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PRE-CONSTRUCTION, CONSTRUCTION AND POST-CONSTRUCTION PHASE

ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR THE

Proposed Mixed-Use Development on Portion 9 of the Farm Kranshoek No. 432, Knysna Road, Plettenberg Bay.

APPLICANT:	Status Homes Property Developers Contact: Alphonso Les Lamour
ENVIRONMENTAL CONSULTANT:	Sharples Environmental Services cc Primary Author: Betsy Ditcham (EAPASA Reg No. 1480)
DEA & DP PROJECT REFERENCE:	16/3/3/2/D1/13/0001/20
SES REFERENCE NUMBER:	CT06/38/DEIAR/KRANSHOEK/11/2020
DATE:	13 November 2020

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DOCUMENT DETAILS

Project Ref. No:	CT06/38
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Sharples Environmental Services cc Since 1998, SES has been actively engaged in the fields of environmental planning, assessment and management. We advise private, corporate and public enterprises on a variety of differing land use applications ranging from large-scale residential estates and resorts to golf courses, municipal service infrastructure installations and the planning of major arterials. Our consultants have over 20+ years of combined experience and we operate in the Southern, Eastern and Western Cape regions.

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LLOYD BARNES (**Environmental Assessment Practitioner**)- Lloyd has recently obtained his National Diploma and Bachelor of Technology in Environmental Management from the Cape Peninsula University of Technology. He has gained experience in on-site compliance monitoring, sustainable development, conservation and report writing. In his time as a consultant, he has compiled multiple management plans.

JOHN SHARPLES (**Director**) - John started Sharples Environmental Services in 1998 and has overseen the company's growth and development since then. John also started the Cape Town office in 2010. John holds a Masters in Environmental Management from the University of the Free State as well as a Bachelor's degree in Conservation. He has consulted for 19 years running a team of highly trained and qualified consultants and prior to this gained 12 years of experience working for environmental organizations. John is registered with EAPASA as a certified Environmental Practitioner (No 1485).

1. Introduction

Sharples Environmental Services cc (SES) was appointed by *Status Homes Property Developers (Pty) Ltd* (the proponent) to compile the Environmental Management Programme for the proposed housing development & associated infrastructure near Kranshoek, Western Cape.

2. About this EMPr

This document is intended to serve as a guideline to be used by *Status Homes Property Developers (Pty) Ltd* (as the Implementing Agent) and any person/s acting on *Status Homes Property Developers (Pty) Ltd* behalf, during the pre-construction, construction, post-construction rehabilitation and operational (maintenance) phases of the proposed development. This document provides measures that must be implemented to ensure that any environmental degradation that may be associated with the development is avoided, or where such impacts cannot be avoided entirely, are minimised and mitigated appropriately.

This EMPr has been prepared in accordance with the requirements of an EMPr as specified in the Environmental Impact Assessment Regulations, 2014 (as amended), and with reference to the "*Guidelines for Environmental Management Programmes*" published by the Department of Environmental Affairs and Development Planning (2005).

It is important to note that not only is the EMPr designed to manage the physical establishment of the development *per se*, but also as a tool which can be used to manage the environmental *impacts* of the development.

The rehabilitation, mitigation, management and monitoring measures prescribed in this EMPr must be seen as binding to *Status Homes Property Developers (Pty) Ltd*, and any person acting on its behalf, including but not limited to agents, employees, associates, guests or any person rendering a service to the development site.

2.1 Important caveat to the report

In the past, some developments have had a devastating impact on the environment even though they have had Environmental Management Programmes in place, while other developments have had a low impact even though no management plans have been compiled.

The Implementing Agent and the attitude of the construction team play an integral role in determining the impact that the development will have on the environment. The ECO needs to ensure that the all role-players are aware of the constraints that the EMPr places on the development and construction team and are prepared to be actively involved in enforcing these constraints. The end result relies on cooperation and mutual respect and understanding of all parties involved.

3. How to use this document

It is essential that this EMPr be carefully studied, understood, implemented and adhered to as far as reasonably possible, throughout all phases of the proposed development. *Status Homes Property Developers (Pty) Ltd* must retain a copy of this EMPr, and an additional copy must be kept on site at all times during the pre-construction, construction and post-construction rehabilitation phases of the development.

This EMPr must be included in all contracts compiled for contractors and subcontractors employed by *Status Homes Property Developers (Pty) Ltd*, as this EMPr identifies and specifies the procedures to be

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followed by engineers and other contractors to ensure that the adverse impacts of construction and maintenance activities are either avoided or reduced. Appointed contractors must make adequate financial provision to implement the environmental management measures specified in this document.

This EMPr must be seen as a working document, which may be amended as and when needed, in order to accommodate changing circumstances on site or in the surrounding environment, or in order to accommodate requests/ conditions issued by the competent authority, the Department of Environmental Affairs & Development Planning (DEADP). Amendments to this EMPr must first be approved by the competent authority, in writing, before being implemented.

4. Description of the Activity

Status Homes Property Developers (Pty) Ltd proposes to construct approximately 876 housing units consisting of a mix of affordable housing, business and commercial properties, schooling facilities (including creche's), places of worship and Public Open Spaces (the public open spaces account for > 23% of the development proposal) near the town of Kranshoek, within the urban edge of the Bitou Municipality, in the Western Cape.

Various bulk water, stormwater and sewer infrastructure upgrades and new pipelines are proposed to be constructed to service the development.

The residential township of Kranshoek is situated within the Western Cape, along the Garden route. Kranshoek is located approximately 7kms south-west of the well-known town of Plettenberg Bay and falls within the Bitou Municipal. The site is located south of the N2 and Robberg Road and the project area comprises of only one property, namely Portion 9 of the Farm Kranshoek No 432. Portion 9 is positioned to east of the town centre and abuts Trekkerspad. The size of the total development footprint for the mixed-use development is approximately 25.98Ha.

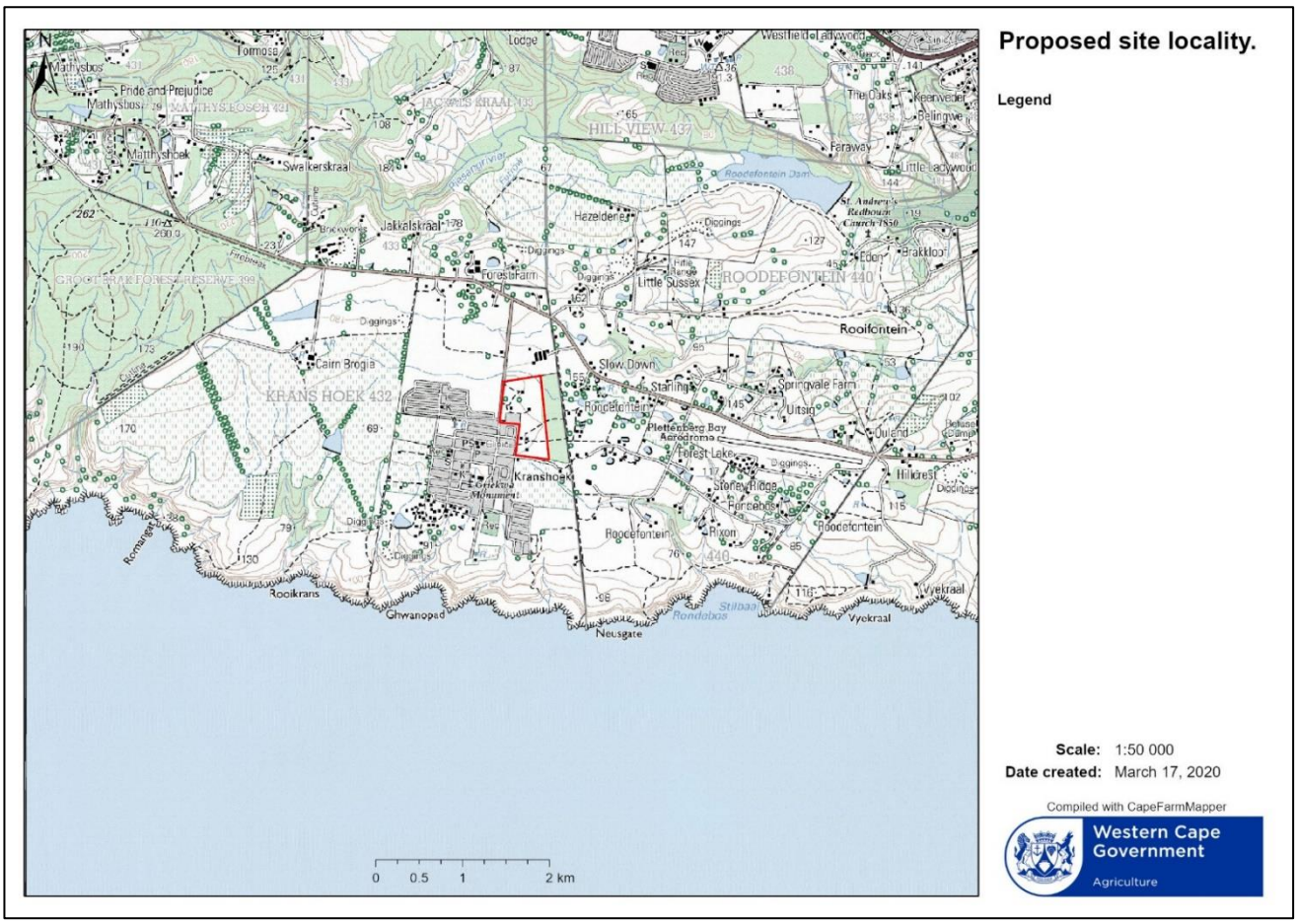

Figure 1: The proposed site for the affordable housing development (red border).

The town of Kranshoek is comprised of township extensions linked by gravel and tar roads. Urban development to the west of the proposed site includes affordable housing and a school with mostly vacant land to the north and agricultural farm portions (Portions 7 and 8) to the east and south.

Portion 9 of the Farm Kranshoek No. 432 is not completely undeveloped and, in fact, has residential buildings situated on it. The site was historically used for stock farming, however it is now used by some members of the local community for informal tea farming.

The following is proposed to be developed as per the Site Layout Plans and in the table below:

Table 1: List of proposed development aspects.

Development Proposed	No.	Size (ha)
Residential Zone 1: Dwelling Houses	457	8.95
Residential Zone 4: Flats	419	4.18
Business Zone 1: Shops, shopping centre	1	1.32
Institutional Zone 1: School & Creche	2	0.303
Institutional Zone 2: Place of Worship	2	0.19
Open Space Zone 1: Public Parks	2	5.72
Open Space Zone 2: Private Parks	4	0.51
Transport Zone 1: Private Roads	4	2.98
Transport Zone 1: Private Roads	-	1.83
TOTAL DEVELOPMENT FOOTPRINT		±25,98Ha

Table 2: Summary Table: Site and Farm Details

Province	Western Cape
District Municipality	Eden District Municipality
Local Municipality	Bitou Local Municipality
Ward number(s)	Ward No 7
Nearest town(s)	Kranshoek – directly adjacent
SG Code	C03900000000043200009
Co-ordinates of the farm boundaries:	

A	34° 4' 54.79" S	23° 18' 11.88"E
B	34° 5' 20.573" S	23° 18' 15.131" E
C	34° 5'19.357" S	23° 18' 2.54" E
D	34° 5' 9.825" S	23° 18' 4.085" E
E	34° 5' 9.249" S	23° 17' 56.592" E
F	34° 4' 56.582" S	23° 17' 58.137" E

5. Description of Environmental Setting

5.1 Vegetation

5.1.1 Vegetation description

The Ecological Impact Assessment undertaken by Jamie Pote (2019) notes that according to the vegetation map of SA (Figure 3), the vegetation unit primarily affected by the proposed development is South Outeniqua Sandstone Fynbos which has a Vulnerable Conservation Status. The site is also in the general vicinity of areas with Garden Route Shale Fynbos (Endangered) and Knysna Sand Fynbos (Endangered). No elements of these units were however noted to be present on the proposed site during the Ecological Assessment.

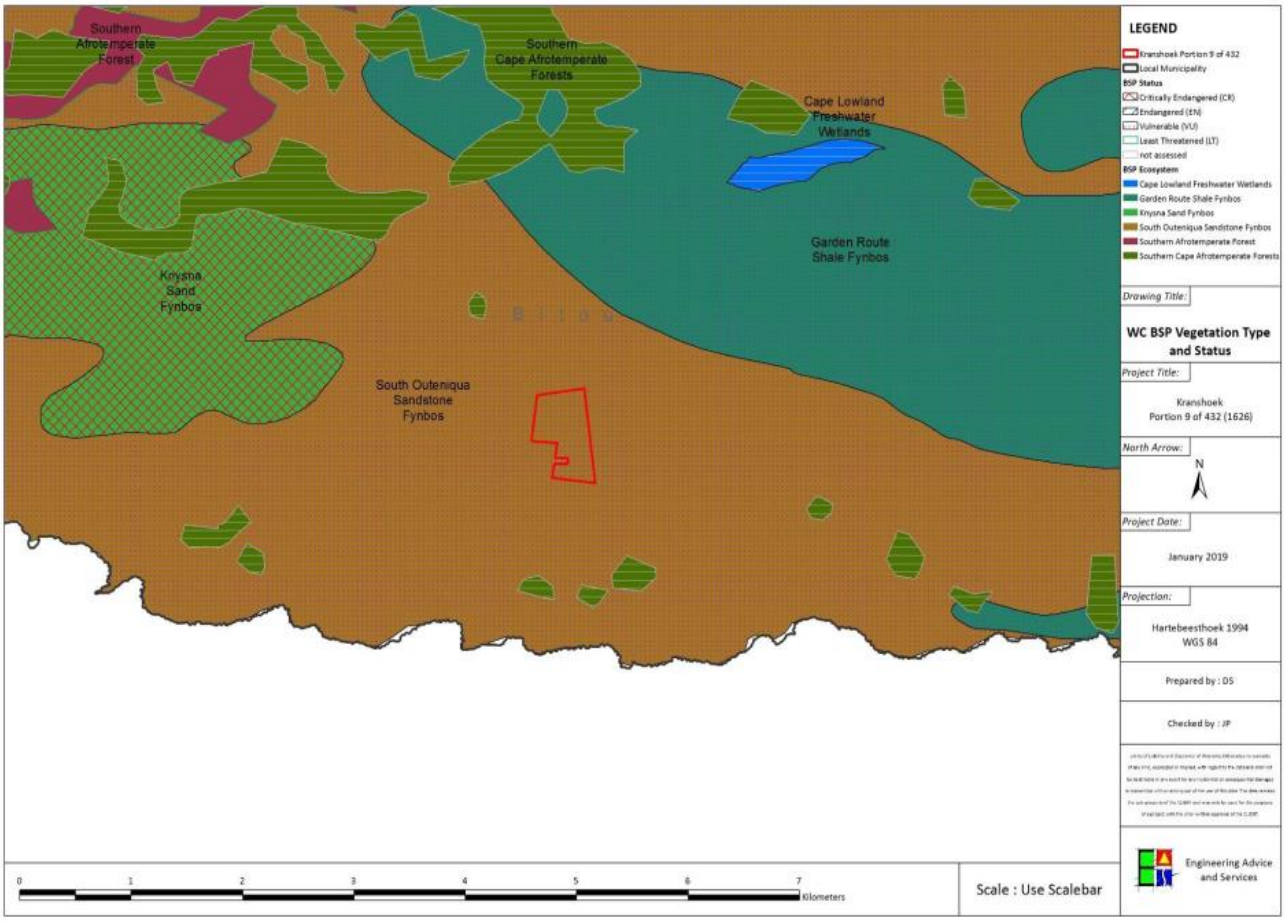

Figure 2: Vegetation Map of SA shows that the site falls within vegetation of South Outeniqua Sandstone Fynbos, with Garden Route Shale Fynbos to the north east of the site and Knysna Sand Fynbos to the northwest of the site.

South Outeniqua Sandstone Fynbos is predominantly distributed within the Western Cape, along the southern slopes of the Outeniqua Mountains from the Cloetesberg northeast of Albertinia in the west to the upper reaches of the Keurbooms River, this is where it borders on FFs 20 Tsitsikamma Sandstone Fynbos.

Upon the site visit, Pote (2019) noted that no elements of either South Outeniqua Sandstone Fynbos (Vulnerable), Garden Route Shale Fynbos (Endangered) or Knysna Sand Fynbos (Endangered) were noted to be present on the proposed site. It was however noted that the following flora species were common and dominant within the site; *Cliffortia linearifolia, Restio triticeus, Bobartia orientalis, Chrysanthemoides monilifera, Diospyros dichrophylla, Erica formosa, Erica sessiliflora*, *Erica sparsa*, *Erica versicolor, Leucadendron conicum, Leucadendron eucalyptifolium, Centella affinis, Restio triticeus, Searsia lucida, Watsonia knysnana, Watsonia fourcadei, Helichrysum spp., Restio fourcadei, Senecio spp., Chironia sp., Ficinia gracilis, Hypoxis hemerocallidea, Lobelia tomentosa, Metalasia densa, Pteridium aquilinum, Stenotaphrum secundatum* and *Themeda triandra*.

A number of distinct vegetation communities were mapped below and identified as the following;
1. Shrubby Fynbos
2. Restioid Fynbos
3. Riparian
4. Invaded
5. Transformed

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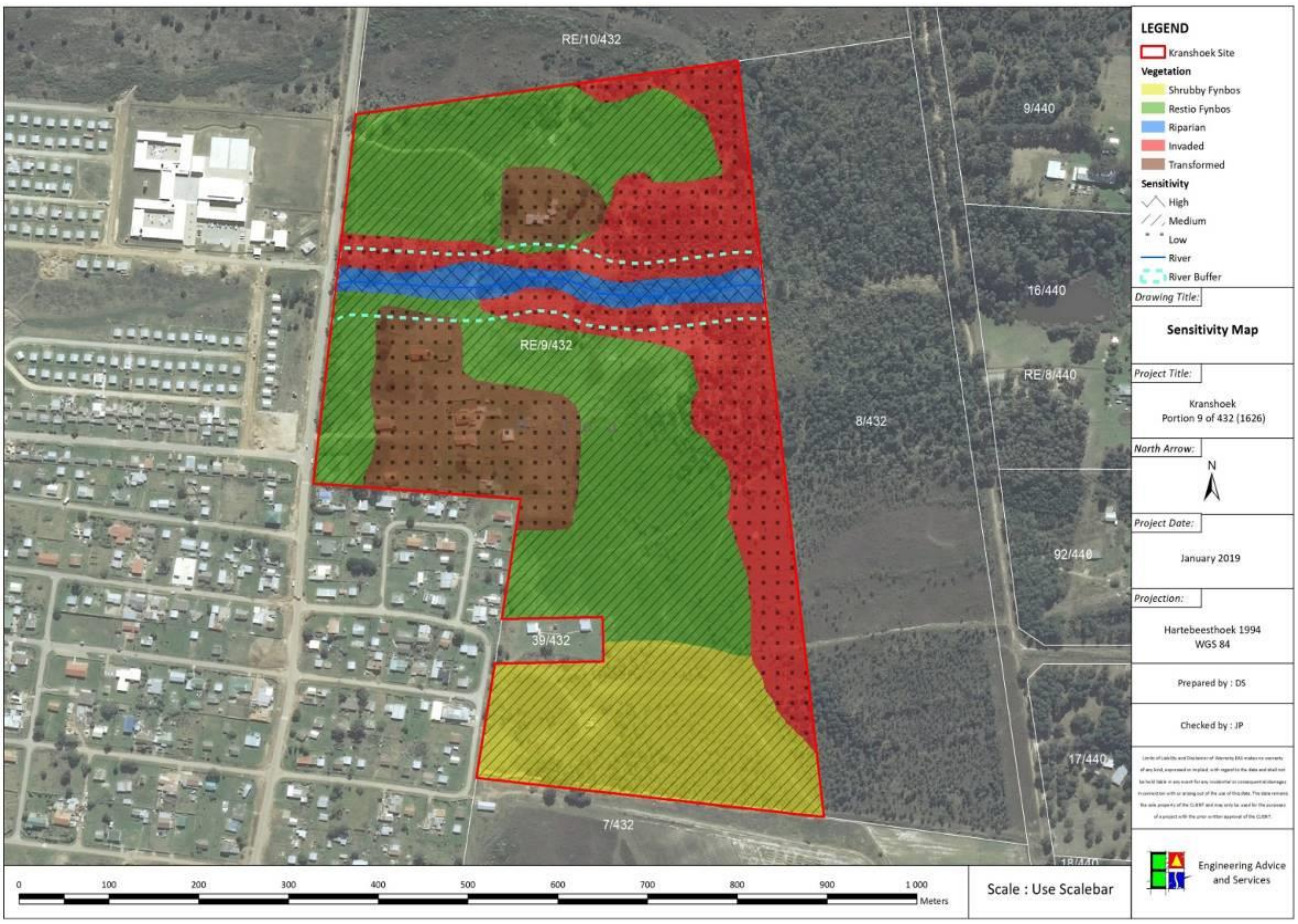


Figure 3: Botanical sensitivity map outlining the vegetation types.

Shrubby Fynbos

A shrubby community is present and is dominated by shrubby species including *Cliffortia linearifolia, Leucadendron eucalyptifolium, Leucadendron conicum, Chrysanthemoides monilifera, Searsia lucida, Erica* spp. and *Bobartia orientalis. Watsonia knysnana*.

Restioid Fynbos

A restioid community is present and noted to be the dominant vegetation type on site, with restioid species including *Restio triticeus, Restio triticeus, Restio fourcadei, Bobartia orientalis, Watsonia* spp, *Hypoxis hemerocallidea* and *Stenotaphrum secundatum*.

Riparian

The riparian vegetation present along the distinct drainage line is highly invaded by alien invasive trees and other ruderal weeds. A few pockets of indigenous riparian species (such as *Cyperus textilis* and *Zantedeschia aethiopica*) are present and the aquatic plant *Nymphaea nouchali* was noted within a small dam within the drainage line.

Invaded

Along the eastern boundary of the site and the existing drainage line ,evidence of *Pinus pinaster* (Pine), with *Acacia mearnsii* (Black Wattle*), Acacia saligna* (Port Jackson), *Eucalyptus* spp. (Bluegum) and *Acacia melanoxylon* (Australian Blackwood) in low to dense infestation was noted. Various ruderal weeds, as well as exotic and indigenous grasses were noted to be in abundance, specifically surrounding the watercourse. Indigenous species within the invaded area include *Chrysanthemoides monilifera, Bobartia orientalis, Diospyros dichrophylla, Searsia lucida, Pteridium aquilinum, Helichrysum and Senecio* spp.

Transformed

Areas that have been transformed include various types of vegetation that have been purposefully introduced. Grasses include *Stenotaphrum secundatum* and *Pennisetum clandestinum* (Kikuyu).

5.1.2 Botanical Sensitivity

Figure 3 shows a linear patch(blue), no wider than 50m, of Riparian vegetation running from east to west across the middle of the site. This patch is defined as an area of high botanical sensitivity. Approximately 4 Ha of Shrubby Fynbos (Yellow) is present in the southern area of the site and two areas cumulatively encompassing approximately 9 Ha in area of Restioid Fynbos (Green) at the centre and north western areas of the site are classified as medium botanical sensitivity. An area of approximately 7.2 Ha dominating the eastern border and freshwater habitat of the site is classified as invasive species (red) and is of low botanical sensitivity. Two other areas encompassing approximately 5 Ha are situated in the western and northern regions of the site(brown) are described as being transformed and therefore has a botanical sensitivity of low.

5.1.3 Critical Biodiversity Areas

As can be seen in Figure 8, there are no Critical Biodiversity Areas (CBA) mapped on the proposed development site. A small portion of an Ecological Support Area (ESA) is identified along the north-eastern boundary. This area should be maintained as Open Space to protect ecological processes and connectivity with the surrounding area (In line with guidelines). CapeFarmMapper (Accessed March 2020) shows that regions within the site have been mapped as, and are defined as Other Natural Areas (ONA) by the Western Cape Biodiversity Spatial Plan (2017). ONA's are areas that retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. The vegetation type within the ONA is well conserved regionally and has a widespread distribution. The vegetation within the ONA is comprised of a mozaic of near-natural, degraded and transformed vegetation with some alien infestation (predominantly Pine). The vegetation within the ONA has a low species diversity compared to surrounding areas. Species of Conservation Concern are generally absent from the site and thus has a low potential contribution to conservation.

5.2 Freshwater features

5.2.1 The Aquatic Environment

The proposed site is located within the Quaternary Catchment K60G and falls within the Breede-Gouritz Water Management Area. A screening assessment completed as part of the Freshwater Habitat Impact Assessment completed by Sharples Environmental Services cc (2019) identified seven wetland systems within a 500 m radius of the site. The watercourses that may potentially be impacted upon by the proposed project were verified through infield soil samples, documentation of vegetation communities and species and key features within the landscape. The Freshwater Habitat Impact Assessment completed by Sharples Environmental Services cc (2019) identified two wetlands that traverse the site which would be directly impacted upon by the proposed development (Figure 4), named WET/3 and WET/4 for the purposes of this study. WET/7 located outside of the proposed site, near the southern boundary is likely to be indirectly impacted upon.

The other freshwater habitat identified within the regulated study area will not be impacted and were therefore not assessed further.

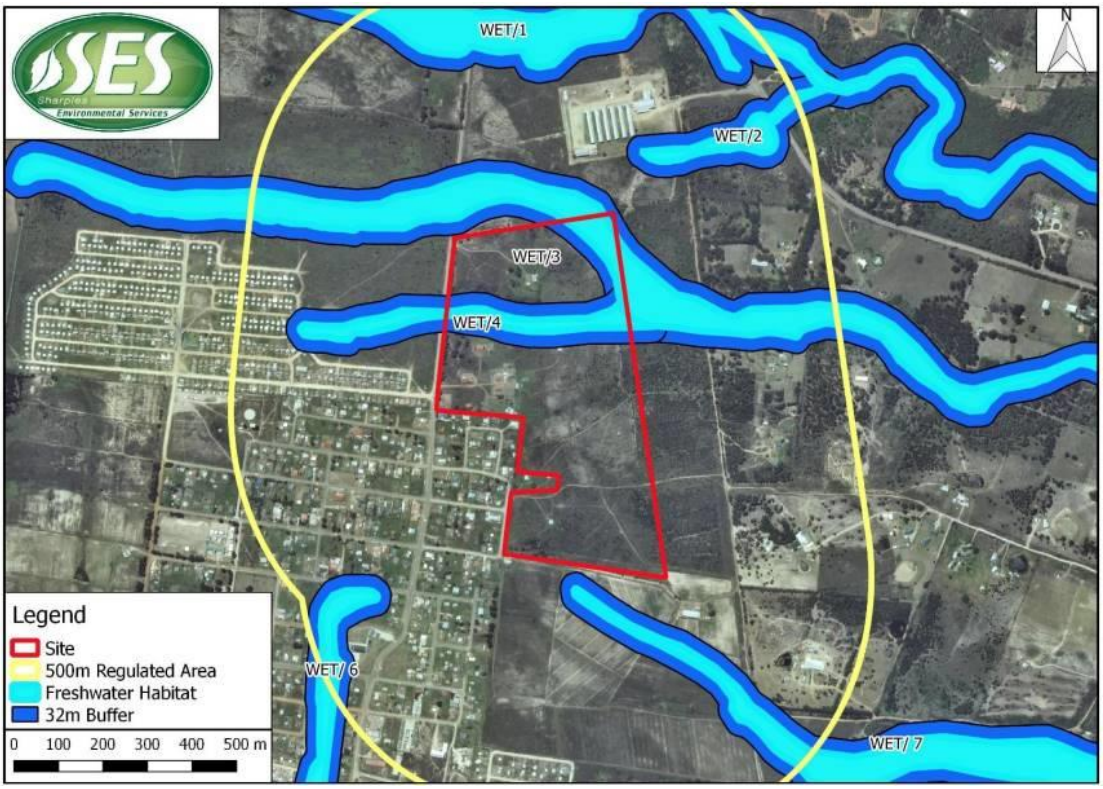
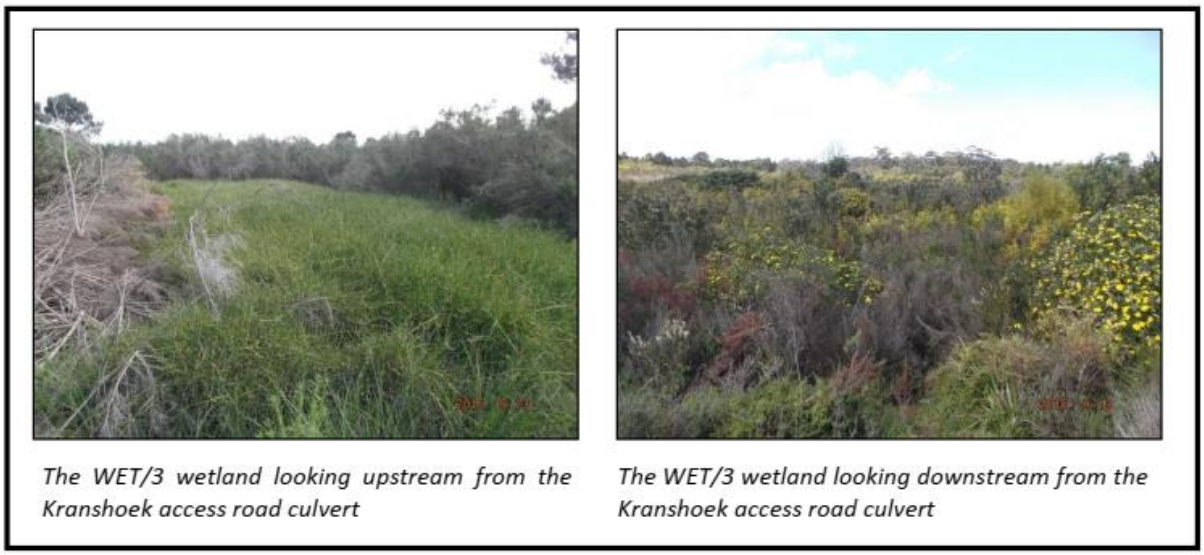


Figure 4: Freshwater ecosystems in relation to the proposed site and the DWS 500 m radius regulated area. (Source: Bekker, 2019)

WET/3 is described as an unchanneled valley bottom wetland, with a large seasonal zone, situated in a shallow valley with a gentle slope. Although the system is in close proximity to the town of Kranshoek, and intersected by two roads, it is dominated by diffuse flows and little erosion is evident. However, in the lower reaches of the system where farming activities intensify, evidence of significant erosion is present.

The soil disturbance has allowed for the encroachment of alien plant species, but the vegetation of the upper reaches remains largely natural. The dominant plant species identified in within WET/3 were *Cyperus congestus, Carpha glomerata, Leucadendron eucalyptifolium, Chrysanthemoides monilifera, Acacia cyclops, Acacia mearnsii,* and *Pinus pinaster.*



The WET/3 wetland looking upstream from the Kranshoek access road culvert

The WET/3 wetland looking downstream from the Kranshoek access road culvert

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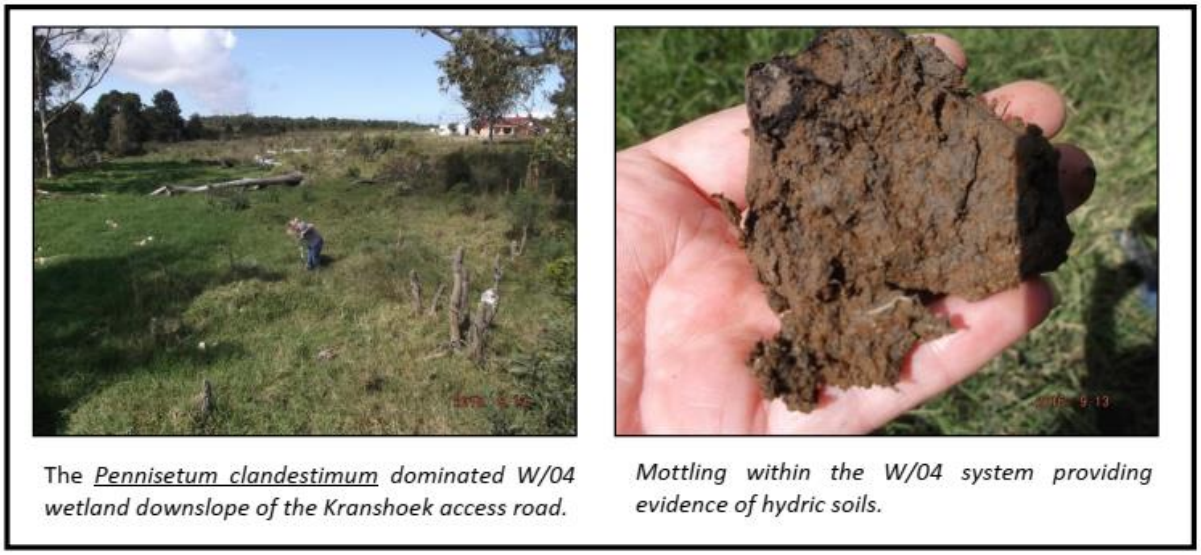
Figure 5: Photographs of WET/3 (Source: Bekker, 2019)

WET/4 is a relatively small, unchanneled valley bottom wetland with a gentle gradient. The wetland is surrounded and intersected by housing and road infrastructure which has resulted in extensive habitat loss. The close proximity to the town has resulted in increased water inputs from grey water and storm water and the road has led to the impeding of flows upslope and confinement of flows downslope through culverts. However, the low gradient and well vegetated state of the system limits the incision and diffuses the flows.

The vegetation present within WET/4 consists largely of alien invasive plant species. The dominant species identified where *Eleocharis limosa, Cyperus congestus, Paspalum urvillei, Commelina benghalensis, Pennisetum clandestinum, Cortaderia selloana, Eucaluptus grandis, Pinus pinaster, Acacia mearnsii,* and *Acacia cyclops.*



The *Pennisetum clandestimum* dominated W/04 wetland downslope of the Kranshoek access road.

Mottling within the W/04 system providing evidence of hydric soils.

Figure 6: Photographs of WET/4 (Source: Bekker, 2019)

WET/7 is a seasonal seep wetland and is located to the south of the proposed site. The wetland has incurred significant habitat loss and disturbance due to agriculture (forestry and more recently ploughed lands). The head of the wetland was assessed and it was found that the area had almost completely lost ecological functioning.

The area is currently covered by grass species and no obligate wetland plants were observed. However, due to the soil characteristics and its position in the landscape it was delineated as wetland habitat.

Figure 7: Photographs of WET/7 (Source: Bekker, 2019)

5.2.2 Habitat Integrity, Ecological Importance & Sensitivity

An overall sensitivity assessment (Figure 3) was made to include relative conservation and ecological importance of the vegetation communities, presence of indigenous Species of Conservation Concern (SCC's) and extent of invasion, as well as the degree to which successful rehabilitation can take place. Areas were divided up into the following sensitivity categories;

- Areas scoring a low sensitivity are those areas that are degraded or transformed or is unlikely that they could be rehabilitated to a normal functioning state without extreme effort and expense. *This includes the portions of the site that are invaded by aliens or areas containing old residences with gardens.*
- Areas of moderate (medium) sensitivity are those areas that contain a reasonably intact habitat and intact ecological functioning. *Within the site, this comprises the intact vegetation.*
- Areas scoring a high sensitivity on site are those having an important ecological function, having specialized habitats, significant populations of Species of Conservation Concern. In this case the Ecological Process areas (Riparian vegetation) and watercourses have been given a high sensitivity.

Figure 3 depicts the various vegetation types and their relative ecological sensitivity. The site was assessed by Pote (2019) and it was noted that the ecological importance and sensitivity of the riparian vegetation within the site is considered high. This is largely due to the services that the riparian vegetation provides, such as habitat for biota, corridors, water recharge, erosion control, pollution management, amongst other benefits.

Restioid fynbos and Shrubby fynbos were identified in the southern and central regions of the site and described by Pote (2019) as moderately sensitive. Cape Farm Mapper (Accessed in May 2019) notes that these areas still retain most of their natural character and perform a range of biodiversity and ecological infrastructure functions. Although not prioritized, they are still an important part of the natural ecosystem. Vegetation straddling the eastern border and surrounding the riparian vegetation is described by Pote (2019) as invaded, the vegetation is predominantly invaded by *Pinus pinaster* (Pine), *Acacia mearnsii* (Black Wattle), *Acacia saligna* (Port Jackson), *Eucalyptus* spp. (Bluegum) and *Acacia melanoxylon* (Australian Blackwood). Given their classification as invasive species, the vegetation carries a low ecological importance.

The Freshwater Habitat Impact Assessment compiled by Sharples Environmental Services cc (2019) states that the health/condition or Present Ecological State (PES) of the wetlands was assessed using the WETHealth assessment tool (Macfarlane et al. 2008, 2018), which is based on an understanding of both catchment and on-site impacts and the impact that these aspects have on system hydrology,

geomorphology and the structure and composition of wetland vegetation. The results are shown in Table 3 below.

Wetland	Result	Hydrology	Geomorphology	Vegetation	Overall PES	
WET/3	Score	3.5	1.9	5.75	3.7	Good
	Category	C	B	D	C	
WET/4	Score	4	3.025	5.6	4.2	Fair
	Category	D	C	D	D	
WET/7	Score	4.6	6.5	6.95	6.1	Poor
	Category	D	E	E	E	

Table 3: The PES Scores for the potentially impacted wetlands (Source: Bekker, 2019)

WET/3 has been subjected to a large amount of habitat loss as it borders the Kranshoek town and there is evidence of more intense cultivation and farming activities in its lower reaches. Overall PES of WET/3 was categorised as being a Good "C" Category. This category is indicative of a system where a moderate change in ecosystem processes and loss of natural habitat and biota and has occurred.

WET/4 is a small system that flows through the Kranshoek town and its associated urban infrastructure. The overall PES of WET/4 can be regarded as being a Fair 'D" Category (Table 3). This category is indicative of a system where the change in ecosystem processes and loss of natural habitat and biota is large but some remaining natural habitat features are functional.

WET/7 has incurred the largest modifications from the natural condition and basic functioning has been critically compromised. The overall PES of the wetland WET/7 is classified as being a Poor 'E" Category. This category is indicative of a system where the change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable.

The WET/3 and WET/4 wetland systems assessed obtained a Moderate ecological importance and sensitivity score and the WET/7 wetland was determined to have Low ecological importance and sensitivity. The wetland systems of the study area provide limited direct human benefits yet have moderate significance regarding indirect services. Ecologically, the systems are not conserved in any way and no red data species or populations of unique species were identified in any of the wetlands.

5.2.3 Aquatic Critical Biodiversity Areas & the Western Cape Biodiversity Spatial Plan

According to CapeFarmMapper(Accessed March 2020) there are no areas mapped as Aquatic Critical Biodiversity Areas by the Western Cape Biodiversity Spatial Plan. With reference to the figure below, there is an area within the north eastern corner of the proposed site that is mapped as an ESA 2 classified area. This identified area is aligned with the drainage network of the area. CapeFarmMapper (accessed March 2020) notes that this ESA 2 is not essential for meeting biodiversity targets, but still plays an important role in supporting the functioning of Protected Areas or CBAs, and is vital for delivering ecosystem services.

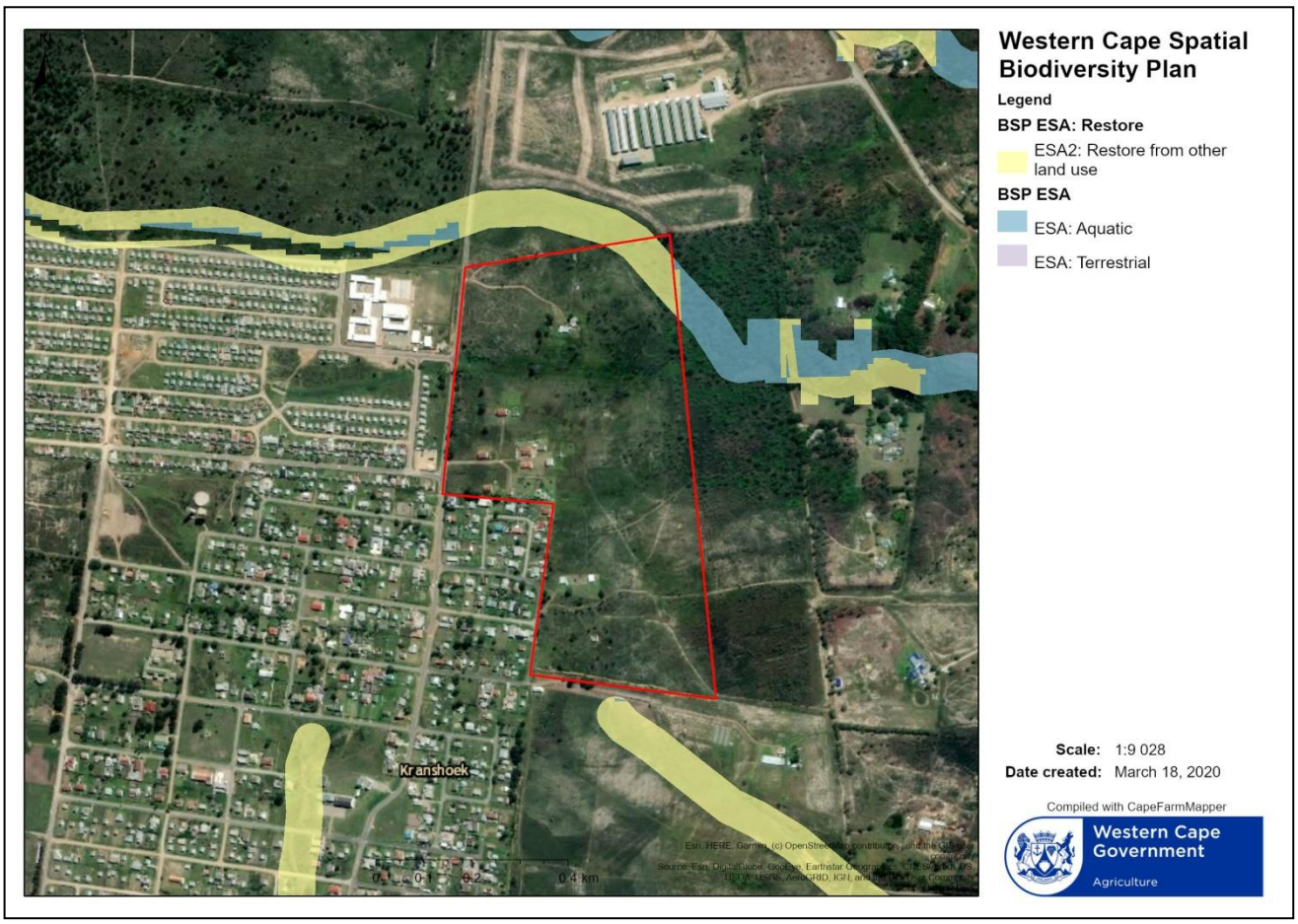


Figure 8: The site in relation to Western Cape Spatial Biodiversity Plan (Pence 2017)

5.2.4 National Freshwater Ecosystem Priority Areas (NFEPA's)

The National Aquatic Ecosystem Priority Areas (NFEPA) map provides strategic spatial priorities for conserving South Africa's aquatic ecosystems and supporting sustainable use of water resources.

FEPAs were identified based on a range of criteria dealing with the maintenance of key ecological processes and the conservation of ecosystem types and species associated with rivers, wetlands and estuaries (Driver et al. 2011). The NFEPA project did not identify any rivers or wetlands within this study area.

6. Legal Framework

6.1 The NEMA, Act No 107 of 1998, as Amended, and the EIA Regulations (2014)

The National Environmental Management Act (NEMA; No. 107 of 1998, as amended) gives effect to the Constitution of the Republic of South Africa by providing a framework for co-operative environmental governance and environmental principles that enable and facilitate decision-making on matters affecting the environment. NEMA requires that an environmental authorisation be issued by a competent authority (CA) before the commencement of an activity listed in Environmental Impact Assessment Regulations Listing Notices G.N. 324, 325, 326 & 327 published on the 7th April 2017.

Due to the fact that this development proposal is an activity listed in the EIA Regulations, a Full Scoping & EIA Process is required and the respective reports (Scoping and EIA) must be submitted to the Department of Environmental Affairs and Development Planning (DEADP) before they issue Status Homes Property Developers with an Environmental Authorisation (either approval or rejection of the development proposal).

Table 4: Listed Activities in terms of the NEMA Environmental Impact Assessment Regulations (2014), as amended, that are proposed to be triggered and therefore require an application for Environmental Authorisation to be submitted to the DEA & DP

Activity #	Listing notice 1. Description of Activity as per GN No. R 327
27	The clearance of an area or 1ha or more, but less than 20Ha of indigenous vegetation, except where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 1st April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5ha; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1ha; EXCLUDING where such land has already been developed for residential, mixed, retail. Commercial, industrial or institutional purposes.
Activity #	**Listing notice 3. Description of Activity as per GN No. R 324**
4	The development of a road wider than 4 metres with a reserve less than 13.5 metres. Western Cape i. Areas zoned for use as public open space or equivalent zoning; ii. Areas outside urban areas; (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: (aa) Areas zoned for conservation use; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.
12	The clearance of an area of 300m2 or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance plan. (i) In Western Cape: 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; ii. Within CBAs identified in bioregional plans; iii. Within the littoral active zone or 100m inland from the 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; or 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. v. On land designated for protection or conservation purposes in an EMF or a SDF adopted by the Minister.
Activity #	**Listing notice 2. (GN No. R325): Scoping & Environmental Impact Reporting**

15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.

Therefore, in summary, the following activities will be applied for:

- Listing Notice 1: Activity No: 27 and 28;
- Listing Notice 2: Activity No 15; and
- Listing Notice 3: Activity No: 4 and 12.

6.2 Other applicable legislation

Status Homes Property Developers is responsible for ensuring that all contractors, labourers and any other appointed person/entity acting on the their behalf, remain compliant with the conditions of the received authorisations, as well as the provisions of all other applicable legislation, including *inter alia*:

- National Environmental Management Act (NEMA) (Act No 107 of 1998, as amended);
- National Environmental Management Biodiversity Act (Act 10 of 2004);
- National Environmental Management: Waste Act (Act 59 of 2008);
- National Water Act (Act 36 of 1998)
- National Forest Act (Act No 84 of 1998);
- National Heritage Resources Act (Act No 25 of 1999);
- Occupational Health and Safety Act (Act 85 of 1993);

The National Water Act (Act 36 of 1998) provides the framework for the sustainable management of South Africa's water resources. It aims to protect, use, develop, conserve, manage and control water resources as a whole, promoting integrated water resource management that involves participation of all stakeholders. The Act declares the national government to be the public trustee of the nation's water. The Act is administered by the national Department of Water Affairs (DWA) via regional offices.

This development proposal is within 500m of various watercourses. It is therefore required to apply for Water Use Authorisation in terms of section 21 of the National Water Act (Act 36 of 1998). An application has been submitted on the e-WULAAS system and the procedure to acquire authorisation is ongoing.

The above listed legislation have general applicability to most development applications, and it is *Status Homes Property Developers'* responsibility to ensure that all contractors and employees are aware of their obligations in terms of these Acts. This EMPr does not detract from any other legal requirements.

The proposed development activity will take place through various phases. Each phase has specific impacts or issues unique to that phase of the development activity. These phases of the development are listed below and the impacts associated with each phase as identified through the environmental impact assessment process are identified and given a brief description. Brief management statements are provided, as well as a description of the desirable impact management outcomes.

7. Scope of this EMPr

This EMPr describes the measures that must be implemented in order to avoid, minimise, manage and monitor the potential environmental impacts of the development, during all phases of the project life cycle, namely:

- Planning and Design Phase

- Pre-construction Phase
- Construction Phase
- Post-Construction Rehabilitation
- Operational Phase

General environmental management measures that must be applied throughout the project lifecycle (as and where applicable) are described in Chapter 9 below. Additional management measures that must be implemented to address specific impacts that may arise during each phase are provided in **Chapters 9-12** of this EMPr.

8. General Environmental Management

The following general management measures are intended to protect environmental resources from pollution and degradation during all phases of the project life cycle. These measures should be implemented as and where applicable, reasonable and practicable during the pre-construction, construction and post-construction rehabilitation and operational (maintenance) phases of the proposed development.

Code of Conduct
The purpose of the Code of Conduct (CoC) is to minimise the impact of the activities associated with the construction phase on the environment. The rules and regulations prescribed in this CoC are intended to ensure that the impacts on the environment are not prejudiced by the construction activities. Failure to adhere to or any breach of this CoC will result in a fine being levied against the offending or defaulting party / individual.

Labourers during the construction phase should conserve the natural environment, endorsing the principles of sustainable use and minimum impact. They should also be sensitive to the impact of their operation on the environment within which they work and minimise any adverse impacts.

This EMPr forms an integral part of the activities during the construction phase and as such, is legally enforceable. In addition to the restrictions and controls provided for in this EMPr, the environmental controls comprise the following:

Engineers
- Unless otherwise stated by the holder, only a registered engineer must be appointed for the construction phase of the development.
- The engineer shall provide work or services of a quality and scope, and to a level, which are commensurate with accepted standards and practices.
- The engineer shall be impartial in decision-making, provision of advice and judgement.

Contractors and sub-contractors
- Unless otherwise determined, only appropriately registered contractors shall be appointed.
- It shall be the responsibility of the holder / engineer to ensure that the contractors abide by and comply with the rules and regulations of the Code of Conduct.
- Contractors shall at all times be responsible for their sub-contractors and employees whilst they are on the development property.

Rules and Regulations
It is of vital importance that engineers and contractors understand and acknowledge that they are working on an environmentally sensitive development and agree to conform to all environmental controls

specified in this EMPr and any additional input by the ECO. In addition to the EMPr, the environmental controls comprise the following:

- **Building Plan Controls**
  - A copy of the approved and signed building plans must be available on site during the construction phase of the development.
  - Variations of the building plans must be approved by the engineer / holder prior to being implemented.
  - Prior to commencing building, the contractor must remove all topsoil and store it in a berm of not more the 2m high, away from construction activities.

- **Site tidiness**
  - The contractor must keep the appearance of his building site neat and tidy at all times. Building rubble must be removed from site at regular intervals, and litter must be removed from the site on a daily basis. Refuse drums must be available on site which waste can be placed in. The drums must be emptied on a regular basis and the waste taken to a licenced local waste disposal facility.
- **Safety**
  - The contractor shall comply with the Health and Safety Act (Act No. 85 of 1993), as amended, together with such regulations promulgated thereunder.

8.1 Site access and traffic management

The accesses to the development from Trekker Road are dictated by the position of the wetland and its buffer zones. As a result, it is not possible to gain access at a point opposite Du Plessis Street. Access to the northern portion is thus proposed from Trekker Road (DR07207) at a point approximately 65m north of Du Plessis Street.

Additional access is proposed from Trekker Road (DR07207) at a point approximately 85m south of Du Plessis Street and via the existing residential streets (Kiewit Avenue) which already intersect with Trekker Road.

All construction vehicles need to adhere to traffic laws and regulations , drivers must be sensitised to the fact that they are working in an area with a potentially high volume of foot and vehicle traffic. The speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. As far as possible, care should be taken to ensure that the local traffic flow pattern is not significantly disrupted and vehicle operators therefore need to be educated in terms of "best-practice" operation in order to minimise unnecessary traffic congestion or dangers. These practices include, but are not limited to, not unnecessarily obstructing the access point or traffic lanes used to access the site; considering the load carrying capacity of road surfaces and adhering to all other prescriptive regulations regarding the use of public roads by construction vehicles.

Adequate signage that is both informative and cautionary to passing traffic should be erected to warn other road users (motorists and pedestrians) about the presence of construction vehicles, particularly at the point where construction vehicles enter/ exit the site from the N2 warning them of the construction.

Signage would need to be clearly visible and include, amongst others, the following:

- Identifying working area as a construction site;
- Cautioning against relevant construction activities;
- Prohibiting access to construction site;
- Clearly specifying possible detour routes and / or delay periods;
- Possible indications of time frames attached to the construction activities, and;
- Listings of which contractors are working on the site.

Other mitigation measures include:

- No construction to take place over or during the December holiday period without prior permission from the relevant authorities.
- Construction vehicles must adhere to the load carrying capacity of road surfaces and adhere to all other prescriptive regulations regarding the use of public roads by construction vehicles.
- ECO to do awareness training with the contractor and labourers and to highlight the traffic related risks before construction commences.
- Where possible, construction traffic that may obstruct traffic flow on the surrounding roads should be scheduled for outside of peak traffic times.
- Ensure appropriate behaviour of operators of construction vehicles.

8.2 Site demarcation

The working areas should be clearly demarcated on site during the pre-construction or construction phases of the development, as appropriate.

8.2.1 Construction working area

Prior to the commencement of any land-clearing or construction activities, the outer boundary of the development area must be surveyed and pegged. If practical, the demarcation boundary should typically allow a working area of no more than 2.5m around the development footprint unless otherwise agreed with the ECO. This demarcation boundary is to ensure that land clearing and construction activities are restricted to only that area strictly required for the proposed development, and to prevent unnecessary disturbance of soil surfaces and vegetation outside of the development footprint.

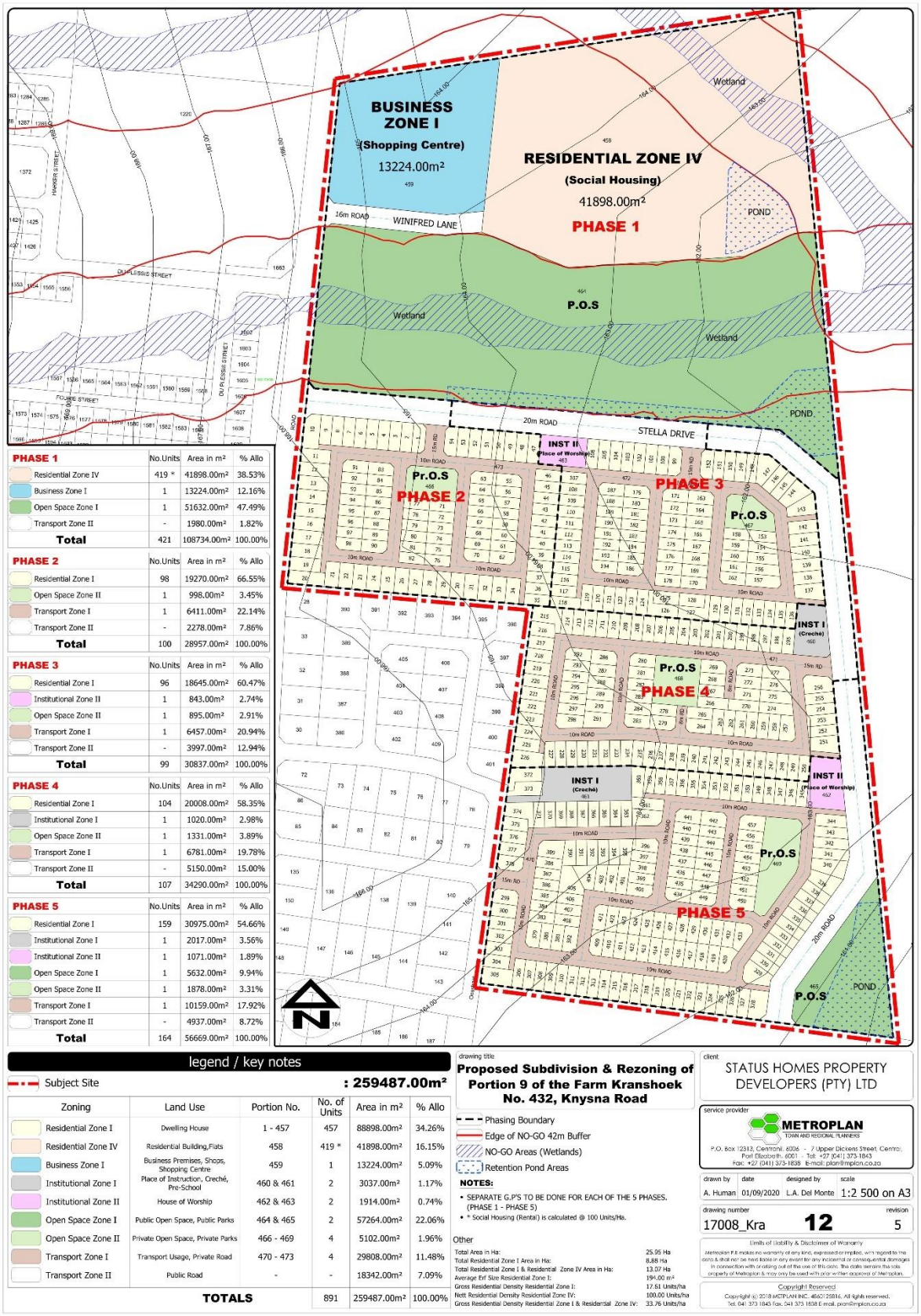
If desired or deemed necessary by the ECO, the outer boundary of the working area can be enclosed with orange barrier netting fencing, shade netting, droppers & wire/ danger tape, or similar – as feasible and practical. The fencing should be retained and maintained for the duration of the construction period, and should not be moved during construction unless agreed otherwise with the ECO. Areas to be cleared must be demarcated before any clearing and grubbing commences.

8.2.2 No-go areas

Prior to the commencement of any land-clearing or construction activities, all sensitive areas (as identified by the ECO), must be demarcated and must not be disturbed during the construction phase. It is recommended that the No-Go areas be demarcated with a suitable material of natural colours, i.e. green or brown biddum, to ensure less visual impact during construction. Danger tape flagging (pieces of danger tape tied to twine or rope) may be utilised, however the use of only danger tape is not recommended for long-term demarcation as this will easily become untidy and blown away by the wind resulting in pollution.

No-go areas could include areas with slopes of 1:4 and steeper, greenbelt / corridor areas, public open spaces, drainage lines, streams and/or other wetlands outside of the approved development area. No-go areas outside the approved development area must be off-limits to all construction workers, vehicles and machinery during all phases of the development. No vegetation may be cleared from within the no-go areas, and no dumping of any material (waste, topsoil, subsoil etc.) may occur in these areas. Construction workers must be informed of the no-go areas, and if necessary appropriate signage can be used to enforce the demarcation. Any interaction with no-go areas should be consulted between the contractor and ECO prior to any actions.

As described in the Freshwater Habitat Impact Assessment compiled by Sharples Environmental Services cc (2019), a 42 meter buffer is prescribed to either side of the wetland systems between any construction and the boundary of the wetland. This buffer area is to regarded as a no-go area during construction and operation.



PHASE 1	No.Units	Area in m²	% Allo
Residential Zone IV	419 *	41898.00m²	38.53%
Business Zone I	1	13224.00m²	12.16%
Open Space Zone I	1	51632.00m²	47.49%
Transport Zone II	-	1980.00m²	1.82%
Total	421	108734.00m²	100.00%

PHASE 2	No.Units	Area in m²	% Allo
Residential Zone I	98	19270.00m²	66.55%
Open Space Zone II	1	998.00m²	3.45%
Transport Zone I	1	6411.00m²	22.14%
Transport Zone II	-	2278.00m²	7.86%
Total	100	28957.00m²	100.00%

PHASE 3	No.Units	Area in m²	% Allo
Residential Zone I	96	18645.00m²	60.47%
Institutional Zone II	1	843.00m²	2.74%
Open Space Zone II	1	895.00m²	2.91%
Transport Zone I	1	6457.00m²	20.94%
Transport Zone II	-	3997.00m²	12.94%
Total	99	30837.00m²	100.00%

PHASE 4	No.Units	Area in m²	% Allo
Residential Zone I	104	20008.00m²	58.35%
Institutional Zone I	1	1020.00m²	2.98%
Open Space Zone II	1	1331.00m²	3.89%
Transport Zone I	1	6781.00m²	19.78%
Transport Zone II	-	5150.00m²	15.00%
Total	107	34290.00m²	100.00%

PHASE 5	No.Units	Area in m²	% Allo
Residential Zone I	159	30975.00m²	54.66%
Institutional Zone I	1	2017.00m²	3.56%
Institutional Zone II	1	1071.00m²	1.89%
Open Space Zone I	1	5632.00m²	9.94%
Open Space Zone II	1	1878.00m²	3.31%
Transport Zone I	1	10159.00m²	17.92%
Transport Zone II	-	4937.00m²	8.72%
Total	164	56669.00m²	100.00%

Zoning	Land Use	Portion No.	No. of Units	Area in m²	% Allo
Residential Zone I	Dwelling House	1 - 457	457	88898.00m²	34.26%
Residential Zone IV	Residential Building,Flats	458	419 *	41898.00m²	16.15%
Business Zone I	Business Premises, Shops, Shopping Centre	459	1	13224.00m²	5.09%
Institutional Zone I	Place of Instruction, Creché, Pre-School	460 & 461	2	3037.00m²	1.17%
Institutional Zone II	House of Worship	462 & 463	2	1914.00m²	0.74%
Open Space Zone I	Public Open Space, Public Parks	464 & 465	2	57264.00m²	22.06%
Open Space Zone II	Private Open Space, Private Parks	466 - 469	4	5102.00m²	1.96%
Transport Zone I	Transport Usage, Private Road	470 - 473	4	29808.00m²	11.48%
Transport Zone II	Public Road	-	-	18342.00m²	7.09%
TOTALS			891	259487.00m²	100.00%

Figure 9: Proposed Development Layout with NO-GO areas

8.2.3 Demarcation of the site camp

The area chosen for the site camp and associated facilities must be the minimum area reasonably required to accommodate the site camp facilities, and which will involve the least disturbance to the environment. It is recommended that easily accessible, transformed areas must be used for the site camp, at least 100m away from any no-go areas. Site selection must be done in consultation with the ECO.

8.3 Site camp and associated facilities

The following general management measures pertaining to the set-up, operation and closure of a site camp should be applied where appropriate, reasonable and practicable:

8.3.1 Fencing & Security

The site camp area must be secured to prevent any un-authorised individuals from entering the site camp and possibly getting injured or posing a safety and/or security risk. Adequate signage must be displayed, designating the site office / camp as a restricted area to non-personnel. If required, the site camp and associated areas may be fenced off along the demarcated boundaries of these areas, preferably with 2m high fence and shade netting or similar.

8.3.2 Fire Fighting Equipment

No less than 2 fire extinguishers must be present in the site camp. The extinguishers must be in a working condition and within their service period. A fire extinguisher must always be present wherever any "hot works" (e.g. welding, grinding etc.) are taking place. It is recommended that all construction workers receive basic training in fire prevention and basic fire-fighting techniques, and are informed of the emergency procedure to follow in the event of accidental fires. No open fires may be made on the construction site during any phase of the project. Construction workers may make small contained fires (e.g. for warming or cooking purposes), within the site camp provided the small fire is encircled by a corrugated iron structure, drum or similar, to prevent wind-blown cinders from causing fires elsewhere. Such fires may not be left unattended and must be thoroughly extinguished after use. No smoking must be allowed on the construction site. In the case of accidental fires the contractor must (if required) alert the Local Authority's Fire Department as soon as a fire starts prior to the fire becoming uncontrollable.

8.3.3 Waste Storage Area

Sufficient bins for the temporary storage of construction related waste must be provided inside the site camp and/or at the working area and should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. Sufficient signage and awareness should be created to ensure that these bins are properly used.

8.3.4 Hazardous Substances Storage Area

Fuels, chemicals, lubricants and other hazardous substances must be stored in a demarcated, secured and clearly sign-posted area within the site camp away from the watercourses on site. Sufficient signage and awareness should be created to ensure that these bins are properly used.

8.3.5 Potable Water

An adequate supply of potable water must be provided to construction workers at the site camp.

8.3.6 Ablution Facilities

Chemical toilets should be kept at the site camp, on a level surface and secured from blowing over and located in such a way that the toilets will not cause any form of pollution . As per the SANS10400 requirement, one ablution facility for every 8 male workers and 2 ablution facilities for every 8 female workers will be provided.

Toilets must be placed at least 100m from any watercourse. The ablution facilities must not be linked to the river system in any way. Toilets must be serviced regularly and kept in an orderly state. The contractor

must ensure that no spillage occurs when the toilets are cleaned, serviced or moved. Performing ablutions outside of the provided toilet facilities is strictly prohibited and the ECO would need to regularly inspect the state of the chemical toilets to ensure compliance.

8.3.7 Eating Area & Rest Area

A dedicated area within which construction workers can rest and eat during breaks must be provided within the site camp. Seating and shade should be provided.

8.3.8 Vehicle & Equipment Maintenance Yard

Where possible, construction vehicles and equipment that require repair must be removed from site and taken to a workshop for servicing. If emergency repairs and/or basic maintenance of construction vehicles or equipment are necessary on site, such repair work must be undertaken within the designated maintenance yard area away from any watercourses. Repairs must be conducted on an impermeable surface, and/or a tarpaulin and/or drip trays must be laid down prior to emergency repairs taking place, in order to prevent any fuel, oil, lubricant or other spillages from contaminating the surrounding environment.

8.3.9 House-keeping

The site camp and related site camp facilities must be kept neat and orderly at all times, in order to prevent potential safety risks and to reduce the visual impact of the site during construction.

8.4 Search and Rescue

The ECO and a suitably qualified specialist should visit the site and conduct a Floral search and rescue. Respective permits must be obtained timeously (2 - 3 months) before site clearing commences and a flora search and rescue plan must be implemented beforehand. Permits from DEA&DP must always be kept on site and in the possession of the search and rescue team. Once search and rescue is complete, a certificate of clearance must be issued by the relative specialist and copies supplied to DEA&DP.

Rescued plants should be replanted into a nearby disturbed area of similar habitat or for open space rehabilitation. Rescued plants should be provided with sufficient water and handled in accordance with the botanist and ECO.

Once site boundaries are demarcated, the area to be cleared of vegetation will be surveyed under the supervision of the ECO in order to identify and remove faunal species suitable for rescue and relocation. Rescued fauna should be released into a nearby area of similar habitat away from any construction.

8.4.1 Protection of fauna

Construction workers are to be sensitised to the fact that they may encounter fauna during the construction period. This should be included in the environmental awareness training completed with all site personal before any construction. No faunal species are to be trapped, kept or killed, and if any fauna is encountered by construction workers, the ECO is to be notified. If the ECO is not on site, the site manager is to be informed.

8.5 Indigenous vegetation clearing and protection.

Where indigenous vegetation must be cleared for the development the following measures must be implemented:

- Respective permits must be obtained timeously (2 - 3 months) before site clearing commences and a flora search and rescue plan must be implemented beforehand.
- Blanket clearing of vegetation must be limited to the approved development footprint, and the area to be cleared must be demarcated before any clearing commences
- Where feasible vegetation must simply be trimmed to facilitate access/ construction, rather than being completely cleared or removed.

- Vegetation clearing/trimming must be cleared by hand (i.e. brush cut) and stockpiled for use as mulch/ brush-packing during rehabilitation of the site. Any alien vegetation that is cleared must be disposed of in consultation with the ECO, unless the cleared alien vegetation does not contain seeds in which case it may be retained for use in site rehabilitation.
- Only the areas required to accommodate the construction and access to the construction site must be cleared/trimmed of vegetation.
- After any clearing is completed, an appropriate cover crop should be planted where any weeds or exotic species are removed from disturbed areas timeously.
- Vegetation outside of the construction footprint and within any no-go areas must not be cleared.
- Land clearing and earthmoving activities should not be undertaken during strong winds, where possible.

The proposed development requires the clearance of vegetation, however the following measures should be implemented to protect the indigenous vegetation where possible.

- Great care will be taken if cement is to be mixed on site, especially in the proximity of vegetation. Cement is to be mixed on thick plastic sheets or in large buckets and not allowed to spill onto bare ground. Any spillage will be cleaned up immediately. Cement water is also to be contained in the above manner and allowed to dry out and then removed from site. Cement water, which is highly alkaline, poses a definite threat to the soil and seed banks.
- Blanket clearing of vegetation must be limited to the approved development footprint, and the area to be cleared must be demarcated before any clearing and grubbing commences.
- No clearing outside of development and infrastructure footprint area to take place.
- Rescued plants should be replanted into a nearby disturbed area of similar habitat or for open space rehabilitation.
- An Environmental Control Officer will oversee compliance with all the prescribed environmental requirements and mitigation measures listed here and will be on site regularly.

8.6 Topsoil and subsoil management

It is recommended that topsoil be removed from any area where physical disturbance of the surface will occur, including within the footprint of the development site (working area) and possibly within the site camp, ablution area, vehicle maintenance yard, refuelling area and temporary waste storage area. Topsoil removal and stockpiling must be undertaken only after consultation with the ECO.

- Removed topsoil and subsoil must be stockpiled for the duration of the active construction period, and utilised for the final landscaping and rehabilitation of disturbed areas on site.
- The removed topsoil must be stockpiled in a berm, in a demarcated area as agreed with the ECO.
- Stockpiles must not be located within 50 metres of the wetlands.
- The topsoil berm may be a few meters wide but must ideally not be more than 2m high to allow light and air penetration.
- Removed subsoil must be stockpiled separately from topsoil.
- The topsoil & subsoil storage area must be located on a level area outside of any surface drainage channels outside the riparian zone, and at a location where it can be protected from disturbance and river flow/floods during construction and where it will not interfere with construction activities.
- Topsoil and subsoil stockpiles must be adequately protected from being blown away or eroded by storm water. If necessary, shade cloth or other suitable measures must be used to stabilise and protect the stockpile from wind/water erosion. Topsoil stockpiles must not be covered with tarpaulin, as this may smother and decrease the virility of topsoil.
- Handling of topsoil must be minimised as much as possible, and the location of the topsoil berm must be chosen carefully to avoid needing to relocate the topsoil berm at a later date.

- Ideally, topsoil is to be handled twice only, once to strip and stockpile, and once to replace, level, shape and scarify.
- If soil stockpiles will be stored for an extended period of time, the stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding, (or application of herbicides if agreed with the ECO).
- Soil material that will not be re-utilised on site may be removed from site and taken to an appropriate site for re-use or disposal.
- Topsoil removed from fynbos areas to be reused in rehabilitation areas, e.g. open space areas. Where possible, topsoil from fynbos areas, containing indigenous plant seeds, should be transferred immediately to rehabilitation areas rather than being stockpiled, as stockpiling kills important fungi, microbes, seeds and soil fauna. Topsoil stockpiles of this kind must not exceed 0.5 m in height and must not be compacted.
- Note that the topsoil must be the final layer applied to a rehabilitated/ re-landscaped site, after subsoil/ spoil material has been placed and shaped on the site.

8.7 Integrated waste management approach

It is recommended that an integrated waste management system is adopted on site. The system must be based on waste minimisation and must incorporate reduction, recycling, re-use and disposal where appropriate. Separate waste bins/skips that are weather and animal proof must be provided for recyclable waste, general waste and hazardous waste. Recovered builder's rubble & green waste may be stockpiled on the ground within the site camp, or in separate skips until removal. These bins/skips must be emptied and the waste taken to a registered recycling facility. The receipts from the facility must be kept on file and must be available on request.

The non-recyclable and non-reusable waste (e.g. builder's rubble, etc.) generated on site must be disposed of at a landfill site licensed in terms of the applicable legislation. The receipts from the facility must be kept on file and must be available on request.

Chemical toilets present a risk to the surrounding environment and must be managed accordingly. Chemical toilets must be kept within the site camp (not be linked to the storm water drainage system), on a level surface and secured from blowing over. Chemical toilets must be regularly emptied, and the waste disposed of at an appropriate wastewater disposal/ treatment site. Care must be taken to prevent spillages when moving or servicing chemical toilets. Ablutions should be further than 100m from watercourses.

Hazardous substances such as diesel, oil and detergents will be present on site throughout the construction phase of the proposed development. Hazardous substances pose a greater risk to the surrounding environment than general substances and therefore need to be managed accordingly. A designated storage area within the site camp that is clearly demarcated must be set aside for the storage of hazardous substances and is to be treated as a no-go zone to unauthorised personnel. Appropriate signage, Material Safety Data Sheets (MSDSs), recently serviced fire extinguishers and spill kits should accompany the hazardous substances. Appropriate storage of hazardous substances is important while drip trays should always be utilised when decanting of hazardous substances and when refilling chemical/ fuel storage tanks. If any spills do occur, the soil must be excavated and disposed of as hazardous waste.

Cement and concrete batching will be permitted on site, but may only take place on designated impermeable, bunded surfaces, as agreed with the ECO. Used cement bags should be disposed of as hazardous waste on site.

8.8 Erosion control and stormwater management

Appropriate measures must be implemented to control the flow of stormwater across the construction site, in order to prevent possible flooding, soil loss and dispersion of pollutants. To prevent excessive erosion activities, exposed earth surfaces must be protected from wind and water erosion.

The scale and nature of the erosion and stormwater control measures implemented on site must be appropriate to the conditions on site, and sufficient to achieve the desired outcomes (soil preservation, prevention of flooding, stormwater control) to the satisfaction of the ECO and consulting engineer.

The prevention of soil erosion can be initiated by designating specific areas for stockpiling of raw materials with consultation of the ECO. No stockpiling is to occur on or near slopes or water resources (must not be located within 50 metres of the wetlands) and all stockpiling areas must be approved by the ECO before stockpiling occurs.

Stockpiles need to be effectively managed and maintained as they have the potential to contribute to runoff and erosion. In order to prevent this, the following management measures must be implemented.

- Stockpiles of topsoil & spoil material must be protected from wind & water erosion.
- Stockpiles of earth material may not be located within any storm-water drainage pathways and must be outside of the reach of potential flood waters.
- Any erosion runnels/ gulleys/ channels that form on site must be infilled with appropriate material, compacted, rehabilitated as needed and appropriate erosion control measures put in place to prevent recurrent erosion at that site. Rehabilitation of erosion channels should be ongoing during the construction phase and not left until the end of the construction period.

It may be necessary to implement small-scale erosion protection measures at the construction site, to prevent soil erosion. Such measures may include the use of shade netting, geo-fabric, brush-packing or similar barriers in areas susceptible to erosion and along exposed slopes. The storm water management plan should adhere to the principles of sound storm water management. The storm water management system must be implemented on site and must be properly maintained in order to ensure that contaminated run-off from the construction site is prevented from flowing into the wetlands.

Cleared areas and any other area susceptible to erosion should be provided with a suitable cover and stabilised as soon as possible via the implementation of appropriate erosion control measures. This may include use of cut-off drains, temporary/permanent drainage channels, brush-packing, mulching, planting or sodding, use of environmentally benign soil binders, use of geo-textile or other coverings. The appropriate measures should be selected by the contractor in consultation with the Engineer & ECO.

Areas must be rehabilitated and a suitable cover crop planted once specific phases of construction is completed.

8.9 Construction near a watercourse

The contractor needs to be mindful of the fact that the proposed site contains a wetland system (WET/4). A demarcated buffer of 42m should be implemented on either side of WET/4 to protect the aquatic system and maintain the present ecological processes. This buffer area should be regarded as a no-go area. No stockpiles are to be located within 50 metres of the wetland and erosion control measures may be required around stockpiles, while the use of grease traps/oil separators to prevent pollutants from entering the environment are recommended as no pollution of surface water or ground water resources may occur due to any activity on the site. A monitoring programme shall be in place to ensure compliance with this EMPr throughout the construction phase.

Once construction has been completed, the objective would be to promote the re-establishment of the ecological functioning of any area disturbed by construction activities and maintain a healthy system throughout operation. The buffer area regarded as a no-go area during construction will be zoned as public open space during the operational phase of the development. During the post-construction and operational phase of the development, erosion features that have developed are required to be stabilised. This may also include the need to deactivate any erosion headcuts/rills/gullies that may have developed.

The area must be maintained through alien invasive plant species removal and the establishment of indigenous vegetation cover to filter run-off before it enters the freshwater habitat. Placement of signage near the boundary of the buffer zone should also be considered to help mark the boundary and educate the community about the purpose and value of protecting buffer zones. Information can include a description and visual of alien invasive plant species.

8.10 Excavations and Earthworks

Any major earthworks with bulldozers and heavy machinery must be under constant supervision and operators are to be aware of all the environmental obligations, as there is always the potential to inflict damage to the sensitive areas. Any unnecessary or excessive heavy machinery movement must be kept to a minimum i.e. only what is absolutely necessary. Areas to be excavated must be clearly demarcated. Areas, which have already been excavated and entail fairly significant earthworks, must be similarly demarcated to avoid the spreading of construction activities into more sensitive areas.

All excavated material must be stored on a flat surface away from any drainage line or area susceptible to erosion. The location must be decided upon in consultation with the ECO. Stored material must be protected from wind and water erosion and this may entail covering the material with suitable shade cloth material or similar (if and when necessary). The shade cloth may need to be weighed down in such a manner that any stream flow is directed away from the stockpile, reducing the risk of erosion.

In the event that any heritage resources (human remains, grave stones, stone tools, artefacts, old coins and pottery, fossil shell middens, rock art and engravings, remains of old built structures etc.) are encountered during construction, the finding should be protected from further disturbance (ideally left in situ) and the ECO and relevant Heritage Authority should be notified. The finding should be handled and/or removed from site as per instructions issued by the Heritage Authority or delegated heritage specialist.

8.11 Visual Impact.

The proposed development has the potential to cause a visual impact during the construction and operational periods. In order to minimise the potential visual impact, all working areas, storage facilities, stockpiles, waste bins, elevated tanks and the site camp should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible.

Waste must be managed according to this EMPr. Good housekeeping practices on site must be maintained to ensure the site is kept neat and tidy. The site camp may require visual screening via shade cloth or other suitable material. The use of reflective materials and excessive lighting should be avoided and construction vehicles must enter and leave the site during working hours.

8.12 Noise management.

Additional noise is expected during the construction period due to construction activities. It is important that a noise complaints register should be opened and that all excavations and earth-moving activities must be restricted to normal construction working hours (7:30 – 17:30) as far as possible. Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance. This is to be

done by ensuring that all equipment is in good working condition and fitted with mufflers/exhaust silencers if necessary.

Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and appropriate and all affected parties must be informed of the excessive noise factors.

8.13 Dust management.

Although the generation of dust is synonymous with construction sites, care needs to be taken to prevent excessive dust from impacting the surrounding environment and community. Majority of the dust causing activities will take place during the construction period. Exposed surfaces, such as stockpiles and cleared areas should be provided with a suitable cover as soon as possible or wetted down. Construction vehicles should maintain low speeds of 20-40km/h on site and must ensure that tarpaulins are used to cover any loads transported. Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not be exceeded. i.e. dust fall in residential areas may not exceed 600mg/m2/day, measured using reference method ASTM D1739.

A Complaints Register must be available at the site office for inspection by the ECO of dust complaints that may have been received.

8.14 Heritage Resources

Should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities, all works must be stopped immediately and Heritage Western Cape must be notified without delay.

Heritage Western Cape:
T: 021 483 5059
E: hwc.hwc@westerncape.gov.za

8.15 Site closure and rehabilitation

Upon completion of the construction phase, and after each maintenance event, all disturbed areas, including the working area (disturbance corridor), temporary access road, and all areas utilised for the site camp and associated site camp facilities will require rehabilitation as follows:

- On completion of the construction operations, the site camp area must be cleared of all site camp facilities, ablution facilities, fencing, signage, waste and surplus material.
- All areas within the working area and site camp that have become devoid of vegetation or where soils have been compacted due to construction activities must be scarified or ripped to improve filtration and reduce run-off.
- All demarcation fencing, including all droppers, wires, netting and barrier tape must be removed from site and taken to an appropriate site for re-use or disposal.
- Surfaces are to be checked for waste products from activities such as concreting or asphalting and cleared in a manner approved by the ECO. Any soil contaminated with hydrocarbons (oil, fuel, etc) or other hazardous substance must be collected and disposed of as hazardous waste to a licenced disposal facility.
- All construction waste is to be removed from the site and disposed of at an appropriate facility. Burying or burning of waste or rubble on site is strictly prohibited.
- Topsoil that was removed and stockpiled before construction, must be replaced by spreading it evenly over the areas from which it was removed. This topsoil (and the seedbank it contains) will facilitate the re-vegetation of the site.

- Disturbed areas, especially areas where excavations have taken place, must be shaped as appropriate (original topography must be restored where possible), and covered with a layer of stockpiled topsoil as soon as possible.
- Any topsoil, subsoil or other excavated material that cannot be utilised during site rehabilitation must be removed from the site and disposed of at an appropriate disposal site.
- The disturbed, newly rehabilitated surfaces (particularly steeper slopes and areas recently covered with topsoil) must be protected from wind & water erosion using mulch, brush packing or other appropriate erosion protection measures. Brush-packing/ mulching is done by covering the exposed surface with organic plant material such as branches, plant cuttings and leafy material. Ideally the vegetation removed from site at the start of the construction must be utilised. Brush-packing/ mulching plays a valuable role in erosion control, while also promoting re-vegetation of the site by retaining moisture in the soil, introducing seeds and/or trapping wind-blown seeds and providing organic material (compost) to promote new plant growth.
- Final landscaping and rehabilitation of the site must be done to the satisfaction of the ECO, and must adhere to all conditions/ requirements of the Environmental Authorisation.

9. Environmental Impact Management: Planning and Design Phase

No direct environmental impacts are associated with the planning and design phase. However, poor planning or inappropriate design decisions in this phase may result in environmental impacts arising during subsequent phases of the project.

Planning and design activities must therefore take into account the environmental constraints and opportunities identified during the Environmental Impact Assessment process, in order to avoid or minimise the potential future impacts of the development. Proper planning is also essential to ensure that adequate provision is made to implement the environmental requirements of this EMPr, and to ensure that the development is compliant with an additional conditions which may be included in the Environmental Authorisation.

The environmental management objectives (goals) during this phase are to:

- Appoint an Environmental Control Officer.
- Complete the detailed design of the structures and detailed site layout plan.
- Update the EMPr (if necessary).

These environmental management objectives, as well as the management actions that must be implemented in order to achieve the desired objective and avoid/minimise potential impacts are discussed in more detail below.

9.1 OBJECTIVE 1: APPOINTMENT OF AN ENVIRONMENTAL CONTROL OFFICER

Impact Management Objective: ***To appoint a suitably qualified and experienced Environmental Control Officer.***		
Potential impact to avoid	Failure to appoint an ECO will result in non-compliance with the requirements of the EMPr.	
Impact Management Outcome	The requirements of the EMPr are implemented and monitored during all phases of the development, which will promote sound environmental management on site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• A suitably qualified and experienced Environmental Control Officer must be appointed before any activities commence on site. • The appointed ECO must adhere to the requirements stated in Chapter 15 and any other requirements specified in the Environmental Authorisation. • The appointed ECO must be advised of the construction start date, before any activities commence on site so that the ECO can perform a pre-commencement inspection and plan for environmental awareness training of construction workers.	Status Homes Property Developers	During design phase
Performance Indicator	A qualified ECO is appointed prior to the commencement of any construction activities (including pre-construction set-up activities) on site.	

9.2 OBJECTIVE 2: DETAILED DESIGN AND SITE LAYOUT PLAN

Impact Management Objective: ***To compile a detailed design and site layout plan that adheres to the recommendations of the EIA Report and any additional conditions which may be included in the Environmental Authorisation.***			
Potential impact to avoid	Substantial deviation from the conceptual layout plan may result in: • Non-compliance with the Environmental Authorisation during construction. • Triggering of additional listed activities not authorised in the Environmental Authorisation. • An increase in the severity of the impacts identified and assessed in the EIA or may result in new impacts not previously assessed and not provided for in the EMPr, resulting in environmental degradation.		
Impact Management Outcome	Development is compliant with recommendations of the EIA and the EMPr.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
• The final detailed design & layout must adhere to the conceptual layout assessed in the Environmental Impact Assessment (EIA) process. • The final detailed design & layout must adhere to any conditions of the Environmental Authorisation (EA). • If the final detailed design differs significantly from that assessed during the EIA, the revised layout must be assessed by an Environmental Consultant and the received EA must be amended by the Competent Authority before proceeding. • Interested & Affected Parties may need to be provided with an opportunity to comment on any proposed amendment to the EA depending on the significance of the changes. • It is recommended that the stormwater management plan implemented.		Status Homes Property Developers / Consulting Engineer	During design phase
Performance Indicator	Detailed designs and site layout plans that adhere to the conditions of the EA and EMPr are finalised prior to the commencement of construction.		

10. Environmental Impact Management: Pre-construction Phase

Proper set-up during the pre-construction phase can set the foundation for good environmental management during the active construction phase to follow, and can avoid potential impacts from arising at a later date.

The Impact Management Objectives for this phase of the project relate to:

- Demarcation of no-go areas and working areas.
- Establishment of site camp and associated site facilities.
- Pre-construction ECO visit.

10.1 OBJECTIVE 1: IDENTIFY & DEMARCATE NO-GO AND WORKING AREAS

Impact Management Objective: ***Identify and demarcate no-go areas, working areas and site facilities.***		
Potential impact to avoid	• No-Go areas including aquatic habitats and public open space. • Insensitive location of working areas and site facilities may result in environmental impacts during the construction phase. • Failure to accurately demarcate working areas may result in an increased disturbance footprint. • Failure to demarcate no-go areas may result in disturbances to these areas during construction.	
Impact Management Outcome	Future construction activities will be restricted to within the designated areas & environmentally sensitive areas (no-go areas) will be protected from disturbance.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• The environmentally sensitive areas must be identified and be designated as no-go areas. • Demarcation of working area and no-go areas must be done in accordance with Section 8.2 of this EMPr. • Site camp facilities must be situated as far away from the No-Go areas as possible.	Contractor	Pre-construction phase (prior to arrival of construction equipment, machinery, or workers on site)
Performance Indicator	No-go areas, working areas and areas for site camp facilities have been identified and appropriately demarcated to the satisfaction of the ECO, before construction activities commences on site.	

10.2 OBJECTIVE 2: ESTABLISH ENVIRONMENTALLY SENSITIVE SITE CAMP & SITE FACILITES

Impact Management Objective: ***To set up and equip the site camp and associated site facilities in a manner that will promote good environmental management.***	
Potential impact to avoid	• An inadequate location for the site camp facilities may result in impacts to sensitive resources (e.g. contaminated run-off from refuelling area may flow into wetland).

	• Failure to properly demarcate and set up site facilities may result in disorganised construction activities and unnecessary disturbance to the site. • Failure to provide the necessary site facilities and/or failure to equip these facilities with the necessary equipment/materials may impede good environmental management & compromise ability to respond to emergencies.		
Impact Management Outcome	Site camp facilities do not impact significantly on environment. The equipment required to implement the provisions of the EMPr are provided on site.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
• The site camp and site facilities described in Section 8.3 of this EMPr must be provided on site. • The site camp and associated site facilities must be set-up and managed in accordance with the general environmental management measures specified in Chapter 8 of this EMPr. • The site camp must be strategically set up, away from freshwater resources, in a manner that will promote good environmental management during construction/ demolition, and to respond to potential emergencies (including fires, spillage of hazardous substances etc.) that may arise. • The site camp, storage facilities, stockpiles, waste bins, and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • Frequent stormwater outlets must be designed to prevent erosion at discharge points. • It is recommended that the stormwater management plan be implemented.		Contractor / Developer	Pre-construction phase (prior to start of construction activities)
Performance Indicator	Appropriate, well organised and properly equipped site facilities are available on site prior to commencement of construction activities. The location and set up of the facilities does not impact on the natural resources.		

10.3 OBJECTIVE 3: PRE-CONSTRUCTION ECO INSPECTION

It is essential that the appointed ECO be advised of the intended construction start date before construction activities commence on site, in order for the ECO to conduct an initial site inspection to assess the pre-commencement condition of the site. The ECO can also advise on the appropriate siting and demarcation of the site facilities, and the identification and demarcation of the no-go areas. The ECO may also conduct the first round of environmental awareness training at this stage, if the construction workers are present on site.

Impact Management Objective: ***Environmental Control Officer to conduct an inspection prior to the commencement of construction activities on site.***	
Potential impact to avoid	• Failure to appoint ECO or to notify ECO of commencement prior to commencement may result in non-compliance with the EA. • If a pre-commencement ECO inspection is not performed, the Construction Contractor may be held liable for environmental degradation that took place prior to the Contractor commencing work on site.

Impact Management Outcome	• Good environmental management is promoted and enforced by the ECO during the full pre-construction and construction phases. • Site facilities are appropriately located on site. • Construction workers receive environmental awareness training before commencing work on site.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period
• The appointed ECO must be advised of the construction start date, before any activities commence on site so that the ECO can perform a pre-commencement inspection and plan for environmental awareness training of construction workers.		Contractor	Start of construction phase
Performance Indicator	A pre-commencement site inspection is conducted by the appointed ECO before construction activities commence on site.		

11. Environmental Impact Management: Construction Phase

A number of potential environmental impacts may arise during the construction phase of the development. These impacts have been identified and assessed during the Environmental Impact Assessment process. Environmental Management objectives and actions that will prevent the identified potential impacts from arising – or where avoidance is not possible, that will minimise and mitigate the impacts – are provided in this section.

The environmental management actions and mitigation measures prescribed in this section must be implemented throughout the construction phase, and must be implemented in conjunction with the general management measures specified in Chapter 8 of this EMPr, as well as any other conditions which may be stated in the Environmental Authorisation. The Environmental Control Officer must monitor and enforce the implementation of the relevant environmental management measures, and may provide guidance on the implementation of these environmental management measures as and when required.

The environmental management objectives (goals) for the Construction phase are:

- Prevent soil erosion & sedimentation.
- Prevent pollution and soil/ water contamination.
- Protection of aquatic ecosystem
- Protection of indigenous vegetation.
- Creation of business & employment opportunities.
- Minimise faunal impact.
- Noise impact management
- Visual impact management
- Dust impact management
- Minimisation of the traffic & safety impact

The environmental management actions that must be implemented in order to achieve the desired objectives and avoid/minimise potential impacts are discussed in more detail in the sections below.

11.1 OBJECTIVE 1: PREVENT SOIL EROSION.

Impact Management Objective: ***To prevent soil loss on site and prevent increased turbidity / sediment load in watercourses.***			
Potential impact(s) to avoid	• Areas disturbed and/or cleared of vegetation (work corridor) during construction may be vulnerable to increased water and wind erosion. • Stockpiles of soil (topsoil/subsoil) at the site may be vulnerable to wind/water erosion.		
Impact Management Outcome	Soil erosion at the water courses are kept to a minimum and the aquatic systems are not impacted significantly as a result of soil erosion.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure		Responsible party	Time period

• Designated areas for stockpiling of raw materials must be identified before material is brought onto site. No stockpiling is to occur on or near slopes or water resources (must not be located within 50 metres of the wetlands). All stockpiling areas must be approved by the ECO before stockpiling occurs. • It is advised that an Environmental Control Officer visit the construction site before construction occurs within any of the watercourses and possibly during construction within the watercourses. • Soil surfaces must not be left open for lengthy periods to prevent erosion. • If site development does not occur soon after preparation of the site, a suitable cover crop to be established as a temporary measure. • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. Alternatively, the exposed slopes must drain into small temporary stormwater and silt traps/ponds. • The SuDS Stormwater management and drainage system should inform the stormwater design of developed areas. • The storm water management plan should adhere to the principles of sound storm water management. The storm water management system must be implemented on site and must be properly maintained. • Clean and contaminated storm water must be kept separate. Contaminated run-off from the construction site must be prevented from flowing into the streams. • The working area and site camp must be clearly demarcated during the pre-construction phase. Land clearing and construction activities must be restricted to within the demarcated working area to prevent unnecessary disturbance, exposure or compacting of surrounding areas. • Only the area required to accommodate construction activities within the working area should be cleared of surface covering. Unnecessary clearing/ disturbance of land and exposure of soil must be avoided. • Land clearing, earth moving and construction activities should not take place during heavy rains, or windy conditions. • Cleared areas and any other area susceptible to erosion should be provided with a suitable cover and stabilised as soon as possible via the implementation of appropriate erosion control measures. This may include use of cut-off drains, temporary/permanent drainage channels, brush-packing, mulching, planting or sodding, use of environmentally benign soil binders, use of geo-textile or other coverings. The appropriate measures should be selected by the contractor in consultation with the Engineer & ECO. • Stockpiles of topsoil & spoil material must be protected from wind & water erosion.	Contractor	Construction phase

• Stockpiles of earth material may not be located within any storm-water drainage pathways and must be outside of the reach of potential flood waters. Stockpiles cannot be within 50 meters of any wetlands. • Any erosion runnels/ gulleys/ channels that form on site must be infilled with appropriate material, compacted, rehabilitated as needed and appropriate erosion control measures put in place to prevent recurrent erosion at that site. Rehabilitation of erosion channels should be ongoing during the construction phase and not left until the end of the construction period.		
Performance Indicator	The water courses are not significantly impacted as a result of soil erosion.	

11.2 OBJECTIVE 2: PREVENT POLLUTION AND SOIL/ WATER CONTAMINATION.

Impact Management Objective: ***To prevent environmental pollution and contamination of soil and water resources***		
Potential impact(s) to avoid	• Fuel, oil, lubricant or other pollutants leaking from vehicles/ machinery and contaminate soil, surface water and/or ground water. • Leaking chemical toilets. • Contaminated run-off from site or site camp facilities entering soil or water resources. • Waste (solid or liquid) from the construction site blown or washed into surrounding environment. • Alteration of aquatic parameters (pH, turbidity and nutrient levels) • Contamination of soil or water impacting the surrounding and downstream land/water users, biota and livestock.	
Impact Management Outcome	The environment (including soil, surface water and groundwater) is not contaminated.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• It is recommended that the stormwater management plan be implemented. **General Pollution Management:** • No pollution of surface water or ground water resources may occur due to any activity on the site. • No storm water runoff from any premises containing waste, or water containing waste emanating from construction activities may be discharged into the environment. Polluted stormwater must be contained on the site. • Cement batching / mixing may not take place directly on the soil surface, it must be done on an impervious lining that will prevent cement particles from contaminating the soil. • The proposed buffer zone around the wetland needs to be strictly adhered to. **General Waste Management:** • Dedicated waste bins or skips must be provided on site and kept in a demarcated area on an impermeable surface.	Contractor	Construction phase

• Separate waste bins/skips must be provided for recyclable waste, general waste and hazardous waste. Recovered builder's rubble & green waste may be stockpiled on the ground within the site camp, or in separate skips until removal. • Waste must be placed in the appropriate waste bins/skips/ stockpiles. • Hazardous waste bins must be kept on an impermeable bunded surface capable of holding at least 110% of the volume of the bins. • Skips/ bins must be provided with secure lids or covering that will prevent scavenging and windblown waste or dust. • Waste bins/skips must be regularly emptied and must not be allowed to overflow. • Construction workers must be instructed not to litter and to place all waste in the appropriate waste bins provided on site. • The Contractor must ensure that all workers on site are familiar with the correct waste disposal procedures to be followed. • Waste generated on site must be classified and managed in accordance with the National Environmental Management: Waste Act – Waste Classification and Management Regulations (GN No. R. 634 of August 2013). • Disposal of waste to landfill must be undertaken in accordance with the National Environmental Management: Waste Act – National Norms and Standard for the Assessment of Waste for Landfill Disposal (GN No. R. 635 of August 2013). • All waste, hazardous as well as general, resulting from the proposed activities must be disposed of appropriately at a licensed Waste Disposal Facility (WDF). **Pollution Management -Hydrocarbons (oil, fuel etc.)** • Vehicles and machinery must be in good working order and must be regularly inspected for leaks. • If a vehicle or machinery is leaking pollutants it must, as soon as possible, be taken to an appropriate location for repair. The ECO has the authority to request that any vehicle or piece of equipment that is contaminating the environment be removed from the site until it has been satisfactorily repaired. • Repairs to vehicles/ machinery may take place on site, within a designated maintenance area at the site camp. Drip trays, tarpaulin or other impermeable layer must be laid down prior to undertaking repairs. • Refuelling of vehicles/ machinery may only take place at the site camp or vehicle maintenance yard. Where refuelling must occur, drip trays should be utilised to catch potential spills/ drips. • Drip trays must be utilised during decanting of hazardous substances and when refilling chemical/ fuel storage tanks. • Drip trays must be placed under generators (if used on site) water pumps and any other machinery on site that utilises fuel/ lubricant, or where there is risk of leakage/spillage.		

• Where feasible, fuel tanks should be elevated so that leaks are easily detected. • A spill kit to neutralise/treat spills of fuel/ oil/ lubricants must be available on site, and workers must be educated on how to utilise the spill kit. • Soil contaminated by hazardous substances must be excavated and disposed of as hazardous waste. **Pollution Management – Ablution facilities** • Chemical toilets must be kept at the site camp, on a level surface and secured from blowing over. • Toilets must be located well outside of any storm water drainage lines ,and may not be linked to the storm water drainage system in any way. • Chemical toilets must be regularly emptied and the waste disposed of at an appropriate waste water disposal/ treatment site. Care must be taken to prevent spillages when moving or servicing chemical toilets. • Ablutions should be further than 30m from watercourses. **Pollution Management – Hazardous Substances** • Any hazardous substances (materials, fuels, other chemicals etc.) that may be required on site must be stored according to the manufacturers' product-storage requirements, which may include a covered, waterproof bunded housing structure. • Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases. • Hazardous chemicals and fuels should be stored on bunded, impermeable surfaces with sufficient capacity to hold at least 110% of the capacity of the storage tanks. **Cement Batching** • Cement batching must take place on an impermeable surface large enough to retain any slurry or cement water run-off. If necessary, plastic/ bidem lined detention ponds (or similar) should be constructed to catch the run-off from batching areas. Once the water content of the cement water/ slurry has evaporated the dried cement should be scraped out of the detention pond and disposed of at an appropriate disposal facility authorised to deal with such waste • Cement batching should take place on already transformed areas within the footprint of the facility. • Unused cement bags must be stored in such a way that they will be protected from rain. Empty cement bags must not be left lying on the ground and must be disposed of in the appropriate waste bin. • Washing of excess cement/concrete into the ground is not allowed. All excess concrete/ cement must be removed from site and disposed of at an appropriate location.		

• Construction works must preferably take place in drier months of the year when runoff from the construction site will be minimal, to limit potential dispersal of pollutants.		
Performance Indicator	The site and aquatic system remains free of any pollutants (in accordance with any necessary tests) and any spills that occur are responsibly managed and recorded on file during monitoring.	

11.3 OBJECTIVE 3: PROTECTION OF AQUATIC ECOSYSTEM.

Impact Management Objective: ***To ensure that the aquatic ecosystem is not significantly impacted on.***		
Potential impact(s) to avoid	• Physical disturbance to aquatic ecosystems during the construction phase. • Increase of sedimentation/turbidity in the watercourses, which may impact biota and instream habitats. • Establishment of Alien invasive species. • Encroachment within the aquatic buffer. • Reduction in aquatic biodiversity. • Decrease in the soil binding capacity and cohesion of the upslope soils. • Soil erosion within the aquatic ecosystem. • Soil compaction within the aquatic ecosystem.	
Impact Management Outcome	Construction activities do not significantly impact on the aquatic ecosystem.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• The Buffer area around the wetland is to be adhered to at all times and no construction activities to occur within this buffer. • No sewage pump stations must be located within 42 m of a watercourse. • Stockpiles must not be located within 50 metres of the wetlands. • Stockpiles should not be placed in vegetated areas that will not be cleared. • The stormwater flows must enter the wetland areas in a diffuse flow pattern without pollutants. • It is recommended that the stormwater management plan be implemented. • Frequent stormwater outlets must be designed to prevent erosion at discharge points. • All erosion protection measures (e.g. Reno-mattresses) must be established to reflect the natural slope of the surface and located at the natural ground level. • Stormwater exit points must include a best management practice approach to trap any additional suspended solids and pollutants originating from the proposed development. • Erosion control measures including silt fences, low soil berms and/or shutter boards must be put in place around the stockpiles to limit sediment runoff from stockpiles. Alternatively, the exposed slopes must drain into small temporary stormwater and silt traps/ponds.	Contractor	Construction phase

• Contaminated run-off from the construction site must be prevented from flowing into the aquatic system. Please refer to the mitigation measures required to prevent the impact of "pollution and contamination". The same mitigation measures apply to reduce the risk of pollution and contamination of the watercourse(s). • It is advised that an Environmental Control Officer visit the construction site before construction occurs within any of the watercourses and possibly during construction within the watercourses areas.		
Performance Indicator	Aquatic ecosystem is free of alien invasive species and the ecosystem is in a healthy state.	

11.4 OBJECTIVE 4: PROTECTION OF INDIGINOUS VEGETATION.

Impact Management Objective: Protect and conserve the Indigenous Vegetation on site.		
Potential impact(s) to avoid	• Permanent Loss of Indigenous Vegetation caused by construction activities. • Loss of Species of Conservation Concern caused by construction activities. • Increased susceptibility to erosion caused by construction activities. • Negligence of indigenous vegetation or topsoil that require transplanting.	
Impact Management Outcome	The loss of indigenous vegetation on site is minimised and results in no erosion. Any species of conservation concern are conserved.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• Development setback buffers to be implemented to avoid watercourses that are also associated with botanical sensitivity. • Great care will be taken if cement is to be mixed on site, especially in the proximity of vegetation and watercourses. It will be mixed on thick plastic sheets or in large buckets and not allowed to spill onto bare ground. Any spillage will be cleaned up immediately. Cement water will also be contained in the above manner and allowed to dry out and then removed from site. Cement water, which is highly alkaline, poses a definite threat to the soil and seed banks. • Blanket clearing of vegetation must be limited to the approved development footprint, and the area to be cleared must be demarcated before any clearing and grubbing commences. • No clearing outside of development and infrastructure footprint area to take place. • Rescued plants should be replanted into a nearby disturbed area of similar habitat or for open space rehabilitation. • Once flora search and rescue is complete, a certificate of clearance must be issued by the botanist and copies supplied to DEA&DP • An Environmental Control Officer will oversee compliance with all the prescribed environmental requirements and mitigation measures listed here and will be on site regularly.	Contractor	Construction phase

• Final siting of footprint should be undertaken in consultation with respective specialists, including a botanist. • Open Space to be incorporated in final plan to include ecological corridors and riparian areas. • Removed topsoil should be used in rehabilitation of transformed areas that are within the open space areas. • Respective permits must be obtained timeously (2 - 3 months) before site clearing commences and a flora search and rescue plan must be implemented beforehand. • Permits from DEA&DP must be kept on site and in the possession of the flora search and rescue team at all times.		
Performance Indicator	• Construction team limit disturbance to the indigenous vegetation as far as possible for the duration of the construction phase. • Indigenous vegetation transplanted successfully and remains in a healthy state. • There is no evidence of erosion.	

11.5 OBJECTIVE 5: CREATION OF BUSINESS & EMPLOYMENT OPPORTUNITIES.

***Impact Management Objective:* To create employment opportunities with potential for skills transfer, for members of the local community.**		
Potential impact(s) to be promoted.	• A number of job opportunities will be created during the construction phase of the development. • There transfer skills from more experienced workers to less experienced workers. • Increase in business for local businesses within the construction industry.	
Impact Management Outcome	The local community benefits from the employment opportunities created during the construction phase.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• Status Homes Property Developers should inform local community leaders, organizations and councillors of the project and the potential job opportunities for local builders and contractors. • Status Homes Property Developers and DHS should establish a database of local construction companies in the area, specifically SMME's owned and run by HDI's, prior to the commencement of the tender process for the development. These companies should be notified of the tender process and invited to bid for project related work. • Status Homes Property Developers and DHS in consultation with the appointed contractor/s should seek to ensure that a percentage of the labour required for the construction phase is sourced from local area in order to maximize opportunities for members from the local HD communities, in accordance with current legislation.	Status Homes Property Developers / Contractor	Construction phase
Performance Indicator	The majority of the construction team is from the local community, with preference given to historically disadvantaged individuals. Skills transfer from experienced to less experienced workers is actively encouraged on site.	

11.6 OBJECTIVE 6: MINIMISE FAUNAL IMPACT.

***Impact Management Objective:* To minimise the impact on the Fauna currently inhabiting the site.**		
Potential impact(s) to avoid	• Total loss of all Fauna on site. • Unnecessary destruction of habitat supporting Fauna. • Injuries and capturing of fauna	
Impact Management Outcome	The loss of Fauna is minimised and vegetation remaining on site is able to act as an ecological corridor.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• Blanket clearing of vegetation must be limited to the approved development footprint, and the area to be cleared must be demarcated before any clearing commences • Open Space to be incorporated in the final plan to include ecological corridors and riparian zones. • Open Space rehabilitation and removal of invasives should commence before site clearing commences. • Rescued fauna should be released into a nearby area of similar habitat away from any construction. • Once fauna search and rescue has been completed, a certificate of clearance must be issued by the animal handler and copies supplied to DEA&DP	Status Homes Property Developers	Construction phase
Performance Indicator	Fauna is safely removed from site and the remaining indigenous vegetation retains the ecological corridor.	

11.7 OBJECTIVE 7: NOISE IMPACT MANAGEMENT.

***Impact Management Objective:* To control avoidable noise impacts to the surrounding areas**		
Potential impact(s) to avoid	• Avoid unnecessary noise generated during the undertaking of construction activities, which may present a nuisance to surrounding community and negatively impact the Sense of place	
Impact Management Outcome	Management of noise emissions to an acceptable level.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• A noise complaints register should be opened. • Excavations and earth-moving activities must be restricted to normal construction working hours (7:30 – 17:30) as far as possible. • Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance.	Contractor	Construction phase

• Vehicles and equipment must be kept in good working condition. If deemed necessary, machinery and equipment should be fitted with mufflers/ exhaust silencers. No unnecessary disturbances should be allowed to emanate from the construction site. • Due to the location of the proposed development site to residents, noise levels must be kept to a minimum at all times. If excessive noise is expected on the boundary of the residential erven bordering the site they must be informed in advance of when the high noise levels will occur and for how long they will occur. • Workers should be educated on how to control noise-generating activities that have the potential to become disturbances, particularly over an extended period of time. • Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and appropriate. • Affected parties must be informed of the excessive noise factors.		
Performance Indicator	Noise levels on site remain within acceptable standards. No valid noise complaints are received.	

11.8 OBJECTIVE 8: VISUAL IMPACT MANAGEMENT.

***Impact Management Objective:* To prevent the site from presenting an unnecessary visual impact to the surrounding public.**		
Potential impact(s) to avoid	• Temporary loss of the sense of place.	
Impact Management Outcome	The site does not present a significant visual impact and the sense of place is maintained during the construction period.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• Consult with the ECO when determining the appropriate site for the site camp. • The site camp must be kept neat and tidy and free of litter at all times. • Waste must be managed according to this EMPr and the mitigation measures listed above in terms of waste management. Good housekeeping practices on site must be maintained to ensure the site is kept neat and tidy. • The site camp, storage facilities, stockpiles, waste bins, and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • Work on site must be well-planned and well-managed so that work proceeds quickly and efficiently, thus minimizing the disturbance time. • The site camp, storage facilities, stockpiles, waste bins, elevated tanks and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. • The site camp may require visual screening via shade cloth or other suitable material.	Contractor	Construction phase

• Special attention should be given to the screening of highly reflective material. • Use of lighting (if required) should take into account surrounding residents and land users and should present little or no nuisance. Downward facing, spill-off type lighting is recommended. • Construction vehicles must enter and leave the site during working hours. • Working areas, storage facilities, stockpiles, waste bins, elevated tanks and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible.		
Performance Indicator	• Good "housekeeping" is evident on site. • The site does not pose a visual impact to surrounding community.	

11.9 OBJECTIVE 9: DUST IMPACT MANAGEMENT.

***Impact Management Objective:* To prevent the generation of significant dust.**		
Potential impact(s) to avoid	• Dust may cause a nuisance to the surrounding residents. • Dust may smother surrounding vegetation. • Decreased visibility for labourers and operators.	
Impact Management Outcome	The surrounding environment, land users, residents do not experience significant dust-related impacts.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• Land clearing and earthmoving activities should not be undertaken during strong winds, where possible. • Cleared areas should be provided with a suitable cover as soon as possible, and not left exposed for extended periods of time. • Stockpiles of topsoil, spoil material and other material that may generate dust must be protected from wind erosion (e.g. covered with netting, tarpaulin or other appropriate measures. Note that topsoil should not be covered with tarpaulin as this may kill the seedbank). • The location of stockpiles must take into account the prevailing wind direction and should be situated so as to have the least possible dust impact to surrounding residents, road-users and other land-users. • Speed limits must be enforced in all areas, including public roads and private property to limit the levels of dust pollution. • The speed limit should be set at 20-40km/h. • Dust must be suppressed on access roads and the construction site during dry periods by the regular application of water or a biodegradable soil stabilisation agent. Water used for this purpose must be used in quantities that will not result in the generation of excessive run off.	Contractor	Construction phase

• Dust suppression measures such as the wetting down of sand heaps as well as exposed areas around the site must be implemented especially on windy days. • The use of straw worked into the sandy areas may also help and the ECO must advise when this is necessary. • If dust appears to be a continuous problem the option of using shade cloth to cover open areas may be necessary or the erecting of shade netting above the fenced off are may need to be explored. • All vehicles transporting sand need to have tarpaulins covering their loads which will assist in any windblown sand occurring off the trucks. • Work on site must be well-planned and should proceed efficiently so as to minimise the handling of dust generating material. • Material loads should be properly covered during transportation. • Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not be exceeded. i.e. dust fall in residential areas may not exceed 600mg/m2/day, measured using reference method ASTM D1739; • A Complaints Register must be available at the site office for inspection by the ECO of dust complaints that may have been received.		
Performance Indicator	• Excessive dust does not arise from the site. • No dust complaints are received from any member of the public. • There is no evidence that vegetation surrounding the site is being smothered by dust.	

11.10 OBJECTIVE 10: MINIMISATION OF THE TRAFFIC & SAFETY IMPACT.

***Impact Management Objective:* To ensure continued community safety during the construction phase.**		
Potential impact(s) to avoid	• The temporary disturbance to traffic in the area. • Reduced safety on surrounding roads. • Damage to the condition of the of the existing road network. • An increase in crime.	
Impact Management Outcome	The functioning of the surrounding road network remains efficient and the state of the infrastructure isn't hampered. The safety of surrounding land occupiers and construction site remains intact.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
Presence of Construction Workers • The need to establish a Monitoring Committee (MC) made up of representatives from the local communities in the vicinity of the site, ward councillors, the contractor/s should be considered. The role of the MC would be to respond to and address issues that arise during the construction phase.	Contractor	Construction phase

• Status Homes Property Developers should seek to appoint local contractors wherever possible. • Status Homes Property Developers should seek to ensure that the majority of construction workers employed during the construction phase are locally based. • Status Homes Property Developers in consultation with the appointed contractors should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase. • The movement of construction workers on and off the site should be closely managed and monitored by the contractors. In this regard the contractors should be responsible for making the necessary arrangements for transporting workers to and from site on a daily basis. • No construction workers, with the exception of security personnel, should be permitted to stay overnight on the site. • All construction vehicles must adhere to traffic laws when travelling to and from the site. • Appropriate signage should be erected to warn other road users about the presence of construction vehicles. **Traffic** • All construction vehicles must adhere to traffic laws when travelling to and from the site. • All drivers and machinery operators must be sensitised to the fact that they are working in an area with a potentially high volume of foot and vehicle traffic and must exercise due caution when entering/ exiting the site. • Appropriate signage should be erected to warn other road users about the presence of construction vehicles, particularly at the point where construction vehicles enter/ exit the site from the N2. • Speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. • Construction vehicles must adhere to the load carrying capacity of road surfaces and adhere to all other prescriptive regulations regarding the use of public roads by construction vehicles. • The Contractor must ensure that any large or abnormal loads (including hazardous materials) that must be transported to/ from the site are routed appropriately, and that appropriate safety precautions are taken during transport to prevent road accidents. • Where possible, construction traffic that may obstruct traffic flow on the surrounding roads should be scheduled for outside of peak traffic times. • Where possible, heavy machinery should be parked within a secure demarcated area within the footprint of the site instead of moving the machinery to and from the site each day.		
Performance Indicator	• The surrounding road networks infrastructure remains in its current state. • Limited congestion and traffic. • Crime levels do not increase.	

12. Environmental Impact Management: Post Construction Rehabilitation Phase & Operational Phase

After all construction activities have ceased, the sites must be cleared of all construction related equipment, materials, facilities and waste. In addition all disturbed surfaces – including disturbed areas around the structures and all areas utilised for site facilities – must be stabilised, rehabilitated and provided with a suitable cover. All temporary access roads constructed must be rehabilitated and access must be restricted from the public.

The environmental management objectives (goals) for this phase are:

- Rehabilitate & stabilise disturbed areas and ensure environmentally sensitive closure of the construction sites.
- Discourage alien vegetation
- Reduce loss of aquatic habitat
- Prevention of flow modification
- Prevention of surface water pollution.
- Reduced erosion & sedimentation.
- Maintain necessary ecological processes.
- Reduce visual impact.
- Reduced traffic and improve safety.
- Provision of affordable housing, public facilities and public spaces
- Creation of Business and Employment Opportunities.

12.1 OBJECTIVE 1: SITE CLOSURE & REHABILITION

Impact Management Objective: ***To rehabilitate all areas disturbed by construction activities in an environmentally sensitive manner.***		
Potential impact(s) to avoid	• Failure to remove all construction related waste and materials may result in environmental pollution. • Failure to remove all construction related equipment, machinery and site facilities may pose an impact to the natural environment specifically the watercourses. • Failure to stabilise disturbed surfaces may result in soil erosion and increased storm water run-off, which may limit successful revegetation of the site.	
Impact Management Outcome	• The site is neat and tidy and all exposed surfaces are suitably covered/ stabilised. • There is no construction-related waste or pollution remaining on site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• On completion of the construction operations, the site camp area must be cleared of all site camp facilities, ablution facilities, fencing, signage, waste and surplus material. • Surfaces are to be checked for waste products from activities such as concreting or asphalting and cleared in a manner approved by the ECO.	Contractor	Construction phase

• Any contaminated soil must be collected and disposed of as hazardous waste. • All construction waste, litter and rubble are to be removed from the site and re-used elsewhere, or recycled/disposed of at an appropriate facility. • Burying or burning of waste or rubble on site is prohibited. • All areas within the working area and site camp that have become devoid of vegetation or where soils have been compacted due to construction activities should be scarified or ripped. • Topsoil removed during the establishment of the site camp and the working area must be spread evenly over the entire site camp area and all other disturbed/ exposed areas after those areas have been ripped, scarified, shaped and contoured (as required). • Where necessary seeding and planting of vegetation can take place after the replacement of the topsoil. Hardy, drought tolerant, non-invasive plant species must be selected. If needed, a layer of mulch can be applied to the newly shaped/ landscaped and topsoiled areas. The mulch will serve to limit erosion and will promote the re-vegetation of the site by retaining moisture in the soil and providing organic material (compost) for new plant growth. • All exposed soils and recently topsoiled areas are to be re-vegetated or stabilised to the satisfaction of the ECO, to protect these areas from wind and water erosion. No areas are to be left exposed to erosive forces. Erosion protection measures that can be applied include mulching (described above), the placement of geotextile, onion bags filled with wood chips, brush-packing or other similar measures. • Any topsoil, subsoil or other excavated material that cannot be utilised during site rehabilitation must be removed from the site and reused elsewhere on the property or disposed of at an appropriate disposal site. • Disturbed soils must be revegetated with the local indigenous vegetation such as that which occurs at the site, or provided with other suitable cover. • Erosion features that have developed due to construction within the aquatic habitat due to the project are required to be stabilised. • It is recommended that follow-up alien clearing be conducted 6 months after construction is complete and thereafter annually for 3 years (or longer if alien recruitment is still evident on site).		
Performance Indicator	• All construction-related materials, equipment, facilities, waste and contaminated soils have been removed from the site. • Compacted soils have been scarified/ ripped and stabilised. • All disturbed/exposed surfaces have been provided with a suitable covering and/or stabilised. • No alien vegetation is evident on site.	

12.2 OBJECTIVE 2: DISCOURAGE ALIEN VEGETATION

Impact Management Objective: Discourage establishment of alien vegetation		
Potential impact(s) to avoid	• Alien vegetation may establish as a result of land disturbance.	
Impact Management Outcome	• No establishment of alien vegetation on the site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• An Environmental Control Officer will oversee compliance with all the prescribed environmental requirements and mitigation measures listed here and will be on site regularly. • Alien plants must be removed from the site as per NEMBA requirements. • A suitable weed management strategy to be implemented in construction and operation phases to eradicate and control regeneration. • After any clearing is completed, an appropriate cover crop should be planted where any weeds or exotic species are removed from disturbed areas timeously.	Developer	Operational phase
Performance Indicator	• No alien vegetation is evident on site.	

12.3 OBJECTIVE 3: REDUCE LOSS OF AQUATIC HABITAT

Impact Management Objective: Reduce loss of Aquatic Habitat		
Potential impact(s) to avoid	• Loss of aquatic habitat within the wetland areas. • Establishment of alien invasive species within the riparian zone. • Erosion within the riparian habitat	
Impact Management Outcome	• Minimal loss of Aquatic Habitat and Associated Biota	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• Engage with the community to explain the reasons why the buffer and the water resources are protected and what human activities are allowed. • Placement of signage near the boundary of the buffer zone should also be considered to help mark the boundary and educate the community about the purpose and value of protecting buffer zones. • Information can include a description and visual of alien invasive plant species. • The stormwater management infrastructure must be designed to ensure the runoff from the development is not highly concentrated before entering the buffer area. The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion. • Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity	Developer	Operational phase

of the water reduced through further structures and/or energy dissipaters. These structures must be incorporated within the layout area. • The recommended use and maintenance of grease traps/oil separators to prevent pollutants from entering the environment from stormwater. • Appropriate wastewater infrastructure must be designed to prevent any such water from entering the surrounding environment. • Maintenance of the wetland habitat and buffer are must be implemented, preventing encroachment of any further infrastructure or vehicles. • Engage with the community regarding the wetland to discourage illegal dumping and ensure the water resources are protected. The community could be involved in the monitoring. • Placement of signage near the boundary of the buffer zone should also be considered to help mark the boundary and educate the community about the purpose and value of protecting buffer zones. • Information can include a description and visual of alien invasive plant species.		
Performance Indicator	• All disturbed/exposed surfaces have been provided with a suitable covering and/or stabilised. • A healthy aquatic habitat • Minimal waste within the aquatic habitat • Minimal alien vegetation present	

12.4 OBJECTIVE 4: PREVENTION OF FLOW MODIFICATION.

***Impact Management Objective:* No Impairment of Surface Water Quality**		
Potential impact(s) to avoid	• Deteriorated aquatic habitat. • Increased erosion. • Loss of ecosystem functioning.	
Impact Management Outcome	• No impairment of surface water quality as a result of the development.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• The stormwater management infrastructure must be designed to ensure the runoff from the development is not highly concentrated before entering the buffer area. The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion. • Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters. These structures must be incorporated within the layout area. • Appropriate wastewater infrastructure must be designed to prevent any such water from entering the surrounding environment.	Developer	Operational phase

Performance Indicator	• No visible signs of erosion. • Aquatic ecosystem remains healthy and functioning.

12.5 OBJECTIVE 5: PREVENTION OF SURFACE WATER POLLUTION.

Impact Management Objective: No Impairment of Surface Water Quality		
Potential impact(s) to avoid	• Pollution of the watercourse. • Loss of aquatic life. • Deteriorated aquatic habitat. • Loss of ecosystem functioning.	
Impact Management Outcome	• No impairment of surface water quality as a result of the development.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• The developer must implement litter clean-up operations from the wetlands and streams on a regular basis. In addition the storm water infrastructure (ponds and discharge infrastructure and litter traps etc) must be serviced regularly. • The storm water management system must be implemented on site and must be properly maintained. • The permanent storm water management plan must be properly monitored and maintained throughout the operational phase. Blockages in the system must be cleared timeously. • Monitoring and rehabilitation or blockages (litter clean-ups) in the stormwater infrastructure must be ongoing throughout the operational phase. • The local authority should prevent illegal dumping in this area by providing suitable waste disposal facilities where waste can be recycled and disposed of in a controlled manner. • Engage with the community to explain the reasons why the buffer and the water resources are protected and what human activities are allowed. This could be targeted at learners to prevent the dumping of solid waste and other activities that threaten the watercourses and buffer zones. • Placement of signage near the boundary of the buffer zone should also be considered to help mark the boundary and educate the community about the purpose and value of protecting buffer zones.	Developer / Bitou Municipality	Operational phase
Performance Indicator	• Approved and implemented Wetland Monitoring & Rehabilitation Plan • Continual Stormwater Management. • No impairment of surface water quality on site or downstream as a result of the development.	

12.6 OBJECTIVE 6: REDUCED EROSION & SEDIMENTATION.

Impact Management Objective: Reduced Erosion & Sedimentation.	
Potential impact(s) to avoid	• Increased sedimentation of downstream watercourses as a result of soil erosion problems and bank instability.

Impact Management Outcome	• Prevention of excessive sediment entering the watercourse.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• The increased intensity of the runoff from the site that would result from the hardening of surfaces within the site should be mitigated by encouraging infiltration where possible within the developed site. • The area will need to be monitored to ensure that erosion of the streams downstream of the site does not become eroded, especially at the proposed storm water discharge points. If erosion and scouring is noted then erosion rehabilitation measures must be installed as follows: o The scale and nature of the erosion and storm water control measures implemented on site should be appropriate to the conditions on site, and sufficient to achieve the desired outcomes (soil preservation, prevention of flooding, storm water control) to the satisfaction of the ECO and consulting engineer. o Small-scale control measures: This may include the use of shade netting, geo-fabric or similar barriers in areas susceptible to erosion and along exposed slopes. The netting/fabric is placed directly across the path of flow of storm water. Poles and logs, staked in along the contours of a slope susceptible to erosion may also be used. o Medium-scale control measures: This may entail the establishment of small berms and benches cut into affected slopes, as well as the placement of poles and logs along the contours of the slope. Berms can be created to divert storm water run-off into surrounding vegetated areas. • The stormwater management infrastructure must be designed to ensure the runoff from the development is not highly concentrated before entering the buffer area. The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion. • Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters. These structures must be incorporated within the layout area.	Developer / consulting engineer	Operational phase
Performance Indicator	• There is no evidence of erosion and the watercourse remains healthy.	

12.7 OBJECTIVE 7: MAINTAIN NECESSARY ECOLOGICAL PROCESSES.

Impact Management Objective: ***The Maintenance of Healthy, Functioning Ecosystem***	
Potential impact(s) to avoid	• Loss of Ecological connectivity.
Impact Management Outcome	• Ecological processes are maintained and function accordingly.
IMPACT MANAGEMENT ACTIONS	

Mitigation measure	Responsible party	Time period
• No clearing outside of development and infrastructure footprints to take place. • Open Space to be incorporated in final plan to include ecological corridors and riparian zones.	Developer	Operational phase
Performance Indicator	• Vegetation present on site remains in a healthy state.	

12.8 OBJECTIVE 8: REDUCE VISUAL IMPACT.

***Impact Management Objective*: Reduce the visual impact caused by the proposed development.**		
Potential impact(s) to be avoided.	• Change in the sense of place. • Community tension.	
Impact Management Outcome	• Surrounding road networks remain safe to use and free of excessive congestion.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• Unnecessary use of lighting should be avoided. • The state of the onsite vegetation should be maintained and kept in a healthy state. • Collection of refuse must be maintained. • The possible visual impact should be considered when painting the units. • Infrastructure should be maintained. • A detailed Architectural Design Plan and Landscaping Plan should be compiled and included in the EMPR, post EA, before the development is constructed. • The mitigation measures included under the following sections of the EMPr should be implemented: o Colours for Roofs and Buildings o Lighting	Developer	Operational phase
Performance Indicator	• The proposed development forms part of the community and the visual impact is dissipated.	

12.9 OBJECTIVE 9: REDUCED TRAFFIC AND IMPROVE SAFETY.

***Impact Management Objective*: Minimise the impact of traffic and maintain a safe environment.**		
Potential impact(s) to be avoided.	• The permanent disturbance to traffic in the area. • Reduced safety on surrounding roads. • Damage to the condition of the of the existing road network. • An increase in crime.	
Impact Management Outcome	• Surrounding road networks remain safe to use and free of excessive congestion.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period

• Access to the site should be via Trekker Road (North & South access roads) and configured as per the TIA. • The North and South accesses to be upgraded as indicated in the TIA, including provision for safe pedestrian access. • The proposed collector road be constructed to a 7,4m surfaced width excluding kerb and channel, with sidewalks provided along both sides.	Developer / Bitou Municipality	Operational phase
Performance Indicator	• Traffic moves freely and road infrastructure remains in a safe condition.	

12.10 OBJECTIVE 10: PROVISION OF AFFORDABLE HOUSING, PUBLIC FACILITIES AND PUBLIC SPACES.

***Impact Management Objective*: Provision of affordable housing to address the housing backlog.**		
Potential impact(s) to be promoted.	• Improved safety and hygiene for individuals previously living in informal areas. • Formal provision of basic services for individuals previously living in informal areas. • Creating a base for individuals to positively contribute to society. • Improved quality of life. • An increase in the rates base for the municipality.	
Impact Management Outcome	• Improved quality of life and ability to contribute to society.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
• Ensure that services are maintained. • Establish a community group who can engage with stakeholders and maintain an open line of communication to ensure that the community is functioning optimally.	Developer / Bitou Municipality	Operational phase
Performance Indicator	• A well-balanced community living in a safe and healthy environment.	

12.11 OBJECTIVE 11: CREATION OF BUSINESS AND EMPLOYMENT OPPORTUNITIES.

Impact Management Objective: Creation of Business and Employment Opportunities		
Potential impact(s) to be promoted.	• The business and commercial components will create employment opportunities for local residents. • The housing component of the development may create employment opportunities for domestic workers. • The operational phase of the residential development will also create opportunities for local businesses, such as local maintenance and building companies, garden services, security and catering companies and the local taxi industry. • Decreased unemployment levels. • The local estate agencies in the area and legal firms will benefit from the sale and resale of properties associated with the new development.	
Impact Management Outcome	• Creation of Business and Employment Opportunities.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period

• The developer should inform local community leaders, organisations and councillors of the potential job opportunities associated with the different components associated with the operational phase of the development. • Small medium and micro enterprises (SMME's) owned and run by historically disadvantaged individuals (HDI's) that are on the Bitou Municipality database should be notified of the development and invited to bid for project related work.	Developer / Bitou Municipality	Operational phase
Performance Indicator	• Increase in employment of local residents.	

13. Emergency Preparedness

13.1 Emergency response procedures

The potential environmental risks that may arise as a result of construction activities, or during the maintenance of the structures must be identified, and appropriate emergency response procedures must be compiled for each emergency scenario. Potential environmental emergencies that require an emergency response include, but are not limited to, unplanned fires, sewage spills, spills of hazardous chemicals, snake bites etc.

- The construction contractor is responsible for identifying potential significant environmental risks that may arise as a result of pre-construction, construction and rehabilitation activities, and the contractor must formulate emergency response procedures for these potential incidents.
- The ECO, the contractor and the Developer are responsible for ensuring that all construction workers are aware of the emergency procedures, and are properly trained on how to identify and respond to an emergency incident during construction.
- An emergency procedure must clearly indicate who will take charge during an emergency, and the roles and responsibilities of workers and authorities during an emergency.
- The construction contractor is responsible for ensuring that the requirements of the Occupational Health & Safety Act (OHSA) are adhered to during the construction phase. The Developer is responsible for ensuring compliance with the OHSA during the undertaking of maintenance activities.

13.2 Emergency preparedness

The following measures must be implemented, as appropriate, to ensure effective responses to emergencies:

- All workers on site during the construction and operational phase must be properly educated about possible emergency incidents that may arise, how to avoid such incidents and how to respond in the event of an incident. "Refresher" training sessions on emergency procedures must be held if needed.
- All workers must ideally be given basic fire-awareness training, and advised on basic firefighting and safety techniques. Fire-fighting equipment must be available on site during construction and maintenance activities (see section 8.3).
- All workers must be trained on how to respond in the event of a spill of a hazardous substance (fuel, chemicals etc.), if hazardous substances are to be used on site.
- A spill kit for containing and/or neutralising spills of hazardous substances (e.g. hydrocarbons) must be available on site at all times, when hazardous substances are present.
- Any incidents of pollution or spillage of hazardous materials during construction must be reported to the ECO as soon as possible. The ECO must then (depending on the nature of the spill) notify the relevant authorities, if needed. During the operational phase of the development, the Developer is responsible for notifying the relevant authorities of any pollution incidents that arise as a result of maintenance activities.
- A first aid kit must be available on site at all times.
- Emergency contact numbers (including the fire department, police and ambulance) must be prominently displayed on site at all times and regularly updated.
- All emergency incidents must be recorded in a site incident log. The cause of the incident, the measures taken in response to the incident and the efficacy of those measures must also be recorded. This information must be used to inform future emergency preparedness planning, and to avoid prevent similar incidents from arising again.

14. Method statements

The Competent Authority and/or the ECO may require the Developer or Construction Contractor to submit Method Statements for one or more construction-related activity, or any aspect of the management of the site, before the activity is undertaken or during the performance of the activity, if the activity is causing or may cause significant environmental damage, or pose a health and safety risk.

Method Statements need not be complex and lengthy, but must clearly state **how**, **when** and **where** the activity concerned will be undertaken, and must specify **who** will be responsible for undertaking each component of that activity. Method Statements must be prepared by the Construction Contractor and submitted to the ECO for approval before undertaking the activity concerned.

The ECO and / or Competent Authority have the authority to request method statements for activities, including but not limited to:

- Establishment of site camp and stockpile area.
- Cement/ concrete batching, disposal and emergency contingencies.
- Topsoil and sub-soil storage/ stockpiling.
- Storage of fuels and hazardous chemicals and emergency contingencies.
- Waste management system.
- Storm water management and control.
- Fire Control & Fire Emergency Plan.
- Emergency preparedness plan / emergency response procedure (see Chapter 14).
- Post-construction rehabilitation.

The ECO has the authority to prevent activities from being undertaken until such time as a satisfactory Method Statement has been submitted to the ECO and approved by the ECO.

15. Roles and Responsibilities

This EMPr, once approved by the competent authority (DEA&DP), must be seen as binding to the Holder, and any person acting on the Holder's behalf, including but not limited to agents, employees, associates, contractors and service providers.

The Holder and all other persons who may be directly involved in the development are also bound by their general Duty of Care, as stated in Section 28 of the National Environmental Management Act, 1998:

> ***Duty of Care:***
> *"Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm cannot reasonably be avoided or stopped, to minimize and rectify such pollution or degradation of the environment"*

15.1 Duties and Responsibilities of the Holder

The Holder is ultimately responsible for ensuring that the environmental management measures specified in this EMPr, as well as any other conditions specified by the competent authority, are implemented and adhered to during the construction and operational phase (maintenance activities) of the proposed development.

The Holder or delegated party is responsible for monitoring and maintenance during the operational phase. The Holder must ensure that all appointed service providers, contractors and maintenance workers are capable of complying with all statutory requirements of this EMPr and the conditions of the Environmental Authorisation. The Holder is responsible for ensuring that this EMPr and the conditions of the Environmental Authorisation are implemented and adhered to during construction.

The Holder or appointed consultant is responsible for identifying emergency situations that may arise during operational and maintenance activities, and must formulate appropriate emergency response procedures for these emergency scenarios.

15.2 Duties and Responsibilities of the Contractor

The "Construction Contractor" is the entity responsible for undertaking the physical construction of the residential development. The construction contractor is responsible for ensuring that all environmental management measures specified in this EMPr and in the EA are implemented during the pre-construction, construction and post-construction rehabilitation phases, unless agreed otherwise with the Holder. The contractor will be responsible for all costs incurred in the rehabilitation of the site and for ensuring effective environmental management during construction. The contractor must therefore make adequate financial provision for the implementation of all prescribed measures.

It is strongly recommended that the Construction Contractor appoint an Environmental Site Officer (ESO), who will act as the Contractor's representative to monitor and enforce compliance with the conditions of this EMPr, throughout all phases of construction.

In addition to the above, the Construction Contractor is responsible for the following:

- Identify emergency situations that may arise as a result of construction activities, and formulate appropriate emergency response procedures.
- Ensure that all construction workers, including sub-consultants and service providers, undergo environmental awareness training prior to commencing work on site, or as soon as possible thereafter.
- Compile the required method statements, which must be to the satisfaction of the ECO, before commencing with the activity to be governed by the method statement.
- Respond to concerns or issues identified by the ECO, as relates to environmental management, and implement the appropriate management or remediation measures, at the Contractor's own expense (unless agreed otherwise)
- Should third parties be called to the site to perform clean up and rehabilitation procedures, the Construction Contractor will be responsible for all associated costs.

Note that failure to comply with the requirements and conditions of this EMPr and the Environmental Authorisation may result in fines or other penalties being levied against the Construction Contractor by the Competent Authority.

15.3 Duties and Responsibilities of the ECO

The appointed Environmental Control Officer (ECO) is responsible for undertaking regular site visits to monitor and report on the implementation of the EMPr and adherence to the conditions of the Environmental Authorisation during the pre-construction, construction and post-construction rehabilitation phases. The ECO is not required to monitor the site during the operational (maintenance) phase of the development.

15.3.1 Competency of the ECO

The ECO must be independent of the Holder, Engineer, Construction Contractor and their service providers. The appointed ECO must be suitably qualified and experienced, and must be able to

demonstrate that he / she is of sufficient competency to undertake the required task. The ECO must preferably be a resident in close proximity to the development area to ensure quick response if required. The ECO must work in close co-operation with the Construction Contractor, resident engineer or ESO (where applicable) and all contractors in order to identify potential problems before they occur, and provide suitable guidance as to how the identified problems (environmental impacts) can be avoided.

15.3.2 Duties of the ECO

The duties of the ECO include, but are not limited to:

- Conduct a pre-construction site inspection to ascertain the pre-commencement condition of the site (i.e. the status quo);
- Conduct environmental awareness training;
- Undertake regular site visits to monitor compliance with all mitigation, monitoring and management measures contained in the EMPr and the Environmental Authorisation, during the pre-construction, construction and rehabilitation phases of the development;
- Evaluate the achievement of the performance indicators associated with each impact management objective specified in this EMPr;
- Liaise with site contractors, engineers and other members of the development team with regard to the requirements of the EMPr;
- Provide guidance as and when required regarding the implementation of the environmental management measures contained in the EMPr and EA, so as to assist the Holder and contractor in remaining compliant with these measures;
- Assist in finding environmentally acceptable solutions to construction problems;
- Assist with demarcation of working areas, site camp facilities, access roads and no-go areas;
- Monitor that proper topsoil management practices are adhered to on site;
- Monitor that proper waste management & pollution prevention strategies are practised on site;
- Examine method statements, where required;
- Recommend additional environmental protection measures, should this be necessary;
- Furnish contractors with verbal warnings through the Developer / Engineer in case of contravention of the EMPr;
- Recommend that the competent authority furnish errant contractors with predetermined fines, when verbal and / or written warnings are ignored;
- Monitor satisfactory rehabilitation of disturbed areas on site, after construction is complete;
- Keep detailed records of all site activities that may pertain to the environment, and produce compliance-monitoring reports (ECO Reports) for submission to the Holder, and the Competent Authority at regular intervals during the construction phase;
- Submit a final post-construction inspection report, within 6 months of completion of the construction phase. The audit report must detail the rehabilitation measures undertaken, describe all major incidents or issues of non-compliance and any issues or aspects that require attention or follow-up.
- All ECO Reports and Inspection Reports must be submitted to the Holder and Competent Authority, where required.

15.3.3 Frequency of ECO visits

The ECO must conduct weekly site visits during the construction phase, in addition to the start-up and closure inspections.

The ECO has the discretion to undertake additional 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 must also undertake a final inspection (audit) 6 months of completion of construction activities. The purpose of this final inspection is to ensure that the rehabilitation measures applied at the conclusion of the construction phase have been sufficient to promote the successful rehabilitation of the site, and to identify any further issues that require attention or follow-up.

15.3.4 Authority of the ECO

The ECO has the authority to recommend to the authorities that they suspend all works (or part thereof) occurring on site, should any action being undertaken on site not comply with the environmental requirements, and where such actions pose a serious threat to any element of the surrounding environment.

The ECO has the authority to recommend instructions to the Construction Contractor and/or Holder, regarding measures that must be implemented on site in order to ensure compliance with the EMPr and Environmental Authorisation, and/or to prevent environmental degradation or pollution from occurring.

The ECO has the authority to recommend verbal and written warnings to contractors. Should verbal and written instructions and/or warnings be ignored, the ECO may request the Competent Authority to issue pre-determined fines or other penalties.

The ECO has the authority to report incidents of non-compliance to the Competent Authority at any time.

16. Environmental Awareness Plan

Environmental Awareness Training must be conducted prior to the commencement of construction activities. It is the holder's responsibility to familiarise himself/herself with the content and requirements of this EMPr. The holder is also responsible to ensure that the contractor and all labourers working on site during the construction phase are familiar with the content of this EMPr.

The following actions must be taken to ensure that all relevant parties are aware of their environmental role and duties:

1. This EMPr must be kept on site at all times.
2. The provisions of this EMPr and the conditions of the Environmental Authorisation must be explained in detail to all staff during Awareness Training.
3. Training booklets will be handed out to all labourers and must be explained to them.
4. Weekly checks to be done by the Holder's environmental representative who must be on site at all times.
5. The ECO to conduct frequent site visits.
6. Monthly monitoring reports to be compiled by the ECO. These reports will be circulated to all parties involved (including the holder, contractor and the competent authority where required).

The Construction Contractor must make allowance for all construction site staff, including all subcontractors that will be working at the site, to attend environmental awareness training sessions (undertaken by the ECO) before commencing any work on site. During this training, the ECO will explain the EMPr and the conditions contained therein. Attention will be given to the construction process and how the EMPr fits into this process. Other items relating to sound environmental management which must be discussed and explained during the environmental awareness training sessions include:

- The demarcated "No-Go" areas;

- General do's and don'ts of the site;
- Making of fires;
- Waste management, use of waste receptacles and littering;
- Use of the toilets provided;
- Use and control of construction materials and equipment etc.;
- Control, maintenance and refuelling of vehicles;
- Methods for cleaning up any spillage;
- Access and road safety;
- Emergency procedures (e.g. in case of fire, spillage etc.)
- General "best practice" principles, with regards to the protection of environmental resources.

Environmental awareness training and education must be ongoing throughout the construction phase, and must be undertaken regularly if deemed necessary (especially if it becomes apparent that there are repeat contraventions of the conditions of the EMPr), or as new workers come to site. Translators must be utilised where needed.

17. Monitoring, Record Keeping and Reporting

17.1 Environmental Auditing

In accordance with the requirements of the Environmental Impact Assessment Regulations, 2014 (as amended), the holder of the Environmental Authorisation must, for the period that the Environmental Authorisation is valid, appoint a suitably qualified independent person to conduct an environmental audit to audit compliance with the conditions of the Environmental Authorisation and the EMPr.

The holder is responsible for appointing, managing and remunerating the appointed auditor. The auditor may **not** be the appointed Environmental Control Officer (ECO.

The appointed auditor must undertake regular environmental audits every 6 months or according to the frequency specified in the Environmental Authorisation. Following each audit the environmental auditor must submit an audit report to the Competent Authority (in this instance the DEA&DP).

- Environmental auditing and environmental audit reports must adhere to the requirements of the amended 2014 Environmental Impact Assessment Regulations, in particular Section 34 (*Auditing of Compliance with Environmental Authorisation, Environmental Management Programme*) and Appendix 7 (*Objective and Content of Environmental Audit Report*)
- The audit report must provide verifiable findings on the level of compliance with the provisions/ conditions of the Environmental Authorisation and the EMPr, and must also comment on the ability of the measures contained in this EMPr to sufficiently avoid, manage and mitigate environmental impacts.
- Where the findings of the audit report indicate that the impact management measures stated in the EMPr are insufficient to adequately address environmental impacts, recommendations as to how the EMPr must be amended so as to address the identified shortcomings must be made and submitted to the competent authority together with the audit report.

17.2 Construction phase monitoring, reporting and record keeping

The appointed Environmental Control Officer (ECO) is responsible for monitoring the site at regular intervals during the construction phase, in order to ensure that the provisions of this EMPr and the Environmental Authorisation are adhered to and that sound environmental management is ensuing on site.

• Environmental Impact Assessments • Basic Assessments • Environmental Management Planning
• Environmental Control & Monitoring • Water Use License Applications • Aquatic Assessments

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The ECO must compile a monthly ECO report detailing the ECO's observations on site, any instances of non-compliance and any issues or aspects that require attention, follow-up or remedial action. The ECO reports must be submitted to the Holder and to the Competent Authority is so requested by that authority. The ECO inspection reports must include both photographic and written records.

17.2.1 ECO Inspections - Photographic Records

The condition of the surrounding natural environment must be monitored regularly in order to ensure that construction and management activities are not impacting negatively on the condition of the landscape and any sensitive ecosystems. The most effective way to achieve this is by means of a detailed photographic record. In this way, a record of any shift in ecosystem condition can be maintained and potential impacts be detected at an early stage. It is thus recommended that fixed-point photo-monitoring sites could be set up, and photographs must be taken at these sites during each ECO inspection. Where necessary, the entire working area must be well documented and photographed.

17.2.2 ECO Inspections - Written Records

The following record-keeping during the pre-construction, construction and rehabilitation phases of the development is recommended:

- The ECO must complete an ECO Checklist after each ECO site visit.
- The ECO must compile an ECO monitoring report and submit this to the Holder, the Contractor and the Competent Authority (the latter only if required by the Competent Authority). The monthly reports must be a summary of the ECO inspections from the preceding month, and must highlight the key concerns/ issues on site, instances of non- compliance with the EA and EMPr, all instructions issued to the contractor, actions taken and aspects that still require attention.
- All ECO reports and ECO instructions must be retained on file at least for the duration of the construction period (retaining reports for a period of at least 5 years is recommended, in the event that the Competent Authority must request information).
- A record (minutes) of construction site meetings, liaison site meetings between the ECO and resident engineer or contractor, monitoring reports, ECO instructions and ECO observations must be clearly documented and filed on a master file off-site for safe keeping.
- It is recommended that a site register (incident register) be kept on site at the site office for the recording of any environmental incidents (e.g. fires, spills etc.), observations which are contrary to the stipulations within the EMPr and any other contravention deemed necessary for the attention of the resident engineer. Actions taken to remedy the incidents must also be recorded.
- A complaints register must be kept on site in which complaints by any member of the public must be logged.
- The ECO must compile a final post-construction audit report, within 6 months of completion of each construction phase. The audit report must detail the rehabilitation measures undertaken, describe all major incidents or issues of non-compliance and any issues or aspects that require attention or follow-up.

17.2.3 Construction Phase Record Keeping

A copy of the approved EMPr, the Environmental Authorisation and any relevant construction method statements must be kept on site at all times during pre-construction, construction and rehabilitation activities. The ECO Reports must be retained by the Holder for a period of at least 5 years, and must be provided to the Competent Authority upon request.

18. Penalties, Claims and Damages

The contractor will be responsible for all costs incurred in the rehabilitation of the site and for ensuring that all procedures required to rehabilitate the site are implemented. If third parties are called to the site to perform clean up and rehabilitation procedures, the contractor will be responsible for all costs. The competent authority may impose penalties on the Holder or any of the contractors if conditions contained in this EMPr are contravened. This would be based on an agreement or contract between the Holder and the contractor.

Penalties could be imposed in terms of Chapter 11 of the Western Cape Bill on Planning and Development as published in the Extraordinary Provincial Gazette No 5183, 3 October 1997, and would be applicable for any action which leads to damage to the natural environment. Please note that the payment of any fines in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

In cases where severe environmental damage occurs, the competent authority law enforcement division may take legal action against the responsible parties. The reasons for this could include, among others:

- Not implementing the conditions of the EMPr;
- Spillage that result in environmental damage;
- Incorrect handling and storage of construction materials and chemicals;
- Sensitive areas that are not clearly demarcated;
- Performing ablutions in areas other than facilities provided for such actions; and
- Occurrence of unattended and out of control fire.

The Contractor shall comply with the environmental specifications and requirements on an ongoing basis and any failure on his part to do so will entitle the ECO recommend a penalty / fine as described in the following section.

The following fine structure shall apply:

Offence	Fine
Any vehicles, plant, or thing related to the Contractors operations within the designated boundaries of a "no-go" area.	**R 1,000.00**
Any vehicle being driven, and items of plant or materials being parked or store outside the demarcated boundaries of the site.	**R 1,000.00**
Persons walking outside the demarcated boundaries of the site.	**R 100.00**
Persistent and un-repaired oil leaks from machinery. The use of inappropriate methods of refuelling such as the use of a funnel rather than a pump.	**R 1,000.00**
Littering by individuals.	**R 250.00**
Deliberate lighting of illegal fires on site.	**R 1,000.00**
The eating of meals on site outside the defined eating area. Individual not making use of the site ablution facilities.	**R 250.00**
No on-site implementation of waste management system.	**R 1,000.00**
Waste not collected and contained immediately.	**R 1,000.00**
No recycling of waste.	**R 1,000.00**
Burning, burying or disposing of waste other than as prescribed.	**R 1,000.00**
Waste not disposed of at an approved landfill.	**R 1,000.00**
Chemicals and / or waste spilled on ground.	**R 250.00**
Use of other areas for toilet purposes and / or disposal of chemicals / waste.	**R 250.00**

Offence	Fine
Stockpiling of soil in an unspecified area.	**R 2500.00**
Stockpiles not located and aligned so as to minimise impacts.	**R 2500.00**
Spilling of soil or construction material into water body or stream.	**R 1,000.00**
Clearance of vegetation within the aquatic buffer.	**R 1,000.00**

The above does not absolve the transgressor from being prosecuted in terms of the ***National Environmental Management Act (Act 107 of 1998)*** which may result in further penalties and other actions by State Departments.

19. Conclusion

The recommendations and mitigation measures prescribed in this EMPr have been formulated with the intention of addressing potential pre-construction, construction and operational phase impacts on the environment. It is likely that if the conditions, requirements and recommendations of the above EMPr are implemented as described and the relevant stakeholders adhere to the various mitigation measures, then the project will be completed without unforeseen negative environmental impacts.

Familiarity with the contents of this EMPr by the contractors and other individuals involved in the development project will assist in achieving "environmental best-practice", which ultimately ensures that the project arrives at a sustainable outcome.