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DRAFT
ENVIRONMENTAL MANAGEMENT PLAN
FOR CONSTRUCTION OF ERF 438, STANFORD

STANFORD GREEN
eco lifestyle estate

Erf 438 Stanford

August 2024

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STATEMENT OF INDEPENDENCE

Lornay Environmental Consultants nor any of the authors of this report have any material present or contingent interest in the outcome of this report, nor do they have any financial or other interest which may affect the independence of the author(s) or Lornay Environmental Consulting. The consultant fees paid to Lornay Environmental Consulting for the completion of this report is in line with standard professional fees and daily rates. The settling of the professional fee is not dependent on the outcome of the report.

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1. INTRODUCTION

This Environmental Management Plan (EMP) serves as a guideline document for the construction phase of the subdivision and residential development on Erf 438 Stanford, to be known as Stanford Green.

This EMP describes mitigation measures and is prescriptive, identifying specific individuals or organisations responsible for undertaking specific tasks during the construction phase of the development with the aim to ensure that potential impacts on the environment during the construction phase, are minimised and / or avoided. The EMP is an open-ended document and may require updating from time to time and as the activities evolve on site. The construction EMP has been compiled as part of the Basic Assessment process and once approved by the Competent Authority, is legally binding. This EMP is to be read in conjunction with the Architectural and Landscape Guide for Homeowners Document, prepared by Sadie Coetzee Architects attached.

This EMP is drafted in line with the requirements outlined in Section 24N of the National Environmental Management Act (NEMA) (Act 107 of 1998).

2. ACTIVITY

Erf 438 Stanford is located adjacent to the village of Stanford in the Overstrand Municipality, east of the R43. The development of the erf and decommissioning of the existing activities onsite, were assessed during the NEMA Environmental Authorisation process and the following activities were applied for under the preferred alternative:

28 Residential Properties:

- → 27 x Residential Zone 1: Single Residential
- → 1 x General Residential Zone 1: Town Housing (The Lodge)

Private Open Spaces; and

Private and Public Roads

Erf 27 Land use - General Residential: Town Housing (The Lodge)

- → Property Size: 4902 m²
- → Building Size:
  - o Front of house 250 m²
  - o Back of House (BOH) 150m²
  - o Accommodation Units
  - 2 x Single Room – 25m² (5mx5m)
  - 12 x Double Suites – 50m² (5mx10m)
  - 2 x Family – 60m² (5mx12m)
  - Total 16 units - Total 650 m²

Erf 28 Land use – Residential Zone 1: Single Residential

- → Property Size: 1383 m²
- → Building size: To be determined, used for Guest house purposes, ten overnight beds.
- → 474m² Undevelopable area

Table 1. Town planning components

Legend Colour	Zoning	Size (m^2)	Percentage
	Residential Zone 1: Single Residential	18040	34.36 %
	General Residential Zone 1: Town Housing	4902	9.34 %
	Open Space Zone 3: Private Open Space	20967	41.43 %
	Open space at Entrance gate	787	
	Transport Zone 2: Road and Parking (Pvt)	5130	9.77 %
	Transport Zone 2: Road and Parking	1299	2.63%

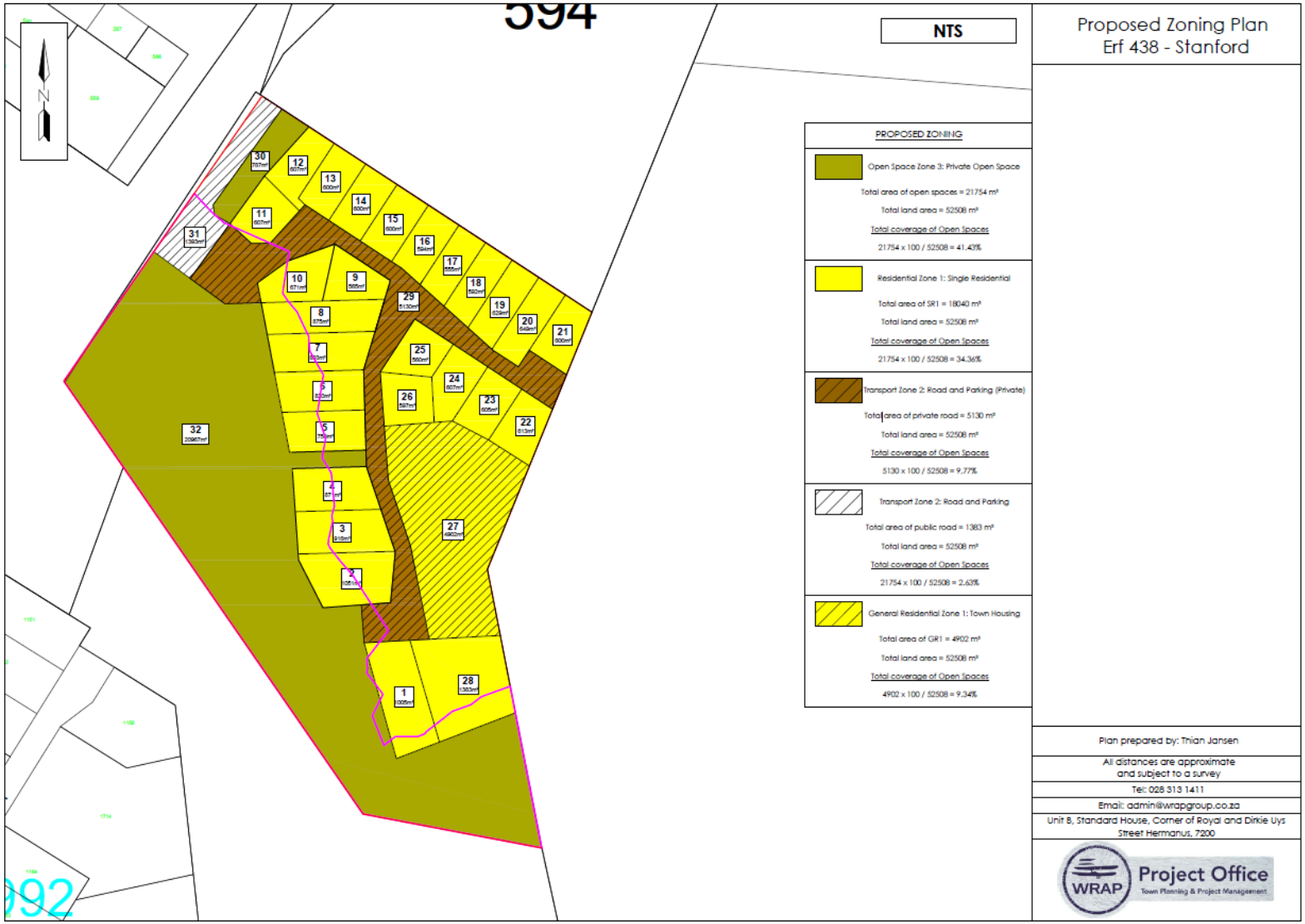

Figure 1. Preferred alternative.

Note: The Pink Line indicates the Wetland / Mill Stream buffer

Figure 2. The preferred layout

Table 2. Description of Erven, sizes and zoning

Erf no.	Erf Size (m²)	Non-Developable Area m²	Zoning
1	1 005	213	Residential Zone 1: Single Residential
2	1 051	569	Residential Zone 1: Single Residential
3	916	343	Residential Zone 1: Single Residential
4	871	397	Residential Zone 1: Single Residential
5	758	347	Residential Zone 1: Single Residential
6	820	407	Residential Zone 1: Single Residential
7	893	378	Residential Zone 1: Single Residential
8	875	265	Residential Zone 1: Single Residential
9	565	-	Residential Zone 1: Single Residential
10	671	156	Residential Zone 1: Single Residential
11	607	-	Residential Zone 1: Single Residential
12	607	-	Residential Zone 1: Single Residential
13	600	-	Residential Zone 1: Single Residential
14	600	-	Residential Zone 1: Single Residential
15	600	-	Residential Zone 1: Single Residential
16	594	-	Residential Zone 1: Single Residential
17	555	-	Residential Zone 1: Single Residential
18	592	-	Residential Zone 1: Single Residential
19	629	-	Residential Zone 1: Single Residential
20	649	-	Residential Zone 1: Single Residential
21	600	-	Residential Zone 1: Single Residential
22	613	-	Residential Zone 1: Single Residential
23	605	-	Residential Zone 1: Single Residential
24	607	-	Residential Zone 1: Single Residential
25	560	-	Residential Zone 1: Single Residential
26	597	-	Residential Zone 1: Single Residential
27	4 902	-	General Res. Zone 1: Town Housing
28	1 383	474	Residential Zone 1: Single Residential
	5 130	-	Transport Zone 2: Road and Parking (A) (Private)
	1 299	-	Transport Zone 2: Road and Parking (B) (Public)
	21 588	-	Open Space Zone 3: Private Open Space
TOTAL	**52 342**	**3 549**	

3. KEY TERMS AND ABBREVIATIONS

BAR	Basic Assessment Report
CARA	Conservation of Agricultural Resources Act (Act No. 43 of 1983)
DEA&DP	Department of Environmental Affairs and Development Planning (Western Cape)
EA	Environmental Authorisation
ECA	Environment Conservation Act (Act No. 73 of 1989)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
HOA	Home Owners Association
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEM:BA	National Environmental Management Biodiversity Act (Act No. 10 of 2004)
NEM:WA	National Environmental Management Waste Act (Act No. 59 of 2008)
PPE	Personal Protective Equipment

SDS	Safety Data Sheets
SHE	Safety Health and Environmental

Basic Assessment - Process followed to receive Environmental Authorisation from the Competent Authority, necessitated by NEMA. The Basic Assessment Report (BAR) is drafted in line with the legislation.

Competent authority - The Department of Environmental Affairs and Development Planning (DEA&DP), Western Cape.

Contractor - the main or specialised contractors as appointed by the developer / applicant for the execution of the works, including all sub-contractors

Developer / Applicant – Omni King Investments

Environmental Control Officer (ECO) - a suitably qualified person to be appointed by the Developer / Applicant, to oversee the implementation of the Construction Phase EMP and environmental agreement until the completion of works on the site

Environmental Management Plan / Programme (EMP/r) - this document, approved by the competent authority, to control the implementation of the works on the site in such a way as to ensure that they do not result in undue or reasonably adverse impacts on the environment.

General waste - Waste that does not pose an immediate hazard or threat to health or to the environment, and includes domestic waste, building and demolition waste, business waste and inert waste

Hazardous waste - Any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

Home Owners Association – Home Owners Association will be responsible for oversight of Stanford Green once the Developer is satisfied that the infrastructure is complete and there are occupied residences on the property.

Project manager - Overall responsible and accountable person for the site during the construction, operation and decommissioning of the facility.

Project Management team - The responsibility of the EMP implementation resides with this team. This team includes a Project Manager and appointed contractors and consultants.

Safety, Health and Environmental Officer (SHE Representative) – Applicant / developer will appoint one Safety Health and Environmental Officer, assisting the construction manager on Safety, Health and Environmental aspects of the project on the construction site.

Site Manager **–** the employee of the main contractor responsible for the day-to-day control of all activities and operation on site.

Sub-contractor and Contractor - Any provider of services, goods or people to the Applicant / Developer, for the construction, operation or decommissioning.

4. ENVIRONMENTAL CONTROL ON SITE

4.1. Approach

The Table below illustrates the various approaches to be undertaken to manage potential scenarios as a result of the activity on site:

Table 3: Impact management

Avoidance	Avoiding activities that could result in adverse impacts and/or resources or areas considered sensitive.
Prevention	Preventing the occurrence of negative environmental impacts and/or preventing such an occurrence having negative impacts.
Preservation	Preventing any future actions that might adversely affect an environmental resource.
Minimisation	Limiting or reducing the degree, extent, magnitude or duration of adverse impacts through scaling down, relocating, redesigning and/or realigning elements of the project.
Mitigation	Measures taken to minimise adverse impacts on the environment.
Enhancement	Magnifying and/or improving the positive effects or benefits of a project.
Rehabilitation	Repairing affected resources, such as natural habitats or water resources.
Restoration	Restoring affected resources to an earlier (possibly more stable and productive) state, typically, 'background' or 'pristine' condition. These resources may include soils and biodiversity
Compensation	Compensating for lost resources, and where possible, the creation, enhancement or protection of the same type of resource at another suitable and acceptable location.

4.2. Organisational Structure and Responsibilities

The Applicant and their appointed contractors will be responsible for the construction phase of Standford Green critical infrastructure development. All construction related staff are to be briefed on the requirements of the EA and EMP and copies of these documents are to be kept on site during all phases of construction.

Subsequently, the property owners of each erf will be responsible for the appointment of contractors and construction on their property however this will be guided by the developer. This document and the "Guide for Homeowners" document attached, will then be enforced and the Home Owners Association will become involved with approval of plans prior to their submission the Overstrand Municipality.

Environmental Control Officer

Due to the sensitivity of the site, specifically the wetland, Mill Stream and White Milkwood forest, it is recommended that an Environmental Control Officer (ECO) be appointed prior to the construction phase of the development. ECO site visits should take place for the duration of the construction phase as per the conditions of the Environmental Authorisation. This will ensure that the additional conditions contained in the EA, EMP, HOA, Specialist reports and BAR are implemented.

The responsibilities of the ECO during the construction phase of the project, will include, but not be limited to, the following:

- → To environmentally educate and raise the awareness of the Contractors and their staff and to target responsible individuals as key players for environmental education and to facilitate the spread of the correct environmental attitude during the contract work
- → To ensure that no-go areas are accurately and appropriately demarcated
- → To review method statements and to determine the most environmentally sensitive options
- → To oversee the implementation of environmental procedures set out in this document
- → To attend site contractor's meetings, as required and report on environmental issues
- → To receive notices and minutes of all site meetings
- → To maintain an open and direct channel of communication with the construction team and site manager
- → To take immediate action on site where clearly defined no-go areas are violated, or in danger of being violated, and to inform the site manager immediately, of the documents and the action taken
- → To keep an up-to-date record of works on site, as they relate to environmental issues, in the site diary.
- → To be contactable by the public regarding matters of environmental concern during the construction phase.

Project Manager.

In addition to the ECO, the Project Manager will be responsible for the following:

- → All activities relating to the construction phase
- → Delegate activities in accordance with the EMP and EA
- → Communicate design changes and technical issues to the team timeously
- → Ensure that all contractors are managing their team adequately and abiding by the conditions of the EMP and EA
- → Ensuring that the Contractors are aware of the conditions of the EMP and EA

Contractor

The Contractor (including sub-contractors) will be responsible for:

- → Familiarising themselves with the EA and EMP
- → Complying with the EMP and EA commitments and any other legislative requirements as applicable
- → Include the demarcation of the no-go area and any protected trees or vegetation in the scope of works
- → Adhering to any instructions issued by the Project Manager or the Safety, Health and Environmental (SHE) Officer, if applicable
- → Submitting an environmental report at designated site meetings on the environmental incidents that have occurred, if applicable

→ Arranging that all employees and those of the subcontractors receive appropriate training prior to the commencement of construction, taking cognisance of this EMP and EA

4.3. Site documentation and reporting

A logbook should be kept on a construction site for the purposes of recording on-site instructions and as a general record of environmental issues. The logbook should be kept for a minimum of two years after the activity is completed for the relevant authority to review if deemed necessary. A photographic record of before and after construction should also be kept for visual reference purposes. The logbook should also contain the following sections:

→ *Environmental Site Instruction*

The Environmental Site Instruction section will be used for the recording of general site instructions relating to the protection of environmentally sensitive or potentially impacted areas or features on the site as applicable, by the ECO / site manager / construction team.

→ *Permits and Licences*

Copies of permits and/or licences required from relevant Competent Authorities

→ *Site Diary*

The purpose of this section will be to record the comments of the ECO / site manager / contractor etc., as they relate to activities on the site. The diary should also hold the complaints register, received from onsite personnel and the general public, Environmental Incident Register, disposal certificates for waste and sewage, non-conformance information, and written corrective active instructions. Copies of Minutes of Site Meeting must also be retained on site.

→ *Monitoring Section*

The purpose of this section will be to record the comments of the ECO / site manager / contractor, during construction, relating to the implementation of the mitigation measures as well as waste, recycling, landscaping and renewable energy measures used during the construction. The findings of all inspections and internal audits should be structured into instructive reporting, providing information to all responsible personnel. Corrective actions must be clearly defined where required. Within the reporting function a structured review component will be enforced. This review function will assist in prescribing necessary corrective actions. During construction, the ECO / Project management team, will be responsible for onsite monitoring to ensure that the contractor abides by the conditions of the EA and EMP.

The Environmental Authorisation (EA) as well as a copy of the approved Environmental Management Plan (EMP) for Construction, should also be accessible on site at all times.

5. ENVIRONMENTAL AWARENESS

It is important to ensure that the contractors and employees associated with the proposed activity receive the appropriate level of training and awareness to ensure that continual environmental due diligence and conservation is applied at all levels of work carried out on site. Employees, contractors and sub-contractors must be made aware of their responsibilities in terms of relevant legislation, guidelines, as well as this EMP and EA.

The environmental conditions should be included in the contracts issued to the contractors, to make them aware of the potential environmental impacts and risks associated with the proposed development as well as what measures are expected of them whilst conducting work on site. The importance of implementing the conditions

in the EMP and the necessity of good housekeeping practices, will be made known to the contractors and employees.

5.1. Aim of the Environmental Awareness Plan

- → Promote environmental education and conservation on site.
- → Inform employees and contractors on the applicable environmental procedures and plans.

5.2. Environmental Awareness Training and content

- → All personnel should undergo induction, which as a minimum should include Safety, Health and Environmental awareness.
- → All attendees should sign an acknowledgement register upon receiving and understanding the induction
- → Construction and operational staff should be trained on the implementation of emergency procedures where applicable
- → Definitions as used in this EMP should be provided
- → How and why environmental protection is necessary, should be explained
- → Management measures required to prevent environmental impacts should be outlined
- → Emergency and spills response procedures should be outlined

Environmental conditions in the induction should focus on the following:

- → No-go areas
- → Good house-keeping practices
- → Air quality (Dust)
- → Waste Management, including waste concrete
- → Odour/vermin Control
- → Proper use of sanitation facilities; and
- → Chemicals and materials storage, use and handling.

Environmental training should be implemented at the onset of the construction and can be done verbally or in written format. Proof of training should be kept on record.

6. LEGISLATIVE REQUIREMENTS

A Basic Environmental Assessment process was applicable in terms of the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and the Environmental Impact Assessment (EIA) regulations (2014) (as amended). Appendix 4 of the NEMA EIA Regulations (GN. R982) sets out the minimum requirements for the drafting of an Environmental Management Plan (EMP). This EMP has been created in fulfilment of these prescribed requirements for the construction phase of the activity. The implementation of this EMP will be a condition of approval of the Environmental Authorisation (EA). Failure by the applicant, to comply with this EMP, will therefore constitute an offence, and the applicant and / or the appointed contractors can be held liable for penalties and / or legal action. It is therefore important that a copy of this EMP be issued to each contractor, preferably at the appointment stage, in order to allow for the costs of implementing the EMP, to be included in cost proposals. This will also ensure that the contractor is aware of his responsibilities prior to appointment and commencement. Each appointed contractor involved in the project, as well as the project manager (as applicable), will be required to sign for and thereby acknowledge contents of, the approved EMP and therefore abide by the specifications of the document and any amendments thereto.

Other applicable legislation

The Constitution of The Republic of South Africa (Act 108 of 1996)

The Constitution of the Republic of South Africa states that everyone has a right to a non-threatening environment and that reasonable measures are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

National Environmental Management Act (Act 107 of 1998)

The National Environmental Management Act (NEMA), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the relevant competent authorities. NEMA is a National Act, which is enforced by the Department of Environmental Affairs (DEA). These powers are delegated in the Western Cape to the Department of Environmental Affairs and Development Planning (DEA&DP).

National Environmental Management: Biodiversity Act (Act 10 of 2004)

Chapter 4 of the National Environmental Management: Biodiversity Act, 2004 (NEMBA) deals with threatened and protected ecosystems and species. The need to protect listed ecosystems is addressed (Section 54). Section 73 deals with Duty of Care relating to invasive species, while Section 76(2) calls for development of invasive species monitoring, control and eradication plans by all organs of state in all spheres of government, as part of environmental management plans required in terms of Section 11 of NEMA. To be read with:

National Forest Act (Act 84 of 1998)

The cutting, trimming, pruning or removal of White Milkwood (*Sideroxylon inerme*) will require a permit from the relevant Department. This document must be kept on Site.

The National Water Act, 1998 (Act No. 36 of 1998)

The transformation of the hillslope seep wetland and any construction within the stream or wetland require a Water Use Licence (WUL) application. A copy of this document must be kept on site.

National Environmental Management: Waste Act (Act No. 59 of 2008)

The National Environmental Management: Waste Act (NEM:WA) provides for specific waste management measures (disposal and storage) and the remediation of contaminated land.

National Environmental Management: Air Quality Act (Act No. 39 of 2004)

Section 32 provides provision for the control of dust, section 34 provides provision for the control of noise and section 35 provides provision for the control of offensive odours, all which may be experienced during the construction or operation of an applicable development.

Environment Conservation Act (Act No. 73 of 1989) (Repealed) to be read with Environment Conservation Amendment Act (Act 94 of 1993)

The Environment Conservation Act (ECA), provides provision for the prevention of littering by employees and subcontractors during construction and the maintenance phases of development.

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

Section 8 outlines the general duties of employers to their employees and section 9 outlines the general duties of employers and self-employed persons, to persons other than their employees.

Hazardous Substances Act (Act No. 5 of 1973)

This Act provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances.

7. CONSTRUCTION PHASE IMPACTS AND MITIGATIONS

7.1. Specialist assessment and findings

The Preferred Alternative has been informed by these specialist studies:

AGRICULTURAL COMPLIANCE STATEMENT FOR A PROPOSED RESIDENTIAL DEVELOPMENT IN STANFORD, WESTERN CAPE
Report by Johann Lanz 29 April 2024

The property is within the urban edge and is zoned as a residential. The site falls outside an area that is classified as a Protected Agricultural Area (PAA). It used for the cultivation of role on lawn and not as cropland and therefore does not contribute to food security in the Western Cape. Viable rain-fed crop production is constrained by the combination of low rainfall and poor soil on the site, which further reduces the land capability. The specialist concluded that the nature and layout of the proposed development will have no bearing on the significance of agricultural impacts, as agriculture will be completely excluded from the property. Likewise in the absence of the proposed development i.e. the No-Go option, will also not have an agricultural impact as this is marginal agricultural land, within the urban edge, zoned as residential and not productive cropland.
No specific mitigation or management measures required.

ARCHEOLOGICAL IMPACT ASSESSMENT
Report by Jenna Lavin CTS Heritage April 2024

This specialist study was undertaken as requested by Heritage Western Cape, in the Section 38(8) response dated 27 February 2024.

The investigation of the site during the Environmental Authorisation process, established that there is low density Middle Stone Age (MSA) scatter of artifacts on the soil surface in the accessible areas where the grass is being cultivated that probably extends across the property in inaccessible areas under the leaf litter under the trees and the lawned areas. However, the artefacts have limited scientific value due to the many years of ongoing agricultural activity on the property. They do not have enough cultural value to warrant conservation but they are valuable in terms of rarity as not much research has been done in the area.

The specialist had no objection to the proposed development in terms of the archaeology, but the following mitigation measure must be included in the EMP / condition of authorisation:
"Should any buried archaeological resources or human remains or burials be uncovered during the course of development activities, work must cease in the vicinity of these finds. Heritage Western Cape (HWC) must be contacted immediately in order to determine an appropriate way forward."

HERITAGE IMPACT ASSESSMENT INCLUDING VISUAL AND PALEOTOLOGICAL)
Report by Jenna Lavin CTS Heritage April 2024

The proposed development is located in an area that has generally high levels of palaeontological, archaeological and cultural landscape value and as such, any proposed development must therefore be carefully assessed in terms of impacts to these significant resources.

The assessment shows that the impact on palaeontological resources is low, as the development will only require minor excavation, reducing the risk of disturbing significant palaeontological heritage.
The report recommends implementing mitigation measures, such as a Chance Fossil Find Protocol, to address any unexpected palaeontological discoveries during construction.

Cultural landscape resources have been assessed at the broader landscape, townscapes and site scales recognising the location of Stanford within Klein Rivier Valley as a distinctive cultural landscape and the location of Erf 438 within the Stanford HPOZ which is of Grade IIIA heritage value. At the site scale the following heritage resources are identified:

- → Die Bron/Die Oog has been graded IIIA in terms of the Overstrand Heritage Survey (2009) in terms of its historical, technological and environmental significance being closely related to the development of Stanford since the mid-19th century and the nature of the gridiron pattern and associated leiwater system. The associated mill stream traversing the southern portion site is also worthy of Grade IIIA heritage value.
- → The milkwood forest has been identified in the Overstrand Heritage Survey (2009) as conservation-worthy. Although no heritage grading has been assigned to the forest in terms of this survey, this distinctive landscape feature is worthy of Grade IIIA heritage value.
- → The R43 and the R326 have been designated as HPOZ: Scenic Drives being routes of regional scenic significance. While the site is located adjacent to the R43, the site is located some distance from the R32 and will be obscured from view by future development to the north and north-east of the site.

The principle of development of the site has been supported from a cultural landscape perspective. Heritage indicators have been prepared at the broader landscape, townscape and site scales. The proposed development is largely in accordance with the heritage indicators with further refinements required and indicated below.

There was no objection to the proposed development from a heritage perspective on condition that:

1. *The following refinements are implemented in the project design and are submitted to HWC for further comment and endorsement:*
    a. *Detailed designs of the Treehouse Lodge being submitted to HWC for further comment and endorsement.*
    b. *Amendment to the double storey height of the proposed residential buildings by allowing for a roof attic/loft expression of upper storey elements.*
2. *Detailed design development proceeding largely in accordance with the Site Plan and Landscape Plan as below:*

Figure 3. The preferred layout

3. Detailed design development proceeding largely in accordance with the Landscape Development Plan and Stanford Green Architectural Guidelines respectively.
4. The HWC Chance Finds Protocol as attached in the PIA, is implemented for the duration of excavation activities
5. Should any buried archaeological resources, palaeontological resources or human remains or burials be uncovered during the course of development activities, work must cease in the vicinity of these finds. Heritage Western Cape (HWC) must be contacted immediately in order to determine an appropriate way forward.

AQUATIC BIODIVERSITY THEME

Site screening and delineation report prepared by Delta Ecology – Joshua Gericke
Impact assessment report prepared by Delta Ecology – Kim van Zyl

Three wetlands were identified within the proposed site, including the Mill Stream wetland (classified as a Unchanneled Valley Bottom Wetland (UVBW)), a small tributary thereof (also a UVBW) and a hillslope seep wetland within the onsite farmed area. The delineated onsite wetlands were assessed using current best practice assessment methodologies to determine the present ecological state (PES), ecological importance and sensitivity (EIS), wetland ecosystem services (WES), and recommended ecological category (REC) metrics. The results of these assessments are as follows:

	PES	EIS	WES (Highest)	REC
Mill Stream UVB Wetland	C	High	High	B
Tributary UVB Wetland	C	High	Moderate	B
Hillslope Seep Wetland	E	Moderate	Moderately Low	D

Although the condition of the onsite UVB wetlands was moderately disturbed, the high to moderately high EIS and WES scores indicate that these wetlands are sensitive and important in terms of conservation planning or provision of ecosystem services. The hillslope seep wetland was found to be seriously disturbed, and of moderate to low importance in terms of conservation planning or provision of ecosystem services and hence has been included in the development footprint.

Aquatic biodiversity impacts associated with the development were identified and assessed using both an impact assessment methodology compliant with NEMA requirements and the Risk Assessment Matrix prescribed by GN509 of 2016. The results of the assessment of wetland loss along with four additional impacts during the construction and operational phases, given implementation of the listed mitigation measures, are summarised in the table below which ha been extracted from the Aquatic Boisvert Impact Assessment:

	Rating	Risk Class	Applicable to
		Construction Phase	
Impact 1: Wetland Loss	Medium	Moderate	Hillslope Seep
Impact 2: Altered flow	Low	Low	UVBWs
Impact 3: Water Quality Impairment	Very Low	Low	UVBWs
		Operational Phase	
Impact 4: Altered flow	Low	Low	UVBWs
Impact 5: Water quality impairment	Very Low	Low	UVBWs
"No Go" Scenario	Low	Not Assessed	Hillslope seep & UVBWs

The key recommendations are:

- → Avoid encroachment into the delineated UVBWs during construction and operational phases
- → Avoid encroachment into the 32 m buffer area around each wetland, apart from limited activities – specifically indigenous gardens and pools (recommended to be non-chlorinated eco pools)
- → Tie into mainline sewage if possible or use fully contained conservancy tanks serviced by truck. No sewage treatment, irrigation or soak-aways should be contemplated. Note that the development will connect to existing municipal infrastructure and service confirmation has been provided by the Overstrand Municpality
- → Allowance must be made for stormwater to be treated in a vegetated detention pond and/or a substantial vegetated swale before release into the UVBWs.
- → Municipal water supply should be used if possible. If not, groundwater abstraction would be preferable to wetland abstraction. Note that only municipal water will be sued as per the attached municipal confirmation and engineering reports.

The following mitigation measures have been adopted from the Rebelo *et al.* 2004 Biodiversity Management Plan for the Western Leopard Toad *Sclerophrys pantherinus*. It is essential that these proposed mitigation measures are implemented with the aim to minimize the impact of urban development (specifically habitat fragmentation, obstacles to toads' movements, and road mortalities) on the species:

- → It is recommended that a suitably qualified Environmental Control Officer (ECO) is appointed during the construction phase to ensure that recommendations as per this report, and other specialist reports, are implemented.

- → Toad-friendly curbs stones should be installed i.e. small curbs stones that are less than 50 mm tall, or half road gutters which provide passageways for toads. These can be implemented throughout the estate or at intervals of 50 m.
- → An appropriate road reserve should be implemented for internal access roads within the estate to facilitate the movement of toads.
- → Boundary walls and fences should be permeable to toads. Integrate toad holes of at least 100 mm diameter, spaced every 20 meters, and not exceeding 300 mm in length at ground level. Alternatively open gutters can be a suitable option.
- → Stormwater systems should be designed with suitably spaced escape areas, allowing toads to escape. These escape areas should be positioned at intervals of at least 50 m.
- → The estate should install non-chlorinated eco pools, ideally with a "beach pool" design with gently sloping sides emulating the natural bank of a wetland allowing toads to enter and exit the pool freely. Alternatively, if a pool design with high sides is installed, incorporate escape pathways such as toad ladders, toad friendly steps, or floating vegetated platforms anchored to the side of the pool.
- → To prevent road mortalities, Western Leopard Toad signage should be erected and a speed limit within the eco estate should be implemented and strictly adhered to.
- → Toad friendly gardens should be created, when it is not the toads breeding season (late July to September with the main breeding month being August), they inhabit suburban gardens. Natural vegetation should be planted to create ideal toad habitat.

Specific mitigation measures for construction:

Impact 1: Wetland loss in the delineated hillslope seep

- → Maintain and protect the onsite UVBW in perpetuity as a wetland offset area for the loss of the onsite hillslope seep wetland
- → Remove all alien invasive vegetation present within the UVBW wetland and replant with indigenous wetland vegetation
- → A suitable Rehabilitation and Management Plan is required for the UVB Wetlands to be retained on site

Impact 2: Altered flow regime within the delineated UVBWs

- → Establish a 32 m buffer area around the UVBW Wetland area
- → Ensure that runoff and / or stormwater generated onsite flows into the wetland areas through an appropriately designed broad, vegetated earth swale.
- → Remove all alien invasive vegetation present within the UVBW wetland and replant with indigenous wetland vegetation
- → A suitable Rehabilitation and Management Plan is required for the UVB Wetlands to be retained on site

Impact 3: Water quality impairment within the UVBWs

- → UVBWs must be marked as No-Go Areas during construction
- → Bunded, impervious areas, more than 32 m away from the areas must be determined by the ECO construction related activities including temporary toilets, parking, servicing, mixing, pouring and batching of cement and other chemicals.
- → No pollutants are permitted to infiltrate into the UVBW areas or 32 m zone due to presence of the Western Leopard toad (*Sclerophrys pantherinus*)
- → Construction workers and employees must be educated about these species and other fauna and the no kill policy

Impact 4: Altered flow regime within the UVBW

- → Establish and maintain the 32 m buffer post construction and post commencement, into perpetuity
- → Ensure that runoff and stormwater generated on site flows into the wetland areas through an appropriately designed broad, vegetated earth swale.
- → Remove all alien invasive vegetation present within the UVBW wetland and replant with indigenous wetland vegetation
- → A suitable Rehabilitation and Management Plan is required for the UVB Wetlands to be retained on site

Impact 5: Water quality impairment of the UVBWs

- → Establish and maintain the 32 m buffer post construction and post commencement, into perpetuity
- → Ensure that runoff and stormwater generated on site flows into the wetland areas through an appropriately designed broad, vegetated earth swale.
- → Remove all alien invasive vegetation present within the UVBW wetland and replant with indigenous wetland vegetation
- → No sewage treatment, irrigation or soak-aways are permitted
- → Monitor for sewage leaks

TERRESTRIAL BIODIVERSITY AND PLANT SPECIES

Report by Bernard Oberholzer

The specialist has identified and listed the plants found on the property, including the UVB wetlands. The two most important species are White Milkwood (*Sideroxylon inerme*) and Olive (*Olea europea subsp. africana*). The White Milkwood is Specially Protected species. No other specially protected or endangered species were identified within the development area.

There are a number of exotic garden species and trees planted as wind breaks (e.g. Blue Gum Trees, and Casuarina Trees,) some of these trees should be removed as they are Invasive Species that impact on the Wetland areas, and are category 1b, 2 or 3. There are indigenous plants (Reeds and bulrushes) in the UVB wetland and stream, as well as invasive species (Prickly pears and Port Jackson Willow) which must be removed and will require ongoing removal and management.

A large portion of the property is planted to Buffalo grass, of which most is in the cultivated area that is identified as a Hillslope Seep wetland, and which is sold as roll on lawn. This grass is indigenous, but cultivation requires irrigation, fertilizers herbicides and removal of a small amount of topsoil with every roll of grass 'harvested'. Soil is introduced on site to replace the removed soil.

FAUNAL ASSESSMENT

Report by Whale Coast Conservation (Sheraine van Wyk)

Due to the transformed nature of the site in the roll-on lawn sections, and the presences of wetlands and the Mill Stream with some natural vegetation, the presence of amphibians is highly likely. This coupled with the likehood of the Leopard toad, resulted in the investigation of the faunal situation on site with specific focus on amphibians.

The following observations were made:

Observations on site

→ During the daytime site visit I detected Common Caco and Clicking Stream Frogs calling. During my nighttime site visit I detected over 200 calling males of the Common Caco frogs, over 100 calling males of the Clicking Stream Frogs, and one Cape Sand Frog calling. These were detected in the area marked in yellow on the aerial photograph of the site

Figure 3. Areas occupied by amphibians on site (Whale Coast Conservation)

→ Most of the frogs were found in the northernmost area on municipal land currently leased to a roll-on grass operation, and in the riparian area of the Mill Stream in the south. The agricultural area between these areas showed high levels of ecological disturbance and was unoccupied by frogs, most likely due to the application of pesticides and fertilizer. As noted in the Aquatic Biodiversity Impact Assessment, soil has been brought into this area and compacted. Although I did not test water quality, I observed many instances of algae growth in the standing water in the central agriculturally active area, which would indicate that the water is nutrient enriched.

→ Although the vegetation in the northern area appears ideal for chameleons, we did not find any during our night survey of the area.

→ There is invasive grass growing everywhere on the site. This grass is outcompeting the natural vegetation in the north, encroaching into the tributary wetland in the southeast area and, is also prominent in the Milkwood Forest. Grass invasion generally in a milkwood forest is accompanied by dieback of the trees.

→ The Milkwood Forest is a jewel on this property, and Whale Coast Conservation support Bernard Oberholzer's
recommendations regarding its protection and preservation.

→ Nesting Spotted Eagle Owls were observed in one of the Milkwood trees (close to the prickly pears, which should be removed). If this breeding site is to be preserved (and it should be), then it should ideally be
cordoned off from humans as part of the site design. According to Stanford Bird Club, there are two breeding pairs of Spotted Eagle Owls (mottled brown) on the site and Sparrow Hawks are regularly seen flying over the area.

→ There are several alien and invasive plant species (including gum trees) growing on the site that must be removed.

→ Water use for the roll-on lawn area would appear to be having a marked impact on the natural water systems on site. There is a water pump next to the Mill Stream, presumably used to pump water to irrigate the roll-on lawn area during the dry season. There should be a Water User's License for this; if

so, the conditions of use should be checked. There is also a drainage canal draining water from the roll-on lawn cultivation area through the hillslope seep wetland area, and eventually discharging enriched water into the Mill Stream.

Mitigation measures to enhance faunal conservation on site

- → In the Western Cape the water is naturally slightly acidic, and the soils are generally infertile. When this is changed through agricultural application of fertilizer, the pH of the water increases and the chemical composition changes too, which drives all but the most resilient frogs from the area. This is why one must not only consider whether frogs are present but also the abundance of those species that are present. Typically, in the Overstrand highly disturbed areas with chemically enriched water will support large numbers of Raucous Toads and Painted Reed Frogs as these species can tolerate these adverse conditions. The numbers of the more sensitive frog species dwindle and often these frogs disappear altogether. In general, a healthy aquatic ecosystem should have smaller numbers of each species but a greater number of different species of frogs present. This should be the conservation or management goal of any strategy to improve the wetland health on a site. This is possible even in a development estate such as Stanford Green. I would recommend the following measures which align to the recommendations proposed in other reports and assessments for this development.
- → Remove as much of the invasive grass present on the property as possible. Grass should be limited to only what is necessary and restricted to indigenous local species. As far as possible grass should be replaced with fynbos vegetation, particularly on road verges (such as ground covers like Arctotis and Gazania species) to provide safe corridors for frogs and other animals to move through. The journey for tiny toadlets on their first emergence from their breeding ponds to their foraging grounds is extremely arduous. Many of them die while crossing roads and other hard surfaces without protection from the sun. Shelter plants protect them from the elements and from predators.
- → Road verges should be U-shaped without any edge. The 50 mm edge along De Bruyn Street in Stanford North was a death trap to emerging Western Leopard toadlets coming out of the breeding pond there and crossing to their foraging grounds. This occurs approximately 10 weeks after breeding when the toadlets emerge from mid-October to early December. To address this problem, Whale Coast Conservation (WCC) filled the spaces in the verge stones along De Bruyn Street, Stanford, to create a shallow V-shape. We have not found any dead toadlets in these verges for the last three years.

Figure 4. Example of road verges required

- → Most frogs are not fully aquatic; they spend most of their lives in their foraging grounds and only return to their breeding ponds once a year to spawn. For the rest of the year, they will be in gardens, fields and forests, generally in moist, shady areas foraging for food. To encourage their presence on the estate, the vegetation in gardens must be as "wild" as possible and preferably landscaped with indigenous plants. Wood piles, compost heaps and leaf litter provide food and hiding places for these creatures.
- → A "No pesticides" rule must be non-negotiable.
- → Garden ponds should be discouraged as they tend to attract the noisy frogs during the breeding season
- → All frogs, other than the aquatic Platannas which can breathe in water, will drown in a pool or pond if they are trapped there for too long treading water. Pools and ponds must have a means of escape for a frog. There are various ways this can be achieved using rock piles, frog ladders and toad savers or using "walk-in" pool designs.
- → Chlorinated water will kill frogs and will pollute the surrounding natural water bodies when the water is drained. No chlorine should be used on the estate at all.
- → Numerous small corridors between houses should be accommodated in the wetland to allow both for the free movement of the frogs and natural drainage of water. The Mill Stream is classified as a floodplain wetland or an unchanneled valley bottom wetland and presents an opportunity to create a visually pleasing river front area.
- → The aquatic report mentions that the open water pool upstream from the R43 has been artificially excavated, presumably to make a farm dam to divert and store water (Van Zyl & Morton, 2024, p25). It should be noted that South Africa's environmental laws prohibit these activities, and that if there is no Water User's License water extraction should stop.
- → Regular reed cutting should take place. Cutting reeds improves the water quality; pruned reeds absorb excess nitrates and phosphates from the water as they regrow. WCC's water testing in the past has identified very high levels of these chemical compounds in the stormwater discharging into the Mill Stream on the bank opposite Erf 438. In addition, in the areas where WCC has cut reed, we have found that this activity promotes an increase in biodiversity and broadens faunal habitat use. We have noticed more wading birds and insects in the open areas as they gain access to a food source previously obscured by congested reed growth.
- → Reed cutting should only occur in the hot and dry months from December to May. Note that environmental law prohibits the dredging of more than 300 square meters of reed from a riverbank or riparian zone as this destabilises the substrate. Reeds or reed rhizomes should not be removed as reeds are highly efficient at reducing water pollution provided, they are regularly cut during the dry season, preferably when the water volume is at its lowest at the end of autumn. An early December cut and a repeat cut in May is recommended. All cut material must be removed immediately lest the nutrients in the cut reed biomass leach back into the water. (WCC shreds the reed biomass and includes it in a compost mix.)
- → WCC is collaborating with Guillaume Nel Environmental Consultants on the rehabilitation of the area disturbed by R43 road construction through Stanford. The multiple large culverts installed in the new R43 bridge construction facilitate connection between the eastern and western arms of the Mill Stream and allow for a safer, easier passage for fauna between these. On either side of this bridge, we will be experimenting with ways to suppress reed growth and will be planting lower-growing indigenous wetland plants to facilitate faunal movement. We anticipate that this will encourage faunal population as the ecological use of the ecosystem is improved. This will support the intention to make the area adjacent Erf 438 more nature orientated, expressed in *The Mill Stream Village Park and Greenway, Concept Master Plan* prepared on behalf of the Stanford Ward Committee Members for the Overstrand Municipality (Van Wyk, Bewsher, Bewsher & Oberholzer, 2018)
- → WCC agree with the recommendations made by Oberholzer (2024) for planted berms along the R43 and a 32m buffer along the Mill Stream as well as a swale suggested by Van Zyl and Morton for this

buffer zone. This area should be planted with arum lilies to encourage the return of Arum Lily Frogs. Arum Lilies are also efficient filter plants for enriched water and anecdotal reports by long-standing residents refer to a profusion of arum lily plants in the Mill Stream catchment.

→ If these recommendations are implemented, I am confident that various species of frogs and toads will repopulate the site. Not only will they make an important contribution to the biodiversity of Erf 438, but they will also present an opportunity for the estate to showcase its efforts to restore the ecological processes of the site.

→ The resident frog and toad species hold potential as subjects for environmental tours or events, such as showcasing the Western Leopard Toad breeding season in the middle of winter – which is traditionally a quiet tourism time.

STANFORD GREEN ECO LIFESTYLE ESTATE – ARCHIETCTURAL GUIDELINE FOR HOMEOWNERS

The sense of place Stanford Green eco lifestyle Estate is of utmost importance. Its identification with its location and reflection of the history of the area. The typical Stanford styles include the simple cottage, the Victorian barn, and the eclectic gabled house (Victorian or Cape Dutch Revival). Stanford Green Eco Lifestyle Estate aims to encapsulate the rural Cape farmyard architectural style in creating a contemporary habitation among the milkwood trees and wetland. Whilst attempting not to slavishly imitate any particular style type. Borrowed elements used in varied forms and integrated into a simple architectural shape to create individual and unique designs.

→ Unbroken expanses of white plaster
→ Verticality of windows
→ Celebrated entrances
→ Contrasting textures and materials
→ Interplay of light and shade
→ Proportions of rooms

7.2. Activity specific impacts and mitigations

The primary activities expected during the construction phase include:

→ Identifying and demarcating No-Go Areas
→ Identify and marking all protected trees
→ Clearance of vegetation for erven and road development, as required
→ Creating suitable bunded area with impervious layer for construction camp and activities
→ Demolition of existing dwelling and outbuildings
→ Earthworks and installation of civils
→ Delivery of construction materials
→ Storage and / or stockpiling of construction materials
→ Mixing and preparation of construction materials
→ Extension of services to the site

The following activity specific impacts were identified during the Environmental Assessment process for the construction phase:

- → Wetland and Mill Stream and mandatory 32 m buffer, Private Open Space, including the Undevelopable Area on Erven 1 – 8, 10 and 28. This must be cordoned off as a no go area. Permission to enter this area must be granted by the site manager and / ECO prior to works and entrance to this zone
- → Protection of Milkwood tress on site – these have been located and GPSED and must be marked with visible tape prior to construction
- → Endangered and specially protected fauna – to be protected throughout construction
- → Removal of invasive alien and controlled vegetation, especially Gum trees (*Eucalyptus sp*).
- → Noise
- → Visual
- → Socio-Economic including job creation and skills transfer, investment in the area.

7.3. No Go areas and Removal of vegetation

The development will be a gated Eco Lifestyle Estate with a Homeowners Association (HOA), once construction is complete, who will be tasked with managing the Open Space areas.

The Private Open space associated with the wetland, Mill Stream and associated 32m buffer area must be clearly demarcated and confirmed up front and no disturbance is allowed in these zones, including within the Undevelopable Area of Erven 1 – 8, 10 and 28. Should access or works be required in these area, permission to the zone must be granted by the site manager or ECO prior to activities taking place.

Following on from the specialists' assessments and findings above, the following mitigations measures are also considered essential, feasible and reasonable:

- → The High sensitivity areas identified by the report should not be developed or disturbed. The applicant / contractor must install temporary fencing to demarcate and prevent access to the southern and south western stream and wetland and 32m buffer boundary of the High sensitivity areas prior to any site development. The fences should be permeable to Western Leopard and other toads and small fauna. Integrate toad holes of at least 100 mm diameter, spaced every 20 meters, and not exceeding 300 mm in length at ground level. Bonnox, or similar fencing, erected upside down (with large holes at ground level, see 100mm spec above). Posts must be driven and not concreted in. High viz shade cloth / barrier safety net may be attached to the post as well. It must not touch the ground, and should be above the second horizontal strand of the fencing. Cable ties must be used to lift the net above the second horizontal wire. In addition, short open gutters can be dug at the prescribed interval and size below the bottom wire. (See Aquatic Biodiversity Impact Assessment for Stanford Erf 438. K. van Zyl and R. Morton)
- → The preferred alternative, Erf 27 and 28 incorporate nearly all (plus a strip of road reserve) of the White Milkwoods that the Botanist identified in the Landscape Development Plan. All Protected White Milkwoods and other indigenous trees to be retained must have high viz barrier netting loosely tied around the main trunk, or clump of trees in such a manner that it is visible and remains visible during construction. The required permits to cut or remove any of these trees must be obtained, prior to construction, by the applicant, from DAFF.
- → Construction within the Milkwood canopy must minimise damage to their roots. AVOID concrete strip footing, AVOID concrete slabs, especially within the drip line of the tree canopy. Piled foundations, and decks on piers and beams are appropriate.
- → Removal of Blue Gum trees must be undertaken as early as possible in the site establishment phase. Category 2 and/or 1b trees that are to be removed (Blue Gum trees) must be clearly marked with paint.

The Gum trees must be felled by a professional tree feller. This should be undertaken prior to any construction or infrastructure installation or roads works.

→ The timber of these very large trees is a resource that may be utilised on site if possible or alternatively sold. This is a high-quality valuable lumber.

→ The Gum tree stumps must be as short as possible. Stumps within the Mill stream or wetland must be left in situ, as removal may disturb the bed or banks of the stream resulting in increased run off of stormwater erosion and sedimentation. Tree stumps may be removed for construction of infrastructure.

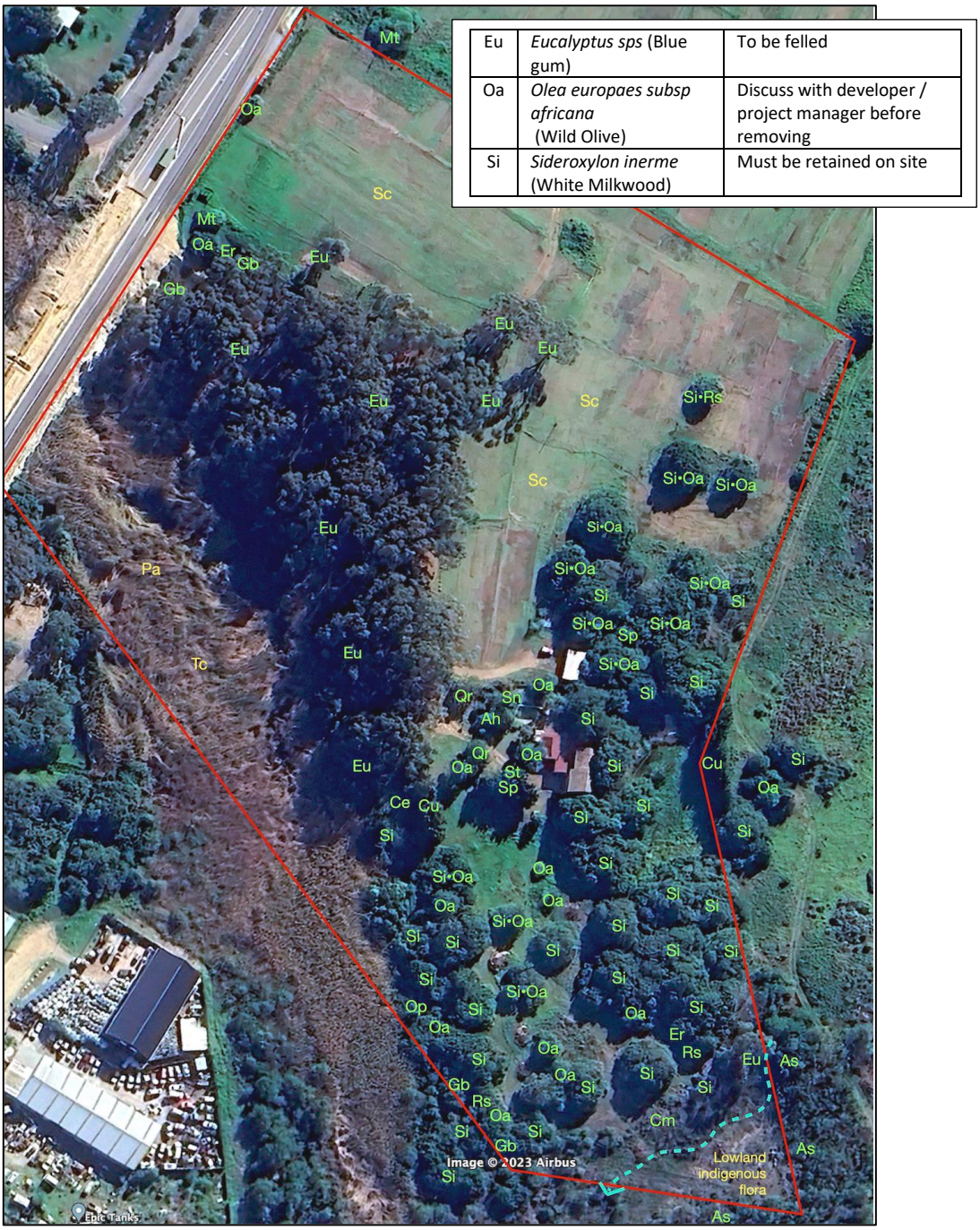

Figure 5. Surveyed trees on the site

- → Berms (approximately 2m high) must be constructed to provide a visual barrier between the R43 and the development, as per the site plan. This will provide a windbreak, reduce noise and screen the buildings. These must be vegetated with appropriate locally indigenous plants. The berm must be kept covered with hessian, or other biodegradable landscape fabric to stabilise it until planting is appropriate. This should be undertaken during the winter if there is sufficient rain. The area must be irrigated only until the plants are established.
- → Any firebreaks around the approved development must be located outside of the mapped areas of High sensitivity. Invasive alien species that may contribute to the fire hazard (*Hakea* and Port Jackson Willow) within the wetland / stream should be removed and monitored. Alien invasive vegetation must removed annually from these areas using the appropriate methodology.
- → No new infrastructure that causes soil disturbance (roads, pipelines, etc) may be routed through the High sensitivity wetland / stream areas. Existing sewer and water pipe lines need to be up-sized as per the Engineers specifications.
- → All infrastructure must be installed strictly in accordance with SANS / SABS specifications and the engineers design in respect of capacity. Emergency containment of 2 hours peak flow must be provided in concrete tanks which may be raised above ground level.
- → Any fencing around the estate should be permeable to small animals, with no electric strands at or below 30 cm above ground level. "Clear View" fencing is not appropriate if erected to ground level.
- → Boundary fencing along the boundary with Erf 594 should Bonnox style fencing, or alternatively Clear View fencing with 15 cm animal passage gaps above ground level every 5 m.
- → No solid walls may be built within the wetland buffer on the western boundaries of Erven 1-8 and 28. Hedges, post and rail or similar is appropriate.
- → All firebreaks need to be outside the Stanford Green property in consultation with landowners of these property owners.

7.4. Demolition of Existing buildings

The existing dwelling and associated infrastructure will be demolished. The demolish team must be briefed about the environmental sensitivities on the site prior to commencement. Materials must be removed off site and disposed of via a licenced facility. Records of this disposal must be kept. Care should be taken to determine whether any parts of the buildings and rooves contain asbestos and in such a case, correct disposal teams will be required.

Should any material be reused for infill, these must be done outside sensitive zones only and upon approval of the team. No stockpiling must be undertaken in sensitive area and preferably in already disturbed zones.

Table 4. Activity specific impacts and mitigations

IMPACT	DESCRIPTION	MITIGATION	RESPONSIBILITY
No Go Area	Mill Stream, Wetland and 32 m buffer area as demarcated on the approved site plan are No Go zones. Risk – Loss of functionality and downstream impacts including reduction of water quality and increased run off.	- Wetland and Mill Stream and 32 buffer must be marked as No-Go areas for the duration of construction. Suitable materials must be used to demarcate this area and the barriers must be inspected on a weekly basis - All batching and mixing areas to be bunded and have an impervious underlayer and located within a demarcated area on site - Stormwater runoff must be managed to ensure contaminated water does not enter the Mill Stream or wetland. - Construction of attenuation structures and vegetated swales to commence as early as possible in construction phase but must be carefully managed by fully briefed staff - Construction required in sensitive zones may need to be fenced in, to prevent sprawl of activities	Project Manager / Contractor / ECO / developer
Sensitive areas	Milkwood forest Risk – This milkwood forest has a Heritage IIIA grading. It provides a sense of place and formed a critical guide in the design and layout of the development. The aim is to protect these area and use it as a feature and attractant to the site.	- Milkwood trees on site have been located and GPSED - All Milkwood trees must be marked and identifiable with barrier netting or similar for identification around the main trunk. - Ensure that all contractors are aware of restrictions regarding strip footing and concrete slabs under the canopy (drip edge) of the Milkwood trees. - The final position of proposed Eco Pods, to be used as Lodge accommodation, must be determined on site in consultation with the developer, architect, engineer, town planning and ECO	Project Manager / Contractor / ECO / developer
Vegetation clearance	Construction of internal roads and installation of infrastructure Removal of Gum trees. The clearance of vegetation for construction on each erf	- All mitigation measures and No-Go areas identified in the specialist reports and outlined above, must be adhered to. - Bee hives must be removed prior to setting out. - Gum trees should be removed prior to construction. Stumps must be left in situ if removal will impact the bed or bank of the stream and result in erosion. - Timber from the Gum trees must be used appropriately or sold. Branches and wood may not be burned on site.	Project Manager / Contractor / ECO / developer

	The clearance of vegetation will also result in habitat disruption for some common faunal species such as toads, tortoises, snakes, birds, chameleons etc. Risk – Dust, visual, erosion, loss of indigenous vegetation and destruction of habitat for common fauna, fire hazard.	- Retain natural areas and vegetation in areas where construction will not take place on site instead of clearing entire erf - Walk site pre-clearance in order to encourage fauna to migrate naturally and/or to relocate any visible fauna - Ensure open spaces are cleared of alien vegetation - Educate clearing team regarding fauna and what action to take to avoid harming or killing fauna - Relocate disturbed fauna - Do not kill any fauna uncovered during clearing - Monitor clearing operations and cleared site for dust and erosion - Do not burn cleared material - At the onset of construction, all batching, mixing and storage areas should be designated and demarcated as well as rest areas for staff.	
Demolition	Existing house and outbuildings to be removed. Risk – Waste material becomes a health or safety hazard. Material that can be recycled or reused or sent to landfill.	-Any appropriate rubble that can be used as construction fill should be re-used on site -Any windows, doors or other fixtures or fittings that can be recycled or re-sued should be made available for such use. -No waste rubble, metal, plastic or wood should be buried on site. A record of appropriate disposal must be kept.	Project Manager / Contractor / ECO / developer
Noise	Typical Noise impacts associated with the construction phase Risk – disturbance to surrounding landowners and employees	- Ensure construction takes place during acceptable work hours - Ensure silencers are fitted to noisy machinery - Machinery to be kept in good working order - Construction teams to be made aware of surrounding neighbours and potential noise impact	Project Manager / Contractor / ECO / developer
Visual	Typical Visual impacts associated with the construction phase Risk – visual impact of construction and related activities	- Ensure construction materials are stored in a predetermined area (contractors camp) on the site, to prevent sprawl across the site - Ensure the site is kept neat and tidy during construction - Ensure that the site is cleared of all construction materials and machinery once construction is complete - Ensure all public roads are kept clean and any spills to be cleaned immediately	Project Manager / Contractor / ECO / developer

Socio-Economic	Job creation and skills transfer during the construction phase Investment in the area Risk – labour not sourced locally, therefore local benefit is limited, strain on services and other local resources	- Ensure labour and contractors are sourced locally as far as possible - Aim to share skill sets during construction - Encourage the use of water wise, indigenous landscaping, installation of rainwater tanks, reuse of grey water etc to reduce pressure on resources	Project Manager / Contractor / ECO / new erf owner

7.5. General Construction Phase Impacts and Requirements

7.5.1. Site Demarcation
Responsibility - Project Manager / Contractor / ECO / owner

Prior to any construction commencing, the high sensitivity areas including the Mill Stream, wetland and 32 buffer areas must be clearly demarcated and indicated as No Go area for the entire duration of construction. Following this, all construction works, as well as the storage or preparation of any materials must be within the demarcated boundaries of the construction zone only and not in or within close proximity to No Go areas. No Go areas and the demarcation thereof must be checked on a regular basis by responsible parties.

7.5.2. Contractors camp
Responsibility – Contractor / ECO / owner

The contractor shall comply with all relevant laws and regulations concerning water provision, sanitation, wastewater discharge and liquid and solid waste handling and disposal during the construction phase.

- → The contractor is referred to the requirements of the NEMA and the NEM:WA and related regulations.
- → The contractor shall not locate the contractors camp, sanitation facilities or any associated activities, in any No- Go areas or buffer zones or areas that can cause nuisance or safety hazards to surrounding land users, inhabitants or the general public. The contractors camp must be placed in a already transformed are or area demarcated for development, in order to reduce impacting undisturbed areas.
- → A suitably sized impervious layer and bund must be constructed in areas where concrete is batched, vehicles are parked, or any other activities may result in spills that could contaminate the Mill stream, wetland and buffer area. Contaminated water and ground must be disposed of appropriately.
- → Suitable temporary toilet facilities should be provided to the construction team. These facilities should be emptied and cleaned on a regular basis by a registered contractor and the waste is to be removed by contractor to a registered facility.
- → The contractor shall keep construction campsites clean and tidy at all times.
- → The contractor shall not leave domestic waste uncontained, and temporary storage shall be enclosed to keep out people and animals.
- → No permanent domestic waste disposal shall be permitted on site.
- → All domestic refuse is to be removed to an existing licensed landfill site.
- → No overnighting will be permitted at the contractors' camp, unless specifically arranged or required. Decommissioning of the campsite will involve removal of all compacted platforms, equipment machinery, tools, waste, etc.
- → The contractor shall at all times carefully consider the machinery required for the desired task while minimizing the extent of environmental damage.
- → The contractor shall take specific measures to prevent the spread of veld fires, which may be caused by activities at the camp. These measures may include appropriate instruction of employees about the fire risks and the construction of firebreaks around the site perimeter, as required. Adequate firefighting equipment shall be made available and maintained on site.
- → The contractor shall prevent accelerated erosion from the construction campsite and shall not discharge polluted runoff into the environment.

7.5.3. Health and Safety
Responsibility - Project Manager / Contractor / ECO / owner

Each contractor should appoint their own Safety Officer to monitor the safety during the operation.

Correct Personal Protective Equipment (PPE) must be worn at all times by the personnel on site. Personnel must be trained on the use of PPE. Safety Data Sheets (SDS) must be readily available for all hazardous substances on site and employees should be aware of the risks associated with any hazardous material used. The handling of hazardous materials should only be done by trained personnel.
All provisions of the Occupational Health and Safety Act (Act No 85 of 1993) must be complied with. In the event of an emergency relating to hazardous substance, procedure details in the SDS should be immediately implements.

7.5.4. Fire risk management
Responsibility - Project Manager / Contractor / ECO / owner

The Applicant / Project manager / contractor should identify a Fire Officer who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. The Fire Officer shall ensure that there is basic fire-fighting equipment available on site at all times. Any fires should be reported to the fire officer immediately. The adjacent properties are a potential source of fires as they have not been managed or cleared of alien invasive plants, a particular fire hazard.

7.5.5 Fuels and hazardous materials
Responsibility - Project Manager / Contractor / owner

Fuels and flammable materials are to be suitably stored, inside the contractor's camp or as appropriate. Impervious materials are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks. Quantities of fuels and hazardous materials stored on site should be appropriate to the requirement for these substances on site.

Bulk fuel depots, if required, should be placed within bunded areas, with impervious underlay areas to prevent soil contamination in the event of leaks of spills. Bunded areas are to have a holding capacity equal to 110 % of the largest fuel container. The relevant Health and Safety requirements for the hazardous materials and fuels should be kept on site in the event of an emergency.

7.5.6. Emergencies protocol
Responsibility - Project Manager / Contractor / owner

Fire: The fire officer / suitable other person, should be notified of any fires. Employees should be aware of the procedure to be followed in the event of a fire.

Hydrocarbon (fuel & oil) leaks and spillages: Employees should be aware of the procedure to be followed for dealing with spills and leaks, which shall include notifying the project manager / contractor. All vehicles leaking fuel or other liquids should immediately be removed to the maintenance area and repaired. In the event of a hydrocarbon spillage, the soil must be excavated and treated and adequately disposed. The necessary materials and equipment for dealing with spills and leaks are present on site at all times. The clean-up of sewerage spills and any damage caused by the spill or leak shall be for the applicant's account. The applicant shall ensure that the Health and Safety officer is available for the duration of the construction period.

Raw Sewerage spills (from portable toilets): Employees are to be aware of the procedure to be followed for dealing with spills and leaks. All the necessary materials and equipment for dealing with spills and leaks are present on site at all times. The clean-up of sewerage spills and any damage caused by the spill or leak shall be for the Applicant's account or applicable contractor.

Sudden illness in member of team: emergency numbers should be readily available on site in case of a sudden illness or injury to a construction team member.

Snake bite: Emergency contact numbers must be kept on site in case of a snake siting or snakebite.

7.5.7. Stockpiles
Responsibility - Project Manager / Contractor / ECO / owner

The contractor and / or project manager should identify sites for the stockpiling of building materials and excavated material. Stockpile sites should preferably be in areas with a gentle gradient. Stockpiles should be stabilised as required and monitored for dust blow and runoff / erosion.

7.5.8. General Wastes
Responsibility - Project Manager / Contractor / ECO / owner

Refuse refers to all construction debris (cement bags, rubble, timber, cans, nails, wire, spilt bitumen, glass, packaging, plastic, organic matter, etc.). Refuse generated during the construction phase should be stored in an appropriate area on site, should be watertight and wind proof, and removed on a regular basis for disposal at a permitted disposal site. Waste bins should be labelled for their designated use. No burning or burying of general refuse on site should be permitted. Recycling and sorting of waste, at the source, is encouraged. Disposal certificates should be kept.

7.5.9. Recreational / Eating areas
Responsibility - Project Manager / Contractor / ECO / owner

If construction workers are permitted to eat on the development site, other than within the contractor's camp, the Contractor shall provide adequate refuse bins at all such places and ensure that they are used. Bins are to be cleared on a daily basis. No rest areas are to be permitted in No Go areas.

7.5.10. Construction water
Responsibility - Project Manager / Contractor / ECO / owner

All cement effluent from mixer washings and run-off from batching areas, as well as other work areas, should be contained in suitable manner, these areas should be lined and allowed to dry from time to time in order to remove the solid materials. Care should be taken to prevent the runoff of construction water, to other areas on site or onto adjacent sites. Construction water must be contained and not permitted to infiltrate into the ground.

7.5.11. Equipment maintenance
Responsibility - Project Manager / Contractor / ECO / owner

All mechanical equipment and work vehicles which are present on-site during construction, are to be stored, serviced and refuelled only at designated areas or within the contractor's camp. Within these areas drip trays and other impervious materials, for example plastic or metal sheeting, must be used to prevent contamination of the ground. The project manager may order the removal of equipment that is causing continual environmental damage, until such equipment has been repaired.

7.5.12. Stormwater Management
Responsibility - Project Manager / Contractor / ECO / owner

Stormwater must not be discharged directly into the stream or wetland. Temporary debris bags, sand traps or vegetated attenuation structures must be created to slow runoff and trap contaminants. These structures should be located outside the wetland and buffer, in areas that can be rehabilitated after the construction phase, when permanent attenuation structures and swales must be established.

Stormwater should be monitored regularly to ensure no environmental risk or unmanageable load to the existing infrastructure. The contractor must take suitable measures to prevent erosion resulting from a diversion, restriction or increase in flow of stormwater caused by construction. Stormwater retention may take place on erven that have been located on agricultural or highly disturbed areas of the site.

7.5.13. Topsoil Removal and Stockpiling
Responsibility - Project Manager / Contractor / ECO / owner

Where services are to be extended or houses erected, topsoil is to be removed from the work areas, stockpiled separately from subsoil, and must be stabilised within a day of stockpiling. In general, stockpiles should be convex at the top to promote run- off, so that water is not able to accumulate and result in leaching of nutrients from the soil. Stockpiling areas should be determined in consultation with the ECO and only for short term.

7.5.14. Erosion Control
Responsibility - Project Manager / Contractor / ECO / owner

Action should be taken to prevent erosion of soils on the construction site. Should any erosion be detected on site, the cause of such erosion should be identified, and appropriate remedial action must be immediately implemented.

7.5.15 Dust Control
Responsibility - Project Manager / Contractor / ECO / owner

Appropriate action should be taken to minimise the generation of dust on the site. This can be done by applying appropriate stabilisation materials, such as straw or mulch or watering of exposed areas. Suppression methods not involving water, are preferred as far as possible.

7.5.16. Construction Traffic Management
Responsibility - Project Manager / Contractor / ECO / owner

All construction vehicles which carry construction materials, must use sheeting or a suitable cover, to prevent loss of load during travelling or due to wind or rain. Any spills should be cleaned immediately.

7.5.17. Architecture / Design
Responsibility - Project Manager / Contractor / ECO / owner

The architecture and design of the dwellings will be as per the Guidelines prepared by the Architect. The houses are designed to be in line with the surrounding architecture and Cape Farm vernacular style common to the area. Neutral colour palettes should be used which blend into the surrounds. Only plans approved by the Architect may be submitted to the Municipality for approval. Buildings must be approved by the Overstrand Municipality Planning Department before any construction can commence.

7.5.18. Sustainable Building Guidelines and materials
Responsibility - Project Manager / Contractor / ECO / owner

See "A Guide for Homeowners, Stanford Green Eco Lifestyle Estate" prepared by Coetzee Sadie architecture

The houses should be designed in such a way as to create a sustainable living area. Ensure materials and orientation allow for an environmentally friendly design with lower operating costs, i.e natural ventilation, correct orientation, correct colours and roofing etc. Use recycled materials as far as possible.

Energy efficiency is also an important consideration, and the following actions should be considered:

- → North orientation to ensure that as many well-used spaces face north as possible. Sun control is more difficult on East and West facing windows
- → Use of good insulation in the roof and walls to keep the inside temperature warm in winter or cool in summer
- → Solar water heaters to be included in the design phase
- → Suitable roof overhangs to let in the lower winter sun but provide shade from the summer sun
- → Sensible fenestration – let in the light and catch the winter sun, but not too much window area so that warmth or cool cannot be retained inside when needed. They can be combined with shading and reflecting devices - such as overhangs, screens, shutters, awnings, trees, planting and different glass types which will aid to control the amount, quality and time of daylight entering the building. Double glazing should be considered near high traffic (R43) to reduce noise and on north facing windows.
- → Suitable ventilation for fresh air and cool breezes
- → Natural lighting through windows and light wells
- → Night lighting must be such that as dark as possible night sky is maintained.

Water conservation should be a priority in design of the dwelling. Rainwater tanks are recommended to supplement water for pools and garden where possible. Optimally designed systems for grey water reuse should also be explored during the design phase in order to prevent the expense of retrofitting a system. Water wise and indigenous landscaping is recommended and will reduce the water costs associated with maintaining gardens. Permeable paving is to be used in areas where paving is required. Low flow shower and heads and dual flushing systems should be fitted. Aerators on taps should also be fitted to reduce overall water demand.

Construction activities such as watering, mixing and cleaning should avoid water wastage. Dry brushing and trigger spray nozzles should be used. Reuse of construction water should also be implemented.

7.5.19. Site Clean Up and Rehabilitation
Responsibility - Project Manager / Contractor / ECO/ owner

The following actions should be implemented once construction has concluded:

- → The construction footprint should be restored to the natural contours of the ground and shall allow normal surface drainage, as far as possible
- → No foreign matter such as rubble, waste or hazardous material will be mixed with the topsoil or used to backfill excavation.
- → Topsoil may not be used as fill.
- → All temporary works within the construction footprint, including fences, access, roads etc. disturbed by construction, should be restored to their original condition, as far as practical.
- → Compacted soils within the construction footprint should be loosened by means of a plough or scarified to aid revegetation

- → Runoff and erosion, as a result of the construction phase, should be suitably managed to prevent long term impacts
- → All structures, equipment, materials and facilities used or created on site for or during construction activities are removed once the project has been completed
- → Vegetation cover (using species appropriate to the local area) in all areas disturbed by the works should be reintroduced, as required.
- → Rehabilitation of No Go areas must be ongoing

8. COMPLIANCE AND MONITORING

8.1. Non-compliance

The Environmental Authorisation (EA) stipulates that, *"Non-compliance with a condition of this Environmental Authorisation and the EMP may render the holder liable to criminal prosecution."* It is therefore important that the conditions are adhered to as outlined in the EA and EMP. A Penalties scheme can be used during construction for transgressions.

Transgressions relate to actions by the contractor whereby damage or harm is inflicted upon the environment or any feature thereof and where any of the conditions or specifications of the EMP and EA have been infringed upon. In the instance of environmental damage, the damage is to be repaired and rehabilitated using appropriate measures, as far as possible and as directed by appropriate specialists, if required. These remedial actions are for the account of the contractor or other guilty party as identified by the Project Manager, applicant or ECO. Where non-repairable damage is inflicted upon the environment or non-compliance with any of the EMP / EA obligations is registered, then the Contractor may face a monetary penalty to an amount specified by the Project manager / ECO.

The Project manager / ECO reserves the right to implement a first offence warning.

If excessive infringement with regard to any of the specifications is registered, the applicant / project manager / owner reserves the right to terminate the contractor's contract.

Table 5. Penalties Scheme – to be reviewed by ECO if required

Infringement	Description	Penalty
Hydrocarbon / fuel spill	Penalty to be issued when remediations not implemented timeously	R 5000 +
Disturbance beyond approved footprint	Disturbance to No Go areas, wetland and stream, beyond approved areas	R 5000 +
Waste management	Inappropriate waste management	R 3000 dependent of extent +
Not adhering to conditions of EA	Not attending to specific EA conditions	R 3000 + per condition

Environmental Compliance Checklists and reports compiled by the ECO must be submitted quarterly to the Department of Environmental Affairs and Development Planning (DEA&DP).

8.2. Environmental Control Sheets

Environmental Control Sheets to be used by the ECO on a weekly basis to monitor construction activities to ensure compliance with recommendations. The ECO should familiarise themselves with the full set of recommendations for the site and reasons for these recommendations, as well as understand the site and constraints analysis and be able to identify the constraints / No Go areas.

Table 6. Environmental Control Sheets

					RECORD OF PERFORMANCE		
TASK	**ACTION REQUIRED / MITIGATION & METHOD FOR IMPLEMENTATION**	**FREQUENCY**	**TARGET / OUTCOME**	**RESPONSIBILITY**	**COMPLETED YES/ NO**	**DATE**	**COMMENT**
PRE-CONSTRUCTION							
Procurement	→ EA and EMP to be distributed to contractor at tender stage to include costing incurred due to compliance with EA and EMP METHOD: Distribute with tender documents	As required	Contractors are aware of requirements in terms of NEMA and can budget accordingly	Developer Project Manager			
Environmental File	→ To include EA, EMP, site diary, public complaints section → To be updated on a regular basis → Public complaints register → Kept on site at all times METHOD: Issue all applicable documents to site manager	As required	Construction team(s) and general public can access relevant information as and when required	ECO Project Manager			
Environmental Awareness and training induction	- All contractors to attend briefing prior to commencement of site works - Register to be signed as proof of attendance METHOD: Briefing to be undertaken by project manager and / ECO	As required	Construction team(s) informed of all requirements in terms of EMPr and EA	ECO Project Manager			

Method Statements	- Contractors to submit Method Statement (MS) seven working days prior to commencement on site - MS to contain clear methods for pollution control measures during construction including hazardous waste, run off, general waste etc. METHOD: Request for method statements to be contained in tender documents. See above	As required	ECO and project manager to be well informed in terms of methods for construction	Contractor			
Site definition and demarcation	- Site survey and pegging - Site demarcation and fencing (mark construction areas – all other areas are No Go) - Access roads for construction vehicles to be clearly indicated, consideration to be given to turning circles - Review of specialist input to familiarise with mitigation measures - Buffer areas to be indicated and demarcated as No Go - Protected trees to be identified and high viz barrier netting erected around either clump of trees or individual trees as appropriate. METHOD: Demarcation methods to be undertaken as outlined in EMP (Item7.2), suitable to the environment and semi-permanent to last as long as possible during construction phase, to be checked on a regular basis	As required and to be repeated on a regular basis in the event that demarcations shift or disturbed by operators, weather etc.	A well demarcated site Well defined No Go areas (specifically Mill Stream, Wetland and 32m buffer) Well defined construction zones Identified and protected White Milkwood trees and other species to be retained on site	ECO Project Manager Contractor			
Construction traffic	- All construction vehicles carrying materials must use cover sheeting to prevent loss of loads due to wind or rain	Duration of Construction	A safe working environment with minimal impact on No Go areas, minimal dust impact, minimal loss of load and minimal general public impact	Project Manager Contractor			

	- Maximum speed to be enforced - Movement of construction vehicles must be limited to approved haul and access routes and existing tracks METHOD: To be monitored by ECO and project manager as well as construction team leaders						
Emergencies protocol	- Staff to be aware of actions to be taken in the event of a natural or medical emergency - Applicable Health and Safety required in terms of OH&S Act METHOD: OH&S officer to be appointed, appropriate signage to be implemented	Duration of Construction	A safe working environment with minimal incidences	Project Manager Contractor			
Fire	- Fire Management recommendations to be implemented - Required firefighting equipment is available on site, and in working order - No open fires are lit on site without approval of the ECO and Site Manager - Removal of flammable alien invasive plants METHOD: To be checked by the ECO and project manager and implemented by the contractor	Duration of Construction	A safe working environment with minimal incidences Action plan in the event of a fire	Project Manager Contractor			
Contractors camp	- Contractor's Camp is located at the most suitable site as identified by the ECO and Site Manager, preferably in areas to be developed or used (i.e roads or house footprints) or already transformed areas - Contractor team to be briefed regarding Do's and Don'ts of camp and site in general	Duration of Construction	A well placed and functional contractors camp to minimise impacts on other areas on site	Project Manager Contractor			

	- Suitable toilet facilities are provided for all staff - Ablutions are to be restricted to the facilities provided - Toilets are to be kept in a hygienic condition and emptied regularly METHOD: Site to be determined in conjunction with project manager and ECO, to be well demarcated with appropriate signage, serviced and cleaned on a regular basis, checked by ECO.						
CONSTRUCTION							
TASK	**ACTION REQUIRED / MITIGATION & METHOD FOR IMPLEMENTATION**	**FREQUENCY**	**TARGET / OUTCOME**	**RESPONSIBILITY**	**COMPLETED YES/ NO**	**DATE**	**COMMENT**
Clearing Vegetation	- Professional trees fellers must be contracted to fell large gum trees. - Stumps must be cut level and as low to the ground as possible, but not be removed adjacent to the stream and wetland - Timber from these trees may be used on site, or sold. Felled trees must not be burned or dumped. - METHOD. Appoint professional tree feller to fell Gum trees. - No other vegetation to be removed without oversight of ECO	Prior to construction	Valuable timber not wasted. Limit erosion by leaving stumps in situ.	ECO Project Manager Sub contractor			

Topsoil removal and stockpiling	- Replaced immediately after works where required - Topsoil which is required to be removed from direct work areas, should be stockpiled separately from subsoil and reused as far as possible - Stockpiles should be suitably shaped to prevent leaching of nutrients, and stabilized, or dispersal by wind or rain - Stockpiles to be monitored for dispersal by rain and wind METHOD: Implement conditions outlined in EMP for stockpiling and topsoil removal	Duration of Construction	Reusable sand and soil stockpiles to facilitate rehabilitation of the site	Project Manager Contractor			
Installation of Services	- Locate existing sewage, water and power services and future upgrade or connection points. - Appropriately cordon area off	Duration of construction	Prevent accidental damage to existing infrastructure and services.	Project Manager Contractor Engineers ECO			
Earthworks	- Works to be restricted construction area only - Bulldozer/ heavy machinery operators to be under constant supervision particularly at onset of works - Use and excessive movement of heavy machinery to be avoided in areas of environmental sensitivity or high erosion potential - Trenching to be undertaken in a phased manner - Fill material to be replaced in same work area from which it originated - Fill material to be compacted to its approximate original density METHOD: Construction zone to be clearly demarcated, instruction for stockpiling to	Duration of Construction	Minimal disturbance to vegetation within development area	Project manager Contractor ECO			

	be implemented, operators to be briefed prior to works						
Demolition	- Demolition to be undertaken as soon as practicable after buildings no longer required in construction phase. - Material to be used on site where infill or earthworks required. - Excess rubble and other material to be removed from site and disposed of appropriately. Method: Construction zone to be clearly demarcated, instruction on at which stage buildings to be demolished established prior to commencement of site clearance.	To be established on site	Minimal disturbance to areas surrounding demolition site. Re-use, Recycle and appropriate disposal	Project manager Contractor ECO			
Material handling, dispatching and storage	- Fuels and hazardous materials to be stored in suitably equipped storage areas in the Contractor's camp and approved by the ECO - Strict measures to be put in place for the use and storage of hazardous materials on site - Disposal to licenced facility only - These areas shall comply with fire safety requirements - Impervious materials are to be used to prevent contamination of the ground in the event of spillages or leaks - Construction materials spilled on public or private roads to be immediately cleaned - No storage other than contractor camp METHODS: Undertake regular inspections of areas and procedures	Duration of Construction	Minimal disturbance to sensitive zones including Minimal incidences	Project Manager Contractor			

Stockpiles	- Sites for stockpiling as identified by the Contractor are to be marked on a plan, and approved by the ECO and Site Manager - Stockpiles must be suitably stabilized where necessary METHODS: Undertake regular checks of stockpiles to ensure methods outlined in the EMP and Dune EMP are implemented	Duration of Construction	Reusable sand and soil stockpiles to facilitate rehabilitation of the site	Project Manager Contractor ECO			
Waste management	- All waste to be stored in an appropriate contained area on site, and protected against wind, rain and animal dispersal - Waste to be removed on a weekly basis for disposal at a permitted disposal site - No burning or burying of refuse on site is allowed - Eating areas must be demarcated and provided with suitable refuse collection areas METHOD: Waste areas to be designed correctly and be wind and weatherproof and emptied on a regular basis	Duration of Construction	A clean waste collection point which is serviced on a regular basis	Project Manager Contractor ECO			
Construction wastewater	- Careful runoff management will be required particularly during construction. No contaminated water should be allowed to seep into the ground or runoff the construction site - All runoff from batching plants, work areas and mixer washings to be contained in sedimentation ponds, which are suitably lined - Ponds must be allowed to dry out regularly, and solid waste removed and	Duration of Construction	A clean site post construction	Project Manager Contractor ECO			

	disposed of at a site approved by the local authority. METHOD: Wastewater areas to be suitably designed and inspected on a regular basis						
Maintenance of equipment	- All mechanical equipment and work vehicles to be stored, serviced and refuelled at designated areas in the contractor's camp - Major services to take place off site - Drip trays or impervious materials to be used to prevent contamination of ground METHOD: Regular inspections undertaken	Duration of Construction	A clean site post construction	Project Manager Contractor ECO			
Stormwater	- Swales and / or attenuation structures recommended must be monitored. - Suitable measures must be in place to prevent erosion resulting from diversion, restriction or increase in stormwater runoff - Measures must be taken to prevent stormwater from flowing from excavated areas or stockpiles - Stormwater containing harmful substances to be contained, and removed from site METHOD: Regular inspections undertaken	Duration of Construction	A clean site post construction, avoiding additional impact on surrounds	Project Manager Contractor ECO			
Erosion	- Stormwater channels are to be kept clear from soil and debris - Erosion or stormwater damage resulting from Contractor's operations to be suitably repaired - Suitable stabilization measures are to be implemented wherever works are taking place as outlined in this document	Duration of Construction	A clean site post construction, avoiding additional impact on surrounds	Project Manager Contractor ECO			

	- Where erosion is detected, suitable mitigation methods are to be employed as soon as possible METHOD: Regular visual inspections undertaken						
Dust	- Sand stockpiles are to be covered with Hessian, shade cloth or DPC plastic - Stockpiles are to be located in sheltered areas and the useable face to be orientated away from the prevailing wind - Excavation and transporting erodible material during high wind conditions - water dampening measures or cessation of activities should be required - If necessary, certain components of the work should be stopped until conditions are more favourable - Vehicles must not exceed 40 km/h along gravel roads - If roads generate unacceptable levels of dust, suppression measures should be introduced - If water is used only the critical areas should be watered by cart or hand to avoid unnecessary run-off, erosion or misuse METHOD: Areas and activities of possible dust generation to be inspected on a regular basis, as well as strategies to address dust	Duration of Construction	A clean site post construction, avoiding additional impact on surrounds, avoidance of impacts on general public	Project Manager Contractor ECO			
Site clean-up and rehabilitation	- All structures, equipment materials and facilities are to be removed from site on completion of the project	Duration of Construction	A functional ecosystem post construction, suitably rehabilitated as required	Project Manager Contractor ECO			

	- Construction site shall be cleared and cleaned to the ECO's satisfaction - Site / Area Rehabilitation to be conducted in line with recommendations herein - Specialist advice to be sort where required - No waste or remaining materials to be buried on site METHOD: Inspected upon site closure / suspension of works, rehabilitation methods contained in EMP and Dune EMP to be implemented						

9. ENVIRONMENTAL AUDITS

The purpose of auditing is to determine and monitor compliance with the EMP and EA, and measure its effectiveness in mitigating environmental impacts. In terms of Regulation 34 of the NEMA EIA Regulations, 2014, the holder of the EA must conduct environmental audits in order to determine compliance with the conditions of the EA and EMP. Environmental Audit Reports should be submitted to the Competent Authority or as stipulated in the EA. The audit reports should be prepared by an independent person. The audit report should also provide recommendations regarding the need to amend the EMP.

The objective of the environmental audit report is to:

- → Report on the level of compliance with the conditions of the EA and the EMP
- → Report on the extent to which the avoidance, management and mitigation measures outlined in the EMP, achieve the objectives and outcomes of the EMP
- → Identify and assess any new impacts and risks as a result of the activity
- → Evaluate the effectiveness of the EMP
- → Identify shortcomings in the EMP
- → Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMP

An environmental audit report should contain the following:

- → Details and expertise of the independent person who prepared the environmental audit report
- → A declaration that the auditor is independent
- → An indication of the scope of, and the purpose for which, the environmental audit report was prepared
- → A description of the methodology adopted in preparing the environmental audit report
- → An indication of the ability of the EMP to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity as well as to ensure compliance with the provisions of environmental authorisation and EMP.
- → A description of any assumptions made, and any uncertainties or gaps in knowledge
- → A description of any consultation process that was undertaken during the course of carrying out the environmental audit report if required
- → A summary and copies of any comments that were received during any consultation process
- → Any other information requested by the competent authority.

10. CONCLUSION

An EMP has been developed as part of the Basic Assessment process to ensure that mitigation and management measures are enforced during the construction phase of the development, and that the conditions of the EA are upheld. The EMP should guide all phases of the project to minimize possible negative impacts and assign responsibility for environmental controls. The EMP provides a tool to recognise the needs of the environment and is intended to be utilised in conjunction with the Environmental Authorisation.

11. DECLARATION OF CONTRACTOR'S ACCEPTANCE

I, _____ (name), representing _____ (company name), have read and understood the above Environmental Management Plan and hereby acknowledge its contents and requirements as a framework for my company's environmental performance during the applicable development.

Signed: _____ Date: _____