3	TERMS OF REFERENCE.....	10
3.1	LISTED ACTIVITIES AUTHORISED IN THE NEMA ENVIRONMENTAL PROCESS.....	11
3.2	ENVIRONMENTAL CONTROL OFFICER (ECO).....	14
3.2.1	SELECTION OF THE ECO.....	14
3.2.2	ROLES AND RESPONSIBILITIES OF THE ECO.....	14
4	CONDITIONS OF THE ENVIRONMENTAL AUTHORISATION (EA).....	16
5	MANAGEMENT OUTCOMES AND OBJECTIVES FROM THE BASIC ASSESSMENT REPORT (BAR)	16
6	SPECIFICALLY REQUIRED ENVIRONMENTAL MANAGEMENT PRACTICES.....	19
6.1	PRE-CONSTRUCTION PHASE.....	19
6.1.1	ENVIRONMENTAL INDUCTION (EDUCATION).....	19
6.1.2	METHOD STATEMENT.....	20
6.1.3	WORKING AREAS AND SENSITIVE NO-GO AREAS.....	20
6.1.4	VEGETATION CLEARANCE AND PLANT RESCUE PROGRAMME.....	23
6.1.5	PLANT RESCUE FOR IMPLEMENTATION OF STORMWATER PLAN IN WETLAND BUFFERS	25
6.1.6	PROTECTION OF FAUNA (ANIMALS).....	25
6.1.7	SOIL PROTECTION.....	26
6.1.8	DISCOVERY OF HERITAGE RESOURCES.....	27
6.2	GENERAL CONSTRUCTION REQUIREMENTS.....	27
6.2.1	ACCESS TO THE SITE.....	27
6.2.2	SITE AGENT.....	28
6.2.3	USE OF LOCAL LABOUR.....	28
6.2.4	DEMARCATON OF NO-GO AREAS.....	28
6.2.5	CONSTRUCTION SITE CAMP.....	30
6.2.6	STORAGE OF CONSTRUCTION MATERIAL.....	30
6.2.7	FIRE PROTECTION.....	31
6.2.8	HEALTH AND SAFETY.....	31
6.2.9	WASTE MANAGEMENT.....	31

6.2.10 ABLUTION FACILITIES 32

6.2.11 SOIL EROSION AND STORMWATER MANAGEMENT 33

6.2.12 IMPLEMENTATION OF STORMWATER MANAGEMENT PLAN IN THE WETLAND AREAS
34

6.2.13 CONCRETE AND CEMENT WORKS 36

6.2.14 NOISE, DUST MANAGEMENT AND NUISANCE MEASURES 37

6.2.15 STABILIZATION REQUIREMENTS (AFTER CONSTRUCTION) 38

6.3 BUILDING CONSTRUCTION PHASE 38

6.3.1 IMPLEMENTATION OF ENERGY AND WATER SAVING TECHNIQUES 39

7 REHABILITATION PHASE 39

7.1 WETLAND REHABILITATION 40

8 MONITORING REQUIREMENTS AND REPORTS 45

9 AUDITING REQUIREMENTS 45

10 OPERATIONAL PHASE 46

10.1 RESIDENTIAL AREA MANAGEMENT 47

10.1.1 INTERNAL PRIVATE OPEN SPACE AREAS, ROAD RESERVES AND GARDENING47

10.1.2 DOMESTIC ANIMALS AND ANIMAL MANAGEMENT 47

10.2 STORMWATER MANAGEMENT 47

10.3 FENCING 48

10.4 WASTE MANAGEMENT 48

10.5 FIRE MANAGEMENT 49

10.6 INVASIVE ALIEN PLANT CONTROL 49

10.7 OPERATION OF WETLAND AREAS 49

10.8 CONSERVATION MANAGEMENT PLAN (CMP) 50

10.8.1 ACCESS AND USE 50

10.8.2 EROSION PREVENTION AND CONTROL 50

10.8.3 VEGETATION MANAGEMENT 51

10.8.4 INVASIVE VEGETATION MANAGEMENT 51

10.8.5 INFRASTRUCTURE DEVELOPMENT AND MANAGEMENT 51

10.8.6 FINANCIAL PROVISIONS 51

11 DECOMMISSIONING PHASE 51

12 PENALTIES FOR NON-COMPLIANCE 51

List of Annexures

Annexure A	Locality Map
Annexure B	Site Development Plan
Annexure C	"No-Go" Mapping
Annexure D	Environmental Induction Sheet and Register
Annexure E	Method Statement Form
Annexure F	Register of Rescued Indigenous vegetation
Annexure G	Stormwater management plan
Annexure H	CV of EAPs
Annexure I	Environmental Authorisation (EA) and addendum

National Environmental Management Act

An EMPr must comply with Section 24N of NEMA and the Environmental Impact Assessment Regulations 2014 (GN 982 Appendix 4) which requires that it must include the following:

REQUIREMENTS	REPORT SECTION
(a) details of- (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Annexure H
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 2
(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Annexure C
(d) a description of the impact management [objectives] outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including- (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Section 5, 6, 7 & 10
(e) a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	Section 5, 6, 7 & 10
(f) a description of proposed impact management actions, identifying the manner in which the impact management [objectives and] outcomes contemplated in paragraph (d) [and (e)] will be achieved, and must, where applicable, include actions to – (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;	Section 5, 6, 7 & 10

(ii) comply with any prescribed environmental management standards or practices;	
(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and	
(iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 3, 5, 6, 7 & 10
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f)	Section 3, 7 and 8
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 3, 5, 6, 7 & 10
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 3, 5, 6, 7, 9 & 10
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 3, 5, 6, 7, 9 & 10
(l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 3, 5, 6, 7, 9 & 10
(m) an environmental awareness plan describing the manner in which-	Section 3
(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	
(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	
(n) any specific information that may be required by the competent authority.	N/A

1 INTRODUCTION

HillLand Environmental (Pty) Ltd, independent Environmental Assessment Practitioners (EAP), have been appointed by the applicant, **Cape Estates Prop Outeniqua (Pty) Ltd**, represented by **Mr A de Vos**, to ensure compliance with the regulations contained in the National Environmental Management Act (NEMA, No. 107 of 1998, as amended) and the Environmental Impact Assessment Regulations, 2014 (as amended) for the residential development of Kraaibosch Park.

This Environmental Management Programme (EMPr) was developed as part of the requirements of a Basic Assessment in terms of NEMA undertaken in 2024 and includes information obtained in the current approved EMPr drafted by Sharples Environmental (6 July 2017, reference: 36/RDP/370&371/7/17).

This EMPr, once approved by DEADP in terms of this NEMA BAR process, will replace the EMPr drafted by SES which is currently approved and being implemented in terms of the EA for the development.

This EMPr is binding on the applicant, their representatives, and ALL successors in title / future developers in full or in part for the development as contemplated in this application and any future amendments to the approved layout / development plan, as well as the future Home Owners Association (HOA) and all property owners in the development.

The monitoring of compliance with the EMPr is mandatory in terms of the construction phase and compliance reporting is required at the **end** of the construction phase(s):

- installation of all **civil** services;
- construction of top structures as per the approved SDP.

This EMPr, in terms of the NEMA "duty of care", also includes the operational and rehabilitation phases that were highlighted as part of the process and it will be the **Developer's and subsequently the HOA's responsibility** to ensure compliance with the operational phases as they fall outside the scope of the Listed Activities to be authorized in terms of NEMA, but they fall under NEMBA as part of the alien clearing control plan.

The report is divided to provide a clear distinction between the construction phase(s) and the ongoing operational aspects of the development.

This EMPr **must be included in the tender documents** of all prospective contractors and must also be included in the final contract awarded. **The EMPr is binding on all contractors, sub-contractors, agents, consultants and construction staff on the property.**

The full and approved EMPr will be made available to all contractors working on the project. Certain fundamental aspects are therefore of importance:

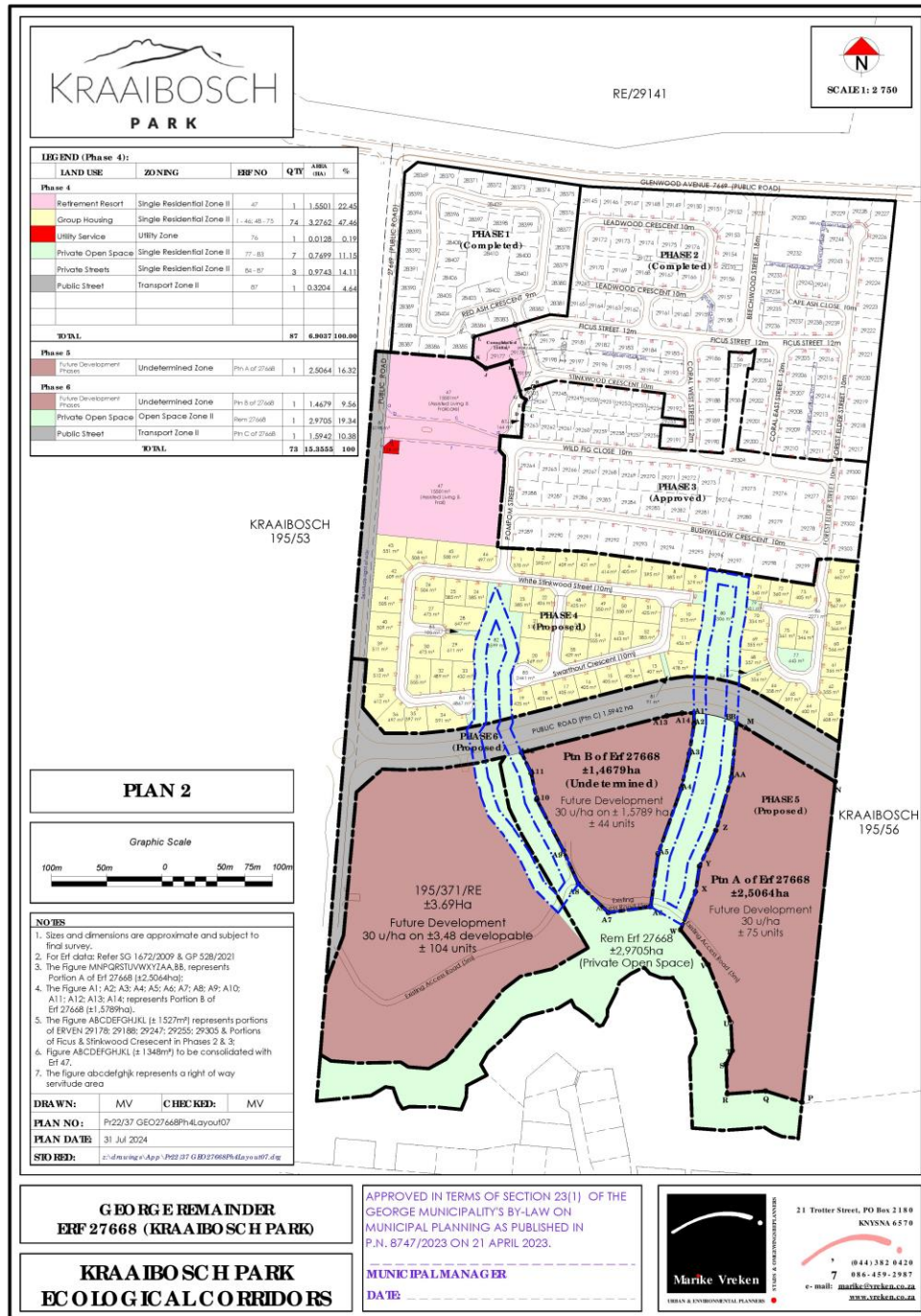
- The EMPr and these requirements are binding on all contractors and their sub-contractors.
- **It is the responsibility of the applicant/ holder /developer /owner / HOA** to ensure that his/her main contractor and any sub-contractors are made aware of the environmental requirements for working on the estate.
- The contractor(s) will be required to make good any damage caused through their actions or the actions of their sub-contractors (in addition to any penalties for non-compliance issued).

Please note that this EMPr is a dynamic document, which will grow and be changed with new developments in the field as the need arises.

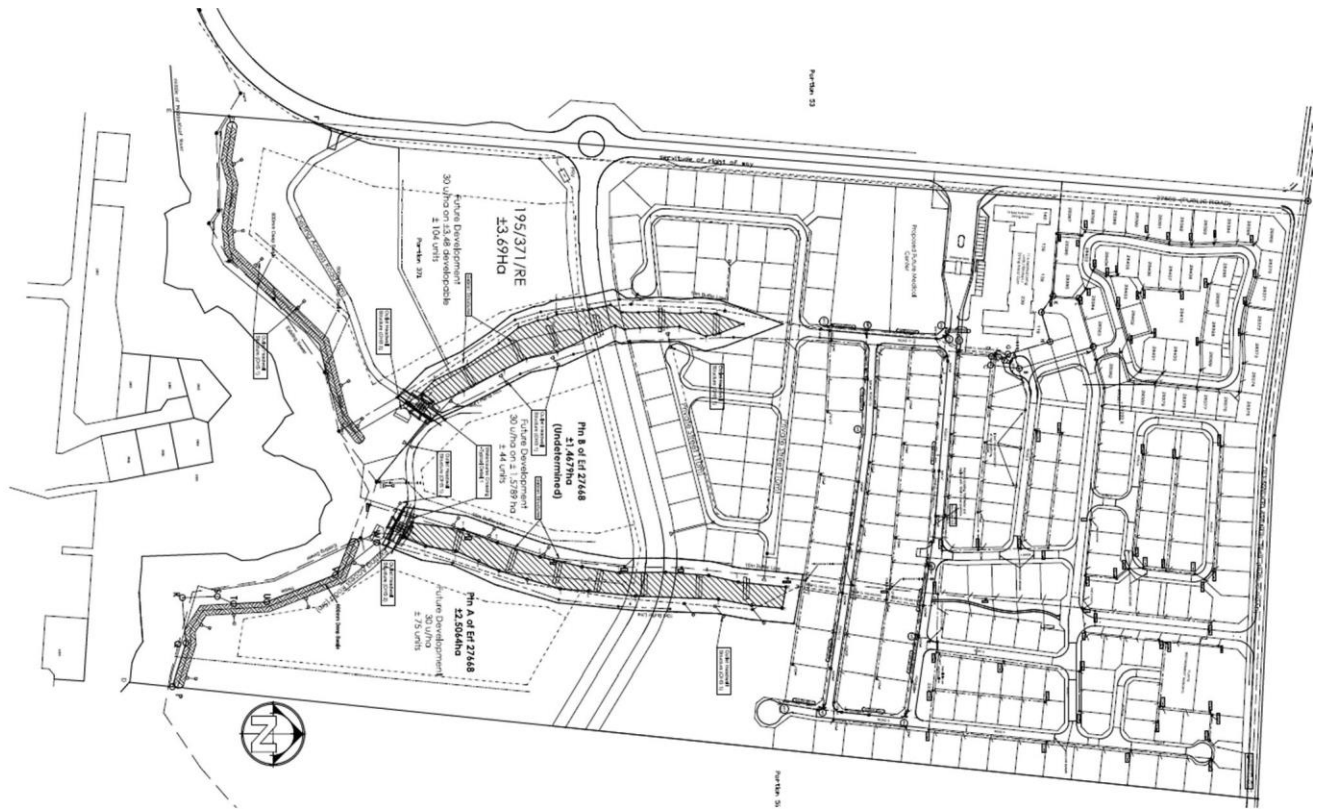
A copy of this EMPr and EA must be kept on-site and, on any website, associated with the development (HOA) so that it is available to all landowners and their successors in title.

2 DEVELOPMENT PROPOSAL

Residential development of Kraaibosch Park in accordance with the following SDP:



Site development plan – including the ecological corridors



Engineering plan highlighting the engineering services associated with the amended SDP and stormwater management plan.

Phases 1 and 2 of Kraaibosch Park have been completed and Phase 3 is currently under construction.

Compliance with the EMPr is required for the construction phase for both civil services and buildings (top structures) as the case may be.

Any changes to, or deviations from the scope of the alternative described above must be accepted or approved, in writing, by the Competent Authority before such changes or deviations may be implemented.

3 TERMS OF REFERENCE

The main terms of reference of this EMPr are to identify and mitigate any potential negative environmental impacts that may be associated with listed activities approved in terms of NEMA for the construction of Kraaibosch Park.

The contractor will be required to make good any damage caused through their actions or the actions of their sub-contractors (in addition to any penalties for non-compliance issued).

3.1 LISTED ACTIVITIES AUTHORISED IN THE NEMA ENVIRONMENTAL PROCESS

The following listed activities, in terms of the Environmental Impact Assessment Regulations (2014, as amended) (GN NO. R. 324 - 327) will be triggered by the residential development and may be undertaken by the holder in terms of the EA:

Activity No(s):	Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1	
9.	The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— <ul style="list-style-type: none"> (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where— <ul style="list-style-type: none"> (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve <u>or railway line reserve</u>; or (b) where such development will occur within an urban area. 	<p>The installation of services – where stormwater pipes may exceed 1km.</p> <p>Exclusion for urban area should apply as this is an existing approved development area, however DEADP may regard it as falling outside the urban area – applicability to be confirmed.</p>
10.	The development and related operation of infrastructure exceeding 1 000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes – <ul style="list-style-type: none"> (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where— <ul style="list-style-type: none"> (a) such infrastructure is for <u>the</u> bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve <u>or railway line reserve</u>; or (b) where such development will occur within an urban area. 	<p>The installation of services – where water and sewer pipelines may be within the flow thresholds and may exceed 1km.</p> <p>Exclusion for urban area should apply as this is an existing approved development area, however DEADP may regard it as falling outside the urban area – applicability to be confirmed.</p>
12.	The development of— <ul style="list-style-type: none"> (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— <ul style="list-style-type: none"> (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — excluding— <ul style="list-style-type: none"> (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or 	<p>The installation of services, construction of roads and implementation of the stormwater management plan will require the construction of infrastructure within a watercourse delineated by the specialist or within 32m of a watercourse.</p> <p>Cumulative size will exceed 100m².</p> <p>Exclusion for urban area should apply as this is an existing approved development area, however DEADP may regard it as falling outside the urban area – applicability to be confirmed.</p>

	<p>harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</p> <p>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</p> <p>(dd) where such development occurs within an urban area;</p> <p>(ee) where such development occurs within existing roads, road reserves or railway line reserves;</p> <p>(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.</p>	
<p>19</p>	<p>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving—</p> <p>(a) will occur behind a development setback;</p> <p>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or</p> <p>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</p> <p>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</p>	<p>The implementation of the stormwater management plan will require the infilling within a watercourse delineated by the specialist.</p>
<p>24.</p>	<p>The development of a road—</p> <p>(i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or</p> <p>(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;</p> <p>but excluding a road—</p> <p>(a) which is identified and included in activity 27 in Listing Notice 2 of 2014;</p> <p>(b) where the entire road falls within an urban area; or</p> <p>(c) which is 1 kilometre or shorter.</p>	<p>This activity would be seen as a similarly listed activity to the original authorisation for the roads associated with the development.</p> <p>The external roads are already under construction in terms of the EA for the Roads Master Plan.</p> <p>Internal roads vary between 4,5m – 5,5m within road reserves of 12m - 18m</p> <p>The exclusion for roads in the urban area may apply.</p>

<p>27.</p>	<p>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</p> <ul style="list-style-type: none"> (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan. 	<p>Clearance of indigenous vegetation within the development area was previously authorised for the development, roads, services and associated infrastructure and the development area remains unchanged.</p> <p>Vegetation clearing will take place.</p>
<p>28.</p>	<p>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, <u>game farming, equestrian purposes</u> or afforestation on or after 01 April 1998 and where such development:</p> <ul style="list-style-type: none"> (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; <p>excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</p>	<p>The development of a mixed residential estate is approved and exceeds 1ha in an area that was historically outside the urban area.</p>
<p>Activity No(s):</p>	<p>Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3</p>	
<p>4</p>	<p>The development of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p>i. Western Cape</p> <ul style="list-style-type: none"> i. Areas zoned for use as public open space or equivalent zoning; ii. Areas outside urban areas; <ul style="list-style-type: none"> (aa) Areas containing indigenous vegetation; (bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined; or iii. Inside urban areas: <ul style="list-style-type: none"> (aa) Areas zoned for conservation use; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority. 	<p>The internal roads will all be in areas where there is indigenous vegetation. This activity would be seen as a similarly listed activity to the original authorisation.</p> <p>Internal roads vary between 4,5m – 5,5m within road reserves of 12m - 18m</p>
<p>12.</p>	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. i. Western Cape</p> <ul style="list-style-type: none"> i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; 	<p>Clearance of indigenous vegetation within the development area was previously authorised for the development, roads, services and associated infrastructure and the development area remains unchanged.</p> <p>Clearance within the watercourse for implementation of the stormwater management plan has not been specifically authorised and will require authorisation.</p> <p>The stormwater infrastructure proposed to protect the wetland area and prevent scour is located within areas zoned or deemed to be zoned as Open</p>

	<ul style="list-style-type: none"> ii. Within critical biodiversity areas identified in bioregional plans; iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister. 	<p>Space or equivalent and is mapped as endangered/critically endangered ecosystem.</p> <p>Internal open space areas increase with the delineation of the wetland areas. The southern open space area along the river will remain the same as originally approved.</p>
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The triggering of any **NEW** listed activities will require environmental authorisation first before the activity may commence.

3.2 ENVIRONMENTAL CONTROL OFFICER (ECO)

An environmental control officer (ECO) must be appointed to oversee the installation of services during **civil and top structure construction** on-site, ensure compliance with the Environmental Authorisation (EA) and the Environmental Management Programme (EMPr) and to assist with issues as they may arise on site. **Any phase will be regarded as complete once the associated communal landscaping for that area is complete.**

It will be the ECO's responsibility to ensure that the mitigation / rehabilitation measures and recommendations referred to in the EA are implemented and complied with by the owner / developer /HOA as the case may be.

The **applicant/developer / HOA** will be responsible for the remuneration of the ECO and any other expenses encountered in the process of environmental monitoring of the construction.

3.2.1 SELECTION OF THE ECO

The appointed ECO must be able to demonstrate that (s)he is of sufficient competency to undertake the required task. This includes:

- Previous experience of environmental control of similar sites.
- Working experience with contractors.
- Knowledge of the particular project and expected areas of concern.

3.2.2 ROLES AND RESPONSIBILITIES OF THE ECO

The ECO will undertake the following tasks:

- Ensure **compliance** with the EMPr at all times during the pre-construction and civil construction phases;
- Ensure compliance with relevant management **conditions** of the EA during the pre-construction and civil construction phases;
- To work in close co-operation with the resident engineer, contractors, management and HOA of the site;
- Meet with the contractors to set out the environmental parameters within which they must work (pre-construction and civil construction phase);
- Provide an **Environmental Induction (Environmental Education)** with all contractors **prior** to the commencement of any work (pre-construction phase (civil building));
- Indicate where all no-go areas are to be demarcated and to ensure adherence to these delimitations at the induction session **BEFORE** any construction commences on-site (pre-construction phase);
- Indicate where **plant rescue** may be necessary, and what species should be rescued on this site (pre-construction phase);
- Indicate where **erosion protection and siltation prevention measures** are required or need to be supplemented and to ensure correct implementation;
- Advise on **rehabilitation requirements** according to the different areas;
- Ensure that the aquatic specialist rehabilitation plan is implemented;
- Check up on general environmentally friendly construction practices (e.g. no littering, safe and secure environment, contamination risks, etc.);
- Ensure that the correct earthworks practices are adhered to, e.g., no encroachment into the surrounding vegetation, separation of topsoil and subsoil, correct stockpiling and stripping of topsoil).
- Provide a report back at site meetings (during the pre-construction and civil construction phase) to report on and assess the success of the environmental control and to determine any further environmental control measures which may be necessary;
- The ECO should visit the site **every two weeks** during the **construction phase** and rehabilitation thereof. The frequency may be increase to weekly site inspections where the work being undertake requires more regular inspection or assistance. The ECO is to be available at any time as required by the contractors, resident engineer or authorities;
- The ECO should conduct inspections **once a month** during the **rehabilitation phase** after civil construction to ensure the success of the rehabilitation;
- The ECO has the discretion to undertake more frequent visits if he/she feels this is justified due to the actions of the contractors and to make ad hoc visits in order to ensure compliance;
- The ECO is to keep a site diary; a photographic record of activities taking place on site as well as copies of all monthly reports submitted to the Department, a schedule of current site activities including the monitoring of such activities and complaints register of all public complaints and the remedies applied to such complaints;
- **During civil construction phase: Monthly monitoring reports** must be compiled submitted to the developer (team), local authority and submitted to DEADP **quarterly (every three months)**, except when there is non-compliance observed.

- **During rehabilitation phase: Monthly monitoring reports** must be compiled submitted to the developer (team), local authority and DEADP.
- The ECO is to submit a **completion report** to the competent authority (**DEADP- George Office**) and **applicant** at the following stages:
 - upon completion of the civil construction (per phase)
 - upon completion of the top structure construction (per phase)
 these reports need to be submitted **before** the EA lapses;
- It must be noted that the **ECO HAS THE AUTHORITY TO SUSPEND WORK ON SITE FOR ANY ACTION BEING UNDERTAKEN THAT DOES NOT COMPLY WITH THE ENVIRONMENTAL REQUIREMENTS OF THE SITE**. Such a stop order has immediate effect and will be communicated through the resident engineer to the contractor responsible.

4 CONDITIONS OF THE ENVIRONMENTAL AUTHORISATION (EA)

The newly issued EA will be attached to the Final EMPr. All conditions of the EA need to be adhered to.

5 MANAGEMENT OUTCOMES AND OBJECTIVES FROM THE BASIC ASSESSMENT REPORT (BAR)

Objective: Prevention of loss of natural vegetation

Impacts to avoid:

- Unnecessary access into the riparian buffer areas (internal wetland buffer areas newly defined by specialist and buffer area along the Modderrug River)
- Unnecessary disturbance of topsoil and remaining vegetation

Management actions:

- Define no-go areas to ensure no encroachment.
- Alien clearing to continue throughout the lifetime of the development
- Approved activities to be undertaken within buffer areas only as defined by the specialist with strict demarcation and management required.
- Ongoing rehabilitation and maintenance of the buffer areas
- Plant rescue within wetland buffer areas to be done before implementation of stormwater management plan

Management Outcome:

- Sound conservation management area which meets the ecological corridor requirements and supports the CBA and ESA principles within the open space areas of the development.

Objective: Prevention of soil erosion**Impacts to avoid:**

- Unnecessary disturbance of soil
- Unnecessary disturbance of vegetation
- Loss of soil on disturbed areas
- Erosion due to stormwater movement

Management actions:

- Implement stormwater management plan and recommendations provided by specialist
- Areas susceptible to erosion must be covered / protected and erosion mitigation measures must be implemented – silt fencing, hay bales, swales, sandbags and other means of slowing water down and allowing sediment to be deposited before it is transported away from its origin
- Stabilization and landscaping must be done following construction to the satisfaction of the ECO to limit exposed areas
- During alien clearing avoid disturbance of the soil and do not remove the roots of alien trees.
- Regular inspection of any services on site during the operational phase to early identify any potential erosion problems (pipelines, manholes, fences, pathways, stormwater gabions etc) and repair immediately to prevent the escalation and damage from occurring

Management Outcome:

- Soil erosion will be kept to a minimum during construction and maintenance during the operational phase will ensure that erosion does not become a problem

Objective: Prevention of pollution**Impacts to avoid:**

- Potential leaks from vehicles/construction machinery
- Spillages of hazardous substances
- Leakage of chemical ablution facilities
- Blockages in sewer system and overflow
- Contamination run-off from the construction site
- Waste, such as construction materials etc., which may be blown / washed away into the surrounding environment

Management actions:

- Vehicles and machinery must be well-maintained
- Drip-trays must be used for vehicles / machinery while standing in the camp site
- Leaks on construction vehicles to be immediately repaired or the vehicle removed from site until it no longer leaks.
- Ablution facilities must be well-maintained and regularly emptied
- Litter control essential throughout construction and operational phases
- Cement / concrete must be mixed on impermeable surfaces, concrete batching areas must have surrounding bunding to prevent the movement out of the area of spillage, no washing of any ready mix trucks on site
- Operational management must include regular inspections of pollution sources
- Monitoring by contractor and ECO

Management Outcome:

- No contamination of the environment and adjacent sensitive area (open space – south and wetland buffer areas internally defined by specialist) and / or adjacent properties / areas
- Good housekeeping

Objective: Prevention of impact of potential heritage resources - none anticipated to be likely on site, however once excavations begin there must be due care to observe if any become evident.

Impacts to avoid:

- Damage to potential heritage resources on the property

Management actions:

- As per the EMPr, should any heritage resources be discovered, work will cease and HWC will be contacted to advise further

Management Outcome:

- Potential heritage impacts are mitigated and avoided

Objective: Management of open spaces – internal wetland buffer areas, riparian area along the river and internal residential open space areas

Impacts to avoid:

- Damage to the open space areas and loss of the restoration potential of the CBA and ESA

Management actions:

- Alien invasive management to be done throughout the lifetime of the development in accordance with the approved ACP in terms of NEMBA
- Rehabilitation as recommended by the specialist to be implemented
- All areas of disturbed topsoil to be revegetated as soon as possible to prevent loss of topsoil
- Development conservation levy to be secured for ongoing alien management, rehabilitation and landscaping of the internal open space areas
- Rescue and stockpile topsoil from the construction areas to use for rehabilitation and landscaping
- Management to continue by the HOA throughout the lifetime of the development
- Management and maintenance budget to be included in the annual HOA budget for the internal open space areas
- Management measures implemented should be done in accordance with the EMPr and inputs made by the ECO
- Maintenance of all pathways to ensure no erosion is starting to take place. Raised wooden walkways used where erosion is a concern, bark or woodchips on pathways to act as a surface and prevent erosion.
- Security fencing where required to be located outside of the riparian buffer zone.

Management Outcome:

- Sound management of riparian zone and buffer area.
- Sound management of the internal open space areas
- Continued use and enjoyment of the internal open space areas by the residents
- No uncontrolled movement through or disturbance of the riparian habitat
- Provide a habitat for movement of wildlife within the rehabilitated riparian area (buffer and riparian zone)

6 SPECIFICALLY REQUIRED ENVIRONMENTAL MANAGEMENT PRACTICES

6.1 PRE-CONSTRUCTION PHASE

6.1.1 ENVIRONMENTAL INDUCTION (EDUCATION)

- All civil construction and building staff **must** be briefed by the ECO in an environmental education programme regarding the environmental status and requirements of the site, **prior** to any activities commencing on site. This will include providing general guidelines for minimizing environmental damage during construction, as well as education with regards to basic environmental ethics, such as prevention of littering, the lighting of fires, etc. Records of environmental training (attendance register and training content) must be kept. Please refer to Annexure D of this EMPr.
- Induction required for **all contractors** prior to them commencing on site.

6.1.2 METHOD STATEMENT

- Where required by the ECO, before the contractor(s) begins each construction activity the Contractor and Site Agent shall, **prior to the commencement** of such activity involving construction, maintenance or rehabilitation, give the ECO a written plan setting out the following:
 - Location of the construction camp
 - Storage of construction materials and hazardous substances (if any)
 - Location of the stockpile sites for the top 30cm of topsoil
 - Location of any stockpile sites for subsoil or plan for removal from site
 - Solid waste plan
 - Wastewater plan
 - Erosion and sedimentation control plan
 - Fire control
 - Protection of natural features
 - Protection of wetland and river area
 - Cement and concrete batching plan

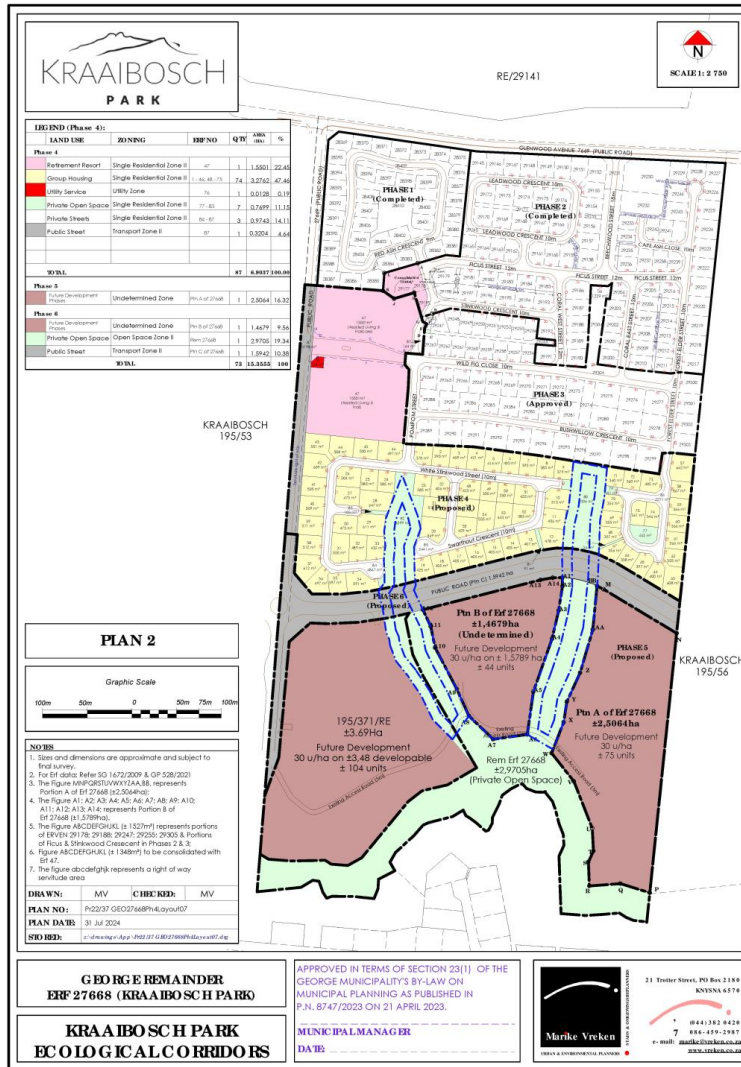
The ECO is to approve the method statement **before** the works may commence. A pro-forma method statement showing what is required is attached in Annexure E.

6.1.3 WORKING AREAS AND SENSITIVE NO-GO AREAS

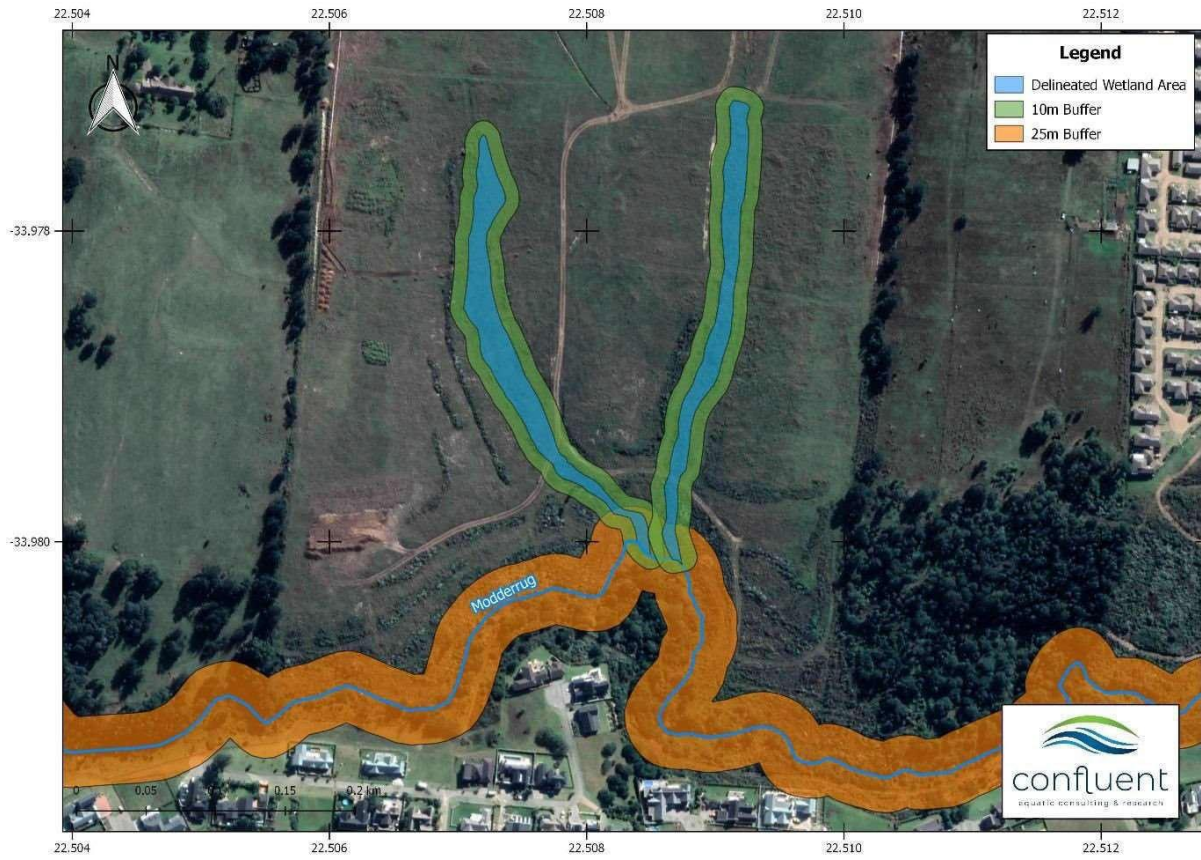
The working areas will be restricted to the development zones highlighted on the SDP.

Sensitive no-go areas, where only **approved activities may be undertaken**, consist of the wetlands and associated 10m buffer areas defined by the specialist and 30m riparian buffer area from the Modderrug River.

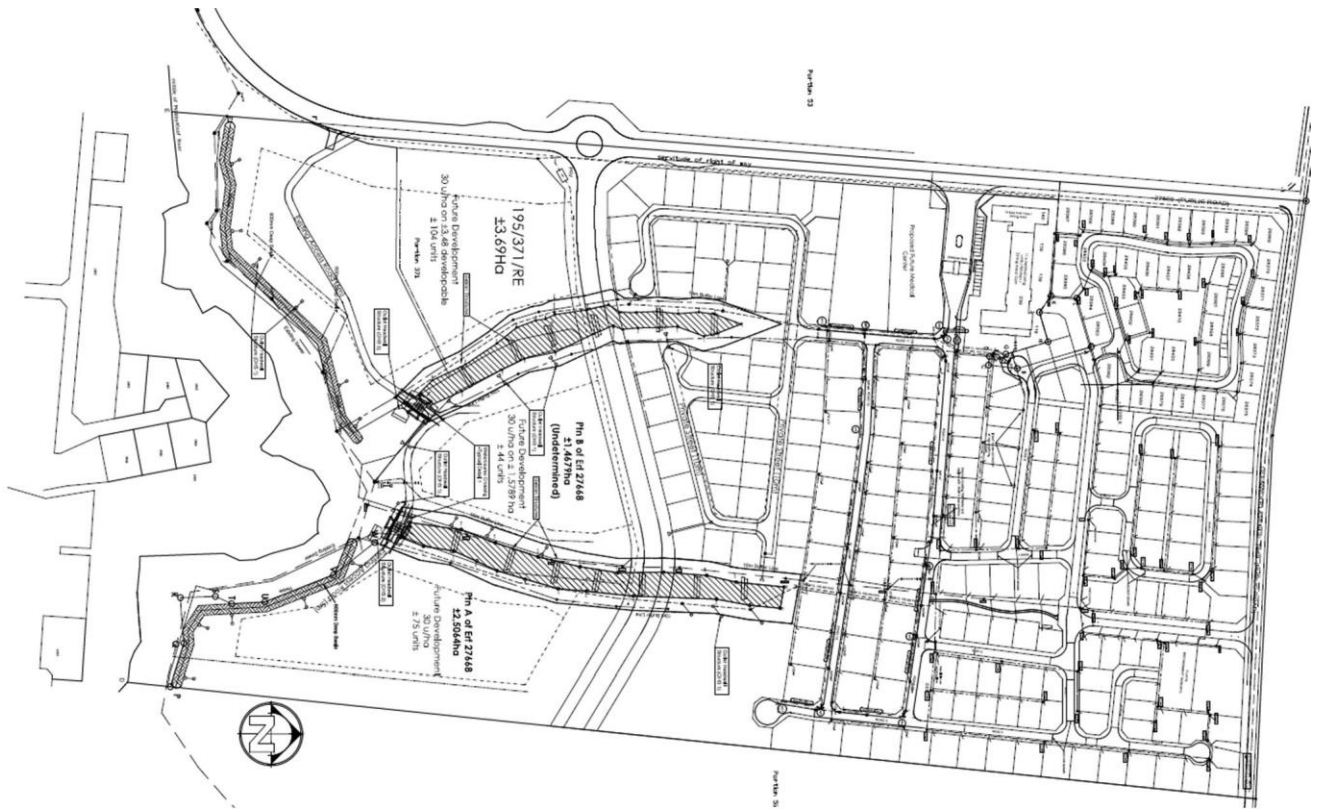
No work within these areas (services, roads and stormwater) may take place until the ECO has agreed the method statement and the areas are demarcated as agreed with the ECO.



Site Development Plan (SDP) showing buffer areas (Vreken, 2023)



**Map indicating the 10 m and 30 m buffer for the wetlands and Modderrug River, respectively
(Confluent Environmental, 2023)**

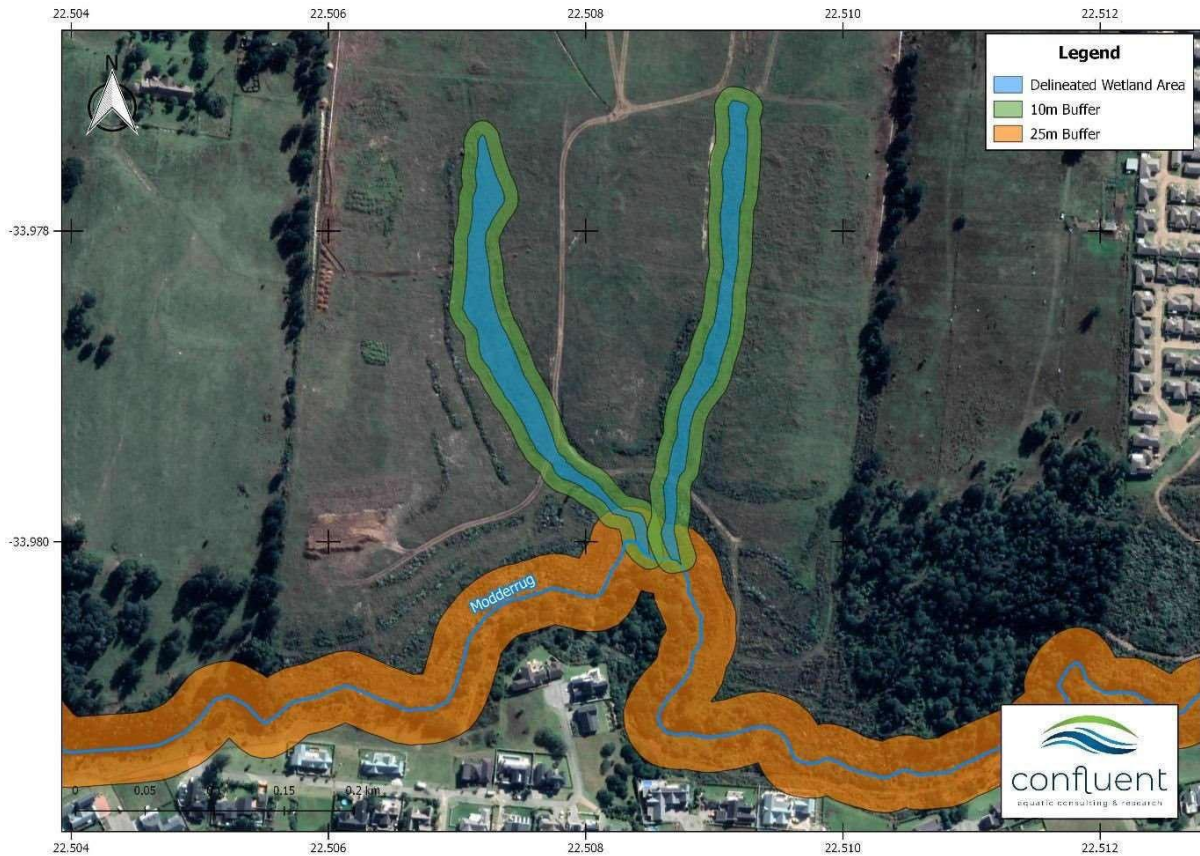


SDP showing the stormwater management within the wetland areas

6.1.4 VEGETATION CLEARANCE AND PLANT RESCUE PROGRAMME

The vegetation within the development areas have been described as transformed grassy veld and no species of conservation concern or protected tree species were observed by the specialist.

- Clearance of vegetation over the entire development area will take place over time.. However, **as vegetative cover is critical to preventing erosion and movement of silt, the vegetation must only be cleared in the immediate working area for any activity for the phase under construction.**
- Demarcation of this area and no-go fencing between the working zone and buffer areas (internal wetland buffers and river buffer) is essential.



Map indicating the 10 m and 30 m buffer for the wetlands and Modderrug River, respectively.

- All activities must be restricted to the demarcated working zone.
- **Plant rescue must be undertaken prior to the commencement of any clearing activities taking place on-site or in a particular phase.** ECO to advise as to what requires transplant in each phase. A record of rescued plant is to be maintained (please refer to the attached table that should be filled out in Annexure F).
- Rescue plants **must be collected and stored** in the on-site nursery located within the working zone for use in rehabilitation areas.
- For successful transplant a sod including the desired plant with its roots intact should be removed and replanted.
- The grass area(s) is to be mowed **AFTER** plant rescue but prior to commencement to reduce the vegetative biomass. This mulch will form part of the organic material collected with the topsoil.
- Alien clearing to continue in accordance with NEMBA.
- Stockpiling of cut alien vegetation shall only be permitted in areas indicated by the ECO. No cut alien vegetation shall be burnt on site without the necessary burning permit.

6.1.5 PLANT RESCUE FOR IMPLEMENTATION OF STORMWATER PLAN IN WETLAND BUFFERS

As recommended by the specialist (Confluent Environmental, 2023):

- Disturbed areas that will not be developed must be kept clear of alien vegetation and must be actively reshaped and rehabilitated with indigenous, local vegetation.
- Recommended buffers for the wetlands (10 m) and Modderrug River (30 m) must be implemented.
- Implement a plant rescue programme prior to the start of construction to assist with rehabilitation post construction
- Survey wetlands for red data or rare fauna prior to construction with the aim of relocation (subject to the necessary approvals from CapeNature if required);
- Implement a plant rescue programme prior to the start of construction to assist with rehabilitation post construction
- Survey wetlands for red data or rare fauna prior to construction with the aim of relocation;
- Implement a plant rescue programme prior to the start of construction to assist with rehabilitation post construction

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Pre-construction and Construction phases							
Clearance of vegetation	Kraaibosch Park development zones	Plant rescue programme must be implemented prior to the commencement of vegetation clearing as per the EMPr Vegetation clearing must be limited to the work area and clear demarcation of the no-go areas will be required to ensure no disturbance beyond the development area	During the pre-construction of the development	Plant rescue to be conducted in conjunction with the ECO prior to the commencement of vegetation clearance (civil service installation and infrastructure construction)	Inspection of pre-construction activities (vegetation clearing) will be required	Applicant. Contractor. ECO.	To be included in the monitoring report

6.1.6 PROTECTION OF FAUNA (ANIMALS)

- The removal, damage or disturbance of animals must be avoided.
- Survey wetlands for red data or rare fauna prior to construction with the aim of relocation (while the installation of gabions takes place);

- Should any animal be caught up or trapped in the construction area, the ECO should be requested to assist (e.g., relocate snakes trapped in the construction trench etc.)
- The contractor(s) shall be responsible for ensuring all employees are aware of the need to prevent any harmful effects on wildlife on or around the construction site as a result of their activities.
- The contractor(s) shall ensure that no hunting, trapping, shooting, poisoning or otherwise disturbance of any fauna takes place.
- The riparian area is a strict NO-GO area unless undertaking a task specific to the area.

6.1.7 SOIL PROTECTION

- As topsoil is a valuable resource, it **must be stripped to stockpile from all construction areas before work commences in that specific area.**
- Disturbance of vegetation and topsoil is **only** to take place according to a programme in approved construction areas as the work in that area is due to begin – this is to avoid large areas being exposed to erosion risk when work is not taking place in that area.
- The topsoil must be stockpiled for use in rehabilitation and landscaping and must **not** be contaminated with other building materials and / or subsoil. The ECO will indicate the position of the topsoil stockpile berms over the site.
- Where possible, topsoil can be placed directly into the required landscaping areas or swales so that they have time to settle and so the soil does not have to be double handled. Where landscape berms / swales are created, they need to be shaped to their final shape immediately prior to the soil settling and becoming hard and difficult to move.
- Such landscape berms or swales must be vegetated with a cover crop to prevent movement and thereafter be planted with the desired indigenous landscaping material
- Topsoil can only be removed from the site with the written approval of the ECO.
- The vegetation roots and any surface organic matter are to be removed together with the topsoil and are to be stockpiled for use during the rehabilitation phase.
- The stockpiles must be protected against erosion including wind (vegetation can be permitted to grow on the stockpile to keep it secure and prevent wind movement. **No** alien invasive plants may grow on the stockpile).
- The soil removed for construction of **services** (which will all be underground such as the sewage / water network, stormwater outlet structures etc.) must not be removed, but placed to the side of the trench, while the sub-soil is placed to the other side. The soil is returned in the same order with the vegetated topsoil closing the trench and stimulating re-growth.
- No topsoil stripping is to take place prior to the completion of the plant rescue programme.
- Any surplus subsoil that needs to be stockpiled for cut and fill operations must be stockpiled in an approved stockpile area as agreed to by the ECO.
- Stockpiles must be screened and protected from wind and water erosion
- Silt fencing needs to be installed before construction works commence to ensure that there is limited movement of silt on site (as indicated by the ECO).

- Implement soil erosion control measures along each wetland and the Modderrug River (e.g. brush layering, erection of silt fences, routine site inspection for problem areas)

6.1.8 DISCOVERY OF HERITAGE RESOURCES

However, although not anticipated, should it be suspected that an object or structure of heritage value has been uncovered during earthworks or the clearing of vegetation (including but not limited to bones, burial sites, structures older than 50 years, stone tools, shell middens, pottery etc.), then all work is to immediately **cease**, and the ECO is to be contacted to inform Heritage Western Cape (HWC). Work shall not recommence until HWC have visited the site, inspected the object in question and advised on how to proceed. If the object requires removal by a trained archaeologist, this process will be at the expense of the developer. It is the contractor’s responsibility to ensure all staff on site is aware of this procedure.

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Pre-construction and Construction phases							
Clearance of vegetation and earthworks required during the construction phase (civil and construction on the property)	Kraaibosch Park development	Should any object or structure of heritage value be discovered, work is to cease , ECO is to be contacted and advise accordingly	Pre-construction and construction phase	ECO to monitor compliance during the pre-construction and construction phase	Continual monitoring of compliance	Contractor to ensure that work ceases should any object or structure of heritage value be discovered, and the ECO should be contacted The ECO is to contact HWC and advise accordingly	To be included in compliance monitoring report

6.2 GENERAL CONSTRUCTION REQUIREMENTS

6.2.1 ACCESS TO THE SITE

Access to the estate is via the Glenwood Avenue (north) and Road 3 at the various designated access points. Any alternative construction access is to be approved by the ECO and local authority prior to being used.

Construction vehicles are to respect the rights of other road users and the residents of the estate.

The following will be of importance:

- Movement of construction vehicles must be **restricted** to the designated roads only - any temporary haul roads must be approved by the ECO.
- Rules of conduct for contractors are likely to be set up by the developer and subsequent HOA and will include contractors complying with the EMPr and any construction access routes designated for such purposes.

- Access to the area is to be monitored during construction.
- The contractor(s) must ensure that vehicles leaving the site are clean and, wherever possible, do not deposit mud, any other earth material and concrete on the road surface. Where this is unavoidable, it must be cleaned on a daily basis and may not be permitted to enter the storm water system.
- It is essential that traffic flow is **correctly managed** especially since Kraaibosch Park is already an operational estate. This implies appropriate signage and visible demarcation of the work area and the areas which traffic must adhere to.

6.2.2 SITE AGENT

- The main contractor shall appoint a responsible agent to ensure that they comply with this EMPr and all its conditions. This party is to report directly to the ECO and will need to attend the induction and be briefed on the requirements by the ECO.

6.2.3 USE OF LOCAL LABOUR

- It is strongly recommended that local labour is used for the construction phase of this project. "Local" implies people within the George area.
- Records are to be kept of all personnel and subcontractors employed by the contractor. The main contractor is to provide the breakdowns of their various sub-contractors. **When required, these records are to be provided to the ECO by the contractor(s) on a monthly basis.**

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Socio-economic benefits through the creation of short- and long-term employment	Construction and operation of the development	The use of local labour to maximise positive benefit to the local area	During the construction and operational phase of the development	ECO inspections and contractor and management/ developer to ensure compliance	Monthly monitoring of submission of records by the contractor(s) when required	Management. Contractor. ECO.	ECO to monitor. To be included in the monitoring report

6.2.4 DEMARCATIION OF NO-GO AREAS

The Modderrug River and its buffer of 30m is to be regarded as a 'no-go' area for everything other than rehabilitation and alien clearing. No physical construction in this area. No security fencing in this area.

Work within the wetland is limited to the structures required in terms of the stormwater plan, specified linkage to the sewer lines and construction of the two road crossings with the necessary rehabilitation recommended by the aquatic specialist (discussed later in this EMPr) may be undertaken in these areas.

- All people working on site must be made aware of the boundaries within which work is to be done.

- As there may be multiple contractors on site at any time it is critical that each contractor is aware of the extent of their work area and remain within the work area.
- During civil construction the areas not under construction are regarded as NO-GO areas.
- During construction of top structures the entire site is regarded as NO-GO with the exception of the site that has been handed over to the specific builder(s).

The following applies:

- **Civil contractors and Building contractors** - all areas **outside** that of the defined works (roads and pipeline route or building platforms) is deemed a no-go area.
- Disturbance within the work area is to be kept to the minimum, as **all disturbed areas will require stabilization** (placing topsoil and re-seeding to ensure vegetative cover) on completion of the work **by the contractor**.
- All construction activities must be **restricted** to the demarcated areas to ensure that no further disturbance into the surrounding vegetation.
- No encroachment or activities may take place outside the work areas.
- Storage sites for construction material and access must be approved by the ECO prior to commencing (and areas will require rehabilitation after use).
- No-Go areas will be required to be demarcated by the contractor to ensure that they are visible at all times, to all personnel.
- Methods of demarcation will be agreed with the ECO and may include danger tape, rope, fencing, shade cloth, mulch bags, wire fencing etc. Method of demarcation will depend on the work that will be undertaken.
- In light of the above, should access be required through a no-go area, permission must be obtained from the ECO in writing prior to the use of such an area. The wetland and river buffer areas may only be accessed for rehabilitation / specified maintenance purposes.
- Adjacent properties to the construction site may not be entered by any construction staff if permission is not granted by the owner.
- The ECO should monitor adherence to the No-Go area policy.
- Access into the No-Go areas by personnel is strictly forbidden (i.e., Work breaks such as lunch are not permitted outside the defined work area - no entry into the neighbouring properties or open space areas). A spot fine will be imposed against the contractor in the event of contravention of the no-go policy up to a maximum of R5 000 per incident).

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Demarcation of no-go areas and protection of sensitive areas	Kraaibosch Park development	The contractors are to comply with the requirements of the EMPr Demarcation of working areas is	During the construction of the development (civil and building construction)	ECO and contractor to continually monitor compliance during construction	ECO to conduct inspections of construction works	Contractor to implement no-go demarcation ECO and contractor	ECO to monitor during the construction phase. To be included in the monitoring report

		required by means of shade netting (around development area(s)) and danger tape / netting (civil construction and trenches)				to monitor the site	
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6.2.5 CONSTRUCTION SITE CAMP

- The area must be indicated and approved by the ECO (through the submission of the **method statement** by the contractor).
- Ablution facilities (chemical toilets) are to be provided at the campsite for use of the staff (one toilet per 15 people) – **to be in place prior to commencement of activities on site.**
- A dedicated area must be created within the campsite for refuse and waste management. These are to be disposed of at the various approved waste disposal sites.
- **No** accommodation with the exception of a night watchman is permitted on site by contractors or their staff during the construction period.
- **No open fires are to be permitted. The storage of any potential ignition sources on the property must be removed from site at end of day.**
- Storage of all materials required for the contract must occur within this campsite, or otherwise approved area (by the ECO).
- **Any concrete batching plant areas** are to be approved by the ECO prior to utilisation and must be equipped with suitable settling ponds and trapping mechanisms to ensure that contaminated water does not leave the restricted area.
- No ready-mix trucks are permitted to rinse their tanks on site or along the access roads to and from the site. **Any spillage is to be immediately cleaned by the responsible contractor / supplier / owner.**
- **No** temporary diesel storage tanks may be brought to the site.
- Adequate signage must be erected at the construction site to ensure that safety regulations are adhered to.

6.2.6 STORAGE OF CONSTRUCTION MATERIAL

The following must be adhered to:

- All stockpile sites to be approved by the ECO and/or landowner, **prior** to the commencement of stockpiling.
- All stockpile sites within the development area are to be demarcated with silt-fences and/or danger tape, where necessary.
- Silt protection measures around stockpile sites may be required.
- All construction material should be stored within the site camp / boundary (if space allows it).
- **No** construction material is to be stored outside of the site camp / development area without written permission from the appropriate landowner, HOA and ECO.

- **No** construction material is to be stored on steep sloped areas (close proximity to the open space area).
- No hazardous materials to be stored on site like diesel, petrol etc. without written approval by DEADP.
- Any material removed from bulk earthworks that is not going to be used as part of the cut and fill, **MUST** be removed from site to an approved disposal site immediately. Temporary storage of cut material for future fill **MUST** be agreed by the ECO and **MAY NOT** be beyond the development footprint.

6.2.7 FIRE PROTECTION

- The contractor must take all reasonable and active steps to avoid increasing this risk of fire (especially to prevent damage to surrounding properties and vegetation). **No** open fires or naked flames for heating or cooking shall be allowed anywhere on site. The contractor shall ensure that all personnel are aware of the fire risk and the need to extinguish cigarettes before disposal. Cigarettes may **not** be disposed of onsite and must be disposed of properly in receptacles for this purpose.

No burning of waste on ANY PART of the site should be permitted.

- The contractor shall identify the authorities responsible for fighting fires in the area and shall liaise with them regarding procedures should a fire start. The contractor shall ensure that his staff are aware of the fire danger at all times and are aware of the procedure to be followed in the event of a fire. The contractor shall also ensure that all the necessary telephone numbers etc. are posted at conspicuous and relevant locations in the event of an emergency. The contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it.

6.2.8 HEALTH AND SAFETY

- The Occupational Health and Safety Act (Act number 85 of 1993) must be complied with.
- The H&S Officer is to copy the ECO in on his/her reports for record purposes.

6.2.9 WASTE MANAGEMENT

- It is recommended that an integrated waste management approach must be used that is based on waste minimisation and must include reduction, recycling, re-use and disposal where appropriate. Only approved waste disposal methods are allowed. The contractor shall ensure that all site personnel are instructed in the proper disposal of all waste. The contractor shall ensure that **sufficient disposal facilities** are available.
- **Recycling** must be encouraged on-site and recycling bins must be provided and clearly marked.

- Disposal of all waste materials must be done at suitable facilities. **No dumping** of any waste material on or off-site is permitted.
- Documentary evidence of all disposed contaminated products, waste or residues, which have been generated during the construction phase must be kept.
- The contractor shall ensure that the site is maintained in a **neat and tidy** condition and kept **free of litter (including the open space areas)**. Measures must be taken to reduce the potential for litter and negligent behaviour with regard to the disposal of all refuse. At all places of work, the contractor shall provide **litter bins, containers** and **refuse collection facilities** for later disposal. Litter to be removed from the site on a **daily** basis (through daily litter picking before the site is closed for the day). Rubbish bins must be provided on-site and regularly cleaned / emptied.
- **Solid waste** may be temporarily stored on-site in a **designated area** approved by the ECO prior to collection and disposal. Solid waste must be removed on a **weekly basis** to a licensed municipal waste site.
- Waste storage **containers** shall be covered, tip-proof, weatherproof and scavenger proof. The **waste storage area** shall be **fenced off** to prevent wind-blown litter.
- The contract staff must be clearly briefed on the 'no litter policy'. **The site is to be kept clean of litter, even if it is not caused by the contractor staff.**

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Construction of buildings and associated waste	Kraaibosch Park development	Waste management should be done in accordance with the EMPr	During the construction of the development (civil and building(s) construction)	ECO and contractor to continually monitor the site during construction	ECO to conduct inspections of construction works	Contractor to implement sound waste management ECO and contractor to monitor the site	ECO to monitor during the construction phase. To be included in the monitoring report

6.2.10 ABLUTION FACILITIES

- Ablution facilities must be provided for all contraction staff working on site (this includes during pre-construction activities).
- Contractors must provide chemical ablution facilities for all construction personnel working on the site. The number of chemical toilets required must adhere to the H&S requirements applicable at the time of the contract.
- Toilets shall be of a **neat** construction and shall be provided with doors and locks and shall be secured to prevent them from blowing over.

- Sanitation provision and servicing shall be to the satisfaction of the environmental control officer (ECO).
- The contractor shall ensure that the toilet(s) are emptied **regularly** and also **before** weekends and public holiday periods.
- Failure to use the chemical toilet provided and making use of the vegetation either on or off-site **will result in maximum penalty fine being awarded in addition to requiring the contractor to clean up.**

6.2.11 SOIL EROSION AND STORMWATER MANAGEMENT

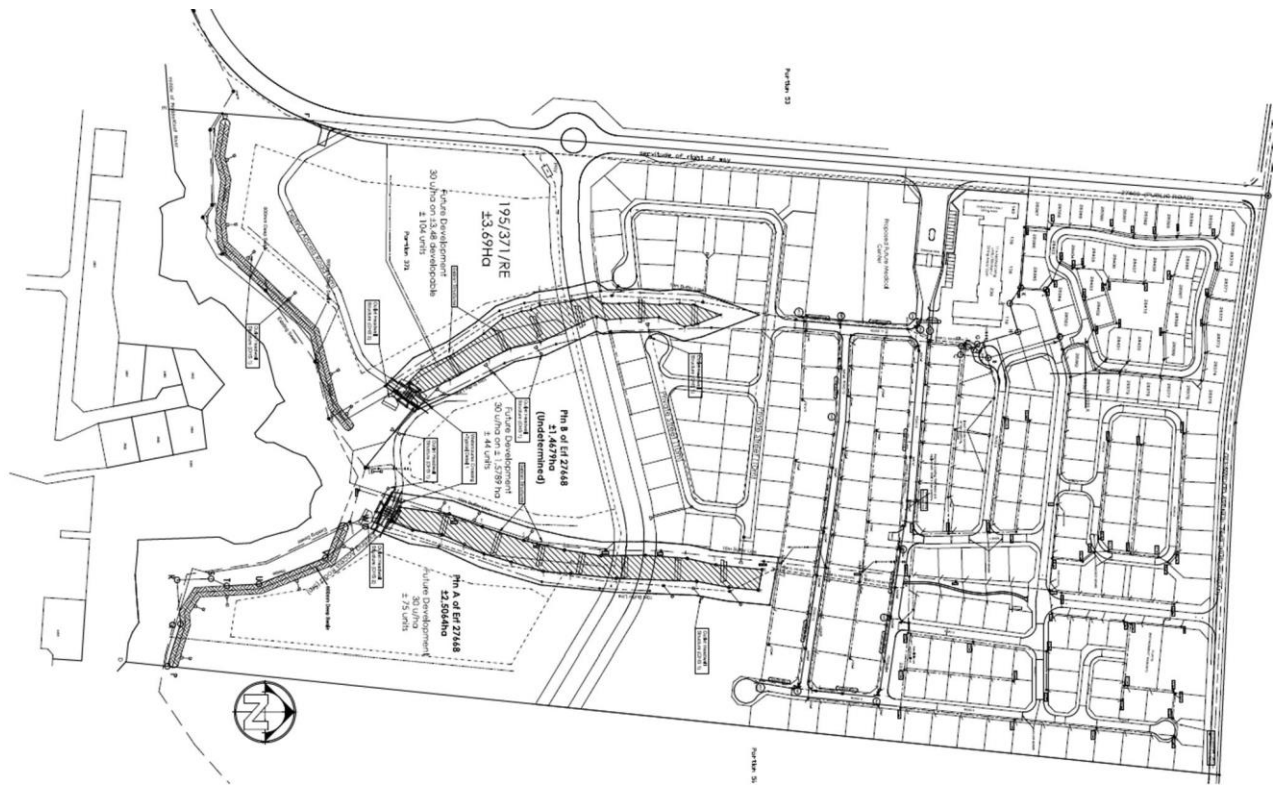
- The stormwater management plan must be implemented as proposed.
- Limit clearing of vegetation as far as possible as this prevents the movement of silt.
- Stringent mitigation measures must be imposed during construction to minimise runoff, possible silt run-off and contamination of water leaving the site (especially into the open space area/buffer areas)
- Use of silt-fencing, rows of onion bags, mulch, brushwood, sandbags and deflection berms (the choice depending on the situation). These mitigation measures are essential in all exposed areas.
- Areas requiring erosion control mechanisms are to be identified by the contractor and ECO. Instructions by the ECO are to be given to the contractor as required.
- In the event of erosion damage or silt movement, the contractor will be liable for a fine and is responsible for the clean-up and required to reinstate the conditions to normal as determined by the ECO.
- To decrease the risk of water pollution, all construction materials must be secured (e.g., only stockpiling at a pre-determined site, around which there must be a silt protection boundary) so that there is **no wash away.**
- In the case of contaminated water run-off, silt can be stopped by means of sandbags and following the rain the contaminated area should be cleaned. All measures must be taken to avoid contaminated water entering any water bodies (Modderrug River) and open space/buffer areas in any way.
- It is the responsibility of the contractor working inside any trench at any specific time to ensure that their works are protected from damage which may be caused through runoff of rainwater inside the trench. The use of sandbags, mulch bags or any other appropriate methods of slowing down the flow of water within a trench is required.

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Potential erosion during the construction of the development.	Kraaibosch Park development	The contractor is to comply with the EMPr requirements regarding erosion prevention. Emergency erosion	During the construction of the development (civil and building(s) construction)	ECO and contractor to continually monitor the site during construction for signs of potential erosion	ECO to conduct inspections of construction works	ECO and contractor to monitor the site	ECO to monitor during the construction phase. To be included in the monitoring report.

		<p>protection materials (haybales, sandbags, geotextile fabric, shade cloth and/or biddum) are to be kept on-site to treat erosion area as soon as it appears</p>					
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6.2.12 IMPLEMENTATION OF STORMWATER MANAGEMENT PLAN IN THE WETLAND AREAS

Any deviation from the following stormwater management plan needs to be approved by the specialists (Confluent Environmental), the ECO and where required, DEADP:



E	SWALE DETAIL ADDED	CAL	07-12-23	NA
D	PH 4 REVISED LAYOUT	CAL	07-11-23	NA
C	SW SIZE ADDED	CAL	12-01-22	NA
B	EAST ADDED	CAL	20-08-21	NA
A	FOR APPROVAL	CAL	18-04-21	NA
No	Description	Drw	Date	App
REVISIONS				
		Initials	Date	
Designed		CAL	18-07-18	
Drawn		CAL	18-07-18	
Project Eng		NA	18-07-18	
Approved		NA	18-07-18	
SCALE 1 : 500				
 KANTEY & TEMPLER CONSULTING ENGINEERS <i>Engineering African Development</i> <small>P O BOX 498 GEORGE SOUTH AFRICA 6520 TEL +27 44 874 2177</small>				
Client				
CAPE ESTATE PROPERTIES OUTENIQUA (PTY) LTD.				
Project				
KRAAIBOSCH PARK				
Title				
INTERNAL SERVICES LAYOUT PLAN PHASE 1 to 4				
Drawing No				
G5155BD-CE-202				
				Rev No
				E

Stormwater and service layout plan (Kantey & Templer)

As recommended by the specialist (Confluent Environmental. 2023):

- Survey wetlands for red data or rare fauna prior to construction with the aim of relocation;

- Implement a plant rescue programme prior to the start of construction to assist with rehabilitation post construction;
- The location and alignment of all proposed infrastructure (i.e. stormwater infrastructure and pipelines) must be clearly demarcated prior to the start of construction activities so as to minimise unnecessary impacts to wetland habitat;
- Soil excavated for the trench for the stormwater and sewage pipelines must be stockpiled along the outer edge of the trench furthest away from the wetland. Topsoil must be separated from subsoil and stockpiled separately;
- The trench must be filled (first with subsoil and then with topsoil) and reshaped to original contours such that no preferential flow paths are created;
- The backfilled trench and any other disturbed areas must be re-vegetated using an appropriate indigenous fynbos grassland mix. Temporary erosion control must be placed along the trench alignment until such time as vegetation has re-established;
- OHS1 outlets and associated gabion protection must all be located within the 10 m buffer of each wetland. No part of the structure is to be located within the delineated area of the wetland;
- Pipelines must be buried within the 10 m buffer and NOT the delineated area of the wetland.
- Cement/concrete used in the construction must not be mixed on bare ground or within the watercourse. An impermeable/bunded area must be established in such a way that cement slurry, runoff and cement water will be contained and will not flow into the surrounding environment, the stream or riparian zone or contaminate the soil;
- The watercourse must be inspected on a regular basis (at least weekly) by an appropriately qualified ECO for signs of disturbance, sedimentation and pollution during the construction phase. If signs of disturbance, sedimentation or pollution are noted, immediate action should be taken to remedy the situation and, if necessary, a freshwater ecologist should be consulted for advice on the most suitable remediation measures.
- Implement the wetland rehabilitation plan post construction; and
- Disturbed areas must be kept clear of alien vegetation and must be actively reshaped and rehabilitated with indigenous, local vegetation;
- Excavators and all other machinery and vehicles must be checked for oil and fuel leaks daily. No machinery or vehicles with leaks are permitted to work in the watercourse;
- No fuel storage, refuelling, vehicle maintenance or vehicle depots to be allowed within the buffer of the watercourse; and
- Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills.

6.2.13 CONCRETE AND CEMENT WORKS

- Mixing areas must be defined on-site and **clearly** demarcated.

- Cement powder has a high alkalinity pH rating, which can contaminate and affect both soil and water pH dramatically. A shift in pH can have serious consequences on the functioning of the soil, water organisms and plants.
- All concrete must be mixed in a batching area that is bunded.
- Cement mixing must be either readymix, from the batching area or mixed on trays / on thick plastic and not on the soil.
- **Bunding** through the use of sandbag walls around any mixing areas is recommended, together with an impermeable base.
- **Contaminated soil** from such bunds to be disposed of at the municipal waste disposal site.
- When using Ready-mix concrete, care must be taken to prevent spills from the trucks while offloading.
- **Cement contaminated water may not enter any open space/buffer area or water bodies (Modderrug river/wetlands).**
- The contractors and sub-contractors need to ensure that the used cement bags do not create a litter problem.
- Any cement or concrete contaminated soil must be removed and disposed of appropriately.
- Excess or spilt concrete should be disposed of at a suitable registered landfill site.
- No water for the mixing of cement may be sourced from any river system (Modderrug River/wetlands).
- No cement water or the like may enter the storm water system which will end up in the River – **bunding is essential.**
- **No mixing to be done in environmentally sensitive areas or areas where there is a high risk of cement contaminated water entering the stormwater system.**

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Cement and concrete works	Kraaibosch Park development	Cement and concrete works are to comply with the EMPr Appropriate bunding and mixing on impermeable surfaces must be implemented	During the construction of the development (civil and building(s) construction)	ECO and contractor to continually monitor the site during construction	ECO to conduct inspections of construction works	Contractor to implement mitigation measures as per the EMPr ECO and contractor to monitor the site	ECO to monitor during the construction phase. To be included in the monitoring report

6.2.14 NOISE, DUST MANAGEMENT AND NUISANCE MEASURES

- During civil construction, work is limited to normal working hours as dictated by the local authority.
- The building(s) should comply with the normal Municipal building control requirements.

- Dust mitigation measures should be implemented as required. This will include spraying of water on gravel roads or exposed areas that generate dust or covering haul roads / exposed areas with wood chip to reduce the generation of dust.
- Dust management includes the management of dust off any stockpile sites
- Temporary stockpile sites may not be placed in areas that are going to result in a nuisance or eyesore to neighbours.

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Construction phase							
Construction of residential development	Kraaibosch Park development	Contractor to comply with SANS 10400 regulations pertaining to noise creation. Dust mitigation measures must be implemented as necessary	During the construction of the development (civil and building construction)	ECO and contractor to continually monitor the site during construction	ECO to conduct inspections of construction works	Contractor to implement mitigation measures as per the EMPr ECO and contractor to monitor the site	ECO to monitor during the construction phase. To be included in the monitoring report

6.2.15 STABILIZATION REQUIREMENTS (AFTER CONSTRUCTION)

- Stabilization of disturbed area as a result of civil construction must be rehabilitated to the satisfaction of the ECO. This will include, but is not limited to the following:
 - use of sandbags, mulch bags as erosion ministration measures, seeding of bare areas with an indigenous grass seed mixture / the use of indigenous grass sods (ECO to advice) etc.
- The ECO is to advise on the rehabilitation measure that should be implemented as it will be case specific.
- No bare or exposed areas are to be left for a period of more than 2 months (if construction is due to commence on that exposed are within 2 months no rehabilitation is required, if construction is to commence after a 2-month period, the area must be immediately rehabilitated and must remain stabilized until the future construction works commence).
- The stormwater system must be protected through the installation of additional silt-fencing and re-vegetation of exposed areas. All stormwater flow must be protected against erosion and continual maintenance thereof will be required as the surface runoff will change as the construction progresses.
- Any silt traps need to be cleared on a weekly basis during the construction phase to ensure that silt traps remain effective.

6.3 BUILDING CONSTRUCTION PHASE

Buildings - The total footprint of a building zone / phase should be demarcated with 1.5 m (height) shade cloth for the **entire** period of the construction to prevent unnecessary disturbance. All areas outside this demarcation must be considered **no-go areas for all construction staff**.

It is recommended that all buildings follow the construction phase requirements of this EMPr while building to ensure no adverse impact on the surrounding natural areas or to the landscaping and rehabilitation done and to the storm water systems which form part of the landscape. It is anticipated that the developer will be undertaking all construction, however this would apply to any owner builder as well. An owner builder would need to demarcate their building area. The developer and subsequently the HOA should set up a system to enforce this.

6.3.1 IMPLEMENTATION OF ENERGY AND WATER SAVING TECHNIQUES

Water savings and energy saving measures to be applied wherever possible.

The use of low flow water fittings, installation of rain water harvesting tanks and the link to the SUDS stormwater system.

7 REHABILITATION PHASE

The holder must finalise the post construction rehabilitation and monitoring requirements within a period of **3-months** from the date the development activity (construction phase) is concluded.

Any damage to private property or open space areas must be reinstated to the state it was before construction commenced and must be done to the satisfaction of the landowner and ECO.

Rehabilitation of damaged areas (development area) will include, but is not limited to the following:

- All building rubble must be completely removed and disposed of at an approved landfill site;
- Compacted topsoil must be raked loose;
- Contaminated soil must be disposed of at an approved landfill site;
- Return topsoil to the area;
- Reinstatement of the vegetation in accordance with the Landscape Master Plan;
- Implementation of additional erosion control methods as required – instructed by the ECO;
- Maintenance of stormwater system at all times.

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Pre-construction commencement of forest rehabilitation & Rehabilitation phase							
Rehabilitation of damaged areas and forest rehabilitation	Kraaibosch Park development	Rehabilitation measures should be implemented as per the EMPr All building rubble must be completely removed and disposed of at an approved landfill site; Compacted topsoil must be raked loose; Contaminated soil must be disposed of at an approved landfill site; Indigenous grass seed can be sowed within required areas (as indicated by the ECO); Open space areas are to be planted with indigenous vegetation; Implementation of additional erosion control methods as required	Upon completion of civil service installations and building(s) construction	Contractor to implement mitigation measures ECO and contractor to monitor rehabilitation phase	ECO to conduct inspections of rehabilitation of home building and every 6 months for remaining rehabilitation measures implemented	Contractor to implement mitigation measures ECO and contractor to monitor rehabilitation phase	ECO to monitor during rehabilitation phase. ECO to submit final compliance monitoring report upon completion of civil construction and rehabilitation phase and building construction and rehabilitation phase to sign-off environmental compliance. To be included within compliance report.

7.1 WETLAND REHABILITATION

As compiled by Confluent Environmental, 2023.

The development has been designed to remain outside of the delineated area of each wetland. The main goals of the rehabilitation plan are to:

Manage stormwater inputs into the wetland so as to prevent scouring and erosion of the bed and banks of the wetlands and Modderrug River;

- Maintain the hydro-functional characteristics of each wetland such that their basic wetland functions are maintained; and
- Improve the floral and faunal biodiversity of each wetland.

The implementation of the proposed rehabilitation plan as laid out below, will preserve the fundamental functional characteristics of each wetland and achieve the goals specified

above. Key to this plan is the careful consideration of the stormwater management plan and the continued control of alien invasive tree species which has already resulted in significant improvement in riparian habitat along the Modderrug River and within each of the wetlands.

Road Crossings

Road crossings must not impede the flow of surface or sub-surface flows of water within the wetland and must not cause scouring of the bed and banks below the crossing. Incision of the channel of each of the wetlands has occurred below the existing road crossing towards the bottom of each wetland.

- Crossings must facilitate free flow of surface and subsurface water and no ponding or inundation of wetland habitat must occur upstream of road crossings; and
- The existing road crossings at the lower end of each wetland must be formalised through the installation of appropriately sized culverts and stream bed and bank protection below the road crossing.

Stormwater Management

Wetlands

The additional stormwater input into each of the wetlands was identified as the most significant impact with respect to the PES and EIS of each wetland. The stormwater plan must therefore minimise the volumes and flood peaks of stormwater entering the wetlands and dissipate the energy of flood flows through adopting the following:

- Similar to KBS1, the OHS2 structure in KBS2 must discharge into the lower section of the wetland below the existing road crossing. Stormwater must be transferred to the structure via means of a stormwater pipeline which bypasses the majority of the length of the wetland. This will reduce the number of OHS1 and gabion structures required for this wetland, minimise the development footprint within the delineated area of the wetland and transfer the bulk of stormwater inputs to the lower end of the wetland, thereby minimising stormwater impacts on the wetland;
- The stormwater pipeline must preferably be buried outside the 10m buffer. If this is not possible the pipeline can be buried within the buffer, but NOT within the delineated area of the wetland;
- OHS1 outlets must be designed according to specifications presented in Figure 12;
- OHS1 outlets and associated stilling basins must all be located within the 10 m buffer of each wetland. No part of the structure is to be located within the delineated area of the wetland;
- OHS1 outlets to discharge into the buffer of each wetland at an angle, orientated in the direction of the natural flow direction of the wetland;
- Prior to excavation of the trench for the stormwater pipeline, its alignment must be clearly demarcated to avoid unnecessary disturbance of the buffer and wetland;
- Soil excavated for the trench for the stormwater pipeline transferring water from the

development down to the OHS2 structure must be stockpiled along the outer edge of the trench furthest away from the wetland;

- The trench must be filled and reshaped to original contours such that no preferential flow paths are created; and
- The backfilled trench and any other disturbed areas must be re-vegetated using an appropriate indigenous fynbos grassland mix. Temporary erosion control must be placed along the trench alignment until such time as vegetation has re-established.

Modderrug River

As described above, increased stormwater flows and urban pollutants are the main factors impacting on the PES and EIS of the Modderrug River. For this reason, it is important that stormwater runoff must be appropriately managed to address the impacts of stormwater velocity and quality resulting from the hardening of surfaces located upslope of the Modderrug River. The management of stormwater runoff must allow for:

- The dissipation of high velocity stormwater flows upslope of the 30 m buffer;
- The amelioration of water quality, with main contaminants likely to include inorganic and organic sediments, and nutrient enriched and probably bacterially contaminated water; and
- The collection of litter upstream of the buffer area.

The following stormwater management designs should achieve these objectives:

- OHS1 structures will discharge first into swales, running along the outer edge of the buffer, parallel with the Modderrug River, designed as vegetated corridors in which sediment collection, litter and dissipation of flows can be achieved;
- Swales must be located outside of the 30 m buffer but can discharge into the buffer area;
- Outlets from the swales will be placed along low points and will consist of gabion boxes to attenuate peak flows with reno mattress protection below (Figure 16). The reno mattress must be level with the natural ground level;
- Swales must be vegetated using an appropriate indigenous fynbos grass mix and must be routinely maintained, particularly during the first two years of establishment, when weed control and replanting may be required; and
- Routine maintenance activities generally include, *inter alia*, weed control, re-seeding of uncovered areas, and the frequent clearing of litter, debris and visible blockages;
- The swale must be inspected at least twice a year, generally at the beginning and end of the wet season to check for areas of erosion and channelization, particularly at the inlets and outlets.

Sewage Pipeline

- The sewage pipeline must preferably be buried outside the 10m buffer. If this is not possible the pipeline can be buried within the buffer, but NOT within the delineated area of the wetland;
- The alignment of the sewage pipeline must be clearly demarcated to avoid unnecessary disturbance of the buffer and wetland;
- Soil excavated for the trench for the sewage pipeline must be stockpiled along the outer edge of the trench furthest away from the wetland;
- The trench must be backfilled and reshaped to original contours such that no preferential flow paths are created;
- The backfilled trench must be re-vegetated using an appropriate indigenous fynbos grassland mix. Temporary erosion control must be placed along the trench alignment until such time as vegetation has re-established.

Wetland and River Habitat

Several impacts are of relevance to the wetlands and Modderrug River. Invasion of each of the wetlands and the buffer area along the Modderrug River by alien tree species was historically high. Extensive alien clearing has occurred within both wetlands and all along the proposed buffer area for the Modderrug River. The proposed buffer area along the Modderrug River is now dominated by indigenous fynbos and grass species and offers good buffering capabilities. Alien clearing has undoubtedly contributed to an improvement in the ecological state and biodiversity of all watercourses and follow up clearing must continue so as to ensure that no re-invasion of these areas occur.

Existing impacts are most prominent in KBS2 and to a lesser extent in KBS1, where high quantities of vegetation (presumably cleared alien vegetation) and soil have been moved to the edge of the delineated area of each wetland (Figure 17). This activity has smothered wetland habitat in parts and infilling has impeded flow of water. This material must be removed from the wetland so as to restore connectivity and base flows along the length of the wetland. Other impacts include the incision of the channel of each wetland below the existing road crossings.

Future impacts relate to the likely increase in stormwater volumes that will enter the wetland. While these will be minimised by the interventions proposed in Section 6.2, stormwater volumes are nevertheless likely to increase, which, given the relatively small size of each wetland, can cause erosion and channelisation of the wetlands. For this reason, gabion weirs will need to be installed within each wetland so as to reduce flow velocities associated with high volume flood events so as to minimise scouring and erosion of the bed and banks of the wetlands.



Photographs indicating piles of vegetation and soil that have been pushed into the delineated area of the wetland

The following must be implemented to mitigate and rehabilitate these impacts:

- Removal of debris and soil that has been pushed into KBS2 and along the delineated edge of KBS1. Removal must ensure no further degradation of wetland habitat and must be done by hand if necessary;
- Reshape and revegetate eroded banks of each wetland below the existing road crossings to allow for their effective stabilisation with locally indigenous plants;
- Implementation of 10 m buffer along the wetlands;
- Implementation of 30 m buffer along the length of the Modderrug River which must be considered as a no-go area for development; and
- Further alien invasive plant clearing must remove remaining alien invasive plant species from within the 30 m buffer of the Modderrug River. There are currently signs of *R. fruticosus* (American bramble) establishing within the proposed 30 m buffer in the vicinity of the lower reaches of each of the wetland channels. This plant can become very problematic to eradicate due to its numerous spines and should be controlled as soon as possible before it spreads further.

Monitoring and Maintenance Plan

The following monitoring and maintenance

- *E. coli* monitoring must be routinely conducted (every 1 to 2 months) within each wetland and in the Modderrug River upstream and downstream of its confluence with the wetlands to ensure that the proposed sewage infrastructure is not contaminating the watercourses; **frequency of testing to be agreed with BOCMA as this has a major cost implication.**
- All stormwater infrastructure (OHS1, OHS2) and gabions, reno mattresses swale outlets etc, to be inspected monthly to ensure that no erosion of the wetland or the buffer of the Modderrug River is taking place;

- Follow up alien clearing must be conducted annually within each wetland and the buffer of the Modderrug River to prevent re-establishment of alien invasive plant species.

8 MONITORING REQUIREMENTS AND REPORTS

- An **induction** meeting with the ECO and the contractor (**civil and building**) to ensure that they are aware of the requirements of this EMPr and the EA before the commencement of the installation of services or building works.
- An induction meeting between the alien clearing team and ECO is recommended to ensure that the approved clearing methods are implemented.
- Induction registers to be kept for all contractors on site.
- The ECO must inspect work areas prior to civil installations and demarcate no-go areas or indicated areas of sensitivity.
- The ECO is to do a site inspection **once every second week** of all **civil installations** and submit a **monthly** compliance monitoring report to the applicant, developer, contractor and DEADP.
- The ECO is to monitor the **building works** on a **monthly basis** and submit a compliance monitoring report every second month to the applicant, developer, HOA and DEADP as the case may be while construction is in progress.
- The ECO **monitoring reports** are to advise on any remedial actions or changes that are required to the method statements in order to ensure that the impacts identified and any that may become evident are mitigated and managed. Should it be necessary the EMPr must be updated / amended to take these into account if they cannot be adequately handled in a revised method statement.
- Upon **completion of civil installations (per phase)**, a **final monitoring report** must be submitted by the ECO to sign-off compliance with environmental requirements. The report must be submitted to DEADP, the applicant, the developer, management and HOA as the case may be.
- On **completion the buildings (top structures)** the ECO is to issue a **completion report** prior to occupation certificates being issued. This may be done in phases based on the developer's programme.
- Once **all phases are completed** the ECO is to issue **the final monitoring report** to DEADP, the applicant, the developer, management and the HOA.
- Copies of all compliance reports should be sent to DEADP for record purposes.

9 AUDITING REQUIREMENTS

Note that audits must be undertaken by an independent person (i.e. not the EAP and appointment ECO).

- Auditing during the non-operational phase (construction activities):

- During the period which the development activities have been commenced with on the site, the Holder must ensure monthly ECO reports are submitted and a **completion audit** is undertaken and submitted to the Competent Authority within 3 months of completion of the rehabilitation phase which follows the construction.
- The audit is to report on the success of the implementation of the EA and the EMPr as the case may be.
- This audit must be **undertaken prior to the completion date of the EA.**

- Auditing requirements are to cover **ONLY the Construction phase for Civil services and Buildings** and does not extend to the operational phase of the development.

Additional environmental auditing may be undertaken as required within the EA or as determined by the Environmental Regulations applicable at the time. The audit report must adhere to the requirements of the applicable legislation and / or regulations at the time.

10 OPERATIONAL PHASE

The HOA of the residential development is bound by their general Duty of Care, as stated in Section 28 of the National Environmental Management Act, 1998 (as amended). As such it is recommended that the Operational phase monitoring should be conducted by the HOA (who may appoint an ECO to assist and offer advice as required by the HOA).

As construction is a primary source of disturbance and damage to the environment, any contractors working for the HOA (doing alterations etc.) should comply with the general conditions above in relation to building contractors.

The EA for the development covers the initial construction, installation of services and construction of all the top structures. At that point the final audit is undertaken and the EA is regarded as having been concluded.

The operational phase of the development is not subject to NEMA unless any specific items that trigger NEMA are undertaken.

The Developer will commence with the various activities on the site and the HOA will take over the long-term implementation and maintenance of the development.

10.1 RESIDENTIAL AREA MANAGEMENT

10.1.1 INTERNAL PRIVATE OPEN SPACE AREAS, ROAD RESERVES AND GARDENING

The HOA is encouraged to plant water-saving, local indigenous plants and to maintain a balance of **80% locally indigenous vegetation** within the internal open space areas.

Listed invasive species are prohibited and must be removed as observed.

The use of indigenous trees and shrubs in landscaping will provide food and shelter to the local fauna and birdlife.

The following is essential within these internal open space areas;

- These areas may be used for approved recreational activities, structures and / or water features;
- These areas should be continually monitored for any signs of erosion; &
- These areas will fall under the responsibility of the residential development's management / HOA.
- The HOA should develop a policy regarding the private landscaping of communal areas (like road verges), to avoid potential conflict.

Rainwater harvesting is recommended for landscaping purposes.

Private gardens must comply with the 80% locally indigenous planting requirement.

10.1.2 DOMESTIC ANIMALS AND ANIMAL MANAGEMENT

The HOA must develop a policy for domestic animals within the estate.

10.2 STORMWATER MANAGEMENT

As with all systems the storm water management system must be maintained and monitored by the HOA to ensure that there is no erosion or intervention required.

The stormwater control philosophy is one of reducing concentration and encouraging spread and infiltration into the natural vegetation and recharging the natural infiltration laterite layer.

Activities	Size and Scale	Mitigation Measures	Timeframe for Implementation	Method of Monitoring Implementation	Frequency of Monitoring	Responsible Persons	Compliance Monitoring
Operational phase							
Operation of stormwater outlets	Stormwater system	The stormwater outlets will be located close to the development	During the operational phase of the development	Management / HOA to monitor and implement mitigation measures	Management / HOA to implement mitigation measures and	Management / HOA and appointed contractor to	ECO to monitor To be included in the yearly

		<p>footprint in order to limit disturbance. The incorporation of detention and retention ponds will allow stormwater to dissipate naturally into the environment. Stringent erosion control will be implemented where necessary during the operation of the development. Ongoing maintenance will ensure that any localised erosion will be rehabilitated before it becomes problematic. The stormwater control philosophy is one of reducing concentration and encouraging spread and infiltration into the natural vegetation.</p> <p>Implementation mitigation measures as per the stormwater management plan.</p>		<p>ECO to monitor during operation of the development</p>	<p>conduct regular inspections</p> <p>ECO to conduct inspections as required</p>	<p>implement and monitor</p> <p>ECO to monitor</p>	<p>monitoring report.</p>
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10.3 FENCING

Security fencing will be installed around the development. **No fencing may be installed within the Modderrug buffer areas (river).** The fence must be monitored for erosion.

10.4 WASTE MANAGEMENT

The development's refuse is collected by the local authority – please comply with their collection requirements. Homeowners must be encouraged to re-use, reduce and recycle (**this needs to be included in the HOA's house rules to ensure compliance**). A suitable refuse area may be located within the development area for the collection of solid waste generated by the development. HOA to provide homeowners / residents with guidance as to when and how waste collection will be handled.

Normal domestic refuse will form part of the municipal waste stream. **No waste may be disposed of in the internal or forest open space areas, or anywhere else if not designated as a waste disposal area.** All waste must be disposed of in appropriate municipal or other authorised dumping sites.

NO dumping of garden refuse on any part of the common property or open space area is permitted.

10.5 FIRE MANAGEMENT

Firebreaks are a legal requirement in terms of the National Veld and Forest Act, 1998 (NVFA). Internal roads and building lines along the boundaries (to be vegetated) will double-up as firebreaks and firescaping with suitable vegetation.

10.6 INVASIVE ALIEN PLANT CONTROL

In terms of the Alien and Invasive Species Regulations, NEM:BA, 2014 specific alien plant species are prohibited and should be removed (by implementing approved methods).

Any alien invasive species germinating must be removed immediately for the life of the development. Initial alien clearing over the entire property is to be undertaken by the Holder of the EA / developer so that any areas handed over to the HOA are free of alien vegetation or are in the process of being removed. The ongoing management and removal of alien vegetation remains the responsibility of the HOA and the individual landowners on their private properties.

10.7 OPERATION OF WETLAND AREAS

As recommended by Confluent Environmental, 2023:

- **Impact of road crossings on channel erosion**
 - o Crossings must facilitate free flow of surface and subsurface water and no ponding or inundation of wetland habitat must occur upstream of road crossings; and
 - o The existing road crossings at the lower end of each wetland must be formalised through the installation of appropriately sized culverts and stream bed and bank protection below the road crossing.
- **Channel erosion and incision caused by increased flow and flood peaks in the wetlands.**
 - o OHS1 and OHS2 structures to include stilling basins and baffels for dissipating stormwater energy;
 - o OHS1 outlets to discharge into the buffer of each wetland at an angle, orientated in the direction of the natural flow direction of the wetland;
 - o Installation of gabions to attenuate and dissipate the energy of stormwater flows;
 - o Installation of reno mattress below gabions to prevent scour of the bed and banks;

- Routine monitoring of outlet structures to ensure that no blockages have occurred;
- Erosion protection must be placed downstream of road crossings.
- **Impairment of water quality caused by increased stormwater inputs**
 - Implementation of gabion attenuation structures within wetlands will attenuate stormwater discharge and assist in the filtering and assimilating pollutants in stormwater; and
 - Guidelines for residents must be drawn up which prohibit dumping of hazardous materials into stormwater drains.
- **Microbial and nutrient pollution caused by sewage leaks from pipelines**
 - Implement the water quality monitoring plan as provided under wetland rehabilitation plan, wetland and river habitat, to identify potential leaks from sewage pipelines

10.8 CONSERVATION MANAGEMENT PLAN (CMP)

10.8.1 ACCESS AND USE

The open space along the river may be used for recreational activities on demarcated paths. No vehicle access within this area is permitted and the use of the footpaths is restricted to non motorized activities. Use of the conservation area by Homeowners will be limited to the pathways set out and recreational use allocated to the area. HOA rules will need to be developed for this area. These rules must cover aspects such as dogs being on a lead at all times in the conservation area and remaining on the designated pathways unless undertaking alien follow-up management or erosion repair works.

As recommended by Confluent Environmental, 2023:

The areas that have been earmarked for Public Open Space or that fall outside of approved development areas may not have any earth movement or modification applied to them during the construction or operational phase of the project (unless erosion repair is required and agreed by the ECO).

10.8.2 EROSION PREVENTION AND CONTROL

The wetland areas and open space along the Modderrug River must be regularly monitored by the HOA during the operation to identify areas susceptible to erosion. The required erosion control measures must be implemented within these areas as approved by the ECO which includes (but not limited to); sandbags, mulch filled orange bags, swales, geotextile fabric, biddum, brush layering, replanting etc. Physical construction will need to follow the Modderrug River Rehabilitation EA and management plan.

10.8.3 VEGETATION MANAGEMENT

No removal of indigenous vegetation / collection of vegetation is permitted. There may be no collection or damaging of flora within this area.

Rehabilitation of the open space area need to be done through removal of alien invasive vegetation and systematic planting of indigenous vegetation (to be advised by the ECO).

10.8.4 INVASIVE VEGETATION MANAGEMENT

Alien invasive vegetation will be eradicated in accordance with the approved alien control plan in terms of NEMBA.

10.8.5 INFRASTRUCTURE DEVELOPMENT AND MANAGEMENT

No infrastructure will be permitted in the open space area, other than ECO approved recreational structures (benches, pathways and the silt trapping brush walls etc).

10.8.6 FINANCIAL PROVISIONS

Financial provisions for the developer for implementation and the HOA ongoing management of the conservation area is required. All initial works and landscaping is included in the Developers budget and the HOA will collect levies that cover the ongoing maintenance of the riparian zone as well as all internal communal landscaping.

11 DECOMMISSIONING PHASE

Should there ever be a need for decommissioning, decommissioning activities need to adhere to the applicable legislation at the time. All material foreign to the site must be removed from the site and must be disposed of at an approved waste disposal site.

Any material that can be recycled should be recycled.

12 PENALTIES FOR NON-COMPLIANCE

Penalties in terms of Chapter 9 of the Western Cape Bill on Planning and Development as published in the Extraordinary Provincial Gazette No 5183, 3 October 1997, are applicable for any action, which leads to damage to the natural environment.

In addition to the penalties in terms of the Act (NEMA), spot fines up to a maximum value of R10 000 per offence can be instituted at the discretion of the ECO for any breach or non-compliance in terms of the EMPr and EA (FINES ISSUED WILL INCREASE EXPONENTIALLY FOR REPEAT OFFENCES).

In the event of damage being caused, the contractor will be responsible for the cost of cleanup, repair or rehabilitation as necessary, as well as being liable for the fine.

A fund is to be established for the collection of fines and the spending of this fund is to be at the discretion of the ECO for environmental rehabilitation of the area.

13 CONCLUSION

This EMPr is binding on all contractors on site and constitutes Best Practice for construction activities. This EMPr may be updated with specific conditions required by the Environmental Authorisation.

This EMPr is binding for the full construction phase of Civil Services (all phases) and for the construction of all units (all phases).