LORNAY
ENVIRONMENTAL CONSULTING

Post Commencement Environmental Management Programme and Maintenance Management Plan

STANFORD GREEN

Erf 438 Stanford

August 2024

STANFORD GREEN
eco lifestyle estate

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STATEMENT OF INDEPENDENCE

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1. POST COMMENCMENT EMP

1.1. Introduction

This Environmental Management Plan (EMP) serves as a guideline document for the operational phase of the newly created 27 single residential (SR1) and General Residential: Town Housing (Lodge) development on former Erf 438, Stanford, Caledon Rd, Overstrand Municipality now known as Stanford Green, Eco Lifestyle Estate.

This EMP describes mitigation measures and is prescriptive, identifying specific individuals or organisations responsible for undertaking specific tasks during the operation phase of the development, with the aim to ensure that potential impacts on the environment during operation 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. This EMP has been compiled as part of the Basic Assessment process and once approved by the Competent Authority, is legally binding.

Included in this document is a Maintenance Management Plan (MMP) for the long term rehabilitation, management and maintenance of the Unchanneled Valley Bottom (UVB) Wetland and Mill Stream and 32 m buffer.

Any future and or additional construction, alterations or amendments of the originally approved site developments plan, after the initial laying out and infrastructure installation phase, must comply with the approved Construction Phase EMP, Environmental Authorisation, the National Environmental Management Act (NEMA) (Act 107 of 1998) and the National Water Act (Act 36 of 1998).

2. OPERATIONAL ACTIVITIES

The operation of the newly developed residential erven and eco lodge, will entail:

Operation

- Lodge with associated hospitality infrastructure
- 27 General single residential dwellings and associated activities
- Maintenance of infrastructure, including Sewer pumpstation, landscaped areas and gardens, paving, open spaces, transport zones etc.
- Long term management and maintenance of the Wetland, Mill Stream bed and banks and the 32 m buffer zone. Activities such as ongoing removal of alien vegetation, erosion control and landscaping as required, flood response and repair, landscaping etc.
- Implementation of the specialist mitigation measures and management of the high sensitivity wetland and stream and buffer area.

Decommissioning

Decommissioning is not applicable.

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
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)
NFA	National Forest Act (Act No 84 of 1998)
PPE	Personal Protective Equipment
SDS	Safety Data Sheets
SHE	Safety Health and Environmental
UVB	Unchanneled Valley Bottom (wetland)
WUL	Water Use License - General Authorisation in terms of 219(c) and (i) of GN 509 of Aug 2016.

Basic Assessment - Process followed to receive Environmental Authorisation from the Competent Authority, necessitated by NEMA. 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.

Developer / Applicant – Omni King Investments (Pty) Ltd

Operator -Assigned Homeowners Association and / or similar structure

Environmental Control Officer (ECO) - a suitably qualified person to be appointed by the Developer / Applicant, to oversee the implementation of the EMP and environmental authorisation through the operational phase and into decommissioning (if applicable)

Environmental Management Plan (EMP) - 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 during the operational phase.

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. Infectious mortalities are also considered hazardous

Home Owners Association (HOA) – Body responsible for ensuring that house plans submitted to Overstrand Municipality for approval comply with Architects Guidelines for the Estate and for the management and operation of the Private Open Space and supervision of undevelopable area on Portion 1 – 8, 10 and 28.

Project / Site manager – Person or body responsible and accountable for the overall development during the operation of Staford Green. This role may fall onto the Home Owners Association and/or Lodge Manager.

Safety, Health and Environmental Officer (SHE Representative) - A representative from each contractor, appointed as a Safety Health and Environmental Officer, assisting the construction manager on Safety, Health and Environmental aspects of the project for any new construction site. General Health and Safety rules are applicable to operations and guest indemnity.

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 operation of the activity on site:

Table 1: Impact Management

Avoidance	Avoiding activities that could result in adverse impacts and/or avoiding 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.

Environmental Control Officer

Typically the ECO duties fall under the Home Owners Association (HOA) or similar management structure once formalised.

The following is a list of typical responsibilities of an ECO or acting ECO:

- To environmentally educate and raise the awareness for environmental education on site and to facilitate the spread of the correct environmental attitude during operation.
- To review method statements and to determine the most environmentally sensitive options.
- To oversee the implementation of environmental procedures set out in this document and the Environmental Authorisation (EA).
- To attend meetings, as required and report on environmental issues.
- To receive notices and minutes of all operational meetings regarding the environmental and operational activities, changes, renovations, complaints, problems etc.
- To take immediate action where infringements are recorded.
- To keep an up-to-date record of operations, as they relate to environmental issues.
- To be contactable by the home owners and public regarding matters of environmental concern during the operation.

In this instance, the applicable ECO / home owner/ HOA / Lodge Management, should also monitor landscaping, upkeep and maintenance, general tidiness, refuse disposal, management of the open space / remainder of the site and water use. The long term management, maintenance and rehabilitation of the Mill Stream, wetland and 32 m will be a long terms, ongoing project requiring careful management in line with original Environmental Authorisation an specialist recommendations.

The drafting of and implementation of the Maintenance Management Plan (MMP) is applicable to the Mill Stream, the onsite UVB wetland and the 32 m buffer to these areas. This includes those areas of private properties that have a non-developable area extending into the 32 m buffer.

5. ENVIRONMENTAL AWARENESS

It is important to ensure that any contractors and employees (and new owners) associated with the development receive the appropriate level of training and awareness to ensure that continual environmental due diligence and conservation is applied at all levels of operation. Employees, contractors and sub-contractors as well as the property owners, must be made aware of their responsibilities in terms of relevant legislation, guidelines, as well as this EMP, MMP and EA. The Homeowners Association can enforce the above. Environmental training should be implemented at the onset of operation and repeated at regular intervals or as required. The Homeowners Association should take ownership of the above.

5.1. Aim of the Environmental Awareness

- → Promote environmental education and conservation on site.
- → Inform employees and any new contractors on the applicable environmental procedures and plans.
- → Ensure that all new owners, contractors and employees are aware of the conditions of the EA and that they are implemented

5.2. Environmental Awareness Training and Content

- → Awareness training, education or signage should include:

- Original content of EA and goals for long term conservation and management of the site.
- Information and education regarding the sensitivities identified during the impact assessment phase
- The implementation of emergency procedures where applicable.

→ Definitions as used in this EMP should be provided.
→ Explanation as to how and why environmental protection is necessary,
→ Management measures required to prevent environmental impacts should be outlined.
→ Awareness should be made of emergency and spills response procedures.
→ Awareness should be made of the content of the Architectural and Landscape Guideline document.
→ Awareness regarding environmental principles such as reduce, reuse and recycle.
→ Information regarding the protection of all fauna and flora, but in particular protected White Milkwood (*Sideroxylon inerme sbs inerme*) trees and endangered Western Leopard Toad (*Sclerophys pantherinus*).

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 operational phase of the residential development on Erf 438 Stanford, to be known as Stanford Green. A construction phase EMP was also required for approval of the development of this listed activity. The implementation of these EMPs will be a condition of approval of the Environmental Authorisation (EA). Failure by the applicant or property owners, to comply with this EMP, will therefore constitute an offence, and the applicant, property owners 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 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. (See Construction Phase EMP for Erf 438 Stanford)

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 84 of 1998 as amended

Lists the protected tree species that may not be cut, disturbed, damaged, or destroyed except under licence or exemption granted by the Department of Agriculture, Forestry and Fisheries (DAFF).

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.

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

Provides for the protection of water resources. The 32m non-developable area adjacent to the stream and wetland is legally protected. Any construction, excavation or disturbance of this area will require a Water Use Licence from the Department of Water Affairs.

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. OPERATIONAL PHASE IMPACTS AND MITIGATIONS

7.1. Activity specific impacts and mitigations

The following activity specific impacts and risks have been identified for the operational phase of the proposed development:

Figure 1. Preferred development layout

Table 2: Activity Specific Impact, Management and Mitigations

IMPACT	DESCRIPTION	MANAGEMENT / MITIGATION	MONITORING	RESPONSIBILITY
Ecological	Long term protection of the wetland and stream and delineated 32m buffer to ensure continued and improved functionality	- Volume and velocity of water entering the stream and wetland is controlled by ensuring vegetated detention ponds, attenuation structures and / or swales are maintained, in order to slow runoff and improve water quality - Ensure that the area is kept clear of alien invasive plants which are a fire hazard and change the hydrology (volume and velocity) of the stream - Any landscaping in Open Spaces must be appropriate locally endemic vegetation - No paved or concrete pathways are permitted. - Footpaths may be raised board walks or timber lined with wood chips or pip shells - Access to the area may only be on foot using footpaths. Do not allow unauthorised establishment of access ways. - Erect signage to ensure awareness of site sensitivities and ecological risks - Budget for maintenance and repairs of water attenuation structures. - Alien invasive plants within the stream and wetland must be removed as per approved Maintenance Management Plan - Bush, including indigenous trees, must not be allowed to encroach into this area. - The buffer must be maintained primarily as an ecological buffer to restore and / or improve functionality of the adjacent wetland and stream - The R43 bridge over the stream may collect branches or other debris in high water situations. This must be monitored and cleared as required.	- Monitor operation and users / home owners - Monitor contractors - Supervise removal of alien plants and gardening.	Home owners association (HOA) / Lodge manager
Fauna and Flora	Long term protection of indigenous vegetation and	- All Open Spaces to be kept clear of alien invasive plants - Gardens and landscaping to be indigenous only	- Monitor operation and user / home owners	HOA / Lodge manager

	natural fauna, ensuring minimal disturbance throughout the site but especially in the wetland, Mill Stream area and associated 32 M buffer. Of particular concern are Western Leopard Toads and White Milkwood trees. Risk – Loss of biodiversity and endangered species	- Arum lilies should be planted in attenuation structures and/ or water polishing area to encourage amphibian diversity. - Water features /ponds on private properties will attract frogs, which are very noisy, in the breeding season. This should be discouraged. - NO kikuyu lawn. Buffalo grass only and very limited areas. - The area under Milkwoods must not be lawned as this can result in die off of these trees - No fence, walls or other solid barrier may be erected on the boundary of properties within the wetland buffer to allow toads and other small birds and animals to move between ecosystems. (Post and rail or hedge or similar is appropriate). - Specially protected tree species should only be planted in areas where they are not likely to ever require authorisation to remove, cut or prune. - All mapped White Milkwood and other protected trees must be monitored bi-annually. - Gardens and landscaping to be locally indigenous species only. - Recommendation regarding toad and frog friendly storm water structures, curbs, walls or fences must be followed. (Van Zyl, K., & Morton, R. 2024. Aquatic Biodiversity Impact Assessment Erf 438 Standford V1.0 Delta Ecology. RSA. and Western Cape Conservation WCC Amphibian Report. July 2024) - No chlorinated pools must be permitted within the development - No pesticides may be used within the development - Chemical fertilizers are toxic to frogs and toads. Only compost or mulching may be used in areas accessible to these animals. - No herbicides may be used in the Mill stream and wetland and buffer unless specifically required in terms of the MMP. - The tree that the Spotted Eagle Owls or other raptors are nesting in should be cordoned off during the nesting period. - Reeds must be cut periodically as per the MMP. Cut reeds must be removed from the area. Roots and rhizomes must be left in situ unless other appropriate plants are recommended in consultation with downstream Mill stream management. -	- Monitor contractors - Supervise removal of alien plants and gardening.	

Infrastructure	Monitor infrastructure to ensure optimal functionality and maintain and upgrade structures before they fail. Sewer pipe line and Pump station Sub station Storm water system Stormwater Attenuation structures Risk – Deteriorate due to lack of maintenance Risk - Cause adverse impacts on site and down stream that has negative health implications for the community and the natural environment.	- Monitor surge protection air valves and pipeline at least weekly - The sewer system should have a 2 hour peak flow capacity within the concrete containment manhole. Ensure that should there be a breakdown at the pump station residents are informed immediately - Procure honey sucker to evacuate containment tanks via scour valves promptly. - Prevent any accidental overflow from the sewer lines into the stream with sand bags. - Stormwater attenuation structures must be monitored to ensure they are not eroding - Debris traps must be cleared regularly and especially after heavy rain. - Stormwater drains / leiwater must be cleared prior to the winter rainy season. Grates must be in place.	- Monitor operations	HOA / Lodge manager
Visual	-Vegetated berms near access to Staford Green -Refuse management area -Access -Dwellings Risk – deterioration due to lack of maintenance	- Ensure that the vegetated berms are maintained and their functionality to reduce the visibility of the development from the R43, and reduce noise and wind is optimised. - Ensure that sight lines from the access road to the R43 are not restricted by vegetation - Ensure on site refuse area is kept tidy and secured to prevents refuse being spread by wind or animals. - Lawns mowed regularly; gardens maintained. - Homes / lodge regularly painted in colours as approved by Architects Guideline or HOA	- Monitor operations	HOA / Lodge manager
Noise	Noise associated with Tourism (Lodge) Noise associated with on-going management and maintenance.	- Ensure noisy activities take place in line with municipal by-laws. - Ensure noisy machinery is only operated when silencers are fitted. - Maintain machinery / mowers in good working order	- Monitor operations	HOA / Lodge manager

	Risk – disturbance to property owners			
Job creation	Job creation and skills transfer during operation. Risk – labour not sourced locally, therefore local benefit to economy and skills transfer is limited	- Ensure labour and contractors are sourced locally as far as possible - Encourage skills upgrading opportunities for employees, especially within the hospitality industry / tourism.	- Ensure employers appoint local employees as far as possible by checking staff appointments - Encourage use of local service providers	HOA/ Lodge manger

7.2. Homeowners Association

A Homeowners Association will be appointed to manage the operation of the development. The Homeowners Association, will amongst others, be responsible for:

7.2.1 Management of open space and high sensitivity areas

Management of open space and wetland, Mill Stream and 32 m buffer as well as the White Milkwood Forest (*Sideroxylon inerme*) and any other Protected or Endangered species on the property, is mandatory.

Open space must be managed by removing emerging alien vegetation and maintain a natural state as far as possible. No permanent infrastructure is permitted in the wetland / stream area and 32 m buffer. This includes the non-developable portion of properties.

The recommendations of the Wetland and Botanical Specialist must be implemented by the HOA:

The following mitigation is considered essential, feasible and reasonable:

- → The development will be a gated estate with a HOA, who must be tasked with managing the Wetland, and Open Space areas. They are also required to monitor the non-developable portion of private properties identified below It is essential that this is clearly indicated and confirmed up front and that no disturbance is allowed within the wetland setback area of Erven 1 to 10 and 28 and that any alien invasive vegetation is removed annually from these areas using the appropriate methodology (see references in Botanical Report and Maintenance Management Plan
- → The High sensitivity areas identified by the various specialists may not be developed or disturbed in perpetuity, without appropriate approvals.
- → No new infrastructure which may cause soil disturbance (roads, pipelines, etc) may be routed through the wetland, steam or non-developable areas without approval.
- → No solid walls or fences may be built on the wetland / Mill stream side of Portions 1 to 8, 10 and 28, or into the undevelopable area that is for the exclusive use of these property owners. Post and rail or hedges or similar that do not compromise the functionality of the buffer area or connectivity with the stream and wetland are appropriate.
- → Recommended boundary fencing is Bonnox style fencing, or alternatively ClearVue fence but must be modified to include toad holes of at least 100 mm diameter, spaced every 20 meters, and not exceeding 300 mm in length at ground level and open gutters. No electric strands at or below 30 cm above ground level, to allow movement of small animals.
- → All firebreaks need to be outside property boundaries. Adjacent properties are owned by the municipality. This will need to be arranged and / or co-ordinated with them.
- → 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 or ensure the pool is not accessible to toads and other animals. Alternatively the pool must not be accessible to frogs or toads.
- → Rainwater down pipes may not discharge rainwater onto driveways or paved areas. Rainwater may be collected in tanks with overflow directed onto lawned areas or garden beds. Due consideration must be taken to attenuate runoff before it enters the wetland or stream to limit downstream impacts.

7.2.2. Private Properties

Those erven (Erf 1 – 8, 10 and 28) that are adjacent to the Mill Stream and wetland, include an area that is considered “undevelopable” as it extends into the delineated 32 m buffer. This is a specific limitation on these portions of theses properties. The HOA must work with the home owners to ensure that these restrictions are

complied with in perpetuity and that homeowners who purchase these erven are aware of the limitations to their erven.

Private gardens must be indigenous, and locally endemic, with limited to no, hardened surfaces. Gardens are to be kept alien and invasive vegetation free. Lawns areas must be limited in size. Groundcover is preferrable.

7.2.3. The Lodge

The accommodation 'Eco Pods' are located in such a way as to ensure that the structures have a minimal impact on the mature White Milkwood trees on this site. These trees also provide privacy for the buildings and contribute to the sense of place which advised the development. Pathways between buildings may be raised boardwalks or paths which permit water and nutrients to reach the roots of the trees.

Parking and driveways must be 'grass blocks' or similar which allow for percolation while limiting compaction.

7.3. General Operational Impact and Requirements

7.3.1 Health and Safety
Responsibility – Owner / Operator / HOA

Correct Personal Protective Equipment (PPE) must be worn at all times by the relevant personnel on site when required. Personnel must be trained in the use of PPE. Each contractor should appoint their own Safety Officer to monitor the safety condition during the operation. Suitable warning and informative signage should be erected. The handling of hazardous materials should only be done by trained personnel. 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. 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.

General Health and Safety requirements for the operation of tourism facilities and overnight lodging must be in line with the relevant legislation.

7.3.2 *Fire Risk Management*
Responsibility – Owner / HOA / Lodge Management

Stanford Green is located within a high-risk area for fire.

A Fire Officer must be identified, 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 sufficient fire-fighting equipment is readily available on site at all times. Any fires or signs of fire must be reported to the fire officer immediately.

No open fires must be permitted and only appropriated braai facilities may be used. The Lodge and homes should be equipped with at least the minimum firefighting equipment and occupants /staff be aware of its location and how to use it. Emergency contact numbers and procedures required in the event of a fire signage must be erected in tourism areas and made available to home owners.

7.3.3 *Fuel and Hazardous Material*
Responsibility – Owner / HOA

Fuels and flammable materials which may be required on site during operation, are to be suitably stored in a designated area. 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.

7.3.4. Erosion Control
Responsibility – HOA / Lodge Management

Action should be taken to prevent erosion of soils on site and consequent sedimentation of the stream. Appropriate attenuation structures and vegetated swales must be monitored and maintained. Should any erosion be detected on site, the cause of such erosion should be identified, and appropriate remedial action must be immediately implemented. See Maintenance Management Plan (MMP) below.

7.3.5. Architecture / Design
Responsibility - Owner / HOA

Dwellings and infrastructure to comply with bylaws and to be built as per approved plans only. Owners must ensure buildings are in line with architectural guidelines for the development and do not have a negative contribution to the area as a whole and have been approved by the HOA before submission to Council. Construction may not commence until the plans have been approved.

7.3.6. Water Use
Responsibility – Owner / HOA if applicable

The following water saving principles are recommended for the site:

- → Rainwater storage tanks may be installed to collect runoff rainwater. Rainwater tanks should be installed in such a way as to prevent visual or landscape intrusion.
- → Shower and wash basin taps should be fitted with recent technological appropriate flow reduction devices, aerators and/or motion sensors to maximise water conservation and reduce wastage
- → All internal and external taps on site should be regularly inspected and maintained to prevent water wastage through drips and leaks.
- → All toilets must be of the of a design that will use the least amount of water per appropriate flush and have the most efficient discharge. All toilets must be connected to the municipal sewage system.
- → Grey water from showers, baths, basins and washing machines, may be collected or redirected for reuse (gardening, outside washing etc.) after it has been appropriately polished /treated. Grey water may not be discharged into the wetland or stream unless treated.
- → Endemic and indigenous plants should be used for gardens and landscaping to minimize water demand i.e. water wise landscaping
- → Should irrigation be required, these should be on timed systems and active at low evaporation hours (early morning, late evening). No water may be abstracted from the wetland or stream without the required permits.
- → Drains should be fitted with grease traps which remove oils and solids from waste water, to improve the quality of the effluent waste water for reuse.
- → Appropriate catering grade grease traps must by installed in commercial kitchens before waste water enters the sewer.
- → Dry brushing and / or sweeping should be used in preference to water cleaning, where possible (cleaning pathways, machinery etc.)
- → Alien invasive vegetation must be removed from the wetland, stream and the undevelopable areas of each property to promote healthy and functioning rivers, ground water and wetlands. See MMP
- → Efficient water use habits should be encouraged across the property
- → Sewerage pipelines and pumpstation should be regularly monitored and maintained to prevent leaks and pollution of groundwater and stream

7.3.7. Electricity

The latest technologically efficient generation equipment must be installed, including where the house is not connected to the national grid and alternative sources of energy are installed.

The following electrical saving principles are recommended but not limited to:

- → Incandescent light bulbs may not be used.
- → LED or similar lighting must be used where possible.
- → "Dark sky" lighting should be installed where exterior lights will impact on neighbouring buildings.
- → Programmed lighting should be implemented to prevent lights being left on unnecessarily
- → Energy saving or on demand water heaters or geysers should be installed OR
- → Solar water heaters should be installed
- → Proper insulation, that at least that complies with local requirements, should be used on all new structures and renovations, in order to reduce the need for heating and cooling of dwellings. This includes, but is not limited to double glazing, blown-in or roll on ceiling insulation or appropriate other technology, and shading windows exposed to summer sun.
- → Programmed or motion sensitive lighting should be implemented to prevent lights being left on unnecessarily.
- → Air conditioning systems, whether they are heating or cooling a room or building, must switch off automatically if the space is unoccupied for a long time.

7.3.8. Sewerage

Municipal infrastructure for the responsibility of the municipality. The Pumpstation and sewer pipelines must be monitored for leaks regularly and maintained as directed by the engineer

7.3.9. General waste and refuse

Waste minimisation strategies should be implemented through avoidance, reduction, reuse, recycling, recovery, treatment or responsible disposal. Then on-site waste management area must be secure and screened to avoid visual impacts. All refuse bins and refuse collection areas must be animal and weatherproof. Refuse areas must provide for waste sorting and separation on site (tins, glass, paper etc.). No waste may be stored in the long terms or disposed of on site.

7.3.10. Site maintenance and repairs

Renovations and maintenance should be conducted in line with a maintenance schedule to ensure that renovations are done effectively with reduced wastage. When using paints, cleaners and other solvents for maintenance, preference should be made for environmentally friendly products, water-based paints and avoidance of harsh chemicals. Chemicals and water used to clean paint brushes and other equipment must not be discharged into the sewage system. No building materials or products used during renovations should be disposed of on site. Maintenance and works required within the 32 m buffer areas and associated Mill Stream and UVB wetland will take place in accordance to the Maintenance Management Plan (MMP) below.

7.3.11. Alien vegetation management

No alien invasive vegetation should be used for landscaping. Control of alien invasive plants and fire management are interlinked. A programme for removal and control must be implemented.

7.3.12. Footpaths

No adhoc paths to be created particularly in the wetland, Mill Stream, 32 m buffer or Open Spaces. Paths must be demarcated, raised, built with wooden planks and infilled with wooden bark, pips, or other biodegradable material or boardwalks may be constructed to allow owners and visitors to enjoy the open areas and to facilitate management.

7.3.13. Fauna

All wild fauna on site should be protected. Western Leopard toads and other frogs and toads are found in the wetland and stream area and they may move into garden when not breeding. Owners and visitors must be made aware of the importance of these endangered species. Water features or ponds may attract frog during the breeding season. They are extremely noisy and can be considered a nuisance. Ponds that are accessible to frog are therefore not appropriate near the houses.

Raptors have been recorded nesting on the property. The trees that Spotted Eagle Owls nest in can be cordoned off during nesting period if the birds are being disturbed. Sparrow Hawks are also visitors to the property.

Chameleons are found in undisturbed fynbos areas. These animals are also negatively impacted by the use of pesticides. The use of pesticides outside buildings is not appropriate.

Edible refuse should be appropriately disposed of. No poisons or traps should be used as far as possible. Professional help, such as Western Cape Conservation, Cape Nature, should be contacted for 'problem' animal solutions.

A No kill policy is implemented.

8. NON-COMPLIANCE

The Environmental Authorisation (EA) stipulates that, *"Non-compliance with a condition of this Environmental Authorisation and the EMPr 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 HOA, Lodge management or ECO. Where non-repairable damage is inflicted upon the environment or non-compliance with any of the EMP / EA obligations is registered, 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, reserves the right to terminate the contractor's contract.

9. COMPLIANCE AND MONITORING

The monitoring of works on site is necessary to demonstrate compliance with the specifications of the EMP and EA and to allow for problems or issues of non-compliance to be identified and remedial actions implemented.

Monitoring should include visual checks by the home owner / Lodge management / ECO, as applicable, on a regular basis. The implementation of regular monitoring will ensure that environmental impacts can be detected early and remedial action implemented.

The following activities need regular monitoring:

- → Actions which impact negatively on the high sensitivity botanical areas
- → Landscaping is limited to allow natural vegetation to thrive
- → Water saving principles are being implemented and adhered to
- → Refuse areas are tidy and no refuse is visible on or around the property
- → Stockpiles are screened and kept for bare minimum
- → Buildings are maintained on a regular basis and in line with architectural character of the area
- → Riverbanks and watercourses are not negatively impacted by daily activities on site
- → Connectivity which allows small animals, including frogs and toads, to move around the buildings is encouraged. Gaps under gates and fences, stormwater pipes which do not trap these animal with shallow sides, and the like are appropriate.

9.1. Environmental Control Sheets

Environmental Control Sheets to be used by the ECO on a monthly basis to monitor 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 3. Environmental Control Sheets for operation

					RECORD OF PERFORMANCE		
TASK	**ACTION REQUIRED / MITIGATION & METHOD FOR IMPLEMENTATION**	**FREQUENCY**	**TARGET / OUTCOME**	**RESPONSIBILITY**	**COMPLETED YES/ NO**	**DATE**	**COMMENT**
OPERATION							
Ecological	- UVB wetland, Mill Stream and 32 buffer areas to remain no development zones, remain natural and well managed as per MMP	As required	Maintain high sensitivity areas in perpetuity	Management / ECO / HOA			
Protected species -Leopard toads -White Milkwood	- Implement all recommendations of the Aquatic Biodiversity Impact Assessment (Van Zyl, K., & Morton, R. 2024. Aquatic Biodiversity Impact Assessment Erf 438 Standford V1.0 Delta Ecology. RSA.) - Ensure that all White Milkwoods and other Protected trees mapped on the property are not damaged, cut or removed.	As required	Maintain and increase number of endangered Leopard toads. Ensure Protected trees, and other plants, are protected	Management ECO /HOA			
Water use	- Ensure irrigation is done in a waterwise manner and limited to those plants that are not yet established. METHOD: Fit timers to irrigation systems. Use low flow irrigation instead of sprinklers.	As required	Waterwise	Management / ECO / HOA			
Noise	- Ensure noisy activities take place in line with municipal bylaw - Ensure silencers are fitted to noisy machinery - Machinery to be kept in good working order - Generators to be located in generator rooms to dampen the sound METHOD: Check the implementation of mitigation measures	As required	No impacts to adjacent landowners	Management / ECO / HOA			

Job creation, skills transfer, invest on the area	- Ensure labour and contractors are sourced locally as far as possible - Encourage educational opportunities to employees - Encourage patrons to visit other local and surrounding tourism offerings METHOD: Include in contract documents and business model	As required	Maximise jobs for local communities Investment in the local economy	Management / ECO / HOA			
Health & Safety	- Appoint officer as required METHOD: Appoint H&S steward	As required	Avoid / prevent H&S incidents	Management / ECO / HOA			
Fire	- Implement fire management requirements as outlined in the EMP and Conservation Management Plan METHOD: Appoint Fire Officer / chief, implement recommendations of management plan	As required	Avoid / prevent fire incidents	Management / ECO / HOA			
Fuels and hazardous material	- To be suitably stored - Bulk deposits to be bunded METHOD: Inspect on a regular basis	As required	Avoid / prevent spills and leaks	Management / ECO / HOA			
Erosion	- Monitor construction and rehabilitated areas METHOD: Inspect on a regular basis	As required	Prevent erosion	Management / ECO / HOA			
Water	- Monitor for water wastage (dripping taps, leaking pipes etc) METHOD: Implement water saving measures	As required	Reduce water usage and introduce water saving principles	Management / ECO / HOA			
Electricity	- Monitor electricity usage METHOD: Implement electrical saving measures	As required	Reduce electrical consumption	Management / ECO / HOA			
Sewage and sewerage infrastructure	- Sewer lines and pump station is located within the buffer as this is the low point below the buildings - Ensure sewage pump station is operating properly . METHOD: Monitor for spills and leaks. Ensure grease traps are regularly cleaned and fatty residue disposed of appropriately.	As required	Avoid sewerage spills and contamination	Management / ECO / HOA			
General waste and refuse	- Implement recycling and reuse as far as possible	As required	A clean site, with reuse and recycling encouraged	Management / ECO / HOA			

	- Ensure waste storage areas are in line with requirements to prevent adverse impacts on people, the environment and animals METHOD: -Monitor waste disposal areas						
Site management and renovations	- Renovations and maintenance should be conducted in line with a maintenance schedule to ensure that renovations are done effectively with reduced wastage. When using paints, cleaners and other solvents for maintenance, preference should be made for environmentally friendly products, water-based paints and avoidance of harsh chemicals. No building materials or products used during renovations should be disposed of on site	As required	A aesthetically pleasing site with schedule maintenance as required	Management / ECO			
Alien vegetation management	- Remove alien vegetation from the property to allow for the regeneration of indigenous species and to reduce the wild fire risk, in line with an Alien Management Plan METHOD: Implement Alien Management Plan Implement Maintenance Management Plan in POS	As required	A quality site and remainder, reduce alien vegetation seedbank	Management / ECO / HOA			
Fauna	- No killing of wild animals - No chemical fertilizers. - No chlorinated pools METHOD: Seek professional assistance for 'problem' animals	As required	Functional ecological corridors and remainder which does not harm fauna	Management / ECO / HOA			

SECTION TWO
MAINTENANCE MANAGEMENT PLAN

10. Maintenance Management Plan

10.1. Introduction

The main purpose of this Maintenance Management Plan (MMP) is to prevent, mitigate or minimise damage associated with long term management and maintenance on the subject property in specific zones, whilst enhancing the benefits.

Extract from Western Cape Information Document for the Development of a Maintenance Management Plan for a Watercourse in terms of NEMA, 1998 (Act 107 of 1998) Environmental Impact Assessment Regulations, 2014 (as amended)

The following are overarching principles to be used by landowners and mangers when considering the development and implementation of a MMP

a. The anticipation and prevention of negative impacts and risks, then minimisation, rehabilitation or 'repair', where a sequence of possible mitigation measures to avoid, minimize, rehabilitate and/or remedy negative impacts is explicitly considered;
b. Avoid and reduce unnecessary maintenance;
c. Maintenance and management of a watercourse must be informed by the condition of the physical and ecological processes that drive and maintain aquatic ecosystems within a catchment, relative to the desired state of the affected system.
d. Management actions must aim to prevent further deterioration of the condition of affected watercourses, and, overall, be guided by a general commitment to improving and maintaining ecological infrastructures for the delivery of ecosystem services;
e. Managers and organs of state must identify, address, and where feasible, eliminate the factors that necessitate intrusive, environmentally -damaging maintenance; and
f. A process of continuous management improvement be applied, namely Planning, Implementing, Checking (monitoring, auditing, determine corrective action) and Acting (management review).

Approval of this Maintenance Management Plan (MMP) does not absolve the owner, contractor or any other party of the general "duty of care" principle as set out in Section 28(1) of the NEMA, which states that "Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment."

10.2. Need for MMP on Erf 438, Stanford

Is there a watercourse on or adjacent to the property?	Three watercourses have bene delineated on the property
Has there been a history of flood damage or vandalism to the existing infrastructure or watercourse – erosion and/or sedimentation?	No history of flooding evident, however flooding is possible along with associated erosion, which will require rectification. Sedimentation, silting is also possible and will require maintenance actions from time to time.
Is there infrastructure or any community at risk of being damaged by flooding?	A 32m buffer zone is implemented as well as the 1:100-year flood line, and limited risk indicated.
Is the design of infrastructure considered adequate in terms of managing the risk of flooding, erosion and/or sedimentation?	A 32m buffer zone is implemented as well as the 1:100-year flood line, and limited risk indicated.
Would you consider an improved design to existing infrastructure to reduce maintenance needs?	N/A
Are there specific incidences where the watercourse is obstructed or blockages occur that alter the flow of the river during floods?	The Mill Stream flows under the newly upgraded R43 road and continues into Stanford. During flood event, blockages from vegetation and trees could block. This will need to be managed and checked on a regular basis
Is there an existing obstruction in the watercourse that has changed the flow of the river under normal conditions?	N/A
Is there a marked increase in the rate of erosion/sedimentation being experienced which threatens operations and assets?	N/A
Is there a presence of alien or bush encroachment vegetation within the watercourse and/or the presence of woody debris after flooding?	As part of the NEMA process, the large Blue gum trees which are currently located alongside the Mill Stream will be removed.

10.3. Applicable legislation

The following specific environmental legislation is applicable to this Maintenance Management Plan:

- → The MMP will be approved in terms of the NEMA EIA Regulations 2014 (as amended) and relates to the following listed activities
  - Listing Notice 1, Activity 19
  - Listing Notice 3, Activity 12

- → The requirements of the National Water Act 36 of 1998 (as amended);
- → The requirements of the National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) in terms of:

- National list of ecosystems that are threatened and in need of protection (GN 1002 of 9 December 2011).
- Alien and invasive species list 2016 (GN R. 864 of 29 July 2016).

11. Applicable area

The development of Erf 438, Stanford was proposed. As part of the NEMA process three wetland / watercourse areas were delineated on the site by the Aquatic Specialist, as per the figure below. The yellow hillslope wetland was confirmed to be severely degraded due to long term agriculture and was included in the development proposal. However, the Mill Stream and associated wetlands (blue) and UVB wetland (orange), will require long terms maintenance and management. This includes the demarcated 32m buffer zone.

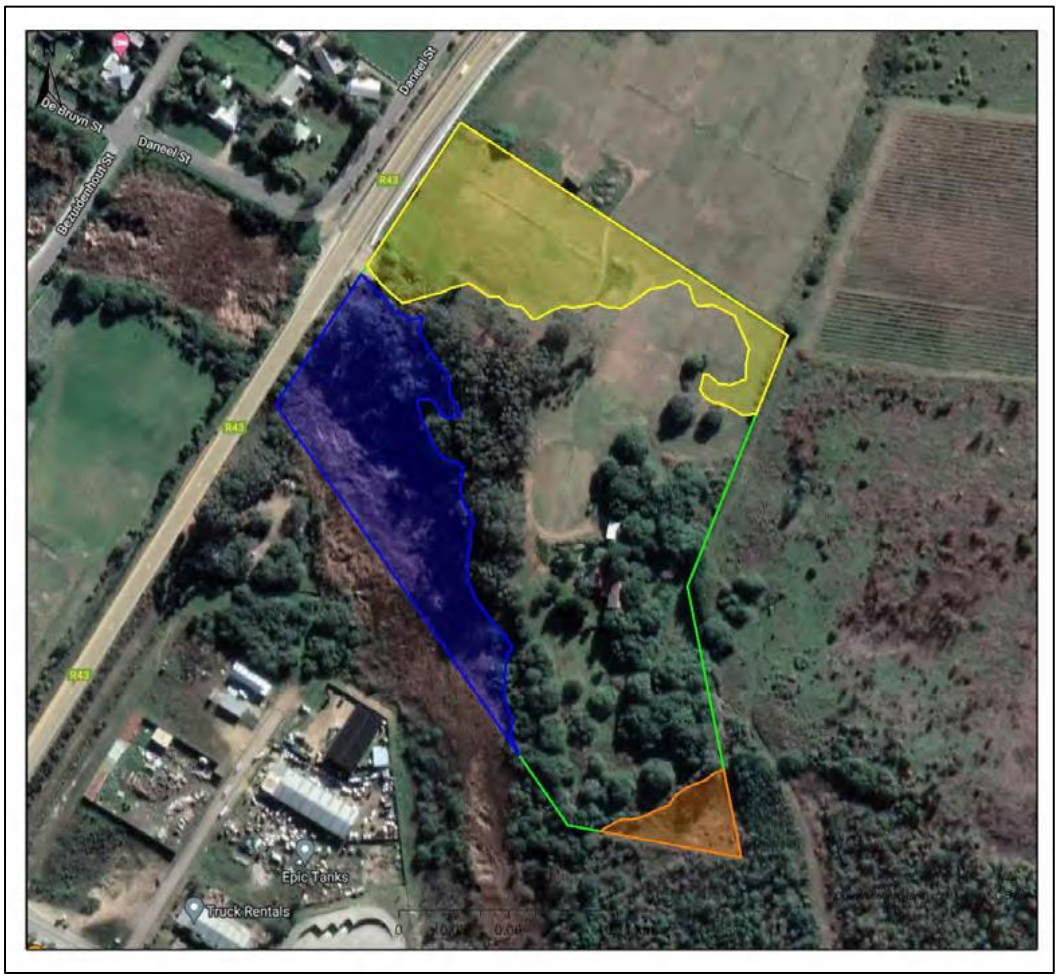

Figure 2. Delineated watercourse and wetlands on site. The Mill Stream is in blue, the tributary in orange and the hillslope seep is in yellow.

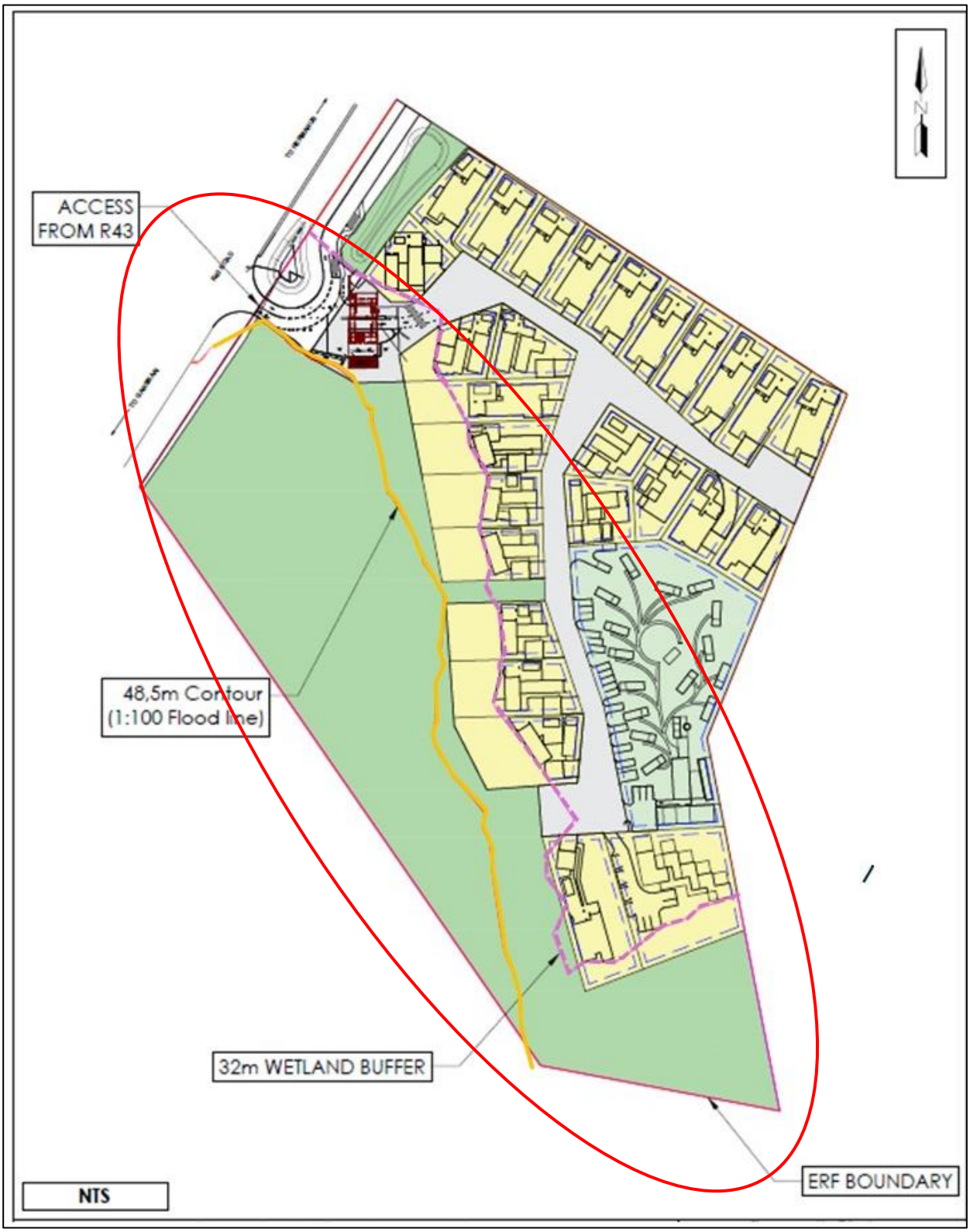

Figure 3. Area applicable to the Maintenance Management Plan (MMP). The 32m buffer zone, UVB Wetland and Millstream

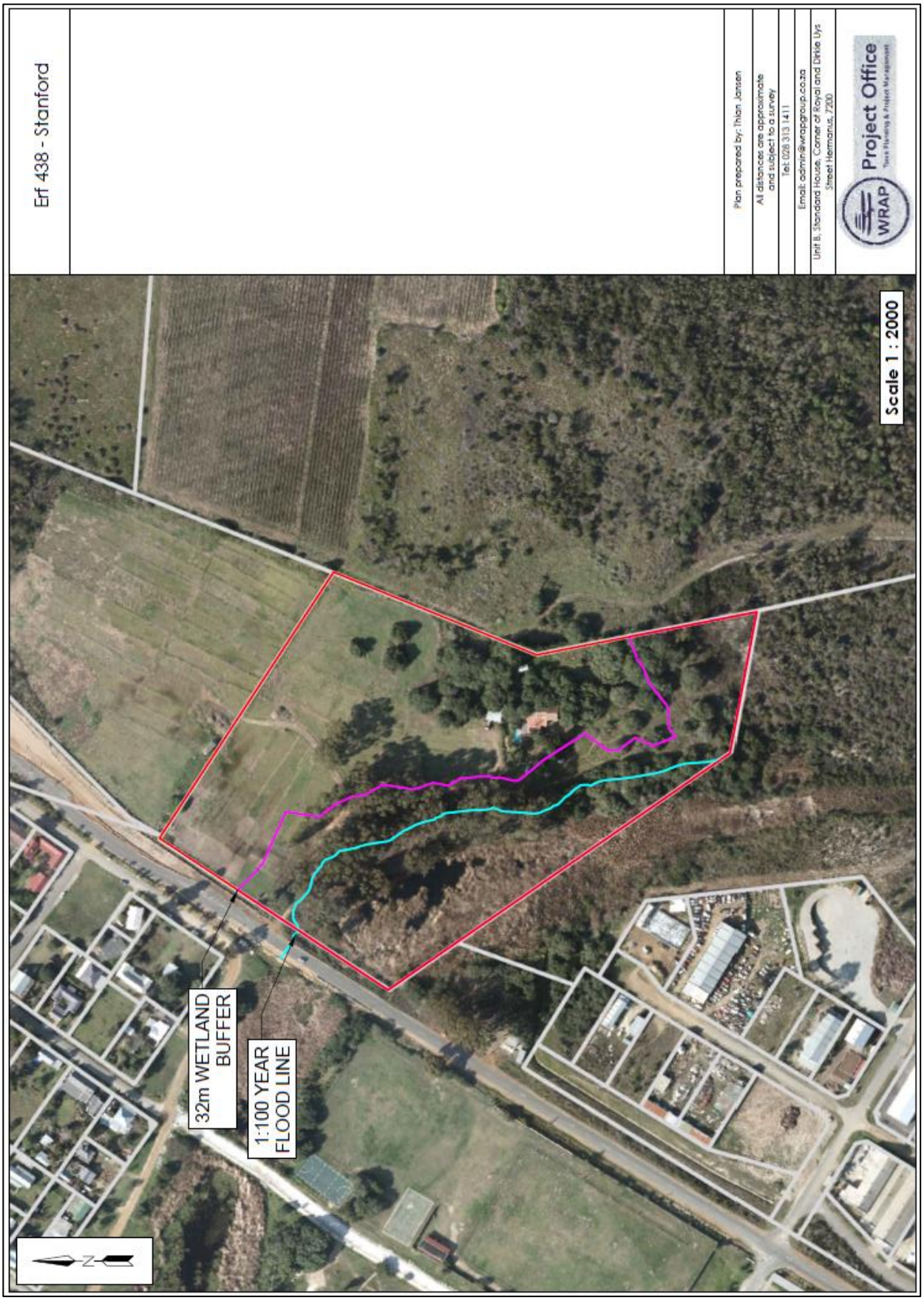

Figure 4. Aerial map with 32 m wetland buffer and 1:100 flood line

12. Maintenance categories

The type of maintenance and management interventions required are outlined the table below.:

Table 4. Maintenance categories appropriate to the property

CATEGORY	TYPES OF MAINTENANCE ACTIVITIES
Category A: Sediment removal as a result of deposition or sediment deposition as a result of erosion	Clearing of accumulated sediment may be required from time to time particular within the Mill Stream itself and may also form part of the rehabilitation of the Stream. The aim of the this is to prevent the formation of islands in the stream and facilitate natural flows. The removal of the gum trees are expected to change the flow and these areas may required movement or clearing of accumulated sediment.
Category B: Emergency repairs – urgent action required to manage risk and damage to assets	With the recent and future expected rainfall patterns on the Western Cape, Emergency Repair to erosion of riverbank or servicing infrastructure in the vicinity may be required from time to time or after flood or other such events. This may include removal of materials which have built up in response to flooding and sedimentation as well as possible damage to any permanent infrastructure in the 32 m buffer. Management of the condition of flood protection berms, swales and existing structures such as gabions, canalized and stormwater systems is also included.
Category C: Managing alien invasive and bush encroachment plant species	The activity will include the removal of invasive alien plant species, as well as potentially obstructive indigenous species/ encroachment (specifically and only, in instances where vegetation is blocking channels, headwall and culverts), to reduce maintenance requirements as they relate to erosion and sedimentation and improve hydrological flow and reduce associated flooding impacts. Clearing of vegetation from affected watercourses and associated buffers should be actioned as required and includes the management of the reeds (*Phragmites australis, Typha capensis) and removal of the large blue gum trees (Eucalyptus sp.)*
Category D: Rehabilitation and restoration activities for maintaining ecological infrastructure	Developments and maintenance of ecological buffers will be required to improve and/or restore the functioning (e.g. wetlands and stormwater detention pond) Actively rehabilitating riparian zones through planting of locally indigenous species is also required on a ongoing basis Bank grading and movement / removal of berms and barriers to flow.

13. Method statements

The Method Statement for the maintenance activities described above are outlined as follows:

- → **What –** needs to be done. A description of the work to be undertaken.
- → **How –** a description of the methods and materials.
- → **Where –** the locality of the work
- → **When –** the commencement and completion program for the work
- → **Who –** the person responsible
- → **Why –** The reason for the activity

The following Method statements are included in this MMP:

Method Statement 1: Clearance of alien vegetation and encroaching vegetation within and alongside watercourses

Impact, Mitigation and Recommendations

- → Damage to beds and banks of the watercourse and wetland during vegetation removal (Large Gum trees).
- → Erosion from the bank as a result of above damage and deposition / sedimentation downstream.
- → Flow obstructed by branches/ leaves falling or being placed in the watercourse.
- → Flow obstruction by encroachment of reeds and bulrushes.
- → Limited open water
- → Change to exposure to sun and therefore increased temperature of the soil with no shade.
- → Change in flow regime with reduced abstraction due to transpiration of large trees.

a. <u>Blue gum trees (Eucalyptus sp.)</u>

What

- → Identify all Blue Gums trees on the property and clearly mark for removal. Ensure that the contractor will remove timber that can be used for lumber to reduce waste of a valuable resource.

How

- → Uproot all young blue gum trees with a basal stem of less than 45cm wide.
- → Fell the mature trees, leaving as short a stump as possible. Fell trees in such a way that they fall outside the stream and wetland as far a possible. Do Not uproot large stumps. This may damage the bank of the stream or wetland. Knock off any coppice emerging from the stump to reduce the need for herbicides. Only approved herbicides, appropriate for use in a riparian zone, may be used strictly according to the instructions.

Where?

These trees must be removed from the whole property, and in particular those encroaching into and alongside the watercourse.

When?

All large trees must be removed prior to the development of the property.
The inclusion in the Operation EMP is relevant as invasive plants are an issue that will continue into the future.

Who?
Developer / Project manager. Large trees must be felled by a professionals. Maintenance staff and landscaping teams must knock off coppice and uproot saplings as they emerge.

Why?
Gum trees have a particularly negative impact in the riparian zone and buffer as they have very deep roots and remove huge volumes of ground water.
The flowers are very attractive to bees so bee friendly plants must be used to revegetate the area and support existing colonies.

b. Port Jackson Willow

What?
Port Jackson Willow (*Acacia saligna*) appears similar to a Eucalyptus tree when young. Removal of this invasive species is not sufficient to ensure that an area is cleared of the plant. Restoration, replacing the removed plant with an appropriate indigenous plant, is more likely to be successful. In areas with a very high seed load this can be a long process.

How?
Foliar spray can increase the flammability of the plant. This is therefore not appropriate on this this site.
The smallest plants can be hand pulled. Larger plants should be cut below the collar (at ground level). Apply a registered herbicide to the cut stump with a dye.

Where?
In the Private Open Space and Undevelopable areas, 32 m buffer including the wetland and stream.

When?
Every 6 months until the significance of the infestation is reduced and at the beginning of summer and the beginning of winter if water levels are not too high. These actions will need to continue into perpetuity.

Who?
Homeowners Association (HOA), landscaping team, management. Appropriately trained labour with the correct equipment and suitably supervised

Why?
This plant is a transformer species because it changes the functioning of the ecosystem it invades. It is also highly flammable and must be removed from proximity to buildings and infrastructure. It is responsible for the transformation of large areas of fynbos as it changes the nutrient levels in the soil.

c. Opuntia sp. - Prickly Pear

What?
Prickly pear plants are originally from Mexico. They easily reproduce from seed or if the flat modified stem comes into contact with the ground. The spiny versions outcompete the spineless cultivated versions and must be eradicated.

How?
There are biological control options to eradicate the plant (C*ochineal* and Cactus Moth and stem-boring weevil). However, there are very few plants on the property and it is recommended that an injectable chemical herbicide, registered for the control of Prickly Pears, be used in this situation. They must be poisoned in situ. If they are cut and then poisoned the removed bits will propagate where they are dumped.

Where?

All plants on the property before construction commences.

When?
At site establishment and into future should they continue to grow.

Who?
HOA, an appropriately trained person, landscaping team.

Why?
These plants not only displace indigenous plants, reducing biodiversity, they also reduce movement of wildlife, and humans with their spines. Spineless varieties are cultivated, but on a residential property their cultivation is not appropriate.

d. <u>Typha and Phragmites Sp. (reeds)</u>

What?
Bulrushes and Reeds are considered together as they have similar impacts on the wetland and Mill stream. Both species are often collected for cultural uses which include roofing, weaving, fencing, plant support, shade barriers and even pulped for fibre. The limited area invaded by these plants suggest they are not likely to be economically viable on this property, but they do assimilate nutrients and toxicants from the water, and trap sediment. They provide important habitat for a number of reptiles amphibians and birds.

How?
These plants are often burnt off. This is not recommended on this site due to the proximity to residential and industrial area and the impact of smoke on drivers on the R43, and the danger of fire spreading to surrounding Fynbos. The burnt material also increases the nutrient levels in the stream and wetland. Toads, frogs and birds are also negatively affected by fire.

The plants should be physically cut back by hand and the cut stems must be removed from the system and stacked outside the 32 m buffer area. Small plants can be hand pulled out of damp soil but the roots and rhizomes grow back quickly. Cut the plants back at the end of the dry season. The sooner the area is flooded by 8-10 cm of water the better. If the plants sprout again before the rains, within 10 days, they should be cut again.

The use of herbicides is not recommended on large plants. The idea is not to completely remove these plants roots. They are important to the natural functioning of the ecosystem.

The rhizomes or roots should only be removed if an appropriate indigenous plant can be planted to replace it.

Where?
Applicable to the 32 m buffer, wetlands and Mill Stream.

When?
To be undertaken at the end of summer, before winter rain. The sooner the area is flooded by 8 -10 cm of water the better. If the plants sprout again before the rains, within 10 days, they should be cut again.

Who?
HOA, appropriately trained and supervised labour, landscaping staff

Why?
The Mill stream area is ~ 0.6 Ha in extent and the wetland ~ 0,1 Ha in extent on the is property. They have a Combined Ecological Category of C with Sediment Trapping and Toxicant Assimilation rated as Moderate to High. This is the on site extent of a much larger system that is ecologically closely linked to the system both upstream and downstream outside the property and Stanford.

This wetland and Mill Stream are not in a natural condition. The R 43 bridge over the Millstream has constrained the width of the stream and the flow of water. Water was also abstracted for agriculture irrigation in the past. The dense growth of these plants is probably limiting the growth of other indigenous aquatic and wetland species. The property's Private Open Space is an important feature and must be properly maintained to the benefit to landowners, visitors and the local fauna and flora.

Method Statement 2: Rehabilitation and restoration activities to maintain ecological infrastructure

Impact, Mitigation and Recommendations

- → Stormwater polishing will be required before the water enters the natural watercourses and wetlands on site. This can be done by using appropriate attenuation structures, swales, polishing ponds, Sustainable Urban Drainage Systems (SUDS)
- → Removal of built-up sediment and landscaping will be required from time to time in perpetuity

What?

Attenuation structures and swales are designed to slow the velocity of water entering the stream and wetland area. They must be located close to the stream and may be located within the wetland and will definitely be located within the 32 m buffer zone. Polishing ponds are intended to trap pollutants in water runoff that is contaminated in any way, and thereby prevent the contaminants from entering the riverine system. They must be designed by a professional with experience in water management. Structures can be designed that reduce the velocity of large volumes of water entering the stream system, instead of exacerbating stormwater runoff and improve the water quality, or they may be two different structures. As recommended by the Aquatic specialist during the NEMA process, allowance must be made for stormwater to be treated in a vegetated detention pond and/or a substantial vegetated swale before release into any wetland. Grassed swales and detention / retention ponds to attenuate the runoff from the proposed development rather than conventional stormwater drains that exacerbate stormwater runoff.

These structures will require general maintenance, cleaning, repair or reinstallation from time to time in perpetuity as well as after flood events.

How?

Parking areas must be porous. Either gravel or grass blocks as appropriate for traffic loads to improve infiltration. Cobbles on sidewalks to slow water run off. Rainwater tanks must be included in the design to reduce runoff water. Waste traps to capture waste, debris and sediment in debris baskets at stream end of leiwater channel, before the water enters the swale or pond. Sand filter traps trap hydrocarbons (oil) before it enters the vegetated polishing pond. Must be designed by suitably qualified person. Contaminated sand must be removed and disposed of at approved dump. Vegetation is ponds can include arum lilies and other indigenous plants that provide habitat and remove toxicants. Ensure that sediment is removed as required.

Where?

As designed by a suitably qualified professional.

When?

During construction and post commencement (operational) phase of the activity. Preferably during low rainfall periods.

Who?

Developer / Project Manager / HOA / Landscaping and maintenance team/ A suitably experienced contractor

Why?
See above

Method Statement 3: Sediment removal

What?
Sedimentation as a result of erosion from within and from outside the property.

How?
Monitor areas which may exacerbate erosion, especially during a storm events. Monitor how sedimentation affects the functioning of the ecosystem i.e reduced water flow, pooling, standing and stagnant water etc. Ensure that good cover of indigenous vegetation is maintained in wetland and Open Space.
Use appropriately sized machinery to remove sediment from the stream system after the storm.

- Small amount of sediment can be removed by hand with a shovel.
- Large amounts of sediment must be removed by a backhoe or bulldozer, but use the smallest available plant for the work.

Do not dig out below the bed of the stream into soil and clayey material below the sediment. Do not dig out below the thalweg (the lowest point of a cross section across the stream). Do not create a pond or dam. Dump removed sediment where it will not wash back into the stream. It can be used as fill or to manage erosion. It may not be used to build berms. Do not drive heavy machinery through the wetland, or if this is the only option do not use multiple access routes and make good afterwards.

Where?
Sediment must be removed from:

- Attenuation structures
- Stormwater drains
- Millstream
- Any additional areas identified and as approved by the ECO

When?
Late in summer is the optimal time for such activities, as far as possible.

Who?
Appropriately trained specialists, HOA / landscaping team, Plant must be operated by person experienced with working in a stream or wetland.

Why?
Sediment gradually transforms a stream and reduces the amount of open water. This then reduces the biodiversity of both fauna and flora. The construction of the road bridge over the R43 has likely altered how water flows down the river. If water velocity is abruptly slowed this causes the sand to settle out. Attenuation structures are designed to do this. However it also happens if the stream is suddenly confined with concrete bridge piers and base.

Method Statement 4: Flood damage

What?
Climate change and the increase in both frequency and intensity of extreme weather, means that flood events are likely. This can result in a number of impacts which will require intervention in the regulate zone:

- Debris piled up against the bridge
- Damage to attenuation structures, vegetated swales, polishing ponds stormwater infrastructure
- Damage to entrance areas and service rooms
- Debris and sediment build up after a storm
- Damange to sewer pipelines, pumps, scour valves, air valves, emergency containments structures.
- Damage to landscaping, boardwalks / access routes, depths, change in course of stream etc.

Inform the Overstrand Municipality should the bridge be damaged or debris block the water flow.
Repair on site attenuation structures as quickly as possible, especially if more rain is forecast.

How?
Ensure that appropriately sized machinery to remove branches or tree trunks that damage their infrastructure. Repair as soon as practicable after storm event. Small branches may be removed by hand but tree trunks must be removed with appropriately sized plant or machines. They may have to be cut up in situ. Use the smallest available machinery for the work required. Follow recommendations for removing sediment above. Ensure all sewer infrastructure is sound, especially containment structures located near the stream.

Where?
In the Mill Stream, wetland and 32 buffer area.

When?
As soon as possible after the storm event.

Who?
The HOA will be able to identify that damage has been done, however this type of repair must be only be undertaken under direction of suitably qualified professionals, especially if municipal infrastructure is damaged. The local authorities must be informed as soon as possible. Repair must be undertaken by suitably experienced contractor.

Why?
Flooding will cause changes to the Mill Stream and possible impact on low lying infrastructure, which will require immediate rectification.

Method Statement 5: Shaping of bed and banks

What?
Ensure that the stream banks are appropriately vegetated and battered back for as shallow a slope as possible, without large unnatural channels that divert water away from ecologically important low flow and shallow edges. These actions may also be required in response to flooding or low rainfall periods.

How?
Batter back banks to required angle of repose as recommended by professional, as and when required. Peg down hessian or biodegradable landscaping fabric in areas that may erode as recommended by a specialist when required. Plant suitable indigenous plants, including grasses, into holes cut in the fabric. Use compost or mulch to assist in water retention while the plans become established. Ensure that pathways do not channel water and erode the banks. Good maintenance is preferable to large repairs.

Where?
Along the stream bank and beds. Banks may be eroded in a storm event.

When?
If proper vegetation cover is maintained on the stream bank it is very rare to need to undertake any earth works on the banks unless in response to a catastrophic event. The banks must be regularly monitored to ensure that they are not eroding for any reason. Actions may be required after flooding or periods of low rainfall.

The banks of the stream should be assessed after the gum trees are removed and monitored for signs of erosion. Appropriate action may be required.

Who?
Developer/ Project Manager / HOA
Only as directed by a suitably qualified professional with experience in fresh water systems and engineering thereof. Must be undertaken by suitably experienced contractor.

Why?
A change in the shape of the bank can change the volume and velocity of water flowing in the stream. It can also increase the amount of sedimentation if a bank is undercut. Shallow sloping banks allow access for many animals and create a more natural ecosystem.

14. Administrative process

In certain cases, the Department of Environmental Affairs and Development Planning (DEA&DP) will need to be notified of the Maintenance Management Actions as outlined in this MMP and in particular, which conducted in response to emergency events. It is the onus of the HOA and implementing teams to ensure that correct procedures are followed at the time activities are required. In some cases, a Section 30A Directive process in terms of NEMA will be required.

SECTION THREE
CONCLUDING STATEMENT

15. ENVIRONMENTAL AUDITS

15.1. Concluding statement

The purpose of auditing is to determine and monitor compliance with the EMP, MMP 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. Should any additional processes be required in terms of the implementation of the MMP, additional auditing actions may also be required and these will be outlined in applicable Directives and correspondence with the Competent Authority.

The objective of the environmental audit report is to:

- → Report on the level of compliance with the conditions of the EA and the EMP and MMP as required
- → 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.

Environmental audits are not likely to be undertaken for the current operational activities due to the nature of the activity.

16. CONCLUSION

This Post Commencement, Operational Management Plan has been developed as part of the Basic Assessment process to ensure that mitigation and management measures are enforced during the operational phase of the activity, 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. This document provides a tool to recognise the needs of the environment and is intended to be utilised in conjunction with the Environmental Authorisation.

The Maintenance Management Plan is required in terms of NEMA and addresses the need for long term, ongoing works which will be required, in perpetuity, in the onsite watercourses.

17. DECLARATION OF ACCEPTANCE

I, _____ (name), representing _____ (company name), have read and understood the above document relating to the post commencement activities and long term maintenance management actions applicable to the subject property and hereby acknowledge its contents and requirements as a framework for the environmental performance during the operational phase of the development.

Signed: _____ Date: _____