



ENVIRONMENTAL MANAGEMENT & MAINTENANCE PROGRAMME

for

PIENAARSTRAND SEWER INFRASTRUCTURE

along

Morrison Road, Eekhorning Street and Bitou Street, Great Brak River, Mossel Bay Municipal District, Western Cape Province

In terms of the

National Environmental Management Act (Act No. 107 of 1998, as amended) & 2014 Environmental Impact Regulations (as amended)

Prepared for Applicant: Mossel Bay Municipality

Date: 18 June 2026

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Submitted for:

Stakeholder Review & Comment

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ORDER OF REPORT

Environmental Management Plan

Appendix 1	:	Locality Plans
Appendix 2	:	Site Plans
Appendix 3	:	Environmental Guidelines for construction
Appendix 4	:	EAP Company Profile
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ENVIRONMENTAL MANAGEMENT PROGRAMME REQUIREMENTS

Appendix 4 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Management Programme (EMPr). The checklist below serves as a summary of how these requirements were incorporated into this EMPr.

Table 1: Checklist in terms of Appendix 4 of Regulation 982 of 2014 EIA Regulations

Requirement	Description
Details and expertise of the EAP who prepared the EMPr; including curriculum vitae.	Ms Louise-Mari van Zyl for Cape Environmental Assessment Practitioners. See Appendix 4.
A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	<u>Section 1</u>
A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that must be avoided, including buffers	Appendix 1
A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all the phases of the development including – (i) Planning and design; (ii) Pre-construction activities; (iii) Construction activities; (iv) Rehabilitation of the environment after construction and where applicable post closure; and (v) Where relevant, operation activities.	<u>Section 4</u> – Environmental Impacts & Mitigations <u>Section 5</u> - Responsibilities <u>Section 6</u> – Pre-Construction Design <u>Section 7</u> – Construction Phase <u>Section 8</u> – Operation Phase
A description and identification of impact management outcomes required for the aspects contemplated above.	<u>Section 4</u>
A description of the proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated above will be achieved and must, where applicable include actions to – (i) Avoid, modify, remedy control or stop any action, activity or process which causes pollution or environmental degradation; (ii) Comply with any prescribed environmental management standards or practises; (iii) Comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.	<u>Section 4</u> <u>Section 6</u> <u>Section 7</u> <u>Section 8</u>
The method of monitoring the implementation of the impact management actions contemplated above.	<u>Section 9</u> <u>Section 11</u>
The frequency of monitoring the implementation of the impact management actions contemplated above.	<u>Section 9</u>

Requirement	Description
An indication of the persons who will be responsible for the implementation of the impact management actions.	<u>Section 5</u>
The time periods within which the impact management actions must be implemented.	Not Applicable
The mechanism for monitoring compliance with the impact management actions.	<u>Section 9</u>
A program for reporting on compliance, taking into account the requirements as prescribed in the Regulations.	<u>Section 9</u>
An environmental awareness plan describing the manner in which – (i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment.	<u>Section 5</u> <u>Section 6</u> <u>Section 7</u> <u>Section 8</u> <u>Section 9</u>
Any specific information that may be required by the competent authority.	Not Applicable.

ABBREVIATIONS AND ACRONYMS

BSP	Biodiversity Sector Plan - to inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact on biodiversity.
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983) - provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.
CBA	Critical Biodiversity Area - areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan.
DFFE	National Department of Forestry, Fisheries & the Environment – the national authority responsible for the sustainable environmental management and integrated planning.
DEA&DP	Department of Environmental Affairs and Development Planning – the provincial authority for sustainable environmental management and integrated development planning. The competent authority is this case.
DWS	Department of Water & Sanitation Affairs – National authority mandated to enforce the National Water Act (NWA).
EA	Environmental Authorisation – Authorisation obtained on completion of an Environmental Impact Assessment in terms of the National Environmental Management Act (NEMA).
ECA	Environment Conservation Act, 1989 - To provide for the effective protection and controlled utilization of the environment and for matters incidental thereto.
ECO	Ecological Control Officer – independent site agent appointed to observe and enforce the implementation of environmental policies and principles on a development site.
EIA	Environmental Impact Assessment - a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.
EMPr	Environmental Management Programme – an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented and that positive benefits of the projects are enhanced.
GIS	Geographic Information System - system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data.
GPS	Global Positioning System - a radio navigation system that allows land, sea, and airborne users to determine their exact location, velocity, and time 24 hours a day, in all weather conditions, anywhere in the world.
NEMA	National Environmental Management Act (Act 107 of 1998, as amended) – national legislation that provides principles for decision-making on matters that affect the environment.

NEM:BA	National Environmental Management: Biodiversity Act (Act No.10 of 2004) – provides for the management and conservation of South African biodiversity within the framework of NEMA.
NFA	National Forestry Act (Act No.84 of 1998) - provides for the protection of forests, as well as specific tree species within South Africa.
NSBA	National Spatial Biodiversity Assessment – aims to assess the state of South Africa's biodiversity based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors.
NWA	National Water Act (Act No.36 of 1998) - ensures that South Africa's water resources are protected, used and managed.

1. INTRODUCTION

The Mossel Bay Municipality (hereafter referred to as the Applicant) proposes to upgrade a section of the existing sewer reticulation network in Great Brak River, extending from Eekhorng Street in *Outeniqua Strand* residential suburb (Figure 1 – Green Box) to Dolphins Creek Golf Estate, located in *The Island* residential suburb (Figure 1 – Yellow Box) (Figure 1).



Figure 1: Locality map of Great Brak River. The YELLOW box indicates the Dolphins Creek Golf Estate, while the GREEN box highlights the approximate position of Eekhorng Street (Outeniqua Strand).

This activity requires an Environmental Authorisation in terms of the National Environmental Management Act (NEMA, Act 107 of 1998) before commencing. This document provides part of a series of documents that is being circulated for public and stakeholder input as part of the Environmental Impact Assessment (EIA) process, before being provided to the provincial competent authority, the provincial Department of Environmental Affairs & Development Planning (DEA&DP) for decision making.

This EMMP contains **management requirements** and **recommendations** made by *Cape EAPrac*, the appointed specialist as well as in terms of the regulations contained in the **National Environmental Management Act** (NEMA, Act 107 of 1998), and best practice principles. The EMMP must be updated to include any conditions of the **Environmental Authorisation** (EA) as issued.

1.1 PURPOSE OF THE EMMP

The purpose of this EMMP is to ensure that the environmental impacts and management of the various phases, of the proposed activity, on the receiving environment are managed, mitigated and kept to a minimum (i.e. the **outcome** of implementing the EMMP). The EMMP must provide easily understood and clearly defined **actions** that must be implemented during each phase of the proposed activity. The EMMP is a dynamic document that is flexible and responsive to new and changing circumstances.

The document is binding on the Applicant (George Municipality), all contractors and sub-contractors to the site. It must be included as part of any documents / agreements, as well as contractual documents between the Applicant and any contractors. Copies of this EMMP must be kept on site and all **senior personnel** are expected to familiarise themselves with the content of this EMMP.

Any changes or deviations to this EMMP must be authorised by the competent authority.

1.2 STATUS OF THE EMMPR

It is of utmost importance that this EMMPr be read in conjunction with any legally obtained authorisations such as an Environmental Authorisation (EA). This EMMPr is viewed as a dynamic document that must be reviewed and updated on a continual basis.

The EMMPr is valid for the duration of the project with each applicable phase corresponding to the identified requirements.

2. EMMPR PHASING

2.1 PRE-CONSTRUCTION PHASE

The pre-construction phase refers to the design phase of the project. This will ensure that any requirements and best practise mechanisms are built into the planning / design phase to be developed in the construction and operational phase. In term of this application, the pre-construction can be considered as the site selection and engineering designs and mitigations.

2.2 CONSTRUCTION PHASE

The construction phase refers to the actual installation of sewer pipelines & modification of conservancy tanks.

2.3 OPERATIONAL PHASE

The Operation Phase of this project relates to the ongoing management required to ensure sustainable development. In terms of this application, this phase includes the inspections, maintenance and repair of the sewer pipelines, pump stations and associated infrastructure (i.e., maintenance and replacement of large fittings).

The Applicant must ensure that the Operational Phase maintains the underpinning principles 'Duty-of-Care-to-the-Environment' and ideals of sustainable development.

Maintenance of the structure, once installed, must be undertaken in accordance with this management & maintenance plan.

2.4 CLOSURE AND DECOMMISSIONING PHASE

Decommissioning refers to the process of removing the operating assets of any development after completion of the operating life cycle.

The decommissioning phase is not applicable. All decommissioning infrastructure / pipelines will remain *in situ* and will not be removed.

3 LEGISLATIVE REQUIREMENTS

The project Applicant is required to comply with all necessary legislation and policies applicable to development and management of the development. These include but are not limited to:

3.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA, ACT 107 OF 1998)

The National Environmental Management Act (**NEMA**, Act 107 of 1998, as amended), makes provision for the identification and assessment of **activities** that are potentially detrimental to the environment and which require authorisation from the competent authority (in this case, the provincial Department of Environmental Affairs & Development Planning (DEA&DP)) based on the findings of an Environmental Impact Assessment (EIA).

NEMA embraces the notion of sustainable development as contained in the Constitution of South Africa (Act 106 of 1996) in that everyone has the right:

- to an environment that is not harmful to their health or wellbeing; and
- to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures.

NEMA aims to provide for cooperative environmental governance by establishing principles for decision-making on all matters relating to the environment and by means of Environmental Implementation Plans (EIP) and Environmental Management Plans/Programmes (EMPr), of which this EMPr is one.

Principles contained in Section 2 of the NEMA, amongst other things, prescribe that environmental management must:

- In order of priority aim to: avoid, minimise or remedy disturbance of ecosystems and loss of biodiversity;
- Avoid degradation of the environment and avoid jeopardising ecosystem integrity;
- Pursue the best practicable environmental option by means of integrated environmental management;
- Protect the environment as the people's common heritage;
- Control and minimise environmental damage; and
- Pay specific attention to management and planning procedures pertaining to sensitive, vulnerable, highly dynamic or stressed ecosystems.

It is incumbent upon the landowner, to ensure that the abovementioned principles, entrenched in this EMPr are upheld and complied with.

3.2 ENVIRONMENT CONSERVATION ACT, 1989 (ECA)

The EIA regulations contained in the Environmental Conservation Act (ECA) have been replaced by NEMA. However, property owners must comply with the draft regulations pertaining to noise as published in the province of Western Cape Provincial Extraordinary Gazette as provision made in section 25 of the ECA), as well as Section 24 of the ECA regarding waste management and Section 20 of the ECA dealing with waste management under Part IV, Control of Environmental Pollution.

3.3 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (NEM:BA) (ACT 10 OF 2004)

This Act controls the management and conservation of South African biodiversity within the framework of NEMA. Amongst others, it deals with the protection of species and ecosystems that warrant national protection, as well as the sustainable use of indigenous biological resources. Sections 52 & 53 of this Act specifically make provision for the protection of critically endangered, endangered, vulnerable and protected ecosystems that have undergone, or have a risk of undergoing, significant degradation of ecological structure, function or composition as a result of human intervention through threatening processes.

The National List of Threatened Ecosystems (Notice 1477 of 2009, Government Gazette No. 32689, 6 November 2009) was gazetted in 2014. The list of threatened terrestrial ecosystems supersedes the information regarding terrestrial ecosystem status in the National Spatial Biodiversity Assessment (NSBA) 2004 & 2011.

According to the independent SACNASP registered botanist, no plant SCC were observed within the area where the proposed works will be installed / constructed. According to the botanist, the impact of this project on CBA and ESA areas will not counter the objectives of these areas.

According to the independent SACNASP registered faunal specialist, the project area is mostly comprised of **transformed habitat**, with little to no natural vegetation.

3.4 NATIONAL WASTE MANAGEMENT STRATEGY

The National Waste Management Strategy presents the South African government's strategy for integrated waste management for South Africa.

It deals among others with: Integrated Waste Management Planning, Waste Information Systems, Waste Minimisation, Recycling, Waste Collection and Transportation, Waste Treatment, Waste Disposal and Implementing Instruments.

It is advisable that an integrated waste management system be adopted, which includes waste minimisation, waste recycling and the proper storage and disposal of waste, which does not impact of the health of the environment and human health.

All waste must be collected and disposed of at a waste facility.

3.5 NATIONAL WATER ACT (NWA, ACT 36 OF 1998)

The National Water Act (NWA) gives effect to the constitutional right of access to water. The Act's overall purpose is to ensure that South Africa's water resources are protected, used and managed in ways which take into account a number of factors, including inter-generational equity, equitable access, redressing the results of past racial and gender discrimination, promoting sustainable and beneficial use, facilitating social and economic development, and providing for water quality and environmental protection.

The NWA makes persons who own, control, occupy or use land responsible for taking measures to prevent pollution of water resources, and empowers Government authorities to take measures to enforce this obligation.

3.6 NATIONAL FOREST ACT (ACT 84 OF 1998)

The NFA provides for the **protection of forests**, as well as **specific tree species**, quoting directly from the Act: “no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated”. The Department of Agriculture, Forestry & Fisheries (DAFF) is responsible for the implementation and enforcement of the NFA, which includes **prohibition of damage to indigenous trees in any natural forest without a licence** (Section 7 of the NFA), as well as the prohibition of the cutting, disturbing, damaging destroying or removing **protected trees** without a licence (Section 15 of the NFA).

Four protected tree species were observed at various locations along the sides of the roads where the upgrades will be taking place, however all the yellowwood trees (2 species) are cultivated, and all the Milkwood (*Sideroxylon inerme inerme*) and Cheesewood (*Pittosporum viridiflorum*) trees can be avoided by the proposed upgrades. If there is any reason why some of these trees might be impacted by the sewerage infrastructure upgrades, an appropriate licence must be applied for from the Department of Forestry, Fisheries and the Environment (DFFE).

Although the need for such permit is not predicted at this point in time, it is noted that construction may be delayed for various reasons and existing trees may be larger, or new trees may have seeded depending on when construction will commence.

Forestry Permit can take 4 – 5 months to obtain once building/services plans are approved. Applications must therefore be submitted well in advance of when a tree must be trimmed/removed to ensure compliance.

The proposed activity is not applicable to the National Veld and Forest Fire Act.

3.7 NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

The purpose of the National Heritage Resources Act is to:

- Introduce an integrated and interactive system for the management of the national heritage resources;
- Promote good government at all levels,
- Empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations;
- To lay down general principles for governing heritage resources management throughout South Africa;
- To introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa;
- To establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources at national level;
- To set norms and maintain essential national standards for the management of heritage resources in South Africa and to protect heritage resources of national significance;
- To control the export of nationally significant heritage objects and the import into South Africa of cultural property illegally exported from foreign countries;

- To enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources;
- To provide for the protection and management of conservation-worthy places and areas by local authorities; and
- To provide for matters connected therewith.

The proposed development triggers the following activity set out in Section 38(1) of the National Heritage Resources Act:

38. (1)(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length.

Cape EAPrac submitted a Notice of Intent to Develop to Heritage Western Cape who confirmed that no additional studies are required.

3.8 OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993)

The Act provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work.

In terms of this Act, a Health and Safety Officer and Protocol must be implemented on any sites. The appointment of a Health and Safety Officer is the responsibility of the proponent and contractor and is included in this report to ensure due diligence on construction sites. It is the responsibility of the appointed HSO to conduct any required audits and as such only the appointment of an HSO will be auditable in terms of this document.

4 ENVIRONMENTAL IMPACTS & MITIGATIONS

The following specialist impact assessments / studies were undertaken for the proposal:

- Aquatic Impact Assessment
- Faunal Compliance Statement
- Botanical & Biodiversity Impact Assessment
- Heritage Background Information Document

The following environmental impacts of the proposed activity were identified and considered during the EIA process, based on which the associated mitigation measures were recommended for implementation (to reduce negative impacts & enhance positive ones):

Specialist Assessments/Compliance Statement

Potential Impacts

- Potential leakage of sewage during flood events that could pollute the estuary.
- Disturbance of estuarine habitat caused by construction activities.
- Pollution of estuarine habitat caused by pipeline blockages.
- Disturbance of a Milkwood Thicket.
- Loss of Plant Species of Conservation Concern (SCC) and Ecologically Important Plant Taxa from Excavation.
- The Negative Impact of Edge Effects and Invasive Species on the Natural Vegetation on and Around the Pipeline Route.

4.1 MITIGATIONS

Table 2: List of Mitigation Measures & Associated Management Requirements

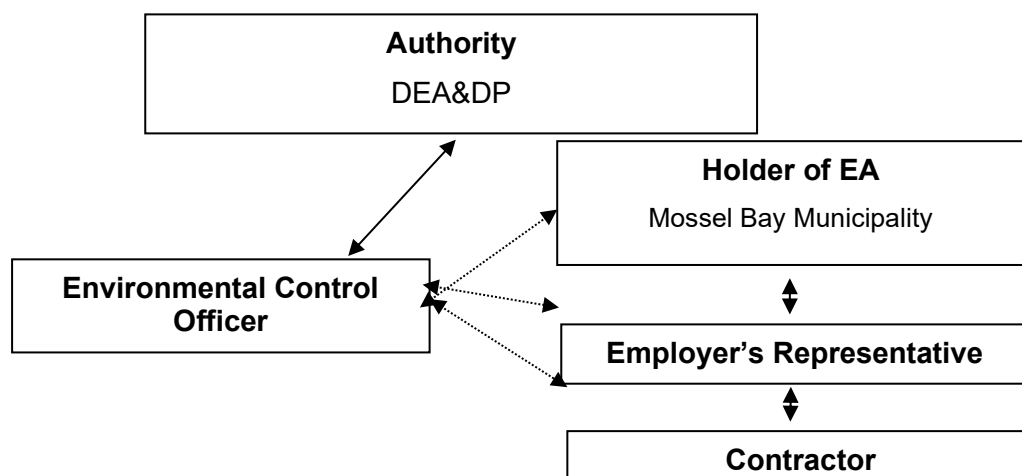
Mitigation	Condition of Approval	Included in EMP	Construction Phase	Operational Phase	Decommissioning Phase
Mitigations / Recommendations					
If any palaeontological materials, human remains or significant archaeological materials are exposed during development activities, then such find(s) must be protected from further disturbance and work in the immediate area should be halted and Heritage Western Cape must be notified immediately. These heritage resources are protected by Section 36(3)(a) and Section 35(4) of the NHRA (Act 25 of 1999) respectively and may not be damaged or disturbed in any way without a permit from the heritage authorities. Any work in mitigation, if deemed appropriate, should be commissioned and completed before construction continues in the affected area and will be at the expense of the developer.		✓	✓		
Air valves along sewer lines must be elevated above the 1:100 year flood line.		✓	✓		
Sewer manhole covers should not be made of metal because of the risk of theft.		✓	✓		
Manholes must be designed to be watertight to prevent environmental contamination from leaking sewage and to avoid ingress of surface water during rainfall and flood events. Watertight manholes achieve this seal using components like gaskets on the manhole cover, proper joint sealing between sections, and leak-resistant pipe-to-manhole connections, which are essential for system integrity and cost efficiency.		✓	✓		
An Environmental Control Officer (ECO) must be appointed for the duration of the construction phase to monitor and report back on compliance with conditions of the environmental authorisation.		✓	✓		
Consult weather forecasts daily and weekly. Do not work during rainfall and minimise the storage of mobile materials in low-lying areas. Plan the construction area as if it could be inundated with floodwaters in the event of a significant rainfall event.		✓	✓		
The width of the working area through must be as narrow as possible and must be clearly demarcated. The stream outside of this demarcated area must be considered as a No-Go area.		✓	✓		
Revegetation of the pipeline area must be actively supported by planting kweek grass: <i>Cynodon dactylon</i> .		✓	✓		
Open trenching for sewer lines should be done in as short a stretch as possible and backfilled with material as soon as possible to reduce the likelihood of material loss in the event of flooding. Excavated soil should be placed on the northern side of the trench.		✓	✓		
Keep a skip on site so that any waste materials can be conveniently discarded and removed. This includes small amounts of dirty water, such as that used for mixing concrete.		✓	✓		
Equipment and materials lay-down areas should be located at the proposed site camp only.		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Post-construction site clean-up must be completed to ensure the entire site footprint and the surrounding area have been cleared of litter and any waste materials associated with construction. The ECO should be informed of the construction		✓	✓		
When blockages to sewerage infrastructure within the EFZ occur, the maintenance team should ensure a honey-sucker is on standby to mop up any spills or overflows for removal and disposal at the Wastewater Treatment Works.		✓		✓	
Any serious sewage spills that result in large quantities of sewage leaking from a manhole must be contained in a temporary coffer dam, which can be constructed using sandbags for the walls and plastic sheeting as a base. From here, honey-suckers can collect sewage for removal.		✓		✓	
Any water-tight seals around manholes, joints or other access points that must be broken for maintenance should be replaced thereafter to ensure the mitigation measures to prevent water ingress or sewage leakage are maintained under flood scenarios.		✓		✓	
Keep sewer line servitudes clear of dense vegetation to facilitate access and reduce the risk of roots cracking sewer lines.		✓		✓	
Restrict construction footprint strictly to the approved disturbance area, including machinery access, pipe-jacking pits, and temporary storage areas.		✓	✓		
Protect intact vegetation and mature milkwood trees by erecting temporary no-go fencing around sensitive patches prior to construction.		✓	✓		
Minimise soil disturbance and erosion on steep slopes using measures such as temporary ground mats, stabilisation of exposed soil, and construction during low soil moisture periods.		✓	✓		
Environmental awareness training for construction staff, highlighting sensitive vegetation, no-go areas, and reporting procedures.		✓	✓		
Delineate the footprint of disturbance and mark protected tree species.		✓	✓		
Obtain the necessary permits for activities affecting these protected species from DFFE.		✓	✓		
Integrate effective erosion control and waste management strategies (refer to the aquatic specialist report for further details) where trees will be affected.		✓	✓		
Make use of visible signage and danger tape to indicate the work area. No-Go signage to indicate limits of disturbance. ECO to inspect signage and placement.		✓	✓		
Rescue grasses, succulent, and geophyte plant species, or any species that could have a high likelihood of survival post construction.		✓	✓		
Monitor staff helping to ensure plants are removed for maximum survivability.* Record the species and location of all rescued plants.		✓	✓		
Preferably store the plants nearby or alternatively at an agreed upon location / nursery where they can be watered regularly. * Undertake weeding of the rescued plants every second month. ECO to record all rescued plants that go missing or that die during their time in the nursery.		✓	✓		

Mitigation	Condition of Approval	Included in EMPr	Construction Phase	Operational Phase	Decommissioning Phase
Installing erosion control blankets during construction can help manage soil movement in areas identified as vulnerable to erosion and sediment runoff.		✓	✓		
Turning and parking for construction vehicles and stockpiling of materials must be in areas that are already cleared and disturbed. Avoid activity in natural vegetation outside of the footprint layout.		✓	✓		
Label topsoil & subsoil stockpiles clearly. Ensure topsoil is appropriately covered and banded. Once construction is finished, ensure topsoil is replaced on top of subsoils to keep seed bank intact.		✓	✓		
Have bins and skips on the construction site and ensure that staff remove rubbish weekly. Have weekly inspections to ensure no waste in the surrounding landscape.		✓	✓		
Record plants successfully replanted & plants that died before replanting. Target areas prone to erosion.		✓		✓	
Monitor the route to ensure sufficient vegetation cover with indigenous plant species.		✓		✓	
Best Practise					
Construction work must take place during normal work hours		✓	✓		
Traffic management must be in place during construction		✓	✓		

5 RESPONSIBILITIES

This section deals with the responsibilities of various parties during the Construction Phase of any development.



5.1 HOLDER OF THE EA

The holder of the EA / property owner is the overseeing entity responsible for ensuring that all activities undertaken on the property comply with the Environmental Authorisation (EA) and associated Environmental Management Programme (EMPr) (& any other approval / licence / permit), as well as the management and maintenance of the open space areas (protected vegetation).

The responsibilities of the holder of the EA / property owner include, but are not limited to the following:

- Ensure that **all tender documentation** include reference to, and the need for compliance with, the EA and EMPr as well as any other legally binding documentation, which include and are not limited to:
 - the Municipal Approval/s.
- Be conversant with, and ensure that all Contractors, Sub-contractors, Engineers (and future senior site managers / personnel) are made aware of, and understand the conditions and recommendations, contained in the abovementioned documentation;
- Ensure that all Contractors, Sub-contractors and Engineers (during construction activities) are made aware of their 'Duty of Care to the Environment' and that any damage or degradation of the natural environment within the bounds of the property will be not be tolerated and must be dealt with / remedied at the cost of the perpetrator;
- Take remedial and/or disciplinary action in circumstances where persons are found to be in contravention of the abovementioned legally binding documentation.

5.2 ENGINEERS AND CONTRACTORS

The Engineers and Contractors are often the parties responsible for physically carrying out the activities for which majority of the recommendations in this EMPr are intended. Service providers and Contractors include: services, building contractors, 'handy-men' and engineers overseeing the installation and maintenance of services etc. The responsibilities indicated here are also relevant to Sub-Contractors.

The responsibilities of these parties include but are not limited to the following:

- Be conversant and compliant with the EA, the EMPr, and any relevant License, Permit or any legally binding documentation relevant to their operations;
- Have a responsibility to adhering to any conditions and recommendations laid out in above mentioned documentation;
- Prevent actions that may cause harm to the environment;
- Be responsible for any remedial activities in response to an environmental incident within their scope of influence;
- Liaise with the holder of the EA in complying with the EMPr, and in the event that any industry regulated standards are in contradiction with the EMPr or any other authorisations.
- Review and amend to any construction activities to align with the EMPr and Best Practice Principles;
- Ensure compliance of all site personnel and / or visitors to the EMPr and any other authorisations.

Contractors are responsible to ensure that all sub-contractors are compliant with the EA, the EMPr, and any relevant licence, permit or any legally binding documentation relevant to their operations. It is recommended that contractors and sub-contractors use colour codes for easy identification by the Environmental Control Officer (i.e., colour coded hard hats or vests).

5.3 ECOLOGICAL CONTROL OFFICER (ECO)

It is recommended that a suitably qualified Environmental Control Officer (ECO) be appointed to oversee all activities for the duration of the construction phase (i.e. construction activities, services, road works) as well as any maintenance work that must be undertaken that will involve earthworks or machine works. The ECO must have at least 3 years' experience and proven competency as an ECO.

The responsibilities of the ECO include but are not limited to the following:

- Provide environmental induction training to Contractors on site prior to construction activities commencing
- Provide maintenance, update and review of the EMPr if necessary;
- Liaison between the Project Holder of the EA, Contractors, Authorities and other lead stakeholders on all environmental concerns, including the implementation of the EMPr;
- Compilation of Environmental Control Reports (ECR) to ensure compliance with the EA, EMPr and duty of care requirements, where necessary;
- Compilation of the Environmental Audit Report or Environmental Completion Statement, after completion of construction (or as otherwise defined in the Environmental Authorisation), where necessary;
- Ensuring / guiding and monitoring compliance with the EA and EMPr and any legally binding documentation;
- Facilitating consultation with relevant environmental authorities (e.g. DEA&DP, DFFE, CapeNature or Municipality);
- Facilitating the application for any required environmental authorisation, permit or licence;
- Provide guidance and interpretation of the EA and EMPr where necessary;
- Issuing site instructions to the contractor for corrective actions required;
- The ECO is required to conduct regular site visits for the duration of the construction period, in order to ensure the Contractor receives the necessary induction and that all procedures are in place. Additional visits may be undertaken in the event of any unforeseen environmental accidents;
- The duration and frequency of these visits may be increased or decreased at the discretion of the ECO;
- Attendance of site meetings if required;
- Maintain a record of environmental incidents (e.g. spills, impacts, legal transgressions etc.) as well as corrective and preventative measures taken. This information must also be included in the ECR;
- Maintain a public complaints register in which all complaints and action taken must be recorded. This information must also be included in the ECR.

5.4 ECO SITE VISIT FREQUENCY

The following site frequency for ECO site visits has been determined:

- Weekly during the installation of the pipelines & associated infrastructure;
- Weekly during rehabilitation.
- Maintenance activities must be monitored on an ad hoc basis depending on the type of maintenance/repair.

Ad hoc site visits may be undertaken in the event of any incidents or specific requests from the project holder of the EA or project team.

5.5 POST-CONSTRUCTION MAINTENANCE

- Repair and reinstate existing infrastructure that will be affected or damaged during construction.

5.6 ENVIRONMENTAL INDUCTION & TRAINING

The holder of the EA in consultation with the Contractor shall ensure that adequate environmental awareness training of senior site personnel takes place and that all construction workers receive an induction presentation on the importance and implications of the EA and EMPr. The presentation shall be conducted, as far as is possible, in the employees' language of choice. The Contractor must provide a translator from their staff for the purpose of translating, if this is deemed necessary.

As a minimum, training must include:

- Explanation of the importance of complying with the EA and EMPr and the employees accountability;
- Discussion of the potential environmental impacts of construction activities;
- The benefits of improved personal performance;
- Employees' roles and responsibilities, including emergency preparedness ;
- Explanation of the mitigation measures that must be implemented when carrying out their activities;
- Explanation of the specifics of this EMPr and its specification (no-go areas, etc.);
- Explanation of the management structure of individuals responsible for matters pertaining to the EMPr.

Where staff turnover is high and with additional appointment of sub-contractors, it may be necessary to undertake additional induction training sessions. The Contractor must keep records of all environmental training sessions, including names, dates and the information presented.

6 PRE-CONSTRUCTION DESIGN CONSIDERATIONS

It is recommended that sustainable design considerations are implemented during the planning phase to ensure that the impacts associated with the development are avoided, minimised or managed before construction commences.

6.1 STORMWATER MANAGEMENT PREPARATION

Management Statement			Impacts & Risks Avoided		
To prepare the site to minimise the negative impacts of stormwater			Damage to the environment caused by stormwater runoff		
Management Actions					
a. All stormwater measures (silt fences, straw bale check-dams) must be installed at areas prone to erosion / stormwater runoff before work commences.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	As required	Engineer / Contractor	Prior to construction	Audit	Monthly

6.2 DEMARCATON OF WORK AND NO-GO AREAS

Management Statement			Impacts & Risks Avoided		
To clearly define the work area and avoid impacting on non-works areas.			Negative construction impacts on natural and rehabilitated areas		
Management Actions					
a. Clearly identify and demarcate the development footprint, area of works and spoiling areas.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance

Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off
b. Fuel and chemicals may only be stored in a designated work area.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off
c. Provide on-site sanitation and rest areas for personnel.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Once off	Developer / contractor	Pre implementation	Audit	Once off

6.3 LAYOUT & DESIGN PHASE

Management Statement	Impacts & Risks Avoided
To avoid impact on the Estuary	Pollute the Estuary
Management Actions	
a. Air valves along sewer lines must be elevated above the 1:100-year flood line b. Sewer manhole covers should not be made of metal because of the risk of theft. c. Manholes must be designed to be watertight to prevent environmental contamination from leaking sewage and to avoid ingress of surface water during rainfall and flood events. Watertight manholes achieve this seal using components like gaskets on the manhole cover, proper joint sealing between sections, and leak-resistant pipe-to-manhole connections, which are essential for system integrity and cost efficiency. d. Restrict construction footprint strictly to the approved disturbance area, including machinery access, pipe-jacking pits, and temporary storage areas. e. Protect intact vegetation and mature milkwood trees by erecting temporary no-go fencing around sensitive patches prior to construction. f. Minimise soil disturbance and erosion on steep slopes using measures such as temporary ground mats, stabilisation of exposed soil, and construction during low soil moisture periods. g. Environmental awareness training for construction staff, highlighting sensitive vegetation, no-go areas, and reporting procedures.	

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Once off	Engineer / Contractor	Prior to construction	Audit	Once off

6.4 SPECIES OF CONSERVATION CONCERN (SCC)

Management Statement	Impacts & Risks Avoided
Avoid impact on SCC	Loss of Plant SCC

Management Actions

- Given the presence of protected tree species such as Milkwood (*Sideroxylon inerme inerme*) and Cheesewood (*Pittosporum viridiflorum*), careful planning and adherence to the National Forests Act (No. 84 of 1998) is crucial to avoid greater than necessary impacts.
- Minimise the construction footprint to the smallest area possible.
- Conduct a Plant Search and Rescue Operation within 4 identified areas that the pipeline will cross (see the blue polygons in the image below).



Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Once off	Engineer / Contractor	Prior to construction	Audit	Once off

7 CONSTRUCTION CONSIDERATIONS

These Construction Phase requirements are aimed at using Best Practise Principles and / or specialist recommendations to manage the impacts on the environment during the construction of the development.

7.1 <u>STORMWATER MANAGEMENT</u>					
Management Statement			Impacts & Risks Avoided		
To minimise the generation of contaminated stormwater.			Minimise sedimentation, erosion and / or undercutting		
Management Actions					
a. The site office / vehicle should have a store of materials suitable for rapid preparation and response to rainfall such as shade-cloth (silt-fencing & check dams), wooden droppers, sandbags, hessian fabric, and fencing wire. b. All material stores should be kept on flat areas and be bunded to prevent material loss during rainfall. c. Monitor the site during / following periods of rainfall and install check dams at points where runoff collects using sandbags and haybales with hessian or shade cloth (90%). d. Following rainfall, water pumped out of trenches or other excavations must not be directed to the No-Go Area (i.e., Estuary). A temporary coffer dam can be created using shade cloth as a filter material to contain silt-laden water which can then flow through vegetation into the Estuary. e. Consult weather forecasts daily and weekly. Do not work during rainfall and minimise the storage of mobile materials in low-lying areas. Plan the construction area as if it could be inundated with floodwaters in the event of a significant rainfall event.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Daily/Weekly	Developer / contractor	Implementation	Audit	As required

Any areas that are identified by the ECO as being prone to erosion must be suitably protected. During construction, the contractor shall protect all areas susceptible to erosion by installing temporary works (e.g., sandbags) and by taking any other measures necessary to prevent stormwater from concentrating in streams and scouring slopes, banks, etc.

In areas where construction activities have been completed and where no further disturbance would take place, rehabilitation and re-vegetation should commence as soon as possible. A suitable rehabilitation method statement must be submitted to the ECO for approval.

7.2 DUST CONTROL

Management Statement	Impacts & Risks Avoided
To ensure there is no health risk or loss of amenity due to emission of dust to the environment.	Ensure land coverage with biomass chips / vegetation / damping to minimise dust

Management Actions

- a. Implement a dust prevention strategy, developed at the project planning stage

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Weekly	Developer / contractor	Pre implementation	Audit	As required

The strategy should include the following amongst others:

- Speed control to minimise dust on site.
- Exposed stockpile materials must be adequately **protected** against wind (covered) and should be sited taking into consideration the prevailing wind conditions.
- Trucks bringing in materials must be covered to prevent dust and small particles escaping and potentially causing damage to people and property.

7.3 NOISE

Management Statement	Impacts & Risks Avoided
To ensure nuisance from noise and vibration does not occur.	Nuisance impacts to neighbours and visitors.

Management Actions

- a. Fit and maintain appropriate mufflers on earth-moving and other vehicles on the site.

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	Initially when vehicle or machinery is introduced to the site and thereafter monthly. As required if complaints registered.	Contractor	During construction and operation	Audit	As required
b. Enclose noisy equipment such as generators and pumps.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	Initially when vehicle or machinery is introduced to the site and thereafter monthly. As required if complaints registered.	Contractor	During construction	Audit	As required
c. Provide noise attenuation screens, where appropriate.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	Initially when vehicle or machinery is introduced to the site and thereafter monthly. As required if complaints registered.	Contractor	During construction	Audit	As required
d. Where an activity is likely to cause a noise nuisance to nearby residents, restrict operating hours to between 7 am and 6 pm weekdays and 7 am to 1 pm Saturday, except where, for practical reasons, the activity is unavoidable.					

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
As required	As required if complaints registered.	Contractor	During construction	Audit	As required

7.4 TRAFFIC CONTROL

Management Statement	Impacts & Risks Avoided
To manage and minimise the nuisance effect created by construction traffic.	The development entrance access will be via Grens Street and construction traffic is likely to temporarily affect users.

Management Actions

- a. Implement a traffic management strategy during construction.

Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method Statement	Daily	Contractor	During construction	Audit	As required

- Construction related activities should be timed where possible to avoid peak periods.
- No construction workers, apart from security personnel, should be allowed to stay on site overnight.
- Contractors appointed by the developer must ensure that workers are transported to and from the site daily.
- Construction related activities should comply with all relevant building regulations. In this regard activities on site should be restricted to between 07h00 and 18h00 during weekdays and 08h00 and 13h00 on Saturdays. No work should be permitted after 13h00 on Saturdays and on Sundays.
- Temporary access to be rehabilitated once construction is complete.

7.5 WASTE MANAGEMENT

Management Statement	Impacts & Risks Avoided
To minimise the waste load discharged to the environment.	Improve waste disposal methods during construction Reduce waste volumes to landfill sites

Management Actions

a. Reduce wastes by selecting, in order of preference, avoidance, reduction, reuse and recycling.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Record of volumes of material removed	As required	Contractor	As required	Audit	Records
b. Maintain a high quality of housekeeping and ensure that materials are not left where they can be washed or blown away to become litter.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Photographic	Weekly	Contractor	As required	Audit	Records
c. Provide bins for construction workers and staff at locations where they consume food. Ensure any litter from construction works or personnel is removed from the site. No litter, food scraps, or waste materials can be left at the site.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Photographic	Weekly	Contractor	As required	Audit	Records
d. Conduct ongoing awareness with staff of the need to avoid littering.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Induction	Once off	Contractor	As required	Audit	Attendance register
7.6 <u>STOCKPILE MANAGEMENT</u>					
Management Statement			Impacts & Risks Avoided		
To manage soil stockpiles so that dust and sediment in run-off are minimised.			Pollution due to dust and sediment run off		

Management Actions					
a. Minimise the number of stockpiles, and the area and the time stockpiles are exposed. Excavated soil should be placed on the northern side of the trench.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Photographic	As required	Contractor	As required	Audit	Records
b. Keep topsoil and underburden stockpiles separate.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	Daily when stripping topsoil	Contractor	Continuously during construction	Audit	Records
c. Ensure that stockpiles and batters are designed with slopes no greater than 2:1 (horizontal/vertical).					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly
d. Stabilise stockpiles and batters that will remain bare for more than 28 days by covering with mulch or anchored fabrics or seeding with sterile grass.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly

e. Establish sediment controls around unstabilised stockpiles and batters.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly
f. Suppress dust on stockpiles and batters, as circumstances demand.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual inspection of stockpiles	As required	Contractor	Continuously during construction	Audit	Monthly
7.7 <u>STORING FUELS & CHEMICALS</u>					
Management Statement			Impacts & Risks Avoided		
To ensure that fuel and chemical storage is safe, and that any materials that escape do not cause environmental damage.			Avoid hydrocarbon pollution to soil and watercourses / coastal environments		
Management Actions					
a. Minimise fuels and chemicals stored onsite.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records

b. Install bunds and take other precautions to reduce the risk of spills.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
c. Implement a contingency plan to handle spills, so that environmental damage is avoided.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
d. All construction materials (topsoil, subsoil, building sand) must be stockpiled as far from the Estuary or slope edge as practically possible.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Monthly
7.8 <u>MINIMISING EROSION</u>					
Management Statement			Impacts & Risks Avoided		
To minimise the quantity of soil lost during construction due to land-clearing.			- Avoid overland flow by capture and store water from roof - Avoid siltation by installing silt traps		
Management Actions					

a. Schedule measures to avoid and reduce erosion by phasing the work program to minimise land disturbance in the planning and design stage.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
b. Keep the areas of land cleared to a minimum, and the period areas remain cleared to a minimum					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
c. Base control measures to manage erosion on the vulnerability of cleared land to soil loss, paying particular attention to protecting slopes.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records
d. Mulch, roughen and seed cleared slopes and stockpiles where no works are planned for more than 28 days, with sterile grasses.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor	As required	Audit	Method statement records

e. Keep vehicles to well-defined haul roads.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site plan	As required	Contractor	As required	Audit	Final site plan
f. Rehabilitate cleared areas promptly.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual / photographic	As required	Contractor	Continuously during construction	Audit	Final Rehabilitation statement
7.9 <u>FAUNA MANAGEMENT</u>					
Management Statement			Impacts & Risks Avoided		
To ensure that impacts to native faunal species is minimised and / or avoided.			To minimise the impact to fauna		
Management Actions					
a. General recommendation and best practice guidelines should be followed for all animal species encountered (regardless of whether they are SCC or not).					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Ad hoc	As required	Contractor	Continuously	Audit	Visual / photographic
7.10 <u>SOCIAL REQUIREMENTS</u>					
Management Statement			Impacts & Risks Avoided		

To ensure equitable, fair and safe social interaction on construction sites			Loss of employment opportunities to the region		
Management Actions					
a. It is strongly recommended that the Contractor make use of local labour as far as possible for the construction phase of the project.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Employment records	Ad hoc	Contractor	Ad hoc	Audit	Once off
b. Theft and other crime associated with construction sites is not only a concern for surrounding residents, but also the Developer and the Contractor.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Site records	Ad hoc	Contractor	Ad hoc	Audit	Once off
Targets - The contractor should endeavour to source local suppliers. - The contractor must ensure that suitable procurement policies are in place that supports local economic growth. - Locally manufactured products must be used as far as possible.					
Site Security Theft and other crime associated with construction sites is not only a concern for surrounding residents, but also the developer and the contractor. Considering this, contractors need to be proactive in order to curtail theft and crime on and resulting from the construction site. It is recommended that the contractor develop a jobsite security plan prior to commencement of construction. This jobsite security plan should take into account protection of the construction site from both internal and external crime elements as well as the protection of surrounding communities from internal crime elements. All incidents of theft or other crime should be reported to the South African Police Service, no matter how seemingly insignificant.					

7.11 METHOD STATEMENTS

Management Statement			Impacts & Risks Avoided		
To ensure efficient communication mechanisms in the implementation of environmental performance requirements			Prevention of potential impacts are avoided during construction by means of correct communication		
Management Actions					
a. Method statements are written submissions by the Contractor to the ECO in response to the requirements of this EMP or to a request by the ECO. The Contractor shall be required to prepare method statements for several specific construction activities and/or environmental management aspects.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	Ad hoc	Contractor	As required	Audit	Once off

Based on the specifications in this EMPr, the following method statements are required as a minimum (more method statements may be requested as required at any time under the direction of the ECO):

- Demarcation of No-Go areas
- Site clearing
- Hazardous substances and their storage.
- Materials requirements & Sourcing.
- Solid waste control system.
- Fire control and emergency procedures
- Petroleum, chemical, harmful and hazardous materials storage, if any.
- Beach work schedule and duration.
- Stormwater Management and Erosion Control.

7.12 POST-CONSTRUCTION REHABILITATION

Management Statement		Impacts & Risks Avoided	
To ensure that degradation to existing botanical components are minimised and that any rehabilitation is undertaken with conservation orientated approach.		To minimise the disturbance to existing flora To minimise the introduction and/or spread of weed species	
Management Actions			

a. Ensure any litter from construction works or personnel is removed from the site. No litter, food scraps, or waste materials can be left at the site. b. Rehabilitation and landscaping may only make use of indigenous vegetation. c. Kikuyu grass may not be used to rehabilitate the road and fence line verges where the pipeline will be installed. d. Post-construction site clean-up must be completed to ensure the entire site footprint and surrounding area has been cleared of litter and any waste materials associated with construction. The ECO should be informed of the construction close-out and complete an inspection to ensure this measure has been implemented. e. Revegetation of the pipeline area must be actively supported by planting kweek grass: <i>Cynodon dactylon</i>.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Method statement	As required	Contractor / Owner	Continuously	Audit	Visual / photographic

8 OPERATIONAL/MAINTENANCE PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS

The Operational/Maintenance Phase of this EMMPr refers to the day to day management activities that are required to ensure sustainability and the achievement of the principles and objectives of the development. The requirements are applicable to the Applicant.

8.1 <u>REPAIRS AND MAINTENANCE TO THE PIPELINE & PUMP STATION</u>					
Management Statement			Impacts & Risks Avoided		
To mitigate renewed wetland disturbance and potential sedimentation.			To prevent renewed wetland disturbance.		
Management Actions					
a. When blockages to sewerage infrastructure within the EFZ occur, the maintenance team should ensure a honey-sucker is on standby to mop up any spills or overflows for removal and disposal at the Wastewater Treatment Works. b. Any serious sewage spills that result in large quantities of sewage leaking from a manhole must be contained in a temporary coffer dam, which can be constructed using sandbags for the walls and plastic sheeting as a base. From here, honey-suckers can collect sewage for removal. c. Any water-tight seals around manholes, joints or other access points that must be broken for maintenance should be replaced thereafter to ensure the mitigation measures to prevent water ingress or sewage leakage are maintained under flood scenarios. d. Keep sewer line servitudes clear of dense vegetation to facilitate access and reduce the risk of roots cracking sewer lines.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual / Photographic	Ongoing	Developer / Contractor	As required	Audit	Audit
Concentration of stormwater runoff will be minimised through the application of landscaping techniques, i.e. by creating grass lined swales, undulations and depressions, vegetation.					

8.2 EDGE EFFECTS AND INVASIVE SPECIES

Management Statement			Impacts & Risks Avoided		
To prevent opportunistic invasive and exotic species from outcompeting and displacing recovering vegetation			To prevent impact on recovering natural vegetation.		
Management Actions					
a. Record plants successfully replanted & plants that died before replanting. b. Target areas prone to erosion. c. Include results in ECO reporting. d. Monitor the route to ensure sufficient vegetation cover with indigenous plant species.					
Method of monitoring implementation	Frequency of Monitoring	Responsible Party for implementing management action	Time period	Mechanism for monitoring Compliance	Programme for reporting on Compliance
Visual / Photographic	Ongoing	Developer / Contractor	As required	Audit	Audit

9 MONITORING

Monitoring is an important tool in determining the effectiveness of management actions by measuring changes in the environment. These could be in the form of fixed point photography where an area is photographed on a regular / seasonal basis to ascertain changes, monitoring of a particular aspect such as landscape integrity parameters, recordings of animal movement from fixed point etc. The most important aspect of any monitoring programme is **consistency and continuity**. This will ensure a level of scientific accuracy to determine baselines / thresholds and measure changes / deviations, which then drive management reactions.

Any required monitoring reports must be made available to the competent authority as required.

The type and frequency of monitoring must include:

- During construction photographs must be taken from pre identified fixed points and a comprehensive record maintained;
- Incident Reports;
- Site meeting minutes.

9.1 MONITORING TIMEFRAMES SUMMARY

Table 3: Monitoring Timeframe Summary

MONITORING TIMEFRAMES		
Type	Frequency	Criteria
ECO visits	As per section 5.4	Site photographs / site diary
Record keeping	Monthly	Site photographs, method statements, site meeting minutes (if applicable)
	3 month post construction	Completion Statement
Auditing	One year post construction	Compliance with the EA, EMPr, municipal permits and any other approvals

9.2 ENVIRONMENTAL AUDITS

A final construction phase Completion Statement must be submitted within 3 months of completion of construction / site handover.

This Completion Statement must include the monitoring results as above, where applicable to construction.

An Environmental Audit should be undertaken one (1) year post construction.

9.3 AUDIT REPORTS FREQUENCIES AND FORMAT

The table below provides a summary of the timeframes for the various Audit Reports specified in the EA.

Table 4: Audit Reports Timeframe Summary

ENVIRONMENTAL AUDIT TIMEFRAMES		
Type	Frequency	Criteria
Final Construction Audit	Two years post construction	Audit on operational aspects of the EA and EMPr

In terms of the 2014 EIA Regulations, Audit Reports must be submitted to the registered Interested & Affected Parties within 7 days of submission to the competent authority.

In order to comply with the 2014 EIA Regulations, any audits must be undertaken using the following format:

Table 5: Environmental Audit Requirements

Appendix 7 of Regulation 326 of the 2014 EIA Regulations, as amended contains the required contents of an Environmental Audit Report. The checklist below serves as a summary of how these objectives & requirements were incorporated into this Audit Report.	
Objective	Description
The objective of the environmental audit report is to -	
(a) Report on – (i) the level of compliance with the conditions of the environmental authorisation and the EMPr, and where applicable, the closure plan; and (ii) the extent to which the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan achieve the objectives and outcomes of the EMPr, and closure plan.	
(b) Identify and assess any new impacts and risks as a result of undertaking the activity.	
(c) Evaluate the effectiveness of the EMPr, and where applicable, the closure plan.	
(d) Identify shortcomings in the EMPr, and where applicable, the closure plan.	
(e) Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan.	
Requirement	Description
(1) An Environmental audit report prepared in terms of these Regulations must contain -	
(a) Details of – (i) The independent person who prepared the environmental audit report; and (ii) The expertise of independent person that compiled the environmental audit report.	

Appendix 7 of Regulation 326 of the 2014 EIA Regulations, as amended contains the required contents of an Environmental Audit Report. The checklist below serves as a summary of how these objectives & requirements were incorporated into this Audit Report.

Objective	Description
(b) A declaration that the independent auditor is independent in a form as may be specified by the competent authority.	
(c) An indication of the scope of, and the purpose for which, the environmental audit report was prepared.	
(d) A description of the methodology adopted in preparing the environmental audit report.	
(e) An indication of the ability of the EMPr, and where applicable the closure plan to – (i) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis; (ii) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) Ensure compliance with the provisions of environmental authorisation, EMPr, and where applicable, the closure plan.	
(f) A description of any assumptions made, and any uncertainties or gaps in knowledge.	
(g) A description of an consultation process that was undertaken during the course of carrying out the environmental audit report.	
(h) A summary and copies of any comments that were received during any consultation process.	
(i) Any other information requested by the competent authority.	

Any other requirements of the EA or any other authorisations must be incorporated into an Audit where necessary.

10 DECOMMISSIONING PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS

Not Applicable.

11 NON-COMPLIANCE

Any person is liable on conviction of an offence in terms of regulation 49(a) of the National Environmental Laws Second Amendment Act (Act 30 of 2013) to imprisonment for a period not exceeding ten (10) years or to a fine not exceeding R10 million or an amount prescribed in terms of the Adjustment of Fines Act, 1991 (Act No. 101 of 1991).

It is the responsibility of the ECO to report matters of non-compliance to the Employer's Representative or the Holder of the EA if no representative is in place. It is the responsibility of the Holder of the EA, and not the ECO, to report such matters of non-compliance to the competent Authority.

11.1 PROCEDURES

The Holder of the EA shall comply with the environmental specifications and requirements of this EMPr, any Approval / License issued and Section 28 of NEMA, on an on-going basis and any failure on his part to do so will entitle the authorities to **impose a penalty**¹.

In the event of non-compliance the following recommended process shall be followed:

- The competent authority shall issue a **Notice of Non-compliance** to the Holder of the EA, stating the nature and magnitude of the contravention.
- The Holder of the EA shall **act to correct the transgression** within the period specified in by the authority.
- The Holder of the EA shall provide the competent authority with a **written statement** describing the actions to be taken to discontinue the non-conformance, the actions taken to mitigate its effects and the expected results of the actions.
- In the case of the Holder of the EA failing to remedy the situation within the predetermined time frame, the competent authority may recommend halting the activity.
- In the case of non-compliance giving rise to physical environmental damage or destruction, the competent authority shall be entitled to undertake or to cause to be undertaken such **remedial works** as may be required to make good such damage at the cost of the Project applicant.
- In the event of a dispute, difference of opinion, etc. between any parties in regard to or arising out of interpretation of the conditions of the EMPr, disagreement regarding the implementation or method of implementation of conditions of the EMPr, etc. any party shall be entitled to require that the issue be referred to **specialists and / or the competent authority** for determination.
- The competent authority shall at all times have the right to **stop work** and/or certain activities on site in the case of non-compliance or failure to implement remediation measures.

¹ A penalty may not necessarily be a monetary fine but could also be a stoppage in work time, additional mechanisms to prevent pollution or degradation at the cost of the proponent or even a directive to cease activities from the competent authority.

12 REFERENCES

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Lochner, P. 2005. *Guideline for Environmental Management Plans*. CSIR Report No ENV-S-C 2005-053H, Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

APPENDIX 1

Locality Map: New 110mm Sewer Rising Main



Map Center: Lon: 22°15'4.3"E
Lat: 34°3'4.8"S

Scale: 1:9,028

Date created: 2025/08/26



Western Cape
Government
FOR YOU

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Locality Map: New 160mm Gravity Sewer Pipeline



Map Center: Lon: 22°15'51.7"E
Lat: 34°3'2.3"S

Scale: 1:1,128
Date created: 2025/08/26



Western Cape
Government
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Locality Map: New 90mm Sewer Rising Main



Map Center: Lon: 22°16'16.9"E
Lat: 34°3'S

Scale: 1:4,514

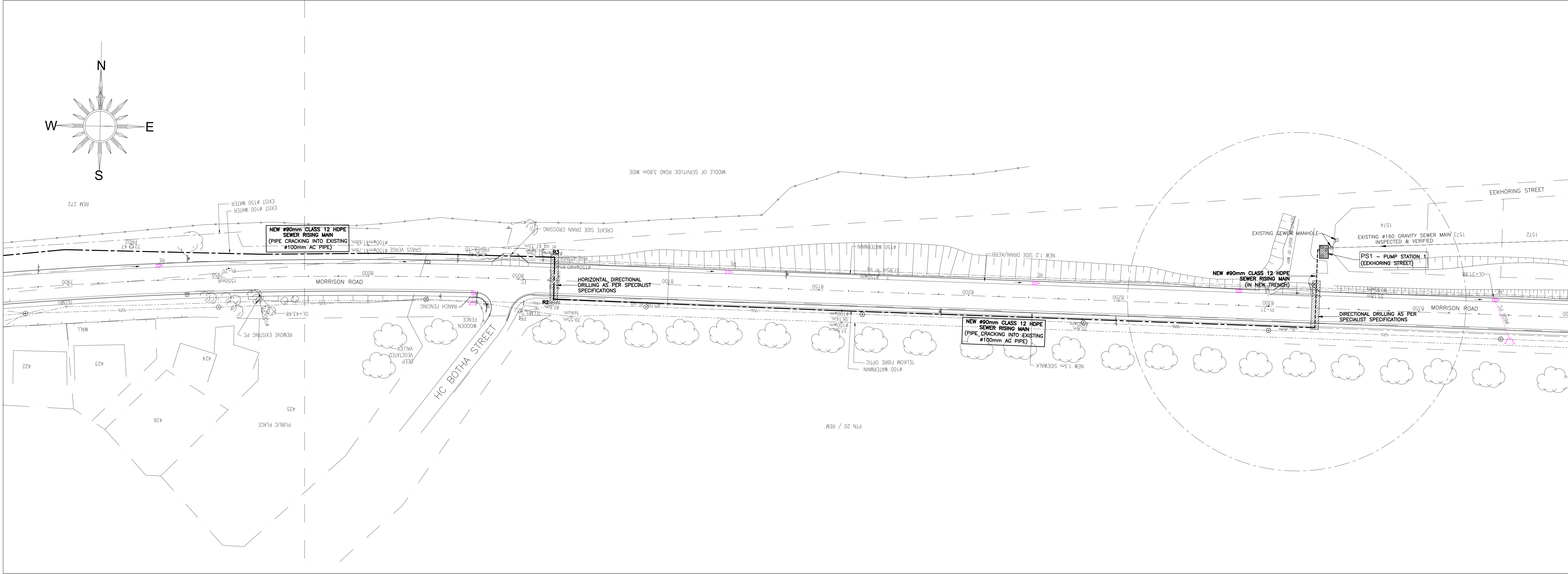
Date created: 2025/08/26



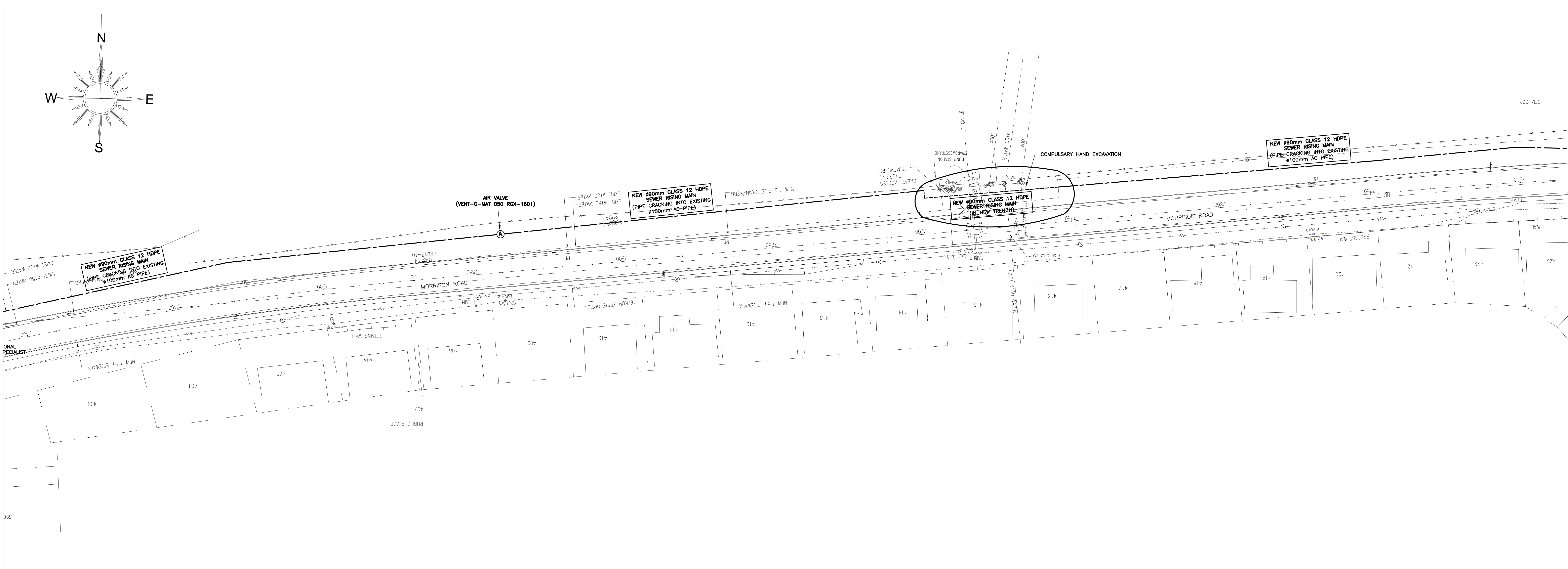
Western Cape
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Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

APPENDIX 2



CHAINAGE: 8350 TO 7900
SCALE: 1 : 500



CHAINAGE: 7900 TO 7400
SCALE: 1 : 500

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3. CONCRETE:
STRENGTH, MAX. AGGREGATE SIZE AND COVER:
FOUNDATIONS : CLASS 10MPa/15mm
SURFACE BEDS : CLASS 30MPa/15mm 30mm
SLABS AND BEAMS : CLASS 30MPa/15mm 30mm
COLUMNS : CLASS 30MPa/15mm 40mm
HORIZONTAL AND VERTICAL FORMED SURFACES: SMOOTH (SANS 1200 G-CLASS II) UNDRAINED SURFACES(WITHOUT SCAFFOLDING). ALL OTHER FORMED SURFACES: ROUGH, UNLESS OTHERWISE SPECIFIED.
4. COMPACTING TO BE DONE IN LAYERS NOT EXCEEDING 100mm.
5. FOUNDATIONS ARE DESIGNED FOR A MAXIMUM SAFE BEARING PRESSURE OF 150 kPa.
6. DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH SANS 1010, 0131, 0160, 0161, 0162, 0163 & 0164 & 0400 AS APPLICABLE.
7. ENGINEER TO APPROVE REINFORCEMENT & EXCAVATIONS PRIOR TO PLACING OF CONCRETE.
8. JOINTS IN BRICKWORK WALLS AS PER MBER SPECIFICATIONS OR AS INDICATED ON DRAWINGS.
9. PUMP STATION NOTES:
 1. ALL DIMENSIONS / SIZES / DIAMETERS / LENGTHS / LEVELS TO BE VERIFIED BEFORE ORDERING OR INSTALLING ANY COMPONENTS.
 2. THE ENGINEER TO APPROVE ALL WORKS.
 3. THE CONTRACTOR TO ADHERE TO ALL INSTALLATION & SAFETY REGULATIONS AS SPECIFIED BY THE MANUFACTURER.
 4. CONTRACTOR TO WORK IN CONJUNCTION WITH GEORGE MUNICIPALITY, THE MANUFACTURER, ENGINEER ON SITE.
 5. IF ANY DISCREPANCIES OR CHANGES ARISES IN ANY DETAIL OR DESIGN, THE ENGINEER NEEDS TO BE NOTIFIED A.S.A.P.
 6. PLINTH LEVELS AND FITMENT OF ALL COMPONENTS TO BE CHECKED BEFORE INSTALLATION.
 7. ALL CONCRETE WORKS 30 MPa.
 8. EMERGENCY OVERFLOW PIPE AND DETAIL TO BE DISCUSSED ON SITE.
 9. PUMPHOUSE FLOOR TO BE SCREEDED TO ALLOW FOR DRAINAGE TO MANHOLES.
 10. 400mm SQUARE POCKETS TO BE LEFT FOR PUDDLE FLANGES.
 11. DOORS TO BE AS PER DOOR SCHEDULE.
 12. ALL EXPOSED PIPEWORK TO HAVE CORROSION PROTECTION AS PER SUPPLIERS SPEC.
 13. BRICKWORK 230mm THICK, 2 No. STAINLESS STEEL BUTTERFLY VALVES PER SQUARE METER.
 14. CONSTRUCT 6 x 160mm SLEEVES AS PER LAYOUT FOR ELECTRICAL CABLES. THESE SLEEVES SHOULD BE SEALED AFTER CABLEING IS INSTALLED.
 15. SLEEVE LAYOUT SHOULD BE CONFIRMED BY MECHANICAL AND ELECTRICAL CONTRACTOR SPECIFICATIONS.
 16. CONSTRUCT 2 x 60 mm Ø SLEEVES FOR FRESH WATER FEED AS SHOWN & 2 x 110mm Ø SLEEVES FOR RIVER WATER FEED.
 17. CONSTRUCT A FLOW SWITCH AT TOP OF RISINGMAIN.
 18. MANHOLE COVER AND FRAMES TO BE OF TYPE 9E AND LOCKABLE.
 19. ALL ELECTRICAL PLUG POINTS, LIGHT FITTINGS, etc. AS PER ELECTRICAL ENGINEER'S SPECIFICATIONS.

Rev	DESCRIPTION	INITIALS	SIGN	DATE
A	ISSUE FOR INFORMATION			18-06-25
Rev	DESCRIPTION	INITIALS	SIGN	DATE
DESIGNED		T.H.		02-04-25
DRAWN		T.H.		02-04-25
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APPROVED		C.C.A.		02-04-25

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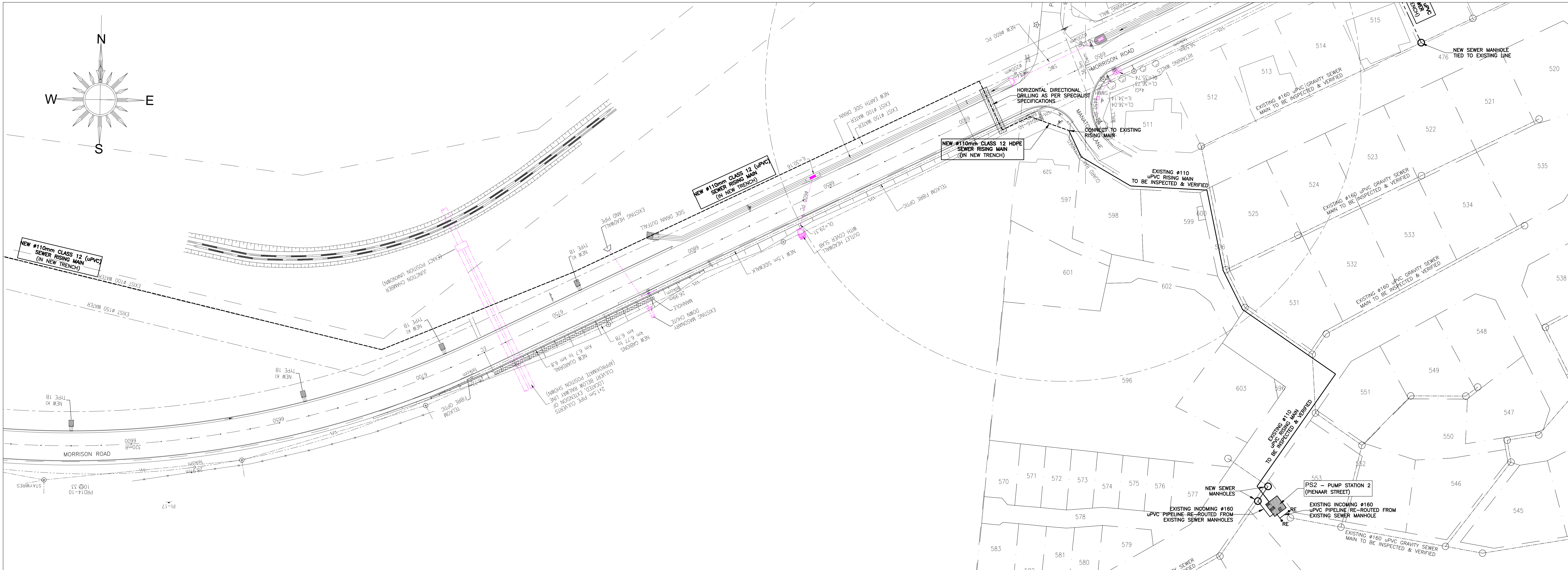
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**LAYOUT 1
CH 8350 – CH 7400**

DRW No. **G5219BA-CE-PS-001**

REV No. **A**



CHAINAGE: 7400 TO 7000
SCALE: 1 : 500



CHAINAGE: 7000 TO 6600
SCALE: 1 : 500

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 3. CONCRETE:
STRENGTH, MAX. AGGREGATE SIZE AND COVER:
FOUNDATIONS : CLASS 10MPa/10mm
SURFACE BEDS : CLASS 30MPa/10mm 50mm
SLABS AND BEAMS : CLASS 30MPa/10mm 30mm
COLUMNS : CLASS 30MPa/10mm 40mm
HORIZONTAL AND VERTICAL FORMED SURFACES: SMOOTH
(SABS 1200 G-CLASS II) UNDEFINED SURFACES(WITHOUT SLOES)
WOOD/PAVED, ALL OTHER FORMED SURFACES: ROUGH, UNLESS OTHERWISE SPECIFIED.
 4. COMPACTING TO BE DONE IN LAYERS NOT EXCEEDING 150mm.
 5. FOUNDATIONS ARE DESIGNED FOR A MAXIMUM SAFE BEARING PRESSURE OF 150 kPa.
 6. DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH SABS 0100, 0101, 0160, 0161, 0162, 0163 & 0164 & DATA AS APPLICABLE.
 7. ENGINEER TO APPROVE REINFORCEMENT & DIMENSIONS PRIOR TO PLACING OF CONCRETE.
 8. JOINTS IN BRICKWORK WALLS AS PER MURS SPECIFICATIONS OR AS INDICATED ON DRAWINGS.
- PUMP STATION NOTES:
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 3. THE CONTRACTOR TO ADHERE TO ALL INSTALLATION & SAFETY REGULATIONS AS SPECIFIED BY THE MANUFACTURER.
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 5. IF ANY DISCREPANCIES OR CHANGES ARISES IN ANY DETAIL OR DESIGN, THE ENGINEER NEEDS TO BE NOTIFIED A.S.A.P.
 6. PLINTH LEVELS AND FITMENT OF ALL COMPONENTS TO BE CHECKED BEFORE INSTALLATION.
 7. ALL CONCRETE WORKS 30 MPa (ex THURST BLOCKS) TO OBTAIN 28 DAY STRENGTH.
 8. EMERGENCY OVERFLOW PIPE AND DETAIL TO BE DISCUSSED ON SITE.
 9. PUMPHOUSE FLOOR TO BE SCREED TO ALLOW FOR DRAINAGE TO MANHOLES.
 10. 400mm SQUARE POCKETS TO BE LEFT FOR PUDDLE FLANGES.
 11. DOORS TO BE AS PER DOOR SCHEDULE.
 12. ALL EXPOSED PIPEWORK TO HAVE CORROSION PROTECTION AS PER SUPPLIER'S SPEC.
 13. BRICKWORK 230mm THICK, 2 No. STAINLESS STEEL BUTTERFLY VALVES PER SQUARE METER.
 14. CONSTRUCT 6 x 160mm Ø SLEEVES AS PER LAYOUT FOR ELECTRICAL CABLEING. THESE SLEEVES SHOULD BE SEALED AFTER CABLEING IS INSTALLED.
 15. SLEEVE LAYOUT SHOULD BE CONFIRMED BY MECHANICAL AND ELECTRICAL CONTRACTOR SPECIFICATIONS.
 16. CONSTRUCT 2 x 60 mm Ø SLEEVES FOR FRESH WATER FEED AS SHOWN & 2 x 110mm Ø SLEEVES FOR RIVER WATER FEED.
 17. CONSTRUCT A FLOW SWITCH AT TOP OF RISINGMAIN.
 18. MANHOLE COVER AND FRAMES TO BE OF TYPE 9E AND LOCKABLE.
 19. ALL ELECTRICAL PLUG POINTS, LIGHT FITTINGS, etc. AS PER ELECTRICAL ENGINEER'S SPECIFICATIONS.

Rev	DESCRIPTION	DRW	DATE	APP
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PROJECT ENG.	C.G.A.		02-04-25	
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PROJECT
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TITLE
**LAYOUT 2
CH 7400 – CH 6600**

DRW No. **G5219BA-CE-PS-002**

REV No. **A**



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- CONCRETE:**
 - STRENGTH MAX. AGGREGATE SIZE AND COVER: BUILDING: CLASS 10MPa/17mm;
 - FOUNDATIONS: CLASS 30MPa/17mm- 50mm
 - SURFACE BEDS: CLASS 30MPa/17mm- 30mm
 - SLABS AND BEAMS: CLASS 30MPa/17mm- 30mm
 - COLUMNS: CLASS 30MPa/17mm- 40mm
 - HORIZONTAL AND VERTICAL FORMED SURFACES: SMOOTH (RMS 100 –CLASS II) UNPOURED SURFACEMETHOD SOREQD)
 - WOODCOATED, ALL OTHER FORMED SURFACES: RROUGH UNLESS OTHERWISE SPECIFIED
 - CONTRACTING TO BE DONE IN LAYERS NOT EXCEEDING 200mm;
- CONTRACTORS ARE DESIGNED FOR A MAXIMUM SAFE BEARING PRESSURE OF 150 kPa;
- DESIGN BORE WAS GARRID BUT TO ACCORDANCE WITH SAES 0103, 0127, 0160, 0162, 0163, 0164 & 0165 AS APPLICABLE
- ENGINEER TO APPROVE REINFORCEMENT & EXCAVATIONS PRIOR TO PLACING OF CONCRETE
- JUNTS IN BROOKWORK VALVES AS PER MERIC SPECIFICATIONS OR AS INDICATED ON DRAWINGS.

PUMP STATION NOTES:

- ALL DIMENSIONS / SIZES / DIAMETERS / LENGTHS / LEVELS TO BE VERIFIED BEFORE ORDERING OR INSTALLING ANY COMPONENTS.
- THE ENGINEER TO APPROVE ALL WORKS.
- THE CONTRACTOR TO ADHERE TO ALL INSTALLATION & SAFETY REGULATIONS AS SPECIFIED BY THE MANUFACTURER.
- CONTRACTOR TO WORK IN CONJUNCTION WITH GEORGE MUNICIPALITY, THE MANUFACTURER, ENGINEER ON SITE.
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- FURNISH LEVELS AND FITMENT OF ALL COMPONENTS TO BE CHECKED BEFORE INSTALLATION.
- ALL CONCRETE WORKS 30 MPa (eg THRUUST BLOCKS) TO OBTAIN 28 DAY STRENGTH EMERGENCY OVERFLOW PIPE AND DETAIL TO BE DISCUSSED ON SITE.
- PUMPHOUSE FLOOR TO BE SCREEDED TO ALLOW FOR DRAINAGE TO MANHOLES
- 400mm SQUARE POCKETS TO BE LEFT FOR PUDDLE FLANGES.
- DUMPS TO BE AS PER DOOR SCHEDULE
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- CONSTRUCT 6 x 160mm SLEEVES AS PER PAYOUT FOR ELECTRICAL CABLEING, THESE SLEEVES SHOULD BE SEALED AFTER CABLES IS INSTALLED.
- SLEEVE LAYOUT SHOULD BE CONFIRMED BY MECHANICAL AND ELECTRICAL CONTRACTOR SPECIFICATIONS.
- CONSTRUCT 2 x 60 mm Ø SLEEVES FOR FRESH WATER FEED SLOW & 2 x 110mm Ø SLEEVES FOR RIVER WATER FEED.
- CONSTRUCT A FLOW SWITCH AT TOP OF RISINGMAIN, MANHOLE COVER AND FRAMES TO BE OF TYPE ONE AND LOCKABLE
- ALL ELECTRICAL PLUG POINTS, LIGHT FITTINGS, etc. AS PER ELECTRICAL ENGINEERS CERTIFICATIONS.

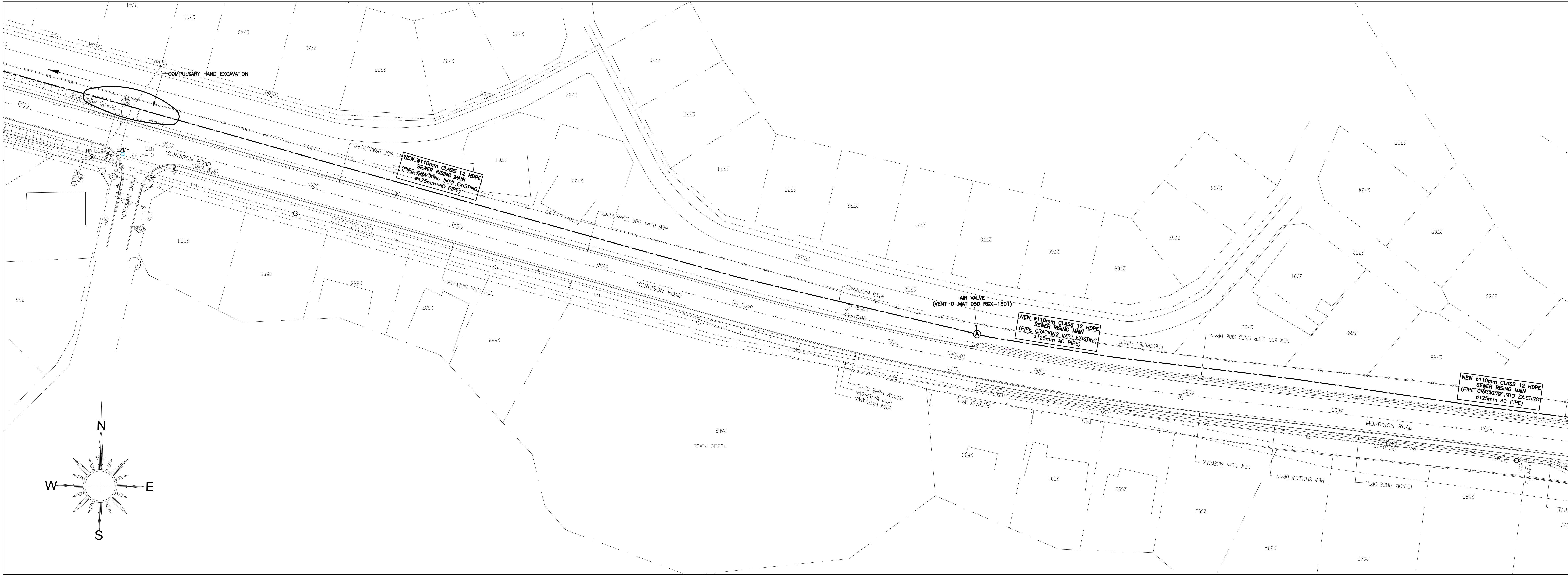
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PROJECT ENG.	C.G.A		05-03-26	
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 Municipality of Pietermaritzburg <i>"Explore Endless Horizons!"</i>
PROJECT
NEW SEWER PUMP STATIONS PIENNAAR STRAND & EEKHORING STREET
TITLE
ALTERNATIVE PIPE LAYING OPTIONS CH 6250 – CH 6750
DRAW No.
G5219BA–CE–OPT–001
REV NO
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CHAINAGE: 5500 TO 5150
SCALE: 1 : 500



CHAINAGE: 5150 TO 4650
SCALE: 1 : 500

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3. CONCRETE:
STRENGTH, MAX. AGGREGATE SIZE AND COVER:
FOUNDATIONS : CLASS 30MPa/15mm 50mm
SURFACE BEDS : CLASS 30MPa/15mm 30mm
SLABS AND BEAMS : CLASS 30MPa/15mm 30mm
COLUMNS : CLASS 30MPa/15mm 40mm
HORIZONTAL AND VERTICAL FORMED SURFACES: SMOOTH
(SABS 1200 G-CLASS II) UNFINISHED SURFACES/WITHOUT SCAFFOLDING, ALL OTHER FORMED SURFACES: ROUGH, UNLESS OTHERWISE SPECIFIED.
4. COMPACTING TO BE DONE IN LAYERS NOT EXCEEDING 150mm.
5. FOUNDATIONS ARE DESIGNED FOR A MAXIMUM SAFE BEARING PRESSURE OF 150 kPa.
6. DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH SABS 0100, 0101, 0102, 0103, 0104 & 0105 AS APPLICABLE.
7. ENGINEER TO APPROVE REINFORCEMENT & ELEVATIONS PRIOR TO PLACING OF CONCRETE.
8. JOINTS IN BRICKWORK WALLS AS PER MBER SPECIFICATIONS OR AS INDICATED ON DRAWINGS.
9. EUMP: STATION NOTES:
 1. ALL DIMENSIONS / SIZES / DIAMETERS / LENGTHS / LEVELS TO BE VERIFIED BEFORE ORDERING OR INSTALLING ANY COMPONENTS.
 2. THE ENGINEER TO APPROVE ALL WORKS.
 3. THE CONTRACTOR TO ADHERE TO ALL INSTALLATION & SAFETY REGULATIONS AS SPECIFIED BY THE MANUFACTURER.
 4. CONTRACTOR TO WORK IN CONJUNCTION WITH GEORGE MUNICIPALITY, THE MANUFACTURER, ENGINEER ON SITE.
 5. IF ANY DISCREPANCIES OR CHANGES ARISES IN ANY DETAIL OR DESIGN, THE ENGINEER NEEDS TO BE NOTIFIED A.S.A.P.
 6. PLINTH LEVELS AND FITMENT OF ALL COMPONENTS TO BE CHECKED BEFORE INSTALLATION.
 7. ALL CONCRETE WORKS 30 MPa (eg THURST BLOCKS) TO OBTAIN 28 DAY STRENGTH.
 8. EMERGENCY OVERFLOW PIPE AND DETAIL TO BE DISCUSSED ON SITE.
 9. PUMPHOUSE FLOOR TO BE SCREED TO ALLOW FOR DRAINAGE TO MANHOLES.
 10. 400mm SQUARE POCKETS TO BE LEFT FOR PUDDLE FLANGES.
 11. DOORS TO BE AS PER DOOR SCHEDULE.
 12. ALL EXPOSED PIPEWORK TO HAVE CORROSION PROTECTION AS PER SUPPLIERS SPEC.
 13. BRICKWORK 230mm THICK, 2 No. STAINLESS STEEL BUTTERFLY VALVES PER SQUARE METER.
 14. CONSTRUCT 6 x 160mm Ø SLEEVES AS PER LAYOUT FOR ELECTRICAL CABLEING. THESE SLEEVES SHOULD BE SEALED AFTER CABLEING IS INSTALLED.
 15. SLEEVE LAYOUT SHOULD BE CONFIRMED BY MECHANICAL AND ELECTRICAL CONTRACTOR SPECIFICATIONS.
 16. CONSTRUCT 2 x 60 mm Ø SLEEVES FOR FRESH WATER FEED AS SHOWN & 2 x 110mm Ø SLEEVES FOR RIVER WATER FEED.
 17. CONSTRUCT A FLOW SWITCH AT TOP OF RISINGMAIN.
 18. MANHOLE COVER AND FRAMES TO BE OF TYPE 9E AND LOCKABLE.
 19. ALL ELECTRICAL PLUG POINTS, LIGHT FITTINGS, etc. AS PER ELECTRICAL ENGINEERS SPECIFICATIONS.

Rev	DESCRIPTION	INITIALS	SIGN	DATE
A	ISSUE FOR INFORMATION			18-06-25
Rev	DESCRIPTION	INITIALS	SIGN	DATE
DESIGNED		T.H.		02-04-25
DRAWN		T.H.		02-04-25
CHECKED		C.C.A.		02-04-25
PROJECT ENG.		C.C.A.		02-04-25
APPROVED		C.C.A.		02-04-25

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CLIENT

PROJECT
NEW SEWER PUMP STATIONS PIENAR STRAND & EEKHORING STREET

TITLE
**LAYOUT 4
CH 5150 – CH 4650**

DRW No. **G5219BA-CE-PS-004**

REV No. **A**

REV No **A**

GENERAL NOTES

1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND.
2. ALL MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH THE LATEST EDITION OF THE STANDARDISED SPECIFICATION, SABS 1000 AND THE STANDARDS REFERRED TO THEREIN.
3. CONCRETE:
STRENGTH, MAX. AGGREGATE SIZE AND COVER:
FOUNDATIONS : CLASS 10MPa/10mm
SURFACE BEDS : CLASS 30MPa/15mm 30mm
SLABS AND BEAMS : CLASS 30MPa/15mm 30mm
COLUMNS : CLASS 30MPa/15mm 40mm
HORIZONTAL AND VERTICAL FORMED SURFACES: SMOOTH (SABS 1200 G-CLASS II) UNFINISHED SURFACES(WITHOUT SMOOTH)
WOOD/PLATE, ALL OTHER FORMED SURFACES: ROUGH, UNLESS OTHERWISE SPECIFIED.
4. COMPACTING TO BE DONE IN LAYERS NOT EXCEEDING 150mm.
5. FOUNDATIONS ARE DESIGNED FOR A MAXIMUM SAFE BEARING PRESSURE OF 150 kPa.
6. DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH SABS 0100, 0111, 0160, 0161, 0162, 0163 & 0164 & DATA AS APPLICABLE.
7. ENGINEER TO APPROVE REINFORCEMENT & DIMENSIONS PRIOR TO PLACING OF CONCRETE.
8. JOINTS IN BRICKWORK WALLS AS PER MBERC SPECIFICATIONS OR AS INDICATED ON DRAWINGS.

PUMP STATION NOTES:

1. ALL DIMENSIONS / SIZES / DIAMETERS / LENGTHS / LEVELS TO BE VERIFIED BEFORE ORDERING OR INSTALLING ANY COMPONENTS.
2. THE ENGINEER TO APPROVE ALL WORKS.
3. THE CONTRACTOR TO ADHERE TO ALL INSTALLATION & SAFETY REGULATIONS AS SPECIFIED BY THE MANUFACTURER.
4. CONTRACTOR TO WORK IN CONJUNCTION WITH GEORGE MUNICIPALITY, THE MANUFACTURER, ENGINEER ON SITE.
5. IF ANY DISCREPANCIES OR CHANGES ARISES IN ANY DETAIL OR DESIGN, THE ENGINEER NEEDS TO BE NOTIFIED A.S.A.P.
6. PLINTH LEVELS AND FITMENT OF ALL COMPONENTS TO BE CHECKED BEFORE INSTALLATION.
7. ALL CONCRETE WORKS 30 MPa (eg THURST BLOCKS) TO OBTAIN 28 DAY STRENGTH.
8. EMERGENCY OVERFLOW PIPE AND DETAIL TO BE DISCUSSED ON SITE.
9. PUMPHOUSE FLOOR TO BE SCREED TO ALLOW FOR DRAINAGE TO MANHOLES.
10. 400mm SQUARE POCKETS TO BE LEFT FOR PUDDLE FLANGES.
11. DOORS TO BE AS PER DOOR SCHEDULE.
12. ALL EXPOSED PIPEWORK TO HAVE CORROSION PROTECTION AS PER SUPPLIERS SPECS.
13. BRICKWORK 230mm THICK, 2 No. STAINLESS STEEL BUTTERFLY VALVES PER SQUARE METER.
14. CONSTRUCT 6 x 160mm Ø SLEEVES AS PER LAYOUT FOR ELECTRICAL CABLEING. THESE SLEEVES SHOULD BE SEALED AFTER CABLEING IS INSTALLED.
15. SLEEVE LAYOUT SHOULD BE CONFIRMED BY MECHANICAL AND ELECTRICAL CONTRACTOR SPECIFICATIONS.
16. CONSTRUCT 2 x 60 mm Ø SLEEVES FOR FRESH WATER FEED AS SHOWN & 2 x 110mm Ø SLEEVES FOR RIVER WATER FEED.
17. CONSTRUCT A FLOW SWITCH AT TOP OF RISINGMAIN.
18. MANHOLE COVER AND FRAMES TO BE OF TYPE 9E AND LOCKABLE.
19. ALL ELECTRICAL PLUG POINTS, LIGHT FITTINGS, etc. AS PER ELECTRICAL ENGINEERS SPECIFICATIONS.

PUMP STATION SPECIALS

ITEM	QTY	LENGTH	DESCRIPTION
1	2		PUMP KRIF B0-253/152UEG-S (KSB PUMPS)
2	2	1520mm	Ø 80mm FLANGED DISTANCE PIECE
3	4		Ø 80mm x 90° FLANGED LONG RADIUS BEND
4	2	565mm	Ø 80mm FLANGED DISTANCE PIECE WITH PUDDLE, BOTH ENDS FLANGED.
5	1	615mm	Ø 80mm FLANGED DISTANCE PIECE WITH PUDDLE, BOTH ENDS FLANGED, (DENSO TAPE WRAPPED.)
6	2		Ø 80mm x FLANGED BALL CHECK VALVE - PLACED UPRIGHT
7	2		Ø 80mm FLANGED AVK GATE VALVE WITH HANDWHEEL
8	1		Ø 80mm FLANGED GUSSETED EQUAL T-PIECE
9	1	150mm	Ø 80mm FLANGED DISTANCE PIECE
10	1		Ø 80x90mm FLANGED REDUCER PIECE (ALL UNDERGROUND ELEMENTS DENSO TAPE WRAPPED.)
11	1		Ø 90mm FLANGED ADAPTER FOR HDPE RISING MAIN (ALL UNDERGROUND ELEMENTS DENSO TAPE WRAPPED.)

NOTE:

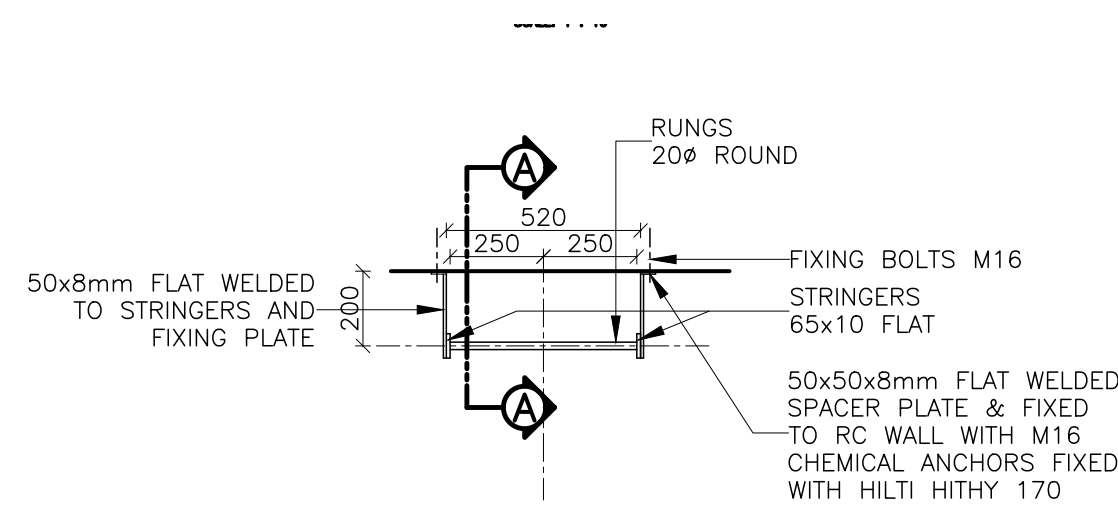
1. STEEL FABRICATED ITEMS TO BE HOT DIPPED GALVANISED, FLANGES 1098° HOT DIPPED GALVANISED BOLTS & NUTS. ALL DISTANCE PIECES TO BE SIZED & FITTED ON SITE.

PUMP STATION SPECIALS

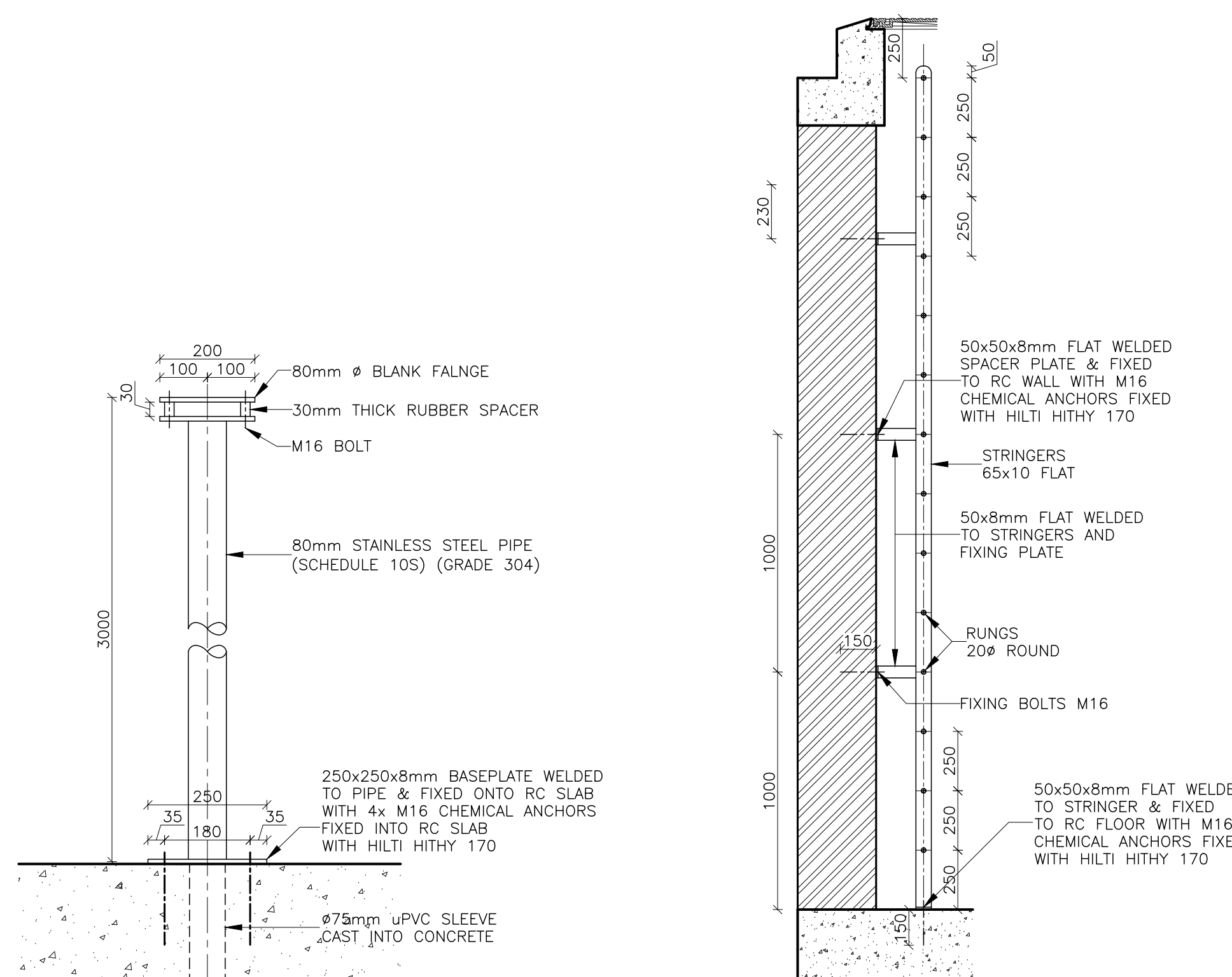
ITEM	QTY	LENGTH	DESCRIPTION
1	2		PUMP KRIF B0-317/372UEG-S (KSB PUMPS)
2	2	2300mm	Ø 80mm FLANGED DISTANCE PIECE
3	4		Ø 80mm x 90° FLANGED LONG RADIUS BEND
4	2	500mm	Ø 80mm FLANGED DISTANCE PIECE WITH PUDDLE, BOTH ENDS FLANGED.
5	1	620mm	Ø 80mm FLANGED DISTANCE PIECE WITH PUDDLE, BOTH ENDS FLANGED, (DENSO TAPE WRAPPED.)
6	2		Ø 80mm x FLANGED BALL CHECK VALVE - PLACED UPRIGHT
7	2		Ø 80mm FLANGED AVK GATE VALVE WITH HANDWHEEL
8	1	630mm	Ø 80mm FLANGED DISTANCE PIECE
9	1		Ø 80mm FLANGED GUSSETED EQUAL T-PIECE
10	1	210mm	Ø 80mm FLANGED DISTANCE PIECE
11	1		Ø 80x110mm FLANGED REDUCER PIECE (ALL UNDERGROUND ELEMENTS DENSO TAPE WRAPPED.)
12	1		Ø 110mm FLANGED ADAPTER FOR uPVC RISING MAIN (ALL UNDERGROUND ELEMENTS DENSO TAPE WRAPPED.)

NOTE:

1. STEEL FABRICATED ITEMS TO BE HOT DIPPED GALVANISED, FLANGES 1098° HOT DIPPED GALVANISED BOLTS & NUTS. ALL DISTANCE PIECES TO BE SIZED & FITTED ON SITE.

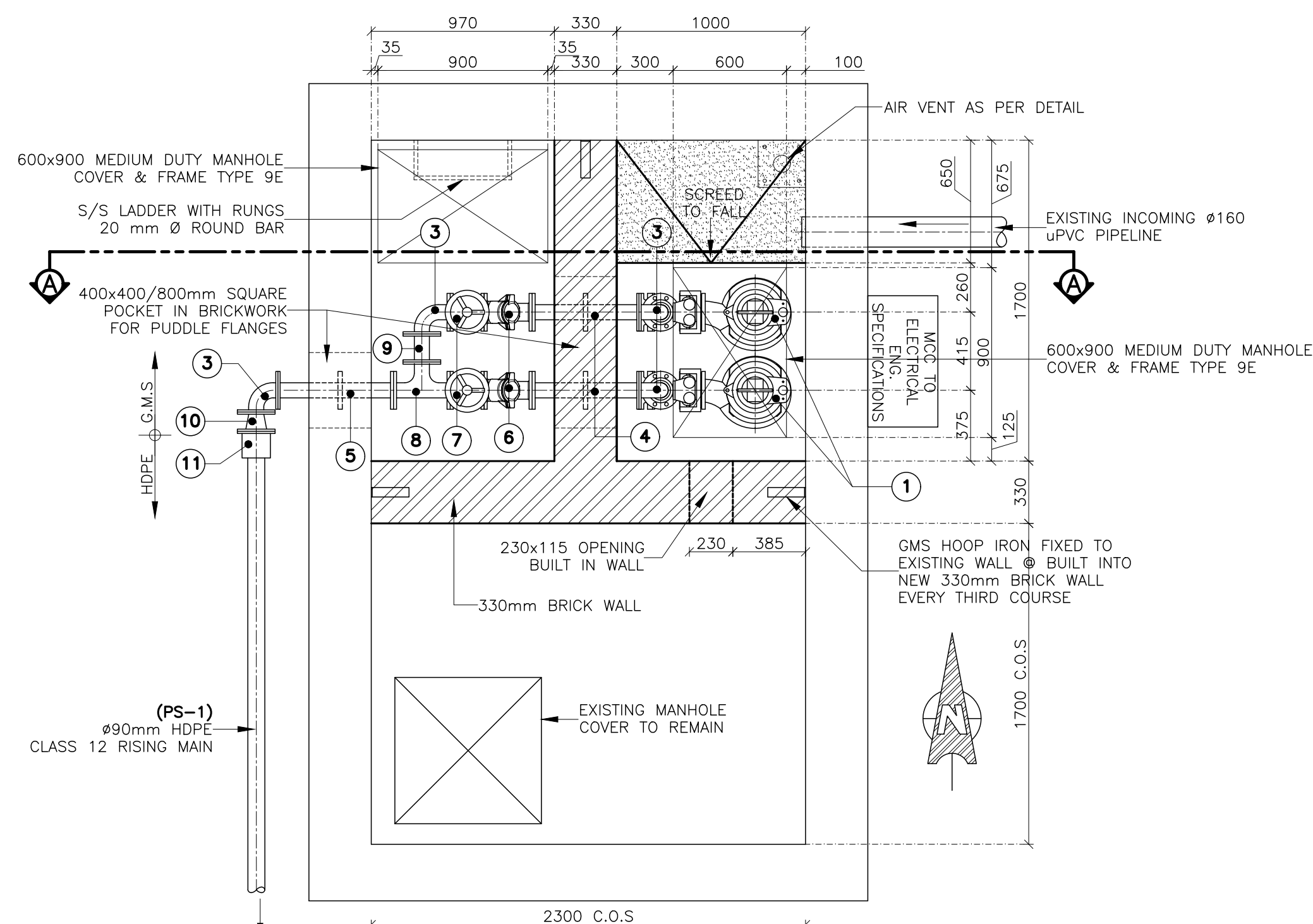


LADDER PLAN LAYOUT
SCALE: 1 : 20

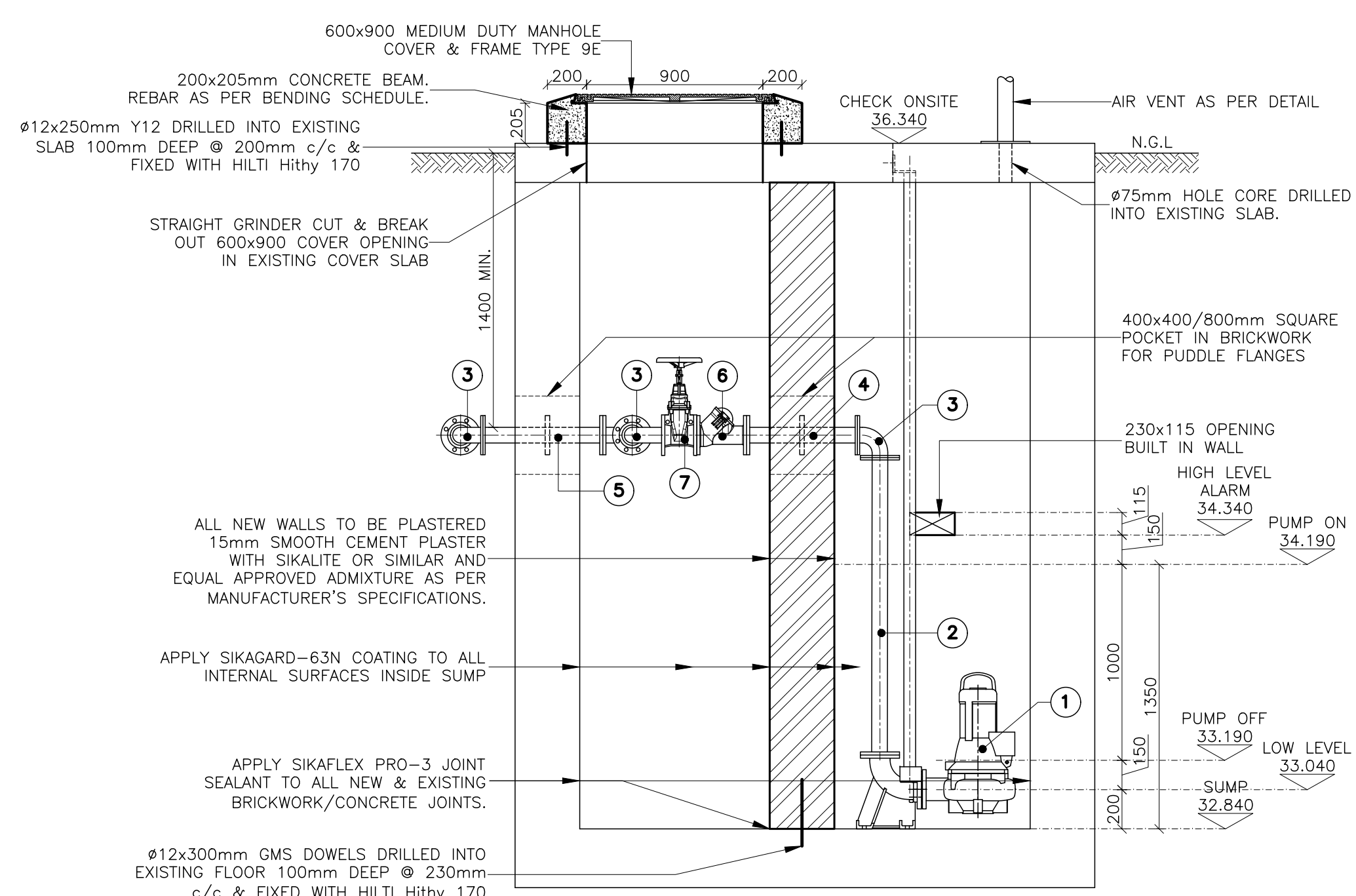


SECTION C-C
SCALE: 1 : 20

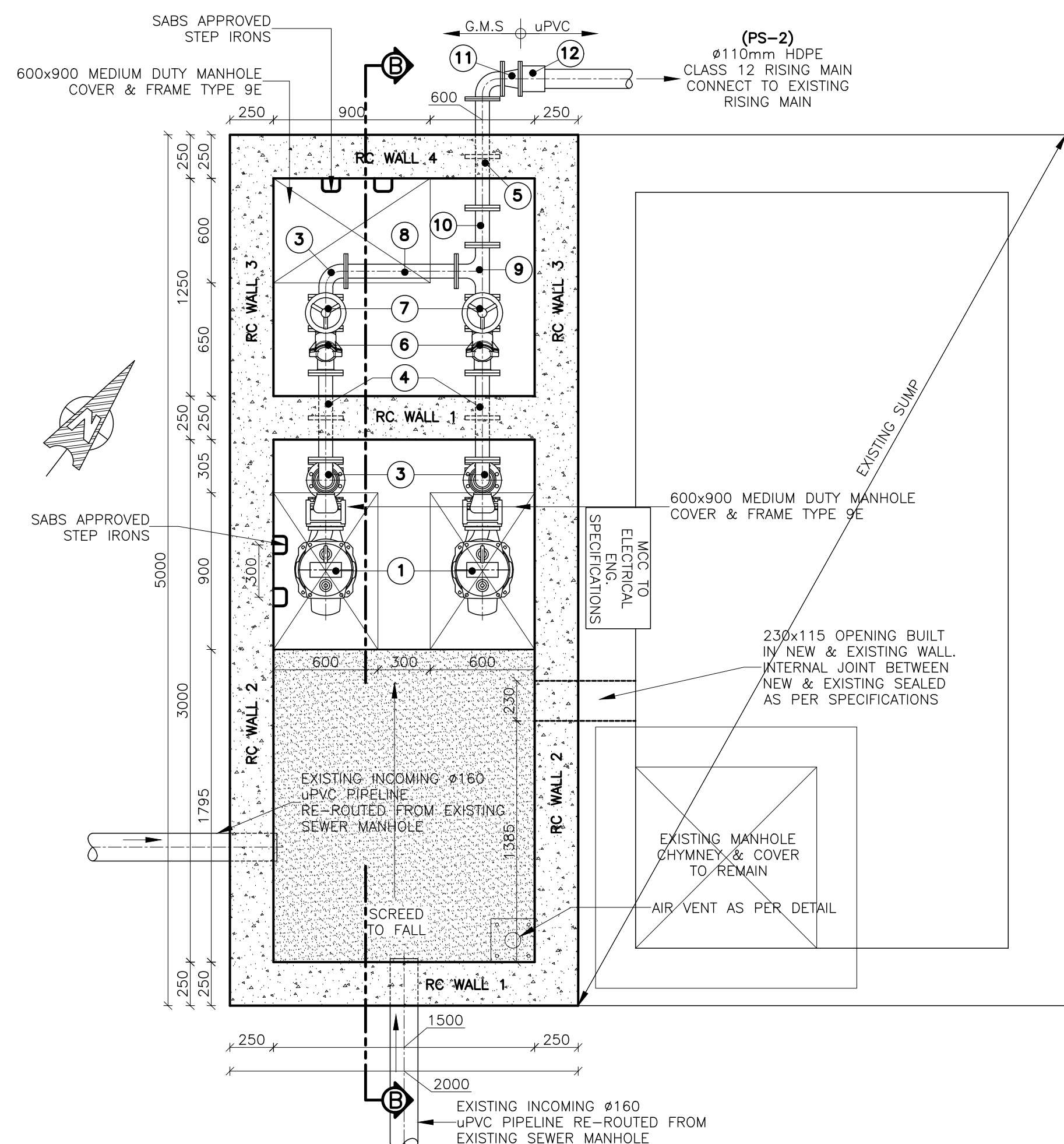
AIR VENT DETAIL
SCALE: 1 : 10



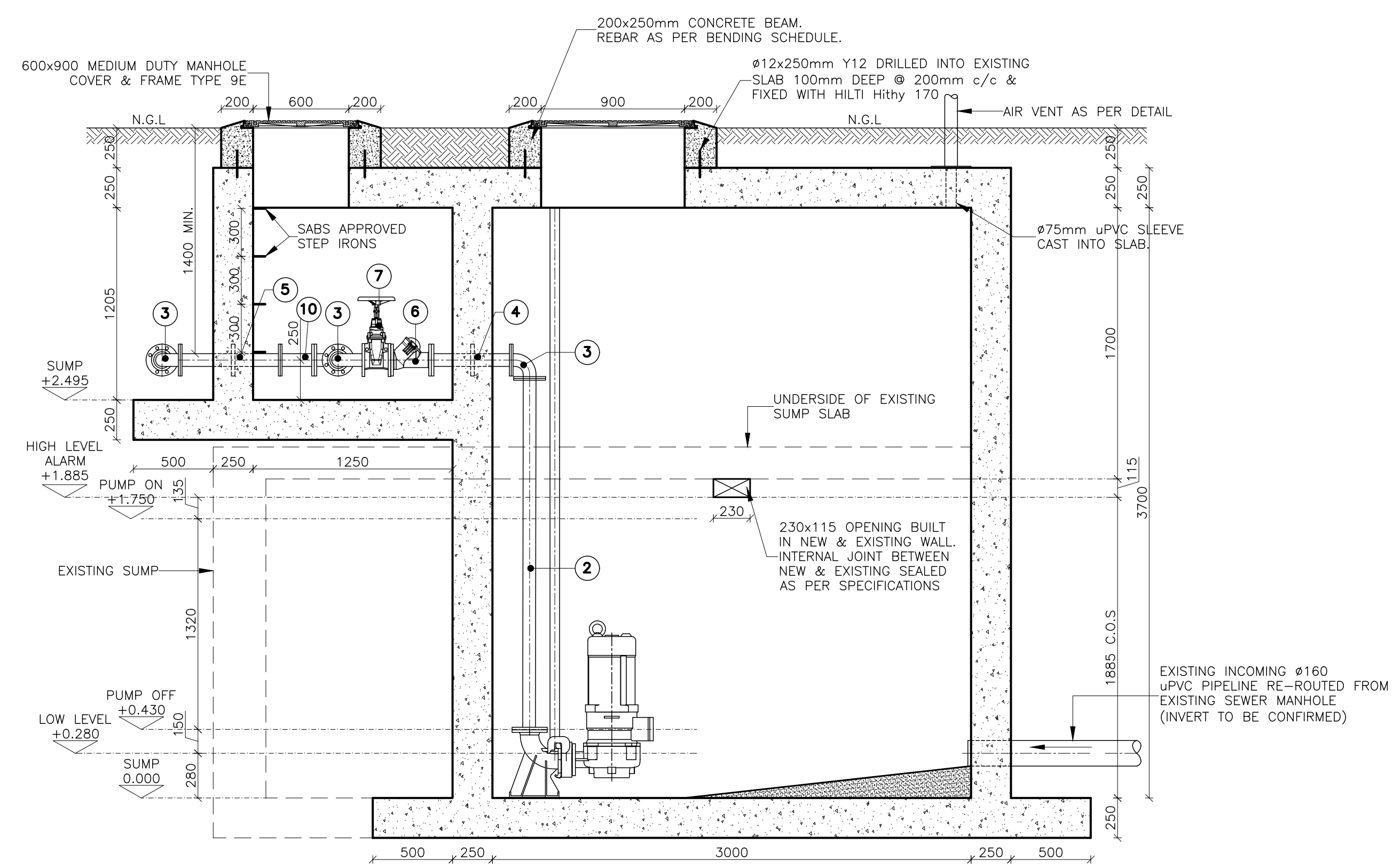
PLAN
PUMP STATION 1 - PS1
EKKHORING STREET
SCALE: 1 : 25



SECTION A-A
PUMP STATION 1 - PS1
SCALE: 1 : 25



PLAN
PUMP STATION 2 - PS2
PIENAR STREET
SCALE: 1 : 25



SECTION B-B
PUMP STATION 2 - PS2
SCALE: 1 : 25

Rev	DESCRIPTION	DATE	APP
A	ISSUE FOR INFORMATION	18-06-25	NA

Rev	DESCRIPTION	DATE	APP
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A	ISSUE FOR INFORMATION	18-06-25	NA

GENERAL NOTES:

1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK BEGINS IN HAND.

2. ALL MATERIALS AND WORKMANSHIP ARE TO BE IN ACCORDANCE WITH THE LATEST EDITION OF THE CANADIAN STANDARDS FOR CONCRETE AND THE STANDARDS REFERRED TO THEREIN.

3. CONCRETE

STRENGTH, MAX. AGGREGATE SIZE AND COVER:

CONCRETE

FOUNDATIONS: CLASS 30MPa/15mm 50mm

SLAB SURFACES: CLASS 30MPa/15mm 30mm

WALLS AND BEAMS: CLASS 30MPa/15mm 30mm

COLUMNS: CLASS 30MPa/15mm 40mm

4. FORMWORK AND VERTICAL CURING

FORMWORK SHALL BE USED TO CAST ALL CONCRETE (SANS 1200 C-03) UNDEFORMED SURFACES/WITHOUT SHOOTING.

5. UNWEATHERED, ALL OTHER FORMED SURFACES: ROUGH.

6. FORMWORK SHALL BE USED TO CAST ALL CONCRETE. FORMWORK TO BE DONE IN LAYERS NOT EXCEEDING 200mm.

7. FOUNDATIONS ARE DESIGNED FOR A MAXIMUM SOIL BEARING CAPACITY OF 120 kPa.

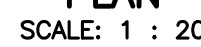
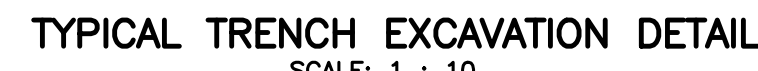
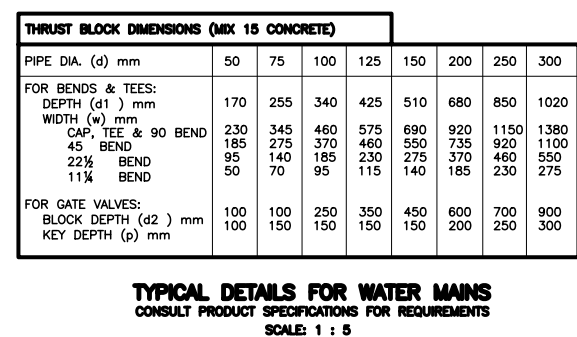
8. DESIGN OF ALL GARETS TO BE IN ACCORDANCE WITH SANS 1000, 0117, 0160, 0161, 0162, 0163 & 0164.

9. DO NOT EXCEED.

10. ENGINEER TO APPROVE REINFORCEMENT & EXCAVATIONS BEFORE ANY WORK BEGINS.

11. JOINTS IN BROWKROK WALLS AS PER REBAR SPECIFICATIONS & AS NOTED ON DRAWINGS.

PUMP STATION NOTES:



EXISTING SERVICES NOTES

1. THE EXISTING SERVICE POSITIONS SHOWN ON THIS PLAN HAVE BEEN OBTAINED FROM INFORMATION SUPPLIED BY THE VARIOUS SERVICE PROVIDERS AND SHOULD BE TREATED AS BEING DIAGRAMMATIC ONLY.
2. THE CONTRACTOR IS REQUIRED TO ESTABLISH THE EXACT POSITION AND DEPTH OF ALL AFFECTED SERVICES AND TO COMPARE THESE TO THE ENGINEER PRIOR TO CONSTRUCTION.
3. THE SERVICE POSITIONS MUST BE ESTABLISHED BY MEANS OF DAYLIGHTING. ONLY HAND EXCAVATION METHODS WILL BE PERMITTED.
4. ANY CUTTING MUST ONLY BE DONE AFTER PERMISSION HAS BEEN OBTAINED FROM, AND IN LIAISON WITH, THE RELEVANT SERVICE PROVIDER. ALL CONTACT DETAILS ARE PROVIDED IN THE CONTRACT DOCUMENT



APPENDIX 3

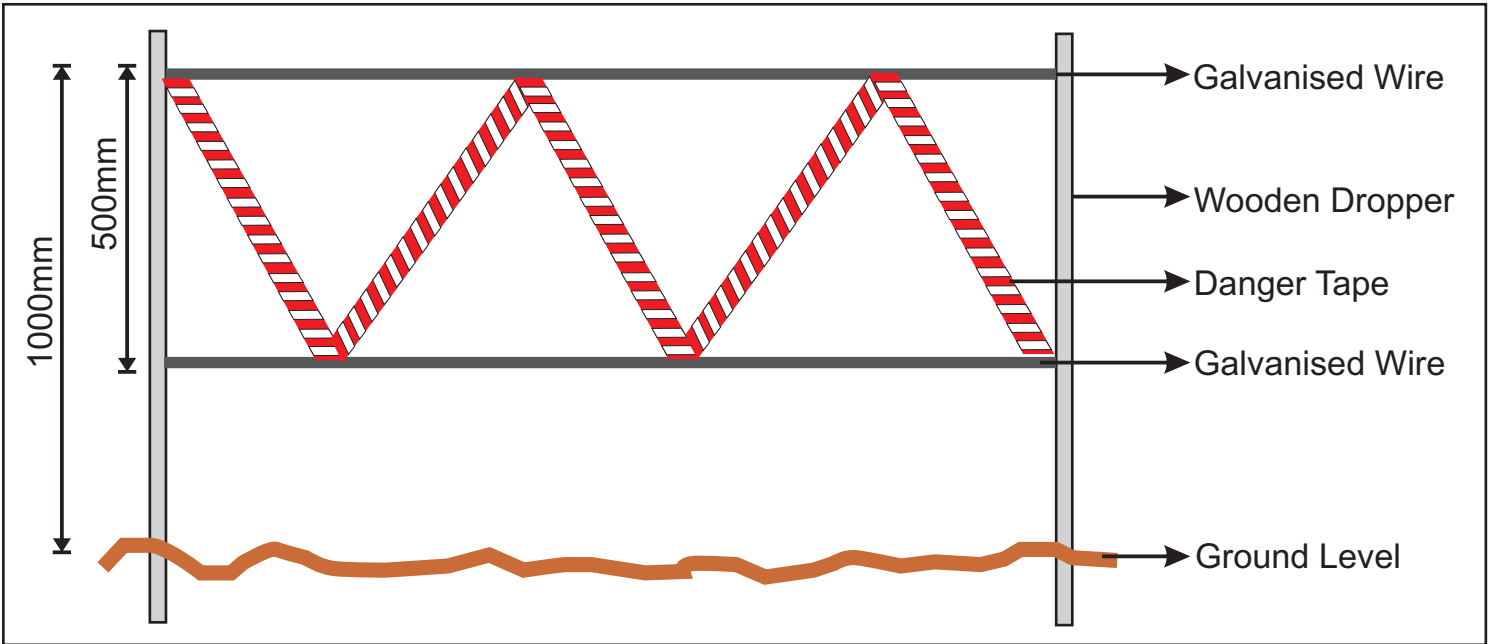


Plate A: Showing a cross section of a typical method of demarcation of no-go areas.

Where demarcation is required on a down slope, it can be more cost effective to include the required silt protection mechanisms on the same support structure as the demarcation. This is detailed in **Plate B** below and must be read in conjunction with the details on erosion control included in the previous diagram.

GENERAL CONSIDERATIONS FOR DEMARCATION OF NO GO AREAS

- The demarcation must include all areas that are going to be disturbed in the total construction (including all service lines)
- The no -go areas may not be accessed by any person (including lunch, tea breaks etc.). Without the explicit written permission from te ECO.
- Maximum fines will be issued for any non compliance with regards to the no go policy.

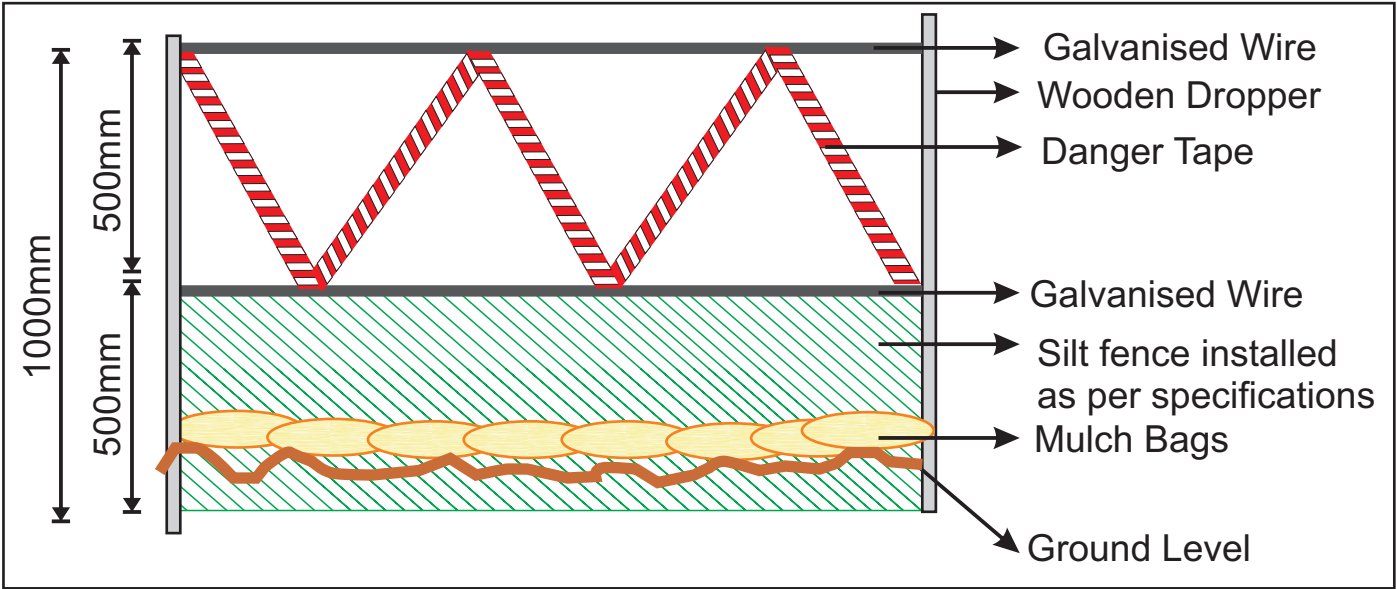
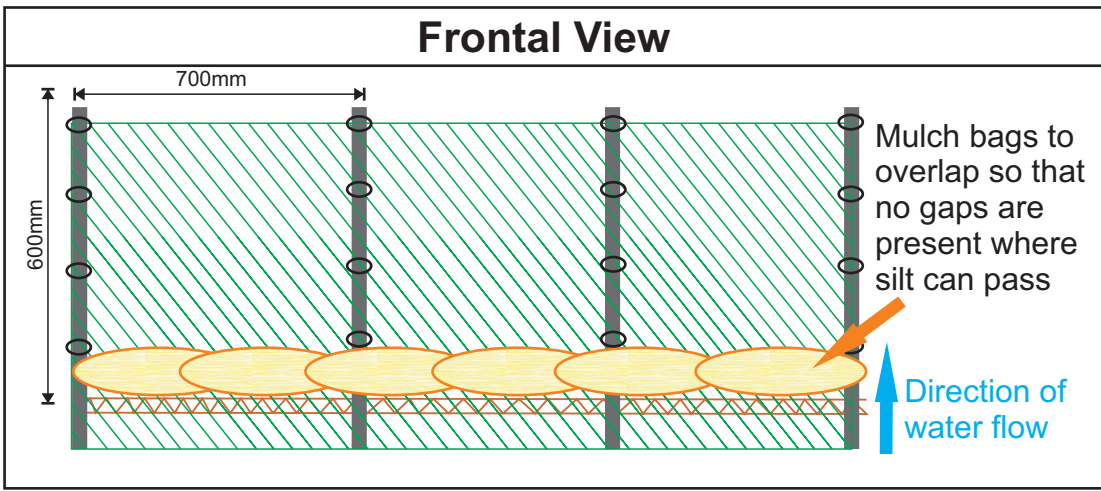


Figure 1: Demarcation of No - Go Areas During Construction





The purpose of a silt fence is to create a temporary barrier to maintain sediment on a construction site in order to prevent soil erosion and pollution through sediment and nutrient loading. Silt fences are designed to detain sediment from the disturbed construction area and also prevent sheet erosion by decreasing the velocity of the run off.

Technical Specifications

- Silt fence fabric to consist out of 50% shade cloth or a geotextile such as biddim (if biddim is used, it is not necessary to place mulch bags).
- Wooden droppers are suitable for the stakes. If the construction program takes place over an extended time frame it may be necessary to use treated droppers or metal stakes.
- The support stakes should not be placed further than 700mm apart on the down slope side of the fabric.
- The fabric should be secured to the stakes using galvanised wire ties not further than 200mm apart.
- The fabric anchorage trench should be at least 300mm deep.

Planning, Placing and Maintenance

- The silt fence is to be installed on all disturbed slopes where sheet erosion may take place.
- This type of silt fence is not suitable for areas where water is concentrated. i.e. gulleys and storm-water outlets.
- The silt fences should be along the contour lines
- The rows of silt fences should be bowed to prevent erosion and loss of silt on the ends of the fence line.
- Silt fences should be inspected weekly and before every forecast rainfall event. Any damage must be repaired immediately.
- Silt deposits should be cleared after each rainfall event. **CLEARED SILT MUST NOT BE PLACED DOWN SLOPE OF THE FENCE.**

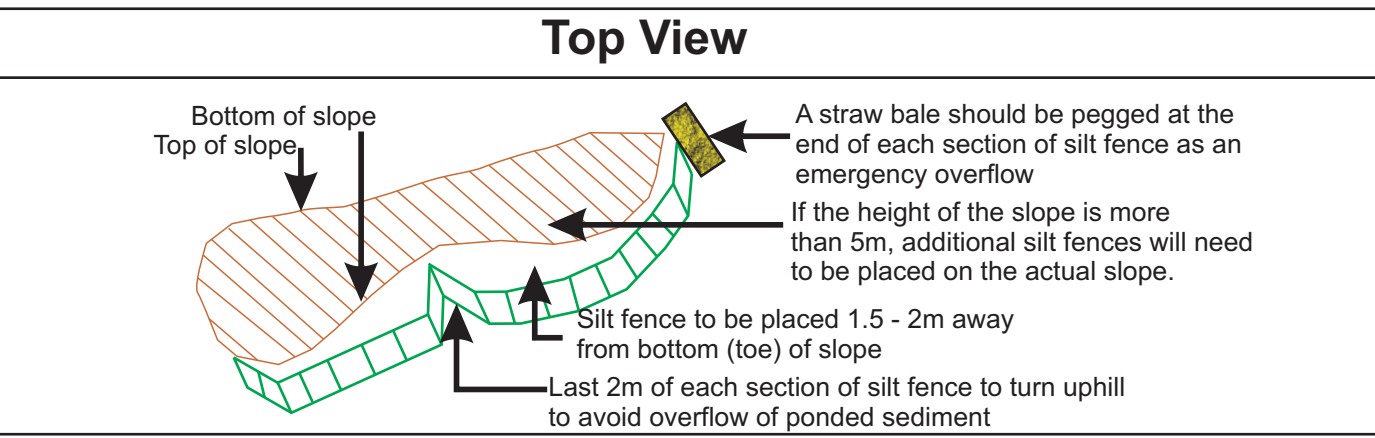
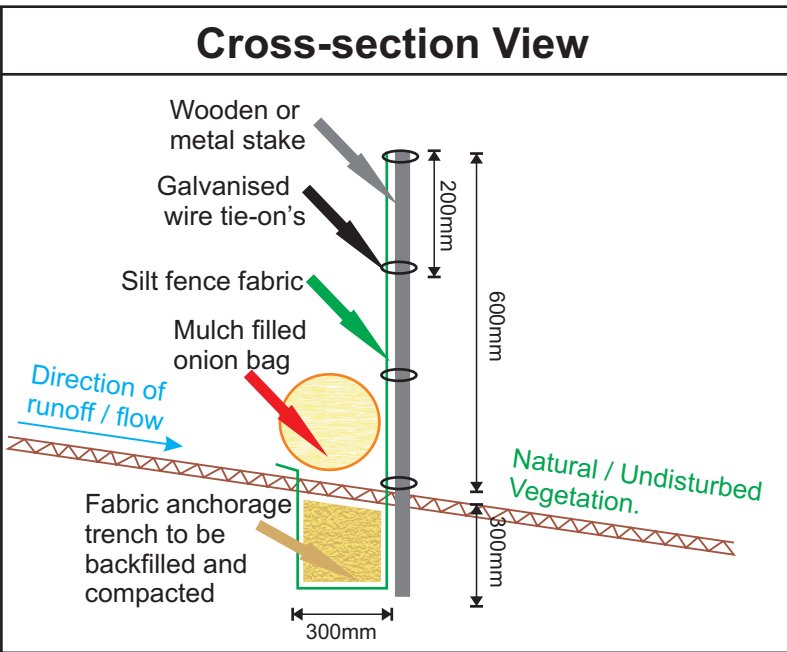
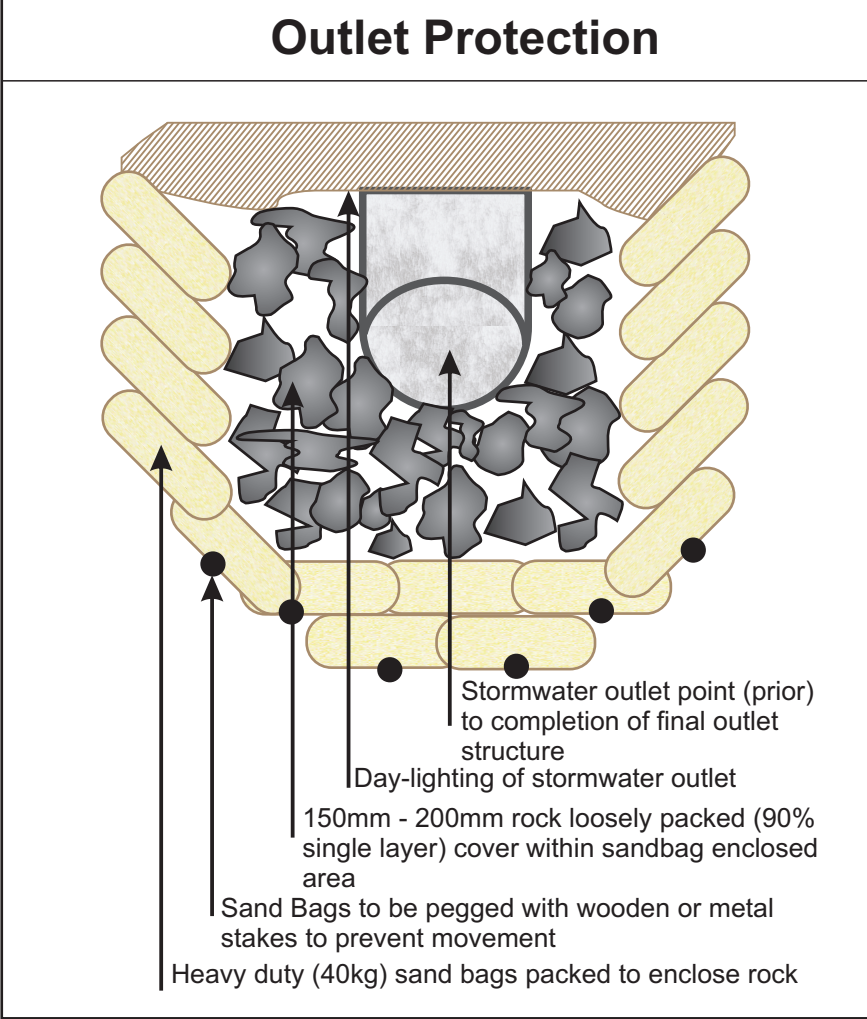
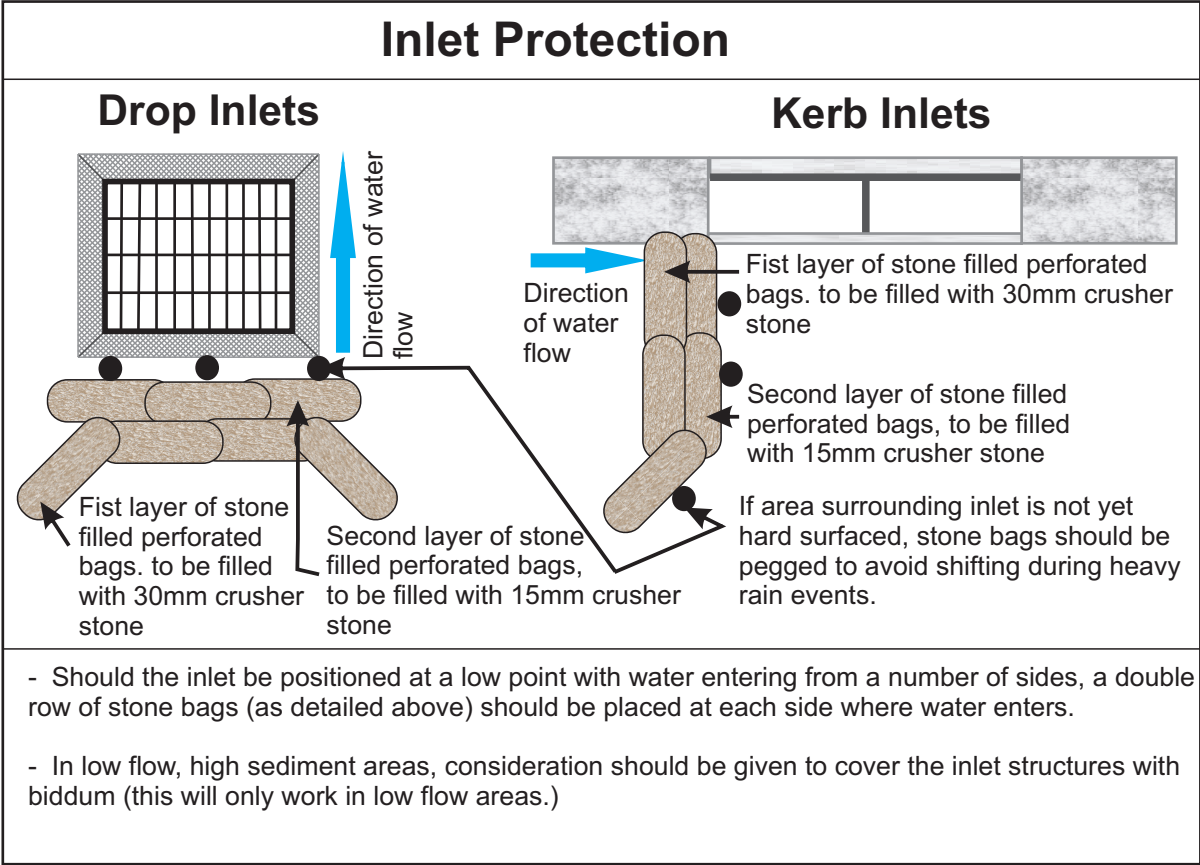


Figure 2: Specifications for Silt Fences



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- The methodology referred to above is effective as a temporary measure to be used during construction and is in no way intended to replace the permanent measures that must be installed. These permanent measures must be constructed as per the engineers specifications.
- Stormwater systems should ideally be constructed during low rainfall periods in order to allow for permanent protection measures to be put in place before the rainy season.
- Consideration should be given to encase the outlet structure with a geo-fabric such as biddum. This should first be clarified with the site engineer to ensure compatibility with the stormwater system.

Figure 3: Specifications for Temporary Stormwater Management During Construction



Key Environmental Considerations for Haul Roads

The most important environmental factor to be considered regarding access and haul roads, is the location thereof. Haul roads should be designed to make use of future permanent internal roads and access points.

The haul roads should never be construction in areas that will not be permanently transformed with the development. Nor should they be constructed in any sensitive area.

Another safety and environmental hazard caused by haul road surface is dust problems. Roads should be designed with enough fines to act as binders for the larger particles. However, an excess of fines will result in these particles being released to the atmosphere when repeated stress is applied by the equipment tires. All haul roads that do not have a “sealed” surface, will create dust. The dust problem is mainly dealt with by application of water.

Minimisation of Dust on Haul Roads

- Every effort to minimize dust pollution on the site must be undertaken.
- Construction vehicles must adhere to speed limits and minimization of haul roads must be implemented. During dry, dusty periods haul roads should be kept dampened to prevent excess dust.
- No potable water may be used for damping haul roads.
- As an alternative, products such as road environment dust suppressants (Reds) would be recommended in order to minimize the use of water for controlling dust pollution. This is to be determined by the ECO during construction as required.

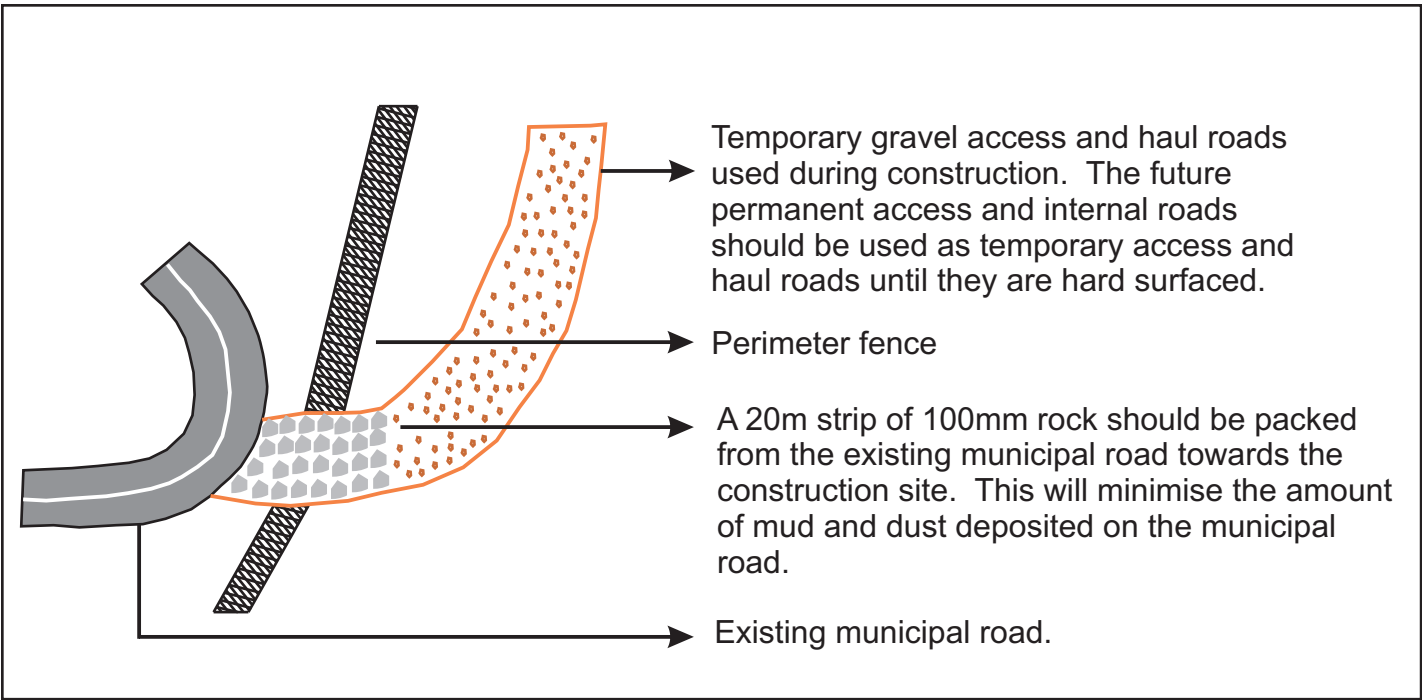


Figure 4: Management of Haul and Access Control During Construction



Cape Environmental Assessment
Practitioners (Pty) Ltd

APPENDIX 4

The Team

Doug Jeffery - Director

Doug Jeffery obtained a BSc with majors in Botany and Zoology at the University of Cape Town (UCT) and went on to obtain his MSc in Botany also at UCT. He has worked extensively in the Western-, Southern- and Eastern Cape both as a professional Botanist and co-ordinating EIA processes for over 20 years. He is registered with the South African Council for Natural Scientific Professions since 1990. He is also registered with the Environmental Assessment Practitioners Association of South Africa.

email: doug@dougjeff.co.za



Dale Holder

Senior Environmental Practitioner

Dale graduated from the Technicon Pretoria in 1999 with a National Diploma in Nature Conservation. He worked as a Socio-Ecologist for SANParks and as Project Manager for the Department of Marine and Coastal Management. He started working as an environmental practitioner in 2002. His focus is currently on Renewable Energy Infrastructure Assessment, but is also involved with assessments in various other industries.

Registered as a Professional Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA). (Reg. No. 2019/301)

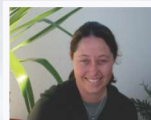
email: dale@cape-eaprac.co.za



Siân Holder - Consultant / ECO

Siân completed a National Diploma Nature Conservation (Pta Tech), B-tech Nature Con. (NMMU) and a Masters Degree in Environmental Education (Rhodes University). She joined our team in 2008. She worked as Environmental Assessment Practitioner for many years, but her current focus is on Environmental Control and Monitoring, Rehabilitation and Alien Invasive Management.

email: sian@cape-eaprac.co.za



Carin Naudé

Business Administrator

Carin obtained a BBA degree through UNISA. She gained extensive experience in business management and administration since 1988. She joined Cape EAPrac in June 2008 and is responsible for the day to day administrative functions of the business. Her acquired knowledge and leadership skills enables the rest of the team to function efficiently in their respective fields.

email: carin@cape-eaprac.co.za



Louise-Mari van Zyl

Director / Principal Environmental Practitioner

Louise-Mari van Zyl holds a Masters degree in Geography & Environmental Sciences from the University of Stellenbosch. She worked as an Environmental Assessment Practitioner (EAP) since 2002 on projects in the Eastern, Southern, Western & Northern Cape provinces. She is registered as an EAP with the Environmental Assessment Practitioners Association of South Africa.

email: louise@cape-eaprac.co.za



Mariska Byleveld

Candidate Environmental Practitioner

Mariska joined Cape EAPrac in April 2022. She completed her BSc in Geology in 2016, BSc Honours in 2017 and holds a MSc in Geology from the University of the Free State (2020). She worked as a Geologist for two years before joining our team. She is registered as a Candidate Environmental Practitioner.

email: mariska@cape-eaprac.co.za



Francois Byleveld

Candidate Environmental Practitioner

Francois graduated from the University of the Free State in 2020 with a MSc in Geology. After working in the petroleum industry, he joined our team in May 2023 to train as an Environmental Assessment Practitioner. He is registered as a Candidate EAP.

email: francois@cape-eaprac.co.za



On-Site ECOs



We have three full-time, on-site ECOs, working on PV Solar construction sites in the Northern Cape:

- ♦ Onke Nandipha - BSc in Environmental Sciences (2017) and a BSc Honours in Geography (2018) from Walter Sisulu University. He is registered as a Candidate EAP with EAPASA.
- ♦ Charmaine Mudau - BA in Geography and Environmental Management from the University of the Free State (2014) and a BSc Honours in Geography from UNISA (2020).

Their knowledge and understanding of environmental management make them a valuable asset on site.

email: onke@cape-eaprac.co.za &
charmaine@cape-eaprac.co.za

Louise-Mari van Zyl

2023



17 Progress Street, George
PO Box 2070, George, 6530
Tel- 044 8740365
Cell – 071 603 4132
Fax – 044 875 0432
louise@cape-eaprac.co.za
www.cape-eaprac.co.za

EDUCATION

University of Stellenbosch

Masters: Geography & Environmental Studies
2006

BA Honours: Geography & Environmental Studies with GIS
2001

BA Geography & Environmental Studies
2000

PROFESSIONAL REGISTRATION

Registered Environmental Assessment Practitioner (EAP) with the
Environmental Assessment Practitioners Association of South Africa
(EAPASA) – Reg. No: 2019/1444

PROFESSIONAL SOCIETIES

Member of International Association of Impact Assessments South
Africa (IAIAsa)

WORK EXPERIENCE

Managing Director | Cape EAPrac, George

2008 – Present

Temporary Lecturer: Environmental Management | Nelson Mandela University, George campus

2019 – Present

Senior Environmental Consultant & Public Participation Facilitator | Doug Jeffery Environmental Consultants, Paarl

2007 - 2008

Senior Environmental Consultant & Public Participation Facilitator | Hilland Associates, George

2002 – 2007

CORE COMPETENCIES

Practicing as an EAP since 2002 I have gained experience with a variety of projects working in the **Eastern Cape, Western Cape, Kwazulu Natal, Gauteng and Northern Cape Provinces**.

My work requires of me to be acquainted with relevant local and international conservation / environmental, as well as planning management policies and legislation, least of which are the National Environmental Management Act, National Environmental Management Waste Act, National Environmental Management Air Quality Act, National Environmental Management Biodiversity Act, Integrated Coastal Management Act, Protected Areas Act, Outeniqua Sensitive Coastal Areas Regulations, the 2014 Environmental Regulations, National Water Act, National Heritage Resources Act and numerous conservation related regulations and guidelines that form the basis of environmental management.

In addition to being the senior EAP on various applications, I am also responsible for overseeing applications handled by all of *Cape EAPrac's* staff, as well as the review of reports prior to submission for consideration by the competent authorities.

Management of and liaison with a variety of specialists, Clients, Organs of State and Authorities form a large component of my daily responsibilities in the form of project management to ensure quality and time/cost management.

It is my responsibility to ensure training and orientation of all incoming staff at *Cape EAPrac*.

As temporary lecturer at the NMU George campus I lecture Environmental Management I (Nature Conservation). In addition to facilitating classes, I am responsible for compiling, as well as marking, of all tests, summary assessments, exam papers and tutorials. Integrating field work and practicals with students, as part of my permanent occupation as an environmental assessment practitioner, creates opportunities for practical experience for the students in environmental management.

PROFFESIONAL PORTFOLIO

ENVIRONMENTAL IMPACT ASSESSMENT, BASIC ASSESSMENT & EMP'S

- **Infrastructure:** Overhead transmission lines with associated substations (standalone or associated with renewable energy projects), construction and expansion of roads, flood damage road rehabilitation, stormwater retention facilities, sewage works, potable water supply networks.
- **Human Settlements:** Facilitate various scale residential developments with associated infrastructure. Environmental expert on the Eden PRT project team from 2012 (ongoing) facilitating various scale subsidised housing projects (upgrades and green fields) for Knysna Municipality, Oudtshoorn Municipality, George Municipality and Mossel Bay Municipality.
- **Renewable Energy:** Facilitating various applications for Wind Farms, Solar Farms, Biogas Waste-to-Energy and Composting applications.
- **Agricultural:** Applications for the construction and expansion of abattoirs of various scales, feedlots, piggeries and orchard establishments.
- **Integrated environmental management:** Environmental management and maintenance plans, environmental monitoring & control functions, environmental auditing.

WASTE MANAGEMENT LICENCES

- **Waste Management Licenses:** Facilitating applications for feedlots, dairy's, waste water discharge for the handling/treatment and disposal;
- **Applications for** composting and anaerobic biogas waste-to-energy projects with organic material at dairies, feedlots, abattoirs and fruit juice factories.

WATER RELATED

- **Desalination:** Application for 1.5Mgl beach intake desalination plant for Knysna Municipality and 300kl reverse osmosis desalination plant at Witsand. Including impact assessment, construction monitoring as well as operational and maintenance control functions since installation.
- **Dams:** Various applications for the construction of new storage dams and reservoirs for Municipal water supply and agricultural irrigation practices.
- **Water supply and storage infrastructure:** Installation of gabions, pipelines and reservoirs for water storage.

AIR EMISSION LICENSES

- **Air Emission Licenses:** Facilitating applications for sawmills, wood drying facilities, tanneries, brick manufacturing (clamp & vertical shaft kilns), asphalt manufacturing (macadam processes), rendering plants, coal dust fallout management, bitumen emulsion, creosote processes, as well as renewal of existing licenses and conversion of old APPA permits..

SECTION 24G RECTIFICATION APPLICATIONS

- **S24G processes:** Facilitating rectification assessment processes for listed activities that commenced unlawfully ito NEMA, NEMWA and NEMAQA (ranging from roads, storm water infrastructure, vegetation clearing, construction activities, air emission generation activities, waste management activities, wetland/riparian disturbances, dams).

ACADEMIA

- **Part-time lecturer** at the Nelson Mandela University (George Campus) teaching Environmental Management.

OTHER

- **Coastal Discharge permits:** Applications for various existing commercial factories in the Mossel Bay Harbour and Witsand Desalination Plan ito the Integrated Coastal Management Act (ICMA) for discharge of their effluent.
- **Environmental Control & Management:** (ECO) Management of construction activities to ensure compliance with environmental approvals and environmental management plans.
- **Rehabilitation:** Rehabilitation plans for disturbed areas and rivers/riparian areas.
- **Norms & Standards:** Assisting the South African National Biogas Industry Association (SABIA) and GIZ with the development of the **Norms & Standards for Organic Waste** in South Africa; as well as
- Assistance to the **National Red Meat & Abattoir Association (RMAA)** with formulating Norms & Standards for Red Meat Abattoir waste, focusing specifically on anaerobic digestion through biogas, composting, alkaline hydrolysis and micro-rendering.
- **Environmental awareness & training:** Induction of contractor teams and labourers associated with alien clearing projects, rehabilitation projects, construction projects, as well as school groups for site inspection and environmental awareness outings.

Mariska Byleveld

May 2023



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EDUCATION

Jim Fouché High School

Matric 2013

University of the Free State

MSc Geology 2018 - 2020

BSc Honours Geology 2017

BSc Geology 2014 - 2016

PROFESSIONAL REGISTRATION

Candidate Environmental Assessment Practitioner (EAP) with the Environmental Assessment Practitioners Association of South Africa (EAPASA)

Reg. No: 2023/6593

Registered Scientist at SACNASP (Candidate Natural Scientist)

WORK EXPERIENCE

Candidate Environmental Assessment Practitioner (EAP) | Cape EAPrac

January 2023 - Present

Project Assistant | Cape EAPrac

April 2022 – December 2022

Junior Geologist | EVS Civil Services

July 2020 – February 2022 (fixed term contract)

Student Assistant | University of the Free State

2016 - 2019

CORE COMPETANCIES

Renewable Energy Infrastructure Assessment, Public Participation & Stakeholder Engagement, GIS & Mapping, Biophysical Inventories, Retrospective Damage Assessment, Air Quality License Applications, Waste Management License Applications, Environmental Impact Assessments, Environmental Management Policies and Plans, Environmental Control, Monitoring and Auditing, Environmental Awareness and Training Programs, Environmental Education and Interpretation and Environmental Feasibility Assessments.

PROFESSIONAL PORTFOLIO

ENVIRONMENTAL IMPACT ASSESSMENTS, BASIC ASSESSMENTS & EMPs

As part of her training to become a registered EAP, Mariska is taking responsibility for various applications for environmental authorisation.

ENVIRONMENTAL CONTROL & MANAGEMENT (ECO)

Acting, under supervision, she acts as Environmental Control Officer during the construction of various residential, retail and services development projects and associated infrastructure.

OTHER:

- Geotechnical Investigation
- DCP (Dynamic Cone Penetrometer) testing
- Troxler Nuclear Gauge testing
- Laboratory Management

APPENDIX 5

Coastal 10m Buffer (Bitou Street Conservancy Tank Upgrade)

The aquatic specialist recommends that, during the conversion of the Bitou Street Conservancy Tank into a pump station, a 10 m buffer zone be maintained from the southern edge of Erf 554. This buffer must function as a designated no-go area, prohibiting any construction activities or the placement of materials within its extent.



Farm Searles No. 252

The specialist has divided the Farm Searles No. 252 section into two sensitivity zones:

- Section A – Railway Corridor Zone: Dense thicket vegetation and steep slopes, rated as highly sensitive (Figure 1 – Red Polygon).
- Section B – Morrison Road Corridor Zone: Transformed or partially disturbed vegetation, rated as moderate to low sensitivity (Figure 1 – Green Polygon).

The three alternatives through Farm Searles No. 252 are:

- Option 01: Pipe cracking within either Railway Corridor Zone or Morrison Road Corridor Zone (Section A or Section B).
- Option 02: Standard trenching within Morrison Road Corridor Zone (Section B).
- Option 03: Standard trenching within Railway Corridor Zone (Section A).



Figure 1: Sensitivity Corridor Zones across Farm Searles No. 252. RED Polygon: Section A (Railway Corridor Zone. GREEN Polygon: Section B (Morrison Road Corridor).