

ENVIRONMENTAL MANAGEMENT PROGRAMME

THE PROPOSED 15 ON HECTOR AFFORDABLE HOUSING DEVELOPMENT ON ERF 6482

LOTUS RIVER, CAPE TOWN

DEA&DP NOI REFERENCE NUMBER:

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NOTE:

This is the Environmental Management Programme (EMPr) submitted with the Pre-Application Basic Assessment Report (BAR).

This EMPr should be updated to:

- Incorporate conditions and specifications imposed by the Department of Environmental Affairs and Development Planning if Environmental Authorisation is granted;
- Reflect the final approved plans / detail design;
- Reflect the final approved stormwater management plan; and
- Incorporate conditions and specifications imposed by the Local Authorities as part of the Town Planning exercise, if applicable.

Such updates must occur without the need for a formal approval process and must be undertaken by a qualified and registered Environmental Assessment Practitioner (EAP).

This EMPr must be incorporated into all tender and contract documentation.

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ABBREVIATIONS AND ACRONYMS

For the purposes of this document the following acronyms shall apply:

CBA Critical Biodiversity Area

CCT City of Cape Town

CCT: ERM	City of Cape Town: Environmental Resource Management
CEMP	Construction Environmental Management Programme
CFSF	Cape Flats Sand Fynbos
CLO	Community Liaison Officer
ECO	Environmental Control Officer
EO	Environmental Officer
ESA	Ecological Support Areas
H&S	Health and Safety
HPOZ	Heritage Protection Overlay Zone
HWC	Heritage Western Cape
MSDS	Material Safety Data Sheets
NEMA	National Environmental Management Act 107 of 1998
NEM:AQA	National Environmental Management: Air Quality Act 39 of 2004
NEM:WA	National Environmental Management: Waste Act 59 of 2008
NHRA	National Heritage Resources Act 25 of 1999
NWA	National Water Act 36 of 1998
NEMBA	National Environmental Management: Biodiversity Act 10 of 2004
OHSA	Occupational Health and Safety Act 85 of 1993
WCNR	Western Cape Noise Control Regulations

DEFINITIONS

For the purposes of this document the following definitions shall apply:

Affected Environment:

Those parts of the socio-economic and biophysical environment impacted on by the development.

Bund:

Enclosure under / around a storage facility to contain any spillage.

Batch plant:

Site for the large-scale mixing and production of concrete or plaster, and associated equipment and materials.

Contractor:

The principal persons /company undertaking the construction of the development.

- The main contractor as engaged by the developer;
- Selected subcontractors; and
- Any other contractor from time to time engaged by the developer directly in connection with the construction part of the works.

Contaminated water:

Means water contaminated by the contractor's activities, e.g. concrete water and runoff from plant/personnel wash areas.

Construction camp:

Means the area designated for all temporary site offices, storage sheds and areas, parking areas, maintenance workshops, staff welfare facilities, accommodation, etc.

Construction Environmental Management Programme (EMPr):

The construction phase Environmental Management Programme, containing the environmental specifications for civil and building works, also forming part of the civils and building contract documentation.

Engineer:

A person representing the developer on site and who is responsible for the technical and contractual implementation of the works to be undertaken. This is usually the engineer, but may be any other person, such as an architect or project manager, authorised by the developer to fulfil this role.

Environment:

Means the surroundings within which humans exist and that are made up of the land, water and atmosphere of the earth:

- micro-organisms, plant and animal life;
- any part or combination of the above and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Education Programme:

An environmental education course for the contractor's management staff and labour force, which informs them of the requirements of the EMPr. The ECO will present and co-ordinate courses.

Environmental Control Officer (ECO):

The individual or company appointed by the developer to ensure the implementation of the EMPr and suitable environmental management practices on site for the duration of the construction phase of the project.

Environmental Impact Assessment (EIA):

A process of collecting, analysing, interpreting and communicating data as it pertains to possible impacts (positive and negative) upon the environment due to a development.

Environmental Officer (EO):

The person appointed by the Contractor to ensure implementation of the EMPr on site.

Heritage Western Cape (HWC):

The statutory provincial body responsible for heritage resource management, in the Western Cape.

Method Statement:

A written submission by the contractor to the engineer and ECO in response to the specifications or a request by the engineer, setting out the plant, materials, labour and method the contractor proposes using to carry out an activity, identified by the relevant specification or the engineer when requesting the Method Statement, in such detail that the engineer is enabled to assess whether the contractor's proposal is in accordance with the specifications and/or will produce results in accordance with the specifications.

The Method Statement shall cover applicable details with regard to:

- construction procedures,
- materials and plant to be used,
- getting the plant to and from site,
- how the plant/ material will be moved while on site,
- how and where material will be stored,
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur,
- timing and location of activities,
- compliance/ non-compliance with the specifications,
- any other information deemed necessary by the engineer.

Mitigation:

The implementation of practical measures to reduce adverse impacts

No Go Areas:

Areas identified as being environmentally sensitive in some manner and delineated on plan, and on the site with pegs or fencing and which are out of bounds to unauthorised persons. Authorisation must be obtained prior to entry.

Potentially hazardous substance:

Is a substance, which, in the reasonable opinion of the engineer, can have a deleterious effect on the environment.

Reasonable:

Means, unless the context indicates otherwise, reasonable in the opinion of the engineer after he has consulted with a person, not an employee of the Employer, suitably experienced in "environmental implementation plans" and "environmental management plans" (both as defined in the National Environmental Management Act (No. 107 of 1998)).

Site:

The boundary and extent of development works and infrastructure, including any areas off the main site on which works are to be carried out in order to allow the development to proceed successfully.

Solid waste:

Means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

Specification:

A technical description of the standards of materials and workmanship that the contractor is to use in the works to be executed, the performance of the works when completed and the manner in which payment is to be made.

Top material:

This refers to any surface material in the construction area, whether it is soil, fine material or stones including vegetation.

Topsoil:

Means the top 100mm of soil and may include vegetation and rocks.

Works:

The construction operations and all related and incidental works, such as site works, earthworks, installation of services, rehabilitation etc., in connection with the execution and carrying to completion of the development.

1. INTRODUCTION

1.1 BACKGROUND

The Western Cape Department of Infrastructure (DoI) intends to develop a ~5 ha housing development ('the project') is proposed on Erf 6482, Lotus River, Cape Town ('the site' – see Figure 1. The site bordered by Edward Avenue to the north, public open space to the west and a road reserve to the south. Marius road borders the eastern boundary of the site and the M17 (Strandfontein Road) is located a further ~350 m east of the site, beyond which is the Philippi Horticultural Area.

The project, 15 on Hector Housing Development, is intended to provide government subsidised housing to qualifying beneficiaries and forms part of the greater Retreat initiative. Access to affordable housing opportunities created through this project will be managed in line with applicable legislative frameworks and processes. Visit the dedicated project webpage for related and updated project information¹.



Figure 1: Locality map

¹ <https://www.westerncape.gov.za/infrastructure/15-hector-erf6482-lotus-river>

Details of the landowner's representative are specified in Table 1 below.

Table 1: Landowner details

Landowner Details	
Full Name	Western Cape Department of Infrastructure
Contact Representative Details	
Full Name	Amozelle Lambrechts (Senior Project Leader)
Physical Address	4 th Floor, 9 Dorp Street, Cape Town City Centre
Email	Amozelle.lambrechts@westerncape.gov.za

1.2 PROJECT DESCRIPTION

The project, 15 on Hector Housing Development, will consist of affordable housing, including Breaking New Ground (BNG)² and (possibly) First Home Finance (FHF)³ housing units⁴. Approximately 318 housing units are proposed, ~80% of which will be two-storey walk-up units, and ~20% of which will be single-storey units (designed to support diverse household structures, including those requiring improved accessibility). Each unit will be located on erven ranging from ~75 m² to ~95 m². Two-storey units will be ~45 m² and single-storey units will be ~40 m² in size.

In addition, the following infrastructure is proposed as part of the development:

- A network of internal roads;
- Community facilities;
- Stormwater infrastructure;
- Public open space and soft landscaping (using indigenous plant species); and
- Services infrastructure.

1.2.1 Internal Roads

The internal road network will provide access to all housing units via two primary access points: one on the northern boundary (Edward Avenue) and one on the eastern boundary (Hector Avenue). While both access points will accommodate two-way movement, the northern entrance will primarily serve the double-storey walk-up units, and the eastern entrance will primarily serve the single-storey units.

Road widths will range between 8 m and 10 m, in line with City standards, ensuring accessibility for service and emergency vehicles, including refuse collection. Adequate space will be ensured for refuse collection vehicles to perform turning shunts, if required.

The design incorporates sidewalks and verges to facilitate safe pedestrian circulation and on-street parking, with unit placement on erven configured to allow on-site parking where appropriate. The layout further supports non-motorised transport (NMT) integration, reinforcing the development's walkable neighbourhood character.

² An affordable housing intervention recognised under South Africa's BNG policy (Department of Human Settlements, 2004).

³ A government housing support programme designed to help lower to middle income households buy/build their first homes.

⁴ The type of affordable housing will be confirmed during the project implementation stage with guidance by market interest.

1.2.2 Community Facilities

The project will deliver community-serving facilities to support social well-being, including:

- A ~498 m² flexible community facility/place of worship/Early Childhood Development (ECD) centre, located near the northern boundary to ensure visibility and accessibility;
- Land use rights for the provision for small-scale local services to meet daily neighbourhood needs.

1.2.3 Stormwater Infrastructure

Four retention ponds and bio-retention swales are proposed to manage stormwater runoff. They are proposed to be constructed around the residential units within the site – three on the eastern side and one on the southern side.

1.2.4 Public Open Space and Landscaping

Approximately 10 075 m² of combined public open space will be provided, concentrated near the northern boundary (opposite community facility/ place of worship) and, along the southern and western edges of the site to function both as recreational amenity and ecological buffer. The space will be landscaped with indigenous plant species to promote biodiversity, provide informal play opportunities, and strengthen the environmental character of the development.

1.2.5 Service Infrastructure

Service infrastructure including a range of overhead and underground services (electrical, water, sewage, stormwater, telecommunication etc) will be installed or connected within the site boundary and will connect to the local municipal service infrastructure. Four distribution substations will be constructed, one:

- Along the northern boundary of the access road off Hector Avenue;
- On the southern boundary of the southernmost road abutting the retention pond/swale south of the housing units);
- In the western portion of the site, extending into the public open space; and
- South of the public open space opposite the community facility/place of worship, adjacent to a two-storey housing unit.

1.2.6 Development Phasing

The project will be developed in three phases:

- Phase 1 which will include construction of:
 - Approximately 136 two-storey and ~15 single-storey units (~151 housing units in total) in the western portion of the site;
 - Community facilities;
 - The pocket park;
 - Utility services;
 - The stormwater infrastructure; and
 - Key internal and access roads.

- Phase 2 which will include construction of:
 - Approximately 111 two-storey units and ~20 single-storey units (~131 housing units in total);
 - Utility services; and
 - Key internal and access roads.
- Phase 3 which will include construction of:
 - Approximately eight two-storey units and ~28 single-storey units (36 housing units in total);
 - Utility services; and
 - Key internal and access roads.

1.3 AFFECTED ENVIRONMENT

1.3.1 Groundwater

The site is underlain by the Cape Flats Aquifer, which presents a high yielding potential and good water quality. Localised contamination of the aquifer is likely due to the highly permeable nature of the aquifer's geology and the shallow water table. Although the aquifer is considered to have a very high vulnerability to point source contamination, the project is assessed to have a low impact on groundwater if the mitigation measures specified by the specialist are adhered to. Depth to groundwater at the site is 4.91 meters below ground level (mbgl).

1.3.2 Surface Water

Extensive seasonal wetlands in good conditions are located just outside the southern boundary of the site (see Figure 2). These wetlands are seasonally saturated to inundated depressions and support various threatened indigenous wetland plants and animal species. Patches of seasonally saturated wetlands are located just outside the western boundary of the site. The Big Lotus River⁵ flows further west of these wetlands.



Figure 2: Seasonal wetlands south of the site (beyond the site boundaries) (Liz Day Consulting, 2025)

⁵ The Big Lotus River is concrete and canalised in these reaches, enabling the river to contain big floods (Liz Day Consulting, 2025).



Figure 3: Wetlands at the site (Liz Day Consulting, 2025)

Large areas of seasonally inundated and saturated wetlands are present within the site (although much of the site has been infilled). Some of the seasonally inundated wetlands have been excavated, forming artificial depressions and presenting poor water quality.

The project will be developed over all the wetlands at the site, but includes adequate provision of infrastructure to manage stormwater runoff. The layout will include a minimum 20 m setback buffer from the wetland outside of the southern boundary of the site, ensuring that no hard infrastructure will be located within 20 m of this wetland. Portions of the buffered area will be used for development of swales. Two swales and a detention pond will be constructed in the open area in the western portion of the site.

1.3.3 Biodiversity

The site is located within the Table Mountain Strategic Water Source Area (SWSA)⁶. The Table Mountain SWSA is regarded as a very broad scale spatial data feature that is not deemed significant in this case given that the site is located in an urbanised area.

The site falls within a region which historically (but no longer) comprised critically endangered Cape Flats Sand Fynbos vegetation. The site currently is regarded as a transformed environment comprising almost exclusively of exotic species. No species of conservation concern are present at the site, as confirmed by a ground truthing exercise conducted by a terrestrial biodiversity specialist.

Eleven trees (including *Schinus terebinthifolius* Brazilian pepper trees, *Platanus x acerfolia* London plane trees, *Cypress conifer* tree and *Syzygium cordatum* water berry tree) were identified at the site, all of which are located around the old school buildings in the southeastern portion of the site.

⁶ SWSAs refer to the 10% of South Africa's land area that provides a disproportionate 50% of the country's water runoff (Lötter, 2021).

No sensitive areas delineated in terms of the Western Cape Biodiversity Spatial Plan and the City of Cape Town (CoCT) Biodiversity Spatial Plan (e.g., Critical Biodiversity Areas, Ecological Support Areas or any other designated conservation areas) are located at the site.

1.3.4 Socio-Economic

The site is located in Ward 66, Sub-council 18 within the suburb of Lotus River. On its own, Lotus River constitutes a sub-place⁷. Key socio-economic statistics are summarised below:

- Lotus River has a population of 38 143, making up 8 895 households with an average size of 4.29 people per household;
- The largest segment of the population is coloured (~93%);
- There are marginally more females (51.8% of the population) than males (48.2% of the population) living in Lotus River;
- Almost half of the population (49%) is made up of 25 to 64 year olds;
- Most of the working age population⁸ is employed (~80%), and the overall unemployment rate is 19.53%, and the labour absorption rate⁹ is 49.92%;
- Approximately 40% of households have a monthly income of R 3 200 or less;
- Approximately 20% of households have a monthly income ranging from R 3 201 to R 6 400, and ~18% of households have an income ranging from R 6 401 to R 12 800. Approximately 8.5% of households have no income;
- Almost all (~96%) of households reside in formal dwellings;
- Most households (~40%) reside in rented dwellings. Only 30% of households reside in dwellings that they own and is fully paid off. Approximately 25% of households reside in dwellings that they own but have not yet paid off;
- Almost all (~99%) of households have access to piped water;
- Approximately 97% of households have access to a flush toilet connected to the public sewer system and more than 99% of households have their refuse removed at least once per week;
- Almost all (99%) of households use electricity for lighting in their dwelling;
- Approximately 90% of households use electricity for cooking (9.1% use gas); and
- Approximately 74% of households use electricity for heating (~22% do not use energy for heating).

1.4 SCOPE OF ENVIRONMENTAL MANAGEMENT PROGRAMME

Table 2 summarises the contents of each section of this EMPr.

⁷ A smaller geographic area that forms part of a larger region (i.e., Lotus River is a sub-place of the bigger allotment of Grassy Park).

⁸ According to Statistics South Africa, the working age population ranges from 15 to 64 years old.

⁹ Proportion of the working age population that is employed.

Table 2: Components of the EMPr

Section	Content
1: Introduction	Provides background information regarding the site, the proposed development and the EMPr.
2: Implementation of the EMPr	Provides details of the communication and organisational structures within which the EMPr will be implemented, responsibilities of key role players, and provides the terms of reference for the ECO.
3: Environmental Management Specifications for Construction Phase	Provides all construction phase environmental management requirements applicable to the principal construction contractor, and their subcontractors.
4: Environmental Management Specifications for Post Development	Provides all operational phase environmental management requirements applicable to the proposed development.

2. IMPLEMENTATION OF THE EMPR DURING THE CONSTRUCTION PHASE

2.1 INTRODUCTION

This document describes mitigation measures, identifying specific people or organisations to undertake specific tasks to ensure that impacts on the environment are minimised during the construction phase of this project. The EMPr is applicable to all works comprising the project. It is an open-ended document implying that information gained during construction activities and/or monitoring of procedures on site could lead to changes in the EMPr.

The appointed Environmental Control Officer (ECO) will monitor compliance with the EMPr, and other Conditions of Approval contained in the Environmental Authorisation (EA) issued by the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP), as they relate to environmental matters. This EMPr gives direction and guidance to all responsible parties. The responsible parties are expected to co-operate closely to minimise or avoid unnecessary environmental impacts.

Non-compliance penalties are described in this EMPr and are thus to be included into the official contract documentation. The contractor is obliged to inform the ECO immediately of events that may cause serious environmental damage or breach the requirements of the EMPr. The ECO in turn will immediately inform the Engineer and Developer and, if necessary, the environmental authorities, of such events.

2.2 ROLES AND RESPONSIBILITIES

The key role-players during the construction phase of the project, for the purposes of environmental management on site, include but are not limited to the Applicant (Developer), the Engineer, the Principal Contractors (direct appointments including civil works contractor, building contractor, landscape contractor etc.), the ECP and representatives of the relevant Authority(ies).

Details of the responsibilities of each of the key role-players have been provided in Sections 2.2.1 to 2.2.4.

2.2.1 The Applicant / Developer

With respect to the construction phase (i.e., the duration of the construction works), the typical responsibilities of the Applicant/Proponent/Holder of the EA would fall to the Developer where the Developer would not be the Applicant/Proponent/Holder of the EA (i.e., in a case where the Applicant sells certain portions of the proposed development to a third-party Developer for development/construction). It is still the responsibility of the Applicant to clearly communicate all requirements of this EMPr to any and all Developers and land users involved in the proposal and the Applicant as the Holder of the EA is responsible for ensuring the implementation of conditions of authorisation overall. The EMPr should be included in all contracts and tender documents.

In addition, prior to handing over to the Developer (for any aspects of the proposal where the Applicant would not necessarily be the Developer), the Applicant must:

- Ensure that the Developer(s) have a complete understanding of the requirements of this EMPr and that the Developer signs the declaration of understanding in the EMPr;

- Ensure that all relevant approvals and permits have been obtained prior to the start of construction activities on site;
- Ensure that the EMPr has been approved by DEA&DP prior to the start of construction activities on site;
- Ensure that DEA&DP have been notified of the date on which construction activities will be starting, one week prior to commencement of the activity (or as per the requirement of the EA);
- Ensure that construction activities start prior to the expiration date of the EA, failing which the approval of the development by the department would lapse unless an extension is applied for;
- Appoint a suitably qualified or experienced ECO prior to the start of construction activities on site, for the duration of the construction contract; and
- Ensure that Operational Phase requirements are strictly adhered to.

2.2.2 The Engineer / Engineer's Representative / Project Manager

For the purposes of this document, "The Engineer" refers to the engineer / project manager for the development, or any other person authorised by the Developer, to be responsible for the technical and contractual implementation of the works to be undertaken.

The responsibilities of the Engineer are to:

- Ensure that the requirements as set out in this EMPr and by the relevant authorities are adhered to and implemented;
- Assist the ECO in ensuring that the conditions of the EMPr are being adhered to and promptly issue instructions requested by the ECO to the Contractor. All site instructions relating to environmental matters issued by the Engineer are to be copied to the ECO;
- Assist the ECO in making decisions and finding solutions to environmental problems that may arise during the various phases of the development;
- Review and approve construction Method Statements with input from the ECO;
- Ensure that the Contractor has signed the declaration of understanding (Appendix C);
- Order the removal of person(s) and/or equipment not complying with the specifications (as required by the ECO or otherwise);
- Issue penalties for transgressions of Environmental Specifications; and
- Provide input into the ECO's on-going internal review of the EMPr.

2.2.3 The Principal Contractor / Contractors Responsible for the Construction

For the purposes of this document "The Principal Contractor" refers to any directly appointed company or individual undertaking the implementation of the works. The Contractor will be responsible for the day-to-day implementation of the EMPr.

The Principal Contractor is to:

- Compile the required Method Statements for submission to the Engineer and the ECO for approval;
- Ensure implementation of all applicable Environmental Management Specifications, including all additional requirements related to approved method statements, during all works on site, failing which penalties, as outlined in the EMPr may be imposed by the ECO via the Engineer;

- Ensure that all of its sub-contractors, employees, suppliers or agents etc. are fully aware of the environmental requirements detailed in the Environmental Specifications of this EMPr (the main contractor will be held liable for any penalties incurred by sub-contractors);
- Liaise closely with the Engineer and the ECO and ensure that the works on site are conducted in an environmentally sensitive manner;
- Nominate a member of personnel as the contractors' Environmental Officer (EO) who will be responsible for enforcing the EMPr specifications on a daily basis. This individual shall liaise closely with the ECO and inform the Engineer, as well as the ECO, should environmental issues on site arise, e.g. dumping, pollution, littering etc.;
- Carry out instructions issued by the Engineer, on request of the ECO, required to fulfil his/her compliance with the EMPr;
- Investigate and comply with all existing regulations and laws/by-laws unless the relevant authority grants specific written compliance with any legislation;
- Comply with the Occupational Health and Safety Act 85 of 1993 (OHSA) and in particular the requirements of the current Construction Regulations; and
- Make provision for inspections of the site by any Authority and/or any party authorised by the Engineer or the ECO.
- Comply with the "Duty of Care" principle (section 28 of the National Environmental Management Act 107 of 1998 [NEMA]) to avoid and prevent any pollution incidents from occurring on site.

Upon failure by the contractor or contractor's employee to show adequate consideration to the environmental aspects of this contract, monetary penalties for breach of the EMPr (and thus the contract) may be imposed by the ECO via the Engineer or to have the Contractor's representative or any employee(s) removed from the site or work suspended until the matter is remedied. No extension of time will be considered in the case of such suspensions and all costs will be borne by the Contractor.

2.2.4 Environmental Control Officer

A suitably qualified ECO shall be employed throughout the duration of the construction phase.

During the construction of the development, the ECO is to:

- Ensure that the Contractor has a copy of the EA and EMPr;
- Ensure that the Stormwater Management and Landscaping Plans have been approved by the relevant authorities and are being duly implemented;
- Ensure that the development footprint remains within what is proposed/authorised;
- Assist the Engineer in identifying the need for or applying for special or required permits;
- Review and approve construction Method Statements together with the Engineer;
- Educate the Contractor and their staff and raise their awareness about the sensitivity of the site and facilitate the appropriate attitude during works on site;
- Undertake **fortnightly** site inspections of earthworks, installation of services and boundary wall/fence construction (frequency may change as required by the ECO through consultation with authorities), to audit compliance of all parties with the requirements of the EMPr;

- For the construction of the residential dwellings, the ECO is to undertake **fortnightly** site inspections in the first month and **monthly site inspections** thereafter, to audit compliance of all parties with the requirements of the EMPr;
- Undertake photographic monitoring of the construction site;
- Compile **monthly** audit reports in which events, concerns and general compliance of the Contractor with the EMPr will be recorded. This report will be submitted to the Engineer and if it is deemed necessary, to the authorities (i.e., DEA&DP and CoCT Municipality);
- Advise/recommend on actions or issues impacting on the environment to the Engineer, who shall issue any required site instructions to the contractor;
- Assist the Contractor in finding environmentally responsible solutions to problems;
- Recommend to the Engineer the issuing of a penalty for any environmental damage caused on site, or non-compliance with the Environmental Specifications;
- Recommend to the Engineer the removal of person(s) and/or equipment not complying with the Specifications;
- Act as the contact person between the Developer, the CoCT's Environmental Management Unit, DEA&DP and the public with regard to environmental matters;
- Report to the CoCT's Environmental Unit and DEA&DP, where required and in terms of the Conditions of Approval of the EA, regarding the implementation of the EMPr, compliance with the Conditions of Approval contained in the EA and implementation of the relevant mitigation measures contained in the EMPr;
- Keep a register of environmental-related complaints and record and manage any community comments or issues, having reported these first to the Engineer;
- Keep records of all activities/ incidents on site concerning the environment in a site file;
- Complete temporary and permanent site closure checklists;
- Take immediate action on site to stop works where significant and irreparable damage is being inflicted on the environment, and inform the Engineer immediately of the occurrence and action taken; and
- Undertake a continual internal review of the EMPr and make recommendations to the Engineer and Developer. This includes monitoring of construction activities and compiling reports on performance relative to this EMPr.

The ECO has the authority to recommend to the DoI that works be stopped, if in their opinion serious harm to, or impact on, the environment is imminent, is likely to occur or has occurred. Furthermore, the ECO may also recommend that works be stopped if such actual or potential harm or impact is in contravention of this EMPr and which is, or may be, caused by construction, or related works.

Upon failure by the contractor or contractor's employees to show adequate consideration to the environmental aspects of this contract, the ECO may recommend to the Engineer and the project management team to have the contractor's representative, or any employee(s) removed from the site or work suspended until the matter is remedied. No extension of time will be considered in the case of such suspensions and all costs will be borne by the Contractor.

The ECO is not responsible for issuing instructions, ensuring, or enforcing compliance with the EA or EMPr. The ECO is not responsible for addressing design requirements. The ECO fulfils a role of monitoring and guidance as well as communication with role players.

The ECO will not and cannot be held liable, legally, or otherwise, as a result of non-compliance with the EA or this EMPr.

2.3 MONITORING AND REPORTING

2.3.1 Site Instructions

Site Instructions, stipulating recommended actions required to improve compliance with the EMPr by the Contractor will be issued by the ECO to the Engineer, who in turn will ensure that the Contractor is informed of the said instruction.

For each of the three phases of construction, the ECO will undertake fortnightly site inspections of earthworks, installation of services and boundary wall/fence construction (frequency may change as required by the ECO through consultation with the authorities). For construction of the residential dwellings, the ECO is to undertake fortnightly site inspection in the first month and monthly site inspection thereafter.

Comments made by the ECO in the Site Instruction Book are advisory and all site instructions required may only be issued by the Engineer. Site Instructions will also be used for the issuing of stop work orders for the purposes of immediately halting any particular activity(ies) of the Contractor deemed to pose immediate and serious risk of unnecessary damage to the environment.

2.3.2 Monitoring Checklists

The ECO will compile a monitoring checklist after each site inspection to facilitate checking against the requirements of the EMPr. Photographic evidence of compliance and non-compliance will be included within the monitoring checklists as evidence.

2.3.3 Monthly Monitoring Reports

Monthly monitoring reports will be compiled in which events, concerns, and general compliance of the Contractor with the EMPr will be recorded. This report will be submitted to the Engineer and if it is deemed necessary, to the authorities (i.e., DEA&DP and CoCT Municipality).

2.3.4 Temporary Site Closure Checklist

If the site is closed for a period exceeding one week, a checklist procedure shall be carried out by the Contractor in consultation with the ECO.

The Contractor's Safety Officer(s) (in terms of the OHSA) are to check the site and report to the Engineer regarding the following:

Fuels / flammables / hazardous materials stores:

- Ensure fuel stores as low in volume as possible;
- No leaks;
- Outlet secure / locked;
- Bund empty;
- Fire extinguisher serviced and accessible;
- Secure area from accidental damage (e.g., vehicle collision);
- Emergency and Management telephone numbers to be available and displayed; and
- Adequate ventilation.

Other:

- All trenches and manholes secured;
- Fencing and barriers in place per the OHSA;
- Notice boards applicable and secured;
- Security persons briefed and have facility for contact;
- Traffic management is applied in terms of safety for road users and pedestrians;
- Night hazards checked (e.g., reflectors, lighting, traffic signage);
- Fire hazards identified – local authority notified of any potential threats (e.g., large brush stockpiles, fuels etc.);
- Pipe stockpile wedged / secured;
- Any scaffolds are secure; and
- Inspection schedule and log by security or contracts staff.

The ECO is to check and report to the Engineer:

- Wind and dust mitigation in place (e.g., straw, brush packs, irrigation);
- Slopes and stockpiles at stable angle;
- Any landscaped areas' watering schedules and supply secured;
- Fuels/hazardous substances stores secure;
- Cement and materials stores secured;
- Toilets empty and secured;
- Refuse bins empty and secured (lids);
- Any oil or hydrocarbon spills are treated (e.g., Spill Sorb or Enretech #1 powder);
- Drip trays empty & secure (where possible); and
- Structures vulnerable to high winds secure.

The Contractor is to ensure that all temporary closure requirements are met before leaving the site.

2.3.5 Construction Site Closure Report

The ECO will compile a Final Closure Checklist for site closure auditing purposes. Once the site has been cleared of all construction related debris, materials and equipment the ECO will undertake a closure inspection to report on the condition of the site and the adequacy of site clean-up/restoration/rehabilitation measures.

Thereafter, a construction conclusion report will be compiled by the ECO, summarising the entire construction period and environmental issues which arose therein, including lessons learned. The construction site will be regarded as being “closed” on agreement between the ECO and the Engineer that the Contractor has met all the necessary requirements.

2.3.6 Site Meetings during Construction Phase

The ECO is required to attend monthly site meetings of the project management team during the construction phase to facilitate the transfer of information and to update all parties on the environmental compliance of the project as a whole and minute requirement.

The ECO will report on the main construction activities as they relate to the environment and any impacts and the mitigation thereof, at this meeting.

2.4 COMMUNITY RELATIONS

The Contractor shall keep a "Complaints Register" on site to record any complaints received and action taken. The Register shall contain all contact details of the person who made the complaint and information regarding the complaint itself. Copies of all entries into the complaints register should be kept in the environmental site file. The Contractor shall notify the ECO immediately of complaints lodged.

The Contractor shall erect and maintain information boards in the position, quantity, design and dimensions specified. Such boards shall include contact details for the Developer and ECO for complaints by members of the public in accordance with details provided by the Engineer.

2.5 COMMUNICATION STRUCTURES ON SITE

2.6 ENVIRONMENTAL EDUCATION PROGRAMME

The ECO shall provide an Environmental Awareness induction training presentation to all staff on site, inclusive of site management. All workers are to attend the presentation, and an attendance register must be taken. The attendance register, along with a copy of the presentation material, must be kept on site as a record of the training.

This presentation should take cognisance of the level of education, designation, and language preferences of the staff. The initial environmental awareness training course shall be presented by the ECO. Subsequent courses are to be held as and when required should be presented by the Contractor's EO or the Health and Safety (H&S) Officer.

2.7 OCCUPATIONAL HEALTH & SAFETY REQUIREMENTS

The OHSA and in particular the requirements of the Construction Regulations issued in July 2003, must be complied with but fall beyond the scope of EMPr.

2.8 DISPUTE RESOLUTION

Any disputes or disagreements between role players on site (with regard to environmental management) will firstly be referred to the Engineer. If no resolution on the matter is possible then the matter will be referred to the CoCT Environmental Management for clarification.

3. DESIGN AND CONSTRUCTION ENVIRONMENTAL MANAGEMENT PROGRAMME

3.1 METHOD STATEMENTS

The Contractor shall provide Method Statements for approval by the ECO and the Engineer prior to work commencing on aspects of the project identified to be of greater risk to the environment and/or which may not be covered in sufficient detail in the EMPr, when called upon to do so by the Engineer or ECO.

A Method Statement is a “live document” in that modifications are negotiated between the Contractor and the ECO/project management team, as circumstances unfold. All Method Statements will form part of the EMPr documentation and are subject to all terms and conditions contained within the EMPr.

Note that a Method Statement is a ‘starting point’ for understanding the nature of the intended actions to be carried out and allows for all parties to review and understand the procedures to be followed in order to minimise risk of harm to the environment.

A Method Statement describes the scope of the intended work in a step-by-step description in order for the ECO and the Engineer to understand the Contractor’s intentions. For each instance where it is requested that the Contractor submit a Method Statement to the satisfaction of the Engineer and ECO, the format should clearly indicate the following:

- **What** – a brief description of the work to be undertaken;
- **How** – a detailed description of the process of work, methods and materials;
- **Where** – a description/sketch map of the locality of work (if applicable);
- **When** – the sequencing of actions with due commencement dates and completion date estimates;
- **Who** – The person responsible for undertaking the works described in the Method Statement; and
- **Why** – a description of why the activity is required.

The Contractor shall provide Method Statements for approval by the ECO and the Engineer prior to work commencing on aspects of the project deemed to pose environmental risks **at least seven working days prior to site establishment**. Changes to, and adaptations of Method Statements should be made in response to changes in construction methods or where effectiveness of environmental management measures requires improvement. Refer to Appendix A for a Method Statement template.

The Engineer / ECO may request a Method Statement for any activity he believes may impact on the environment. The Engineer / ECO may also require changes to a Method Statement if the proposal does not comply with the Specification or if, in the reasonable opinion of the Engineer, the proposal may result in, or carries a greater than reasonable risk of damage to the environment in excess of that permitted by the Specifications.

Approved Method Statements shall be readily available on the site and shall be communicated to all relevant personnel. The Contractor shall carry out the works in accordance with the approved Method Statement. Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the Contract.

The following initial Method Statements shall be provided by the Contractor and submitted to the ECO at least seven working days before site establishment:

- **Site Establishment, Site Camp Division & No-Go Areas:**
 - The location, layout and method of establishment of the construction camp (including all no-go areas, buildings, offices, lay down yards, vehicle wash areas, fuel storage areas, batching areas and other infrastructure required for the running of the project) shall be detailed and presented in a drawing.
- **Access/Haul Routes and Traffic Management:**
 - Details, including a drawing, showing where and how the access points and routes (including areas where plant would be parked) will be located and managed, including traffic safety measures that will be utilised.
- **Fuel Storage and Use**
 - The design, location and construction of the fuel storage and service areas as well as for the filling and dispensing from storage tanks and management of drip trays.
- **Solid Waste Management**
 - Expected solid waste types, sorting methods, quantities, methods and frequency of collection and disposal, as well as location of disposal sites. Include details of the proposed recycling program.
- **Contaminated Water**
 - Methods of minimising, controlling, collecting and disposing of contaminated water.
- **Stormwater management**
 - Methods of managing, controlling, stormwater runoff during construction.
- **Hazardous Substances**
 - Details of any hazardous substances/materials to be used, together with the transport, storage, handling and disposal procedures for the substances.
- **Cement and Concrete Batching**
 - Location, layout and preparation of cement / concrete mixing areas including the methods employed for the mixing of concrete, particularly the containment of runoff water from such areas and the method of transportation of concrete.
- **Dust**
 - Details on the methods employed for reducing dust on the site.
- **Emergency Procedures**
 - Emergency procedures for fire, accidental leaks and spillages of hazardous substances (including fuel and oil). Include details of risk reduction measures to be implemented including fire-fighting equipment, fire prevention procedures and spill kits (materials and compounds used to reduce the extent of spills and to breakdown or encapsulate hydrocarbons).
- **Noise mitigation methods**
 - Detail the steps to be implemented to reduce/avoid noise impacts on the surrounding area.

- **Tree protection**

- Detail the methods in which retained trees are to be protected from construction activities.

Any additional Method Statements that may be required by the Engineer and ECO during the course of construction are to be provided by the Contractor within a minimum of 10 working days prior to the commencement of works or activities to which they apply.

3.2 LEGISLATIVE FRAMEWORK

Obligations imposed by the EMPr are legally binding in terms of environmental statutory legislation (i.e., NEMA, as amended.)

The requirements of this EMPr do not release the Developer from the requirements of any legislation that may be applicable to the project. A list of legislation applicable to the project (although not limited to those listed) has been provided below for guidance:

- NEMA, as amended;
- National Environmental Management: Waste Act 59 of 2008 (NEM:WA);
- National Heritage Resources Act 25 of 1999;
- National Water Act 36 of 1998;
- OHSA;
- Hazardous Substances Amended Act 53 of 1992;
- National Environmental Management: Air Quality Act 39 of 2004 (NEM:AQA);
- Western Cape Noise Control Regulations P.N 200 of 2013 as promulgated under the Environmental Conservation Act 73 of 1989;
- City of Cape Town Air Quality Management by-law, 2016 (Promulgated in Provincial Gazette No.7662, Dated 17 August 2016);
- City of Cape Town Integrated Waste Management By-law (2009);
- City of Cape Town Water By-law (2006);
- The City of Cape Town Environmental Health By-Law P.N. 13333 of 2003;
- The National Health Act 61 of 2003;
- Management of Urban Stormwater Impacts Policy, approved by Council: 27 May 2009;
- By-Law Relating to Stormwater Management, approved by Council: 30 August 2005;
- National Building Regulations and Building Standards Act 103 of 1977;
- National Building Regulations SANS 10400:1990; and
- The Identification and Classification of Dangerous Goods SANS 10228:2012.

Additionally, The Developer is reminded of its **"general duty of care towards the environment"** as prescribed in section 28 of the NEMA which states:

"Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment."

3.3 ENVIRONMENTAL MANAGEMENT REQUIREMENTS

The environmental management requirements take account of the findings of the Basic Assessment together with the typical measures needed to prevent or at least minimise potential adverse environmental effects associated with construction activities. Method Statements must take account of these requirements. Additional measures may be identified during the course of construction and Method Statements would be required in this regard.

Environmental management requirements cover the following (see Table 3):

- Design and Planning Measures;
 - Detail Design Measures.
- Construction Phase:
 - Site establishment and site camp management;
 - Waste management;
 - Protection of any palaeontological and archaeological resources;
 - Noise management;
 - Dust management;
 - Aesthetics/visual;
 - Hazardous substances management;
 - Site access, access routes and traffic management;
 - Incident management;
 - Protection of groundwater resources;
 - Protection of freshwater resources; and
 - Site clean-up and rehabilitation.

Table 3: Environmental Management Requirements / Specifications for the Construction Phase

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
SITE CAMP ESTABLISHMENT/LAYDOWN AREAS <u>Management Statement and objective:</u> To ensure that the site camp and laydown areas are located and laid out in an environmentally sense manner and contained to the site, which also does not adversely affect surrounding land-users or properties. <u>Impact Management Outcomes:</u> No deviations from the below and no damage to environmentally sensitive areas as a result of the location and setup of the site camp and associated laydown areas.			
General requirements	Situate the site camp and construction materials within the site boundaries, avoiding areas with vegetation that will be retained.	• Contractor	• Throughout construction
Ablutions management	Contain ablution facilities within the site camp area and secure them to prevent toppling.	• Contractor	• Throughout construction
	Clean ablution facilities at least once a week and file proof of maintenance on site as evidence.		
	Provide at least one toilet for every 15 workers, along with sufficient toilet paper and cleaning materials.		
Laydown areas	Use laydown areas within the development boundaries for worker activities.	• Contractor	• Throughout construction
	Store materials in piles not exceeding 1.5 m in height and protect them from wind to prevent the spread of fine materials.		
	Avoid storing equipment, materials, stockpiling, or waste outside the site boundaries unless permission is obtained from the ECO.	• Contractor • ECO	• Throughout construction
	Consult the ECO before laying down materials or equipment if additional storage capacity is required.		
No-Go areas	Demarcate the following areas as "no-go" areas on site: • Areas located outside the site boundaries; • The wetland area south of the site; and • Areas within the vegetation/tree demarcation.	• Applicant • Contractor	• Before the start of construction

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
WASTE MANAGEMENT <u>Management Statement and objective:</u> To prevent pollution/contamination associated with the generation and temporary storage of general waste, hazardous waste construction rubble and litter generated by the workforce on site. <u>Impact Management Outcomes:</u> No non-conformances and no pollution of soil, groundwater and/or stormwater and freshwater as a result of waste generation and management activities.			
General requirements	Manage waste under all circumstances in accordance with Section 16 of the NEM:WA ("general duty in respect of waste management"), ensuring it does not endanger health, the environment, or cause nuisance through noise, odour, or visual impacts.	• Contractor	• During construction
	Comply with the "Duty of Care" principle (Section 28 of NEMA) to avoid and prevent pollution incidents from occurring on site.	• Applicant • Contractor	
	Identify construction-related waste as including general waste (e.g., plastic packaging, strapping, lunch wrappers), rubble (e.g., broken bricks, tiles, waste concrete) and limited quantities of hazardous items (e.g., paint tins, oily rags).	• Contractor	
	Establish and implement an integrated waste management system acceptable to the Engineer and ECO and submit a Method Statement detailing estimated waste quantities and types, required services for storage, collection, transport, and disposal, and procedures for separating recyclable and non-recyclable materials. Notify the local authority of any changes to waste estimates.	• Contractor • Engineer • ECO	• Before construction commences • During construction
	Prohibit the disposal of refuse, building rubble, or waste material by burying.	• Contractor	• During construction
	Sort construction waste into recyclable and non-recyclable categories where practical.		
	Ensure removal of waste to City-approved recycling facilities (where possible) and dispose of non-recyclable waste at a registered landfill facility.		
Storage, handling and disposal of general waste	Store waste temporarily on site in a central waste storage area that is weatherproof and scavenger-proof, and approved by both the Engineer and the ECO, when required.	• Contractor • Engineer • ECO	• During construction
	Sort all waste in a designated waste handling/storing area, ensuring the location is ECO-approved and sited a safe distance from wetlands.	• Contractor • ECO	• During construction
	Use colour-coded or clearly marked skips/bins to differentiate various waste types appropriate to each receptacle.	• Contractor	• During construction

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
	Keep receipts for the safe disposal of solid waste on record.		
	Remove general waste from the site at least once every two weeks, provided it does not pose a risk to human health.		
	Recycle materials used or generated by construction as far as possible.		
Litter prevention and housekeeping	Dispose of litter and general waste materials (excluding rubble and hazardous waste) into scavenger- and weather-proof bins.	• Contractor	• During construction
	Provide sufficient bins with lids on site to store waste produced on a daily basis. Prevent bins from becoming overfull by emptying them as required, but at least weekly.		
	Assign dedicated resources to clean the Contractor's camp and working areas daily, and ensure refuse is placed in the central waste storage area to prevent spreading as a result of wind.		
	Collect empty cement bags from the construction area by the end of each day and before rain events, and store them in bins fitted with lids		
	Clear wind-blown litter beyond the site boundary that, in the opinion of the ECO, originates from site activities as part of the site's waste management duties.		
Storage, handling and disposal of hazardous waste	Store hazardous and general waste separately, ensuring hazardous waste containers are placed in a secure area (approved by the Engineer and ECO) with bunding or secondary containment.	• Engineer • Contractor • ECO	• During construction
	Place all hazardous waste in labelled drums / containers designated for this purpose. These containers must be kept securely closed when not in use and must be protected from the ingress of rain.	• Contractor	• During construction
	Do not dispose of hazardous waste at general landfill sites. Remove hazardous waste through a registered hazardous waste Contractor for disposal at a licensed hazardous waste landfill at least once every three months, provided it does not pose a risk to human health.		
	Records of hazardous waste disposal must be maintained. Retain copies of receipts from such waste disposal sites to the Engineer and ECO as proof of proper disposal.	• Contractor • Engineer • ECO	• During construction
	Comply with all relevant legislation governing the storage and disposal of waste items (e.g., OHSA).	• Contractor	• During construction
	Dispose cleared vegetative material only at a licensed composting facility or licensed waste disposal site only.	• Contractor	• During construction

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
Storage, handling and disposal of vegetative waste	Avoid chipping invasive alien plant species for mulch if they are in a seed-bearing state. Dispose of such material at a suitable waste disposal site.	Contractor	During construction
	Do not burn plant material removed from the site, on the site.		
Storage, handling and disposal of builders rubble	Re-use materials generated by construction as far as possible in accordance with the integrated waste management approach. Use clean builders' rubble and soil/sand/rock as infill or backfill material at the ECO's discretion, or dispose of them at the nearest licensed facility under City guidance.	- Contractor - ECO	During construction
	Remove all builders' rubble from the works area weekly and transport it to the temporary storage area at the site camp.	Contractor	During construction
	Provide resources to clean the Contractor's camp and working areas of rubble generated by construction work at least twice a week, or more frequently if required.		
	Stockpile rubble temporarily in a waste skip or central stockpile and remove it to an approved landfill site once it constitutes a practical load for removal and before temporary closure of the site.		
	Avoid storing plastics, shrink wrap, paint buckets, or any other debris that do not qualify as clean building rubble at stockpile sites.		
General Requirements	Demarcate all trees to be protected, as identified in the Landscape Plan, during site camp establishment.	- Applicant - Contractor	Before construction commences
	Assess each condition individually when installing demarcation within the tree canopy drip line to minimise damage to the tree roots.		
	Protect all trees identified for retention within the landscaping plan on site.	Contractor	During construction
	Implement the tree protection plan compiled by the landscape architect during both construction and landscaping phases.	- Applicant - Contractor	During construction
	Take all necessary measures to avoid damaging tree branches, bark, roots, and leaves when working around the tree stem. Replace hoarding once work is completed.	Contractor	During construction
	Ensure that demarcation is kept intact at all times. Repair any damaged hoarding, netting, or danger tape immediately at the main contractor's cost and report it to the ECO.	- Contractor - ECO	During construction
	Avoid storing materials, equipment, or personal items under trees or against the hoarding.	Contractor	During construction
	Restrict excavations beneath tree canopy drip lines unless within the construction footprint. Protect existing root zones as far as possible.	Contractor	During construction

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
PROTECTION OF ANY PALEONTOLOGICAL AND ARCHAEOLOGICAL RESOURCES			
<u>Management Statement and objective:</u> Protection of archaeological and/or palaeontological resources on, or adjacent to the site.			
<u>Impact Management Outcomes:</u> No non-conformances terms of the specifications contained in the EMPr and no impacts on such resources.			
General	Display heritage permits and authorisations clearly on site (if applicable).	• Applicant	• During construction
	Stop all works immediately upon discovery of heritage resources (including graves, human burials, archaeological and/or paleontological material) and notify Heritage Western Cape (HWC) immediately. At the Applicant's cost, appoint an archaeologist, if required by HWC, to record and/or mitigate the find. Failure to notify the HWC of a find will result in a penalty.	• Applicant • Contractor	• During construction
	Avoid disturbing heritage remains uncovered or affected during earthworks until approval is obtained from HWC. Heritage remains include archaeological and paleontological items, coins, ceramics, articles of antiquity, marine shell heaps, stone artifacts, built structures, rock art, shipwrecks, and graves or unmarked burials.	• Contractor	• During construction
	Explain this aspect thoroughly to workers during the Environmental Education Programme.	• ECO	• Before construction commences
NOISE MANAGEMENT			
<u>Management Statement and objective:</u> To avoid and/or minimise impacts on the adjacent residential communities and ensure that any such impacts are appropriately dealt with to prevent further impacts in the longer term. To provide a forum for any Interested and/or Affected Parties to raise their concerns and log complaints for remediation action and prevention of similar incidents.			
<u>Impact Management Outcomes:</u> No disruptions or nuisance to adjacent communities caused by noise from the construction site. Effective complaints handling. No repeat complaints received			
Management of potential noise disturbance	Adhere to SABS 0103 specifications and the Western Cape Noise Control Regulations, P.N. 200/2013 (WCNCR) for all noise generated by machinery, equipment, and construction activities in residential areas.	• Contractor	• During construction
	Obtain a noise exemption permit if legal noise limits will be exceeded for any period. This requires obtaining of signatures from affected parties within a 150 m radius of the site.	• Applicant • Contractor	• During construction prior to noise limits being exceeded
	Restrict working hours to those defined in construction regulations. Notify surrounding residents in advance if work is required outside of these hours.		• During construction
	Limit construction activities that generate noise to the hours of 08h00 to 17:00, Mondays to Fridays.	• Contractor	•

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
	Fit machinery with silencers and avoid using sound amplification equipment such as sirens, loud hailers, and hooters on site, except in emergencies.	• Contractor	• Before construction commences • During construction
	Prohibit amplified music and the use of audio equipment on site.	• Contractor	• During construction
	Avoid noise-generating work at night unless prior approval has been granted by the local municipality and surrounding residents have been notified		
	Inform neighbouring residents in writing and in advance if excessive noise is expected at the site boundary, including when and for how long the high noise levels will occur.	• Applicant	• During construction
	Implement preventative measures (e.g., screening, muffling, timing, and pre-notification of affected parties) to minimise complaints regarding noise.	• Contractor	• Before construction commences • During construction
	Control the movement of all vehicles and plant, including those of suppliers, ensuring they remain on designated routes or haul roads to prevent undue environmental damage.	• Contractor	• During construction
DUST MANAGEMENT <u>Management Statement and objective:</u> No unacceptable levels of dust. To avoid and/or minimise impacts on the adjacent road network and communities and ensure that any such impacts are appropriately dealt with to prevent further impacts in the longer term. To prevent wind and water erosion and/or sedimentation of any natural features. To provide a forum for any Interested and/or Affected Parties to raise their concerns and log complaints for remediation action and prevention of similar incidents. <u>Impact Management Outcomes:</u> No disruptions to traffic, no nuisance to adjacent communities caused by dust. Effective complaints handling. No repeat complaints received.			
Prevention of dust nuisance	Comply with all Local Authority by-laws, the National Dust Control Regulations (GN R.827 of 2013 and the CoCT Air Quality By-Law.	• Applicant • Contractor	• During construction
	Comply with the CoCT Air Quality by-law dated 17 August 2016, which states the following under Section 26: Dust Emissions: (1) Any person who conducts any activity or omits to conduct any activity which causes or permits dust emissions into the atmosphere that may be harmful to public health and wellbeing or is likely to cause a nuisance to persons residing or present in the vicinity of such land, activity or premises shall adopt the best practical environmental option to the satisfaction of the authorised official, to prevent and abate dust emissions. (2) An authorised official may require any person suspected of causing a dust nuisance to submit a dust management plan within the time period specified in the written notice.	• Applicant • Contractor	• During construction

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME									
	(3) The dust management plan contemplated in subsection (2) must: (a) identify all possible sources of dust within the affected site; (b) detail the best practicable measures to be undertaken to mitigate dust emissions; (c) detail an implementation schedule; (d) identify the person responsible for implementation of the measures; (e) incorporate a dust fall monitoring plan; and (f) establish a register for recording all complaints received by the persons regarding dust fall, and for recording follow up actions and responses to the complaints. (4) The authorised official may require additional measures to be detailed in the dust management plan. (5) The dust management plan must be implemented within a time specified by the authorised official in a written notice. (6) Failure to comply with the provisions of this section constitutes an offence.											
	Implement a dust fall monitoring programme if/when required by the CoCT, based on environmental impact, complaints received, or other warranted conditions, in accordance with local regulatory provisions. Monitoring methodology: The method to be used for measuring dust fall rate and the guideline for locating sampling points shall be ASTM D1739: 1970, or equivalent method approved by any internationally recognised body. The standard for the acceptable dust fall rate is set out in Table 4 for residential and non-residential areas. <table><caption>Table 4: Acceptable dust fall rates</caption><tr><th>Restriction Areas</th><th>Dust fall rate (D) (mg/m²/day, 30- days average)</th><th>Permitted frequency of exceeding dust fall rate</th></tr><tr><td>Residential area</td><td>D < 600</td><td>Two within a year, not sequential months.</td></tr><tr><td>Non-residential area</td><td>600 < D < 1200</td><td>Two within a year, not sequential months.</td></tr></table> Note: with regards to the conditions stipulated above, it is to be noted the National Dust Control Regulations are currently undergoing review and amendments (GN 6186 of 2025). Once promulgated the applicable methodology and standards to be complied with must be adhered to at all times.	Restriction Areas	Dust fall rate (D) (mg/m ² /day, 30- days average)	Permitted frequency of exceeding dust fall rate	Residential area	D < 600	Two within a year, not sequential months.	Non-residential area	600 < D < 1200	Two within a year, not sequential months.	• Applicant • Contractor	• During construction
Restriction Areas	Dust fall rate (D) (mg/m ² /day, 30- days average)	Permitted frequency of exceeding dust fall rate										
Residential area	D < 600	Two within a year, not sequential months.										
Non-residential area	600 < D < 1200	Two within a year, not sequential months.										

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
	Prevent dust nuisance during construction activities by implementing sufficient dust mitigation measures to protect human health and the surrounding environment.	• Contractor	• During construction
	Minimise dust nuisance, stream pollution, and public inconvenience to, or interference with, the public (or others) as a result of the execution of the works. A Method Statement will be required in this regard as determined by the Engineer and ECO.	• Engineer • Contractor • ECO	• Before construction commences • During construction
	Employ dust suppression methods during windy and dry conditions. NOTE: Avoid using potable water for dust suppression when water restrictions are in place, and discourage its use even when restrictions are lifted. Prioritise waterless dust suppression methods during the construction phase. These methods are to be approved by the ECO and EO prior to implementation.	• Contractor	• During construction
	Cover stockpiles and truck loads of materials that could lead to dust pollution with tarpaulins or similar to minimise windblown sand / dust.		
	Maintain topsoil stockpiles at a height below 1.5 meters.		
	Avoid dust-generating activities during periods of extremely high winds.		
	Suspend excavation, handling, and transport of erodible materials during high wind conditions or when visible dust plumes are present.		
	Clear all access and haul roads of sand, mud, or debris deposited by construction vehicles associated with the project.		
	Ensure clean-up of any material spills caused by improperly secured loads by employees or suppliers.		
	Implement preventative measures such as screening, dust control, timing, and pre-notification of affected parties to reduce complaints regarding dust.		
	Initiate dust fallout monitoring if excessive dust is observed or if complaints exceed one per week, as reasonable determined by the ECO.	• Contractor • ECO	• During construction
	Sweep the site regularly to keep roadways clear of dust, with increased frequency during windy months, if required.	• Contractor	• During construction

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
AESTHETICS (VISUAL) <u>Management Statement and objective:</u> To ensure that visual impacts are avoided as far as possible, and where these cannot be altogether avoided, that it is reduced to acceptable limits. <u>Impact Management Outcomes:</u> No unacceptable visual impacts occur as a result of construction activities.			
Site Housekeeping	Maintain good housekeeping practices on site at all times.	• Contractor	• During construction
	Minimise the visual impact of construction activities by implementing appropriate aesthetic control measures.	• Applicant • Contractor	• During construction
	Screen activities with high visual impact when requested by the ECO, ensuring they are suitably concealed from the surrounding environment. Use construction hoarding / fencing that is dark in colour and free of excessive branding.	• Applicant • Contractor • ECO	• During construction
	Provide and maintain adequate, suitable sheds or containers for material storage. Ensure sheds for weather-sensitive materials are weatherproof (to prevent deterioration or corrosion), adequately ventilated, and raised off the floor.	• Contractor	• Before construction commences • During construction
	Position all site establishment components and equipment to reduce visual intrusion and limit the size of the area disturbed.	• Contractor	• Before construction commences
	Use roofing and cladding materials for the Contractor's temporary structures that minimise reflection through appropriate type and colour.	• Contractor	• Before construction commences • During construction
	Install site lighting that does not interfere with road traffic or cause avoidable disturbance to the surrounding community. Site lighting should be kept to a minimum and should not be flood type lighting where possible.		
	Do not use neon, spot or up lighting due to their inappropriate visual impact. Light sources should be screened and filtered as far as possible.	• Contractor	• During construction
	Use construction signage that is appropriately sized and avoid placing them along sensitive visual corridors.		

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
HAZARDOUS SUBSTANCES MANAGEMENT <u>Management Statement and objective:</u> To prevent pollution or fire associated with the handling storage and use of materials deemed hazardous to human health or the environment. <u>Impact Management Outcomes:</u> No non-conformances and no pollution of soil, groundwater and/or stormwater as a result of the construction activities. No fires as a result of the handling / use of fuel.			
Hazardous substances handling, use and storage	Store all fuel within a clearly demarcated area and restrict refuelling of vehicles and machinery to the designated area unless authorised by the Engineer, who is to be advised of the area that is intended to be used for the storage of fuel.	• Contractor	• During construction
	Secure all liquid fuels (petrol and diesel) in tanks with firmly shut lids. Seal and store all empty tanks and externally dirty tanks on an area where the ground has been protected.		
	Position fuel tanks on a smooth, impermeable base (plastic or concrete) with a bund to contain spills and prevent ground infiltration (if plastic, the bund must have sand on top to prevent perishing). Extend impermeable lining to the crest of the bund, ensuring the bund volume equals 110% of the largest tank / vessel's capacity.		
	Slope the bund floor toward an oil trap or sump to facilitate spill removal. An Enretech or similar hydrocarbon absorption/remediation product approved by the ECO shall be installed in the sump to reduce the risk of pollution. Bulk fuel storage and bunded areas shall have overhead cover to prevent rain from entering the bunded area.	• Contractor • ECO	• During construction
	Keep fuel under lock and key at all times.	• Contractor	• During construction
	Obtain a Flammable Liquid License for diesel storage exceeding 200 litres, as per City by-laws. Consult the local Fire Chief for any other specific requirements.	• Applicant • Contractor	• Before storing diesel exceeding 200 litres during construction
	If fuel is dispensed from 200 litre drums, the proper dispensing equipment shall be used, and the drum shall not be tipped in order to dispense fuel. Store dispensing mechanisms in waterproof containers when not in use.	• Contractor	• During construction
	Place drip trays under parked temporary fuel tankers (bowzers) to capture incidental drips and spills.		
	Conduct refuelling on concrete or hard standing surfaces, or over drip trays.		
	Ensure a trained individual is present at all times during fuel delivery offloading. Install an anti-flash nozzle at the end of the vent pipe with a fuel dispenser equipped with an automatic cut off switch to prevent fuel tank overfills.		

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
	Comply with fire safety regulations for fuel and flammable material storage area and obtain approval from the municipal fire prevention officer, if required.		
	Keep relevant Material Safety Data Sheets (MSDS) on site.		
	Follow MSDS procedures in the event of an emergency.		
	Submit a Method Statement if any potentially hazardous substances are to be stored on site, detailing the substances / materials to be used, storage, handling, and disposal procedures of the materials.	• Contractor	• Before construction commences
	Do not dispose paint products and chemical additives and cleaners such as thinners and turpentine on site. Brush / roller wash facilities shall be established to the satisfaction of the Engineer.	• Contractor • Engineer	• During construction
	Place drip trays under all vehicles and machinery, and clean them at least once a week.	• Contractor	• During construction
Cement batching and concrete work	Prevent spillage of dry cement powder and concrete slurry to avoid adverse impacts on soil and water pH.	• Contractor	• During construction
	Equip cement mixers with drip trays to contain oil and fuel leaks, and clean these trays regularly.		
	Store cement in a secure, weatherproof location to avoid contamination of the environment.		
	Ensure no run-off from batching areas enters the environment, including stormwater systems.		
	Conduct all cement batching on bunded trays. Prohibit the use of dagga boards without sides. Mixing trays with sides must be used.		
	Place cement- and paint-contaminated water in settling tanks before removing solids from site.		
	Clean equipment and flush mixers in a manner that does not pollute the surrounding environment.		
	Allow sediment to dry out before removing it to a skip.		
SITE ACCESS, ACCESS ROUTES AND TRAFFIC MANAGEMENT			
<u>Management Statement and objective:</u> To avoid and/or minimise impacts on the adjacent road network and road users any such impacts are appropriately dealt with to prevent further impacts in the longer term. To avoid construction related impacts associated with the movement of construction vehicles on adjacent residents.			
<u>Impact Management Outcomes:</u> No disruptions to traffic or adjacent residents, no damage to vehicles and related claims and no nuisance to adjacent communities caused by dust.			
General	Utilise existing access routes wherever possible.	• Contractor	• During construction
	Conduct all work outside the road reserve under close monitoring by the ECO and within the approved development footprint.	• Contractor • ECO	• During construction

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
	Manage site access to prevent unauthorised entry and discourage loitering of construction personnel beyond the designated development area.	• Contractor	• During construction
	Control the movement of all vehicles and plant, including those of suppliers, ensuring they remain on designated routes, are evenly distributed to avoid traffic congestion, and comply with all relevant laws and specifications. In addition, such vehicles and plant shall be so routed and operated as to minimise disruption to regular users of the routes not on the site.		
	Limit construction vehicle movement to off-peak hours as far as possible. Schedule material deliveries and waste collection outside of peak traffic periods.		
	Adhere to the 40 km/h speed restriction within the site and surrounding road network for all contractor and supplier vehicles.		
	Implement additional traffic control measures where necessary.		
	Inspect all access routes following construction activities and undertake any necessary repairs resulting from roadway use during the project.	• Contractor	• Once construction is concluded
INCIDENT MANAGEMENT <u>Management Statement and objective:</u> To guide the way in which emergencies and/or environmental incidents are handled on site and remediate any damage appropriately. To prevent the starting of fires on site. <u>Impact Management Outcomes:</u> No non-conformances and no adverse impacts on the environment as a result of emergency situations and/or environmental incidents. No fires started on the site.			
General	Prepare Method Statements for the management of incidents, including accidental leaks and spills.	• Contractor	• Before construction commences
Prevention of fires	Prohibit fires on site under all circumstances. Notices are to be prominently displayed that no fires are allowed. Any fires that occur, shall be reported to the Engineer immediately.	• Engineer • Contractor	• During construction
	Prohibit burning as a waste disposal method.	• Contractor	• During construction
	Permit smoking only in designated areas marked with appropriate signage. Such areas shall not be located close to fire hazards. Notices are to be prominently displayed prohibiting smoking in areas that are deemed fire hazards (e.g., the workshop and fuel storage areas and any areas where the vegetation or other material is such as to make liable the rapid spread of an initial flame).		
	Notify the relevant authority immediately upon the outbreak of a fire – do not delay until the fire is uncontrollable.	• Applicant • Contractor	• During construction

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
	Demarcate a fire evacuation route clearly and keep it free of obstructions at all times. The Contractor shall ensure that his employees are aware of the procedure to be followed in the event of a fire.	• Contractor	• During construction
	Appoint a Fire Officer, who will be responsible for immediate and appropriate fire response actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. Forward the name of the Fire Officer to the Engineer for his approval seven days prior to the date of the environmental awareness training course.	• Engineer • Contractor	• Before construction commences
	Equip all site offices, kitchens, workshops, stores, and other areas identified by the ECO with tested and approved firefighting equipment. Firefighting equipment is to be maintained in good working order.	• Contractor • ECO	• During construction
	Restrict welding, gas cutting, and metal cutting to designated, clearly marked areas approved by the ECO.		
	Store all flammable materials in suitable lockable storage areas. Prevent the accumulation of combustible materials on site.	• Contractor	• During construction
	Provide symbolic safety signs such as "No Smoking," "No Naked Lights," and "Danger," in compliance with SABS 1186. The volume capacity of any fuel tanks shall be displayed. The product contained within the tank shall be clearly identified; using the emergency information system detailed in SABS 0232 part 1. Any electrical or petrol-driven pump shall be equipped and positioned, so as not to cause any danger of ignition of the product.		
	In the event of a fire emergency: • The site supervisor or worker should sound the fire alarm; • The site supervisor or worker should notify the City of Cape Town (107 from a landline and 021 480 7700 from a cell phone). • All workers on site should go to the designated emergency assembly point; • The Fire Officer shall do a head count of all workers and ensure all personnel are present; and • When the Fire Brigade arrives, the Fire Officer shall provide them with all the information they require regarding the incident.		
Accidental Leaks and Spillages	Ensure all employees are trained and aware of the procedures for managing spills and leaks, including immediate notification of the Engineer and relevant authorities.	• Contractor • Engineer	• During construction
	Maintain all machinery in excellent condition, free from oil/fuel leaks.	• Contractor	• During construction

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
	Treat and remediate the spill areas to the reasonable satisfaction of the Engineer and ECO.	• Engineer • Contractor • ECO	• During construction
	Provide a suitable number of spill kits on site. A spill kit (with the supply of absorbent material) shall be readily available at works areas to absorb any emergency hydrocarbon spills, and where possible be designed to encapsulate minor hydrocarbon spillage. There are a number of products on the market, which are designed and suitable as absorbents and encapsulators of hydrocarbons.	• Contractor	• During construction
	In the event of a spill: • Isolate the source of the spillage; • Contain the spillage using sand berms, sand bags, pre-made booms, sawdust and other absorbent materials; • Cordon off and ensure safety of the spillage area; • Notify the Engineer, ECO and the Pollution Control Inspectorate (if serious spillage has occurred in a sensitive environment); and • Treat and dispose all cleared materials as hazardous waste in accordance with the waste management specifications of this EMPr.	• Engineer • Contractor • ECO	• During construction
	Determine the need for further remedial actions (in consultation with the Pollution Control Inspectorate where necessary).	• ECO	• During construction
PROTECTION OF GROUNDWATER RESOURCES <u>Management Statement and objective:</u> To prevent impacts on groundwater resources as a result of decreased recharge area and the handling, storage and use of hazardous materials. <u>Impact Management Outcomes:</u> No non-conformances with the specifications contained within the EMPr and no evidence of pollution of groundwater as a result of construction activities.			
General	Allow for clean stormwater to be appropriately directed and allowed to infiltrate into the primary aquifer.	• Contractor	• During construction
Groundwater contamination	Maintain construction vehicles regularly and keep them in good working order.		
	Capture and reuse dirty water where possible.		
	Do not discharge dirty water into the surrounding environment.		

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
	Monitor groundwater quality monthly throughout the construction phase.		
	Ensure that any activities with potential impacts on groundwater are appropriately conducted and that any spillages/events are responded to timeously.		
PROTECTION OF FRESHWATER RESOURCES <u>Management Statement and objective:</u> To minimise the loss of wetlands as a result of infilling. <u>Impact Management Outcomes:</u> No non-conformances with the specifications contained within the EMP and no evidence of pollution of freshwater resources as a result of construction activities.			
Wetland loss	Place the two-story units (rather than single-storey or veteran units) along the entire western and southern edges of the site. <i>Note: This measure has been addressed when the current site layout was designed.</i>	• Applicant	• When designing the final site layout
	Design servicing (sewage, solid waste collection and stormwater management) to an appropriate size so as to accommodate backyard settlements at single-storey units. This design must be approved by the relevant sewage reticulation, wastewater treatment works and urban waste departments of the City of Cape Town prior to any development authorisation.	• Applicant	• When designing the final site layout
	Maintain a 10 m gap between the southern boundary of the swale in the southern portion of the site and the edge of the seasonal wetland south of the site (i.e., the no-go area).	• Applicant • Engineer	• When designing the final site layout
	Place the swales in the western portion of the site within ~5 m of the western boundary of the site.	• Contractor	
	Plant the swales with locally indigenous, hardy vegetation compatible with their locations abutting important seasonally inundated and rehabilitated wetlands (west of the site) with input from a botanist and wetland ecologist, informed by a detailed engineering design that considers the depth of the water table in the affected areas when establishing the swale depth.	• Engineer • Contractor	• During construction
	Landscape the remaining area (by means of excavation of fill in of the infilled wetland) in the western portion of the site (excluding areas designated for the stormwater detention pond) to create seasonally inundated wetlands and a wetland area west of this that are: • Set at roughly the same level as those of the wetland south of the site (i.e., the no-go area). • Landscaped to create an area that resembles a mosaic of natural, shallowly inundated depressions (maximum 1:1 year wet season inundation of around 300 mm depth), interspersed by slightly higher lying mounds.	• Engineer • Contractor	• During construction

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
	- Planted with locally indigenous wetland vegetation, sourced from plant stock in the Zeekoe catchment, and dominated by <i>Juncus kraussii</i> plants, to achieve a density of 80% by area before site handover. - Reasonable compensation for the loss of wetland in the rest of the site.		
	The proposed retention pond should: - Include an accessible forebay for removal of sediment and solid waste (although it is assumed that most of this material would be collected in the swale systems). - Be landscaped to include seasonally shallowly inundated wetland margins (at least 10 m wide) on the outer edges of the pond which resembles a similar habitat to that of the wetland south of the site (i.e., the no-go area) (allowance must be made for the sourcing of locally indigenous wetland plants for these areas, which would be located outside of the hard-working functional parts of the detention pond, but would contribute towards improved biodiversity and additional shallow (<300 mm deep) seasonally inundated wetland habitat suitable for use by wading birds in the wet season.	Engineer	When designing the retention pond
	Use palisade fencing (rather than walls).	- Engineer - Contractor	During construction
	Place fencing along the outside of the western boundary of the site.		
	Include access along the western boundary for maintenance purposes.		
	Allow access along fencing along the southern boundary of the site to allow for at least 5 m between the fence and the edge of the wetland south of the site (i.e., the no-go area).		
	Monitor dissolved uranium concentrations in the wetland south of the site.	- Engineer - ECO	During construction
	Conduct repeat wet season sampling of the wetland south of the site (i.e., the no-go area) for water quality assessments.	ECO	During construction
Wetland degradation	Place the two-story units (rather than single-storey or veteran units) along the entire western and southern edges of the site.	Applicant	When designing the final site layout
	Design servicing (sewage, solid waste collection and stormwater management) to an appropriate size so as to accommodate backyard settlements at single-storey and veteran units. This design must be approved by the relevant sewage reticulation, wastewater treatment works and urban waste departments of the City of Cape Town prior to any development authorisation.	Applicant	When designing the final site layout

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
	Fence off the edge of the wetland south of the site (i.e., the no-go area) from the development using temporary fencing (preferably entrenched shade-cloth or wind-break netting) that prevents machine and human access to this area during construction and prevents the runoff of sediment-rich water from the site.	• Engineer • Contractor	• Before construction commences
	Fence off the western boundary of the site using temporary fencing.		
	Compile and implement a Construction Phase Environmental Management Programme which includes measures that will contain construction-associated sediment and runoff of contaminated matters (e.g., sediment, oils, fuel) within the site (i.e., preventing this material from entering the buffer around the wetland south of the site).	• Applicant • ECO	• Before construction commences
	Limit construction activities so that it does not impede on the no go area south of the site and/or beyond the western boundary of the site.	• Contractor	• During construction
	Construct the detention pond and swales outside of the wet season (i.e., construction should take place between October and the end of May).	• Contractor	• During construction between the month of October and the end of May
	Edge all road edges along the southern and western boundaries of the site with bollards spaced at sufficient distances apart to limit access for dumping from vehicles.	• Applicant	• When designing the final site layout
SITE CLEANUP AND LANDSCAPING <u>Management Statement and objective:</u> To prevent impacts on the environment as a result of the conclusion of construction activities and any related impacts requiring rehabilitation actions prior to the contractors leaving the site. <u>Impact Management Outcomes:</u> No non-conformances with the specifications contained within the EMPr.			
Site clean-up and landscaping	Restore all areas within the maintenance footprint that have been degraded during construction to their original condition.	• Contractor	• Once construction is concluded
	Rehabilitate all construction scars immediately upon completion of construction.		
	Rehabilitate any disturbed areas of intact natural vegetation outside the site to the satisfaction of the ECO and Engineer.	• Engineer • Contractor • ECO	
	Remove all temporary structures, equipment, materials, waste, and facilities used during construction upon project completion.	• Contractor	

ASPECT	MANAGEMENT / MITIGATION MEASURES	RESPONSIBLE PARTY	IMPLEMENTATION TIMEFRAME
	Remove all waste material and dispose it at a licensed facility after construction works are complete.		
	Clear the site of all fencing, danger tape, netting, etc.		
	Complete site clean-up to the satisfaction of the Engineer and the ECO.	• Engineer • Contractor • ECO	
	Undertake landscaping in accordance with the approved Landscaping Plan for the site.	• Contractor	

3.4 PENALTIES AND BONUSES

Where the Contractor inflicts damage upon the environment or fails to comply with any of the Environmental Specifications contained within this EMPr they shall be liable to pay a penalty for breach of the conditions of the Environmental Specifications which form part of the works contract.

The Contractor is deemed NOT to have complied with these Environmental Specifications if:

- There is evidence of contravention of the Environmental Specifications within the boundaries of the site, site extensions and haul/ access roads;
- Environmental damage ensues due to negligence;
- The Contractor fails to comply with corrective or other instructions issued by the Engineer within a specific time; or
- The Contractor fails to respond adequately to complaints from the public.

Penalties shall be issued per incident and per individual for the Contractor's responsibility. The amount of the penalty shall be determined by the Engineer, in consultation with the ECO. The Engineer shall inform the Contractor of the contravention and he shall notify the consulting quantity surveyor to deduct such a penalty from monies due under the contract prior to the issuing of the monthly payment certificates.

Payment of any penalties in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

Table 5 specifies the penalties (not an exclusive list) that shall be issued in addition to any remedial costs incurred as a result of non-compliance with the Environmental Specifications and shall be imposed by the Engineer on the Contractor for contraventions of the Environmental Specifications by individuals or operators employed by the Contractor and/or his sub-contractors. Where there are ranges, the amount shall depend on the severity and extent of the damage done to the environment.

Table 5: Offences and penalties

OFFENCE	PENALTY
A Contractor fails to inform the ECO immediately of events that may cause serious environmental damage or breach the requirements of the EMPr	R 500
The Contractor fails to produce Method Statements on identified aspects of the project prior to commencement of that aspect	R 300 per Method Statement
The Contractor's Environmental Site File is incomplete/non-existent	R 500
The Contractor fails to keep activities within the site boundaries	R 1 000
Dust and/or erosion occurs because of lack of appropriate implementation of mitigation measures	R 200
Green waste is not disposed of at an approved waste site or composting facility	R 400
Trespassing of people into no-go areas	R 500
Trespassing of machinery or equipment into no-go areas	R 500 – R 2 000
Delivery drivers are off-loading without supervision	R 300

OFFENCE	PENALTY
Loads for transporting are unsecured or uncovered	R 500
Temporary storage of fuel used for construction purposes is not within specifications	R 100 – R 1 000
Fuel is dispensed with the incorrect equipment	R 400
Individuals are smoking in the vicinity of the fuel stores	R 200
Appropriate safety signs (e.g. Danger) are not displayed	R 200
There is a lack of firefighting equipment at the fuel stores	R 500
The storage areas fail to comply with standard fire safety regulations	R 200
Inadequate supply of material to absorb / breakdown and encapsulate minor hydrocarbon spillage	R 500 – R 1000
An integrated waste management system is not established	R 100 – R 1000
Waste is buried as a means of disposal	R 1000 – R 3000
There is evidence of littering	R 20 per item
Appropriate scavenger and weatherproof bins are not supplied	R 400 – R 1000
Bins are overflowing	R 150 per bin
Refuse is not removed or disposed of at an approved site	R 100 – R 1000
Empty cement bags are not removed from the construction area and placed under cover or discarded in the hazardous waste stream	R 500 – R 2000
Hazardous waste is not stored in an enclosed area	R 1000
Hazardous waste is not disposed of at a hazardous waste disposal facility	R 500 – R 1000
Rubble is not appropriately stored in a skip or central stockpile	R 500
Materials that do not constitute clean building rubble are stored at the stockpiling site	R 200
An individual makes use of areas other than the designated facilities for ablutions	R 200
Latrine facilities and first-aid services are not in a sanitary condition	R 500
Insufficient provision of toilets	R 1000
Toilet waste (sewage) is discharged or buried in the environment	R 1000 – R 2000
Potential pollutants are not stored safely away to prevent pollution of ground or surface water	R 500
Washing of vehicles or cement chutes occurs on site or in the vicinity of wetlands	R 800
Hazardous chemical substances are not stored in secondary containers	R 800 – R 2000
Paint products, chemical additives or cleaners are being disposed of on site	R 200 – R 1500
Adequate sheds/ dry containers for the storage of materials are not provided	R 500
Maintenance of plant occurs on site when only emergency maintenance is permitted	R 200
Emergency maintenance is performed without efforts to prevent contamination of the surrounding environment	R 100 – R1500
Individuals fail to repair leaking equipment immediately	R 100 per item

OFFENCE	PENALTY
Drip trays are not provided in construction areas under all relevant plant/equipment	R 100 – R 500 per absent drip tray
Effective silencing devices are not in use to reduce noise impacts	R 50
Amplified music is heard on site	R 50
Failure to provide environmental awareness training to all site personnel	R 200 per staff member/ worker
Necessary Information posters (procedures for ensuring compliance) are not displayed	R 500
Lighting of fires occurs on site	R 200 – R 10 000
Smoking occurs outside of designated areas	R 20 – R 50
Unnecessary spillage of cement due to inadequate prevention measures, or haphazard working procedures	R 500 – R 1 500
Spillage of cement products are not rectified to the satisfaction of the ECO	R 50 – R 1000
Cement is not stored in a suitable weatherproof location	R 500
Polluted runoff is reaching groundwater/stormwater	R 200 – R 3 000
Screening and suitable containment is not in place /constructed in the concrete batching area	R 100 – R 500
Hydrocarbon spills are not isolated, contained, cleared and rehabilitated	R 100 – R 2 000
Appropriate safety precautions are not implemented	R 20 – R 1 000
Unauthorised firearms are present on site	R 1 000
Personnel other than security staff are living on site	R 1 000
An individual is not attempting to protect natural features during construction	R 50 – R 2 000
Individuals are swimming or washing (clothes, equipment etc.) in natural water bodies on or near the site	R 500 – R 1000
An individual's activities are resulting in the removal or damage of flora	R 500 – R 1 500
Animals are being trapped, poisoned, shot or harmed	R 100 – R 1 500
Erosion or sedimentation caused by construction is not rectified	R 400 – R 2 000
The ECO is not notified of heritage or archaeological remains found	R 1 000
Trenching is conducted without the specified environmental specifications	R 1 000
Failure to avoid stormwater impacts through the adequate protection of stormwater inlets	R 100 per inlet
Unapproved materials are used for landscaping (e.g. invasive plant seeds)	R 50 – R 2 000
All elements of the site are not removed during clean-up for closure	R 100 – R 3 000
A specialist is not employed for rehabilitation where necessary	R 500 – R 2 000
The site not fenced and/or demarcated as required	R 300 – R 3000
The site is not fully secured	R 50 – R 500
Water wastage	R 100 – R 1000

OFFENCE	PENALTY
Method statements not appropriately and/or fully implemented	R 50 – R 300 per Method Statement
Speed limit on site not adhered to	R 100

Note that for each subsequent similar offence, the penalty shall be doubled in value to a maximum value of R 10 000.

The following penalties are suggested for transgression where damage has been done to the environment:

a	Erosion	A penalty equivalent in value to the cost of rehabilitation plus 20%
b	Oil Spills	A penalty equivalent in value to the cost of clean-up operation plus 20%
c	Damage to sensitive environments	A penalty equivalent in value to the cost of restoration plus 20%
d	Damage to archaeological finds	A penalty to a maximum of R 100 000 shall be paid for any damage to any archaeological sites/finds

All monies collected through penalties shall be held in an environmental fund by the Developer and be accounted for. A summary page is to be included with the monthly payment certificates as a record of penalties issued to date. A portion of these funds may be used for token monetary bonuses to individual site staff members that have shown exceptional diligence in applying good environmental practice on the site. The remaining funds shall be allocated for the purposes of contributing to environmental education efforts in the local community e.g., for environmental books for the library, posters, excursions or trees for local schools or environmental resource material for the local public library. The Developer, in consultation with the ECO, Engineer and possibly the local authority, will make a final decision regarding the precise allocation of all penalty funds. Documentation accounting for all penalty funds obtained and how these funds were utilized shall be copied to the CoCT's Environmental Resources Management Unit and DEA&DP, together with the environmental closure documentation on completion of the project.

4. POST DEVELOPMENT ENVIRONMENTAL MANAGEMENT PLAN

The environmental specifications contained in this section address the requirements for controlling the environmental impacts resulting from post development activities.

The responsibility of the implementation of the Post Development EMPr lies with the Applicant. Should the applicant wish to cede this responsibility to the Homeowners Association or an alternative third party, the Applicant is responsible for clearly communicating all requirements. The provincial environmental authorities may at any given time conduct site visits to audit compliance with these specifications.

Table 6: Environmental Management Requirements / Specifications for the Post Development Phase

INFILTRATION OF CONTAMINATED STORMWATER AND CONTAMINATION DUE TO SEWAGE LEAKS
• Treat contaminated water and transport it off-site. • Implement appropriate leak detection procedures, including frequent monitoring of resources. • Monitor shallow groundwater if any critical sites are identified during the Planning, Design and Construction Phase.
ONGOING WETLAND LOSS AND DEGRADATION
• Remove solid waste from the open space west of the site and along the southern buffer area weekly. • Maintain and stormwater system on an ongoing basis. • Audit the stormwater management plan on an ongoing basis. • Monitor dissolved uranium concentrations in the wetland south of the site on an ongoing basis.
INCREMENTAL DEGRADATION OF THE BIG LOTUS RIVER
• Construct and maintain a solid waste interceptor fence in the Big Lotus River immediately downstream of the site or in a nearby suitable location, in consultation with the Friends of the Zeekoevlei and Rondevlei and the CoCT. • Clear litter fences at least twice per week • In consultation with the City of Cape Town, remove cleared solid waste weekly by Urban Waste Management.

Appendix A

Method Statement Template

CONSTRUCTION METHOD STATEMENT

METHOD STATEMENT FOR:

--

WHAT WORK IS TO BE UNDERTAKEN?

--

WHERE ARE THE WORKS TO BE UNDERTAKEN?

--

WHEN ARE THE WORKS TO START, WHAT IS THE ANTICIPATED FINISH DATE?

--

Methodology:

DECLARATIONS

1) PERSON UNDERTAKING THE WORKS (i.e. the Contractor)

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to the signatories hereunder and that the Environmental Control Officer will audit my compliance with the contents of this Method Statement.

_____ (Print name)

_____ (signed) Dated: _____

2) ENVIRONMENTAL CONTROL OFFICER

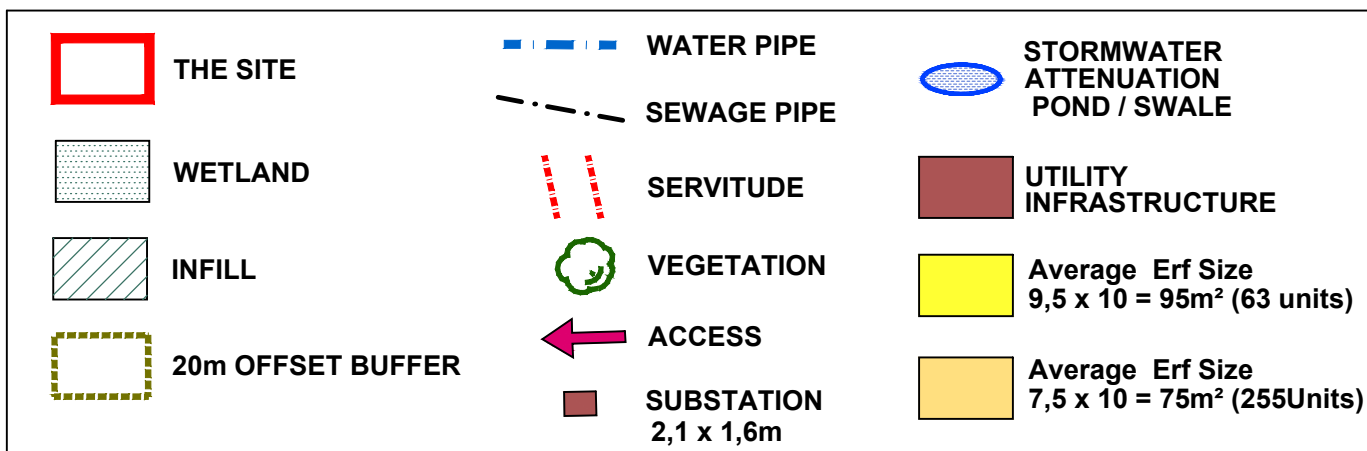
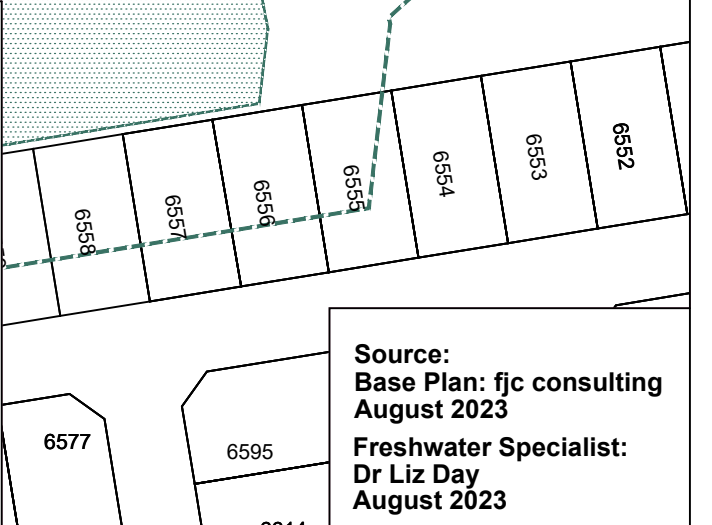
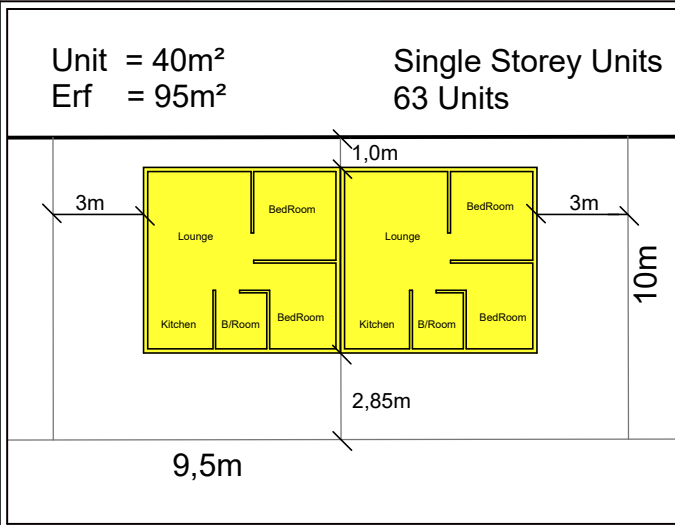
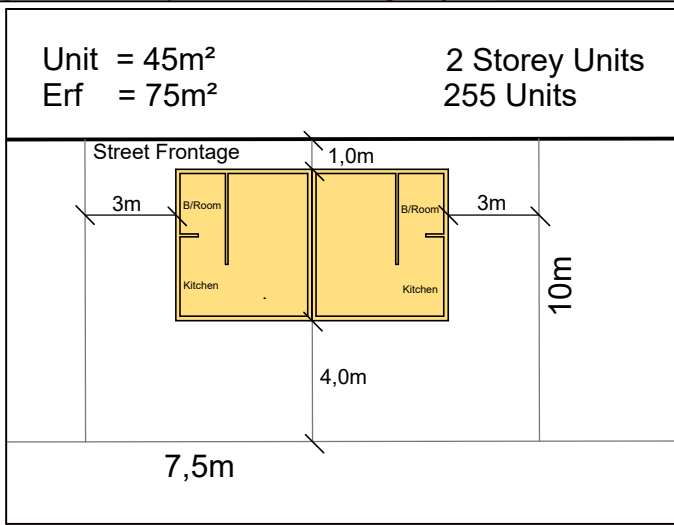
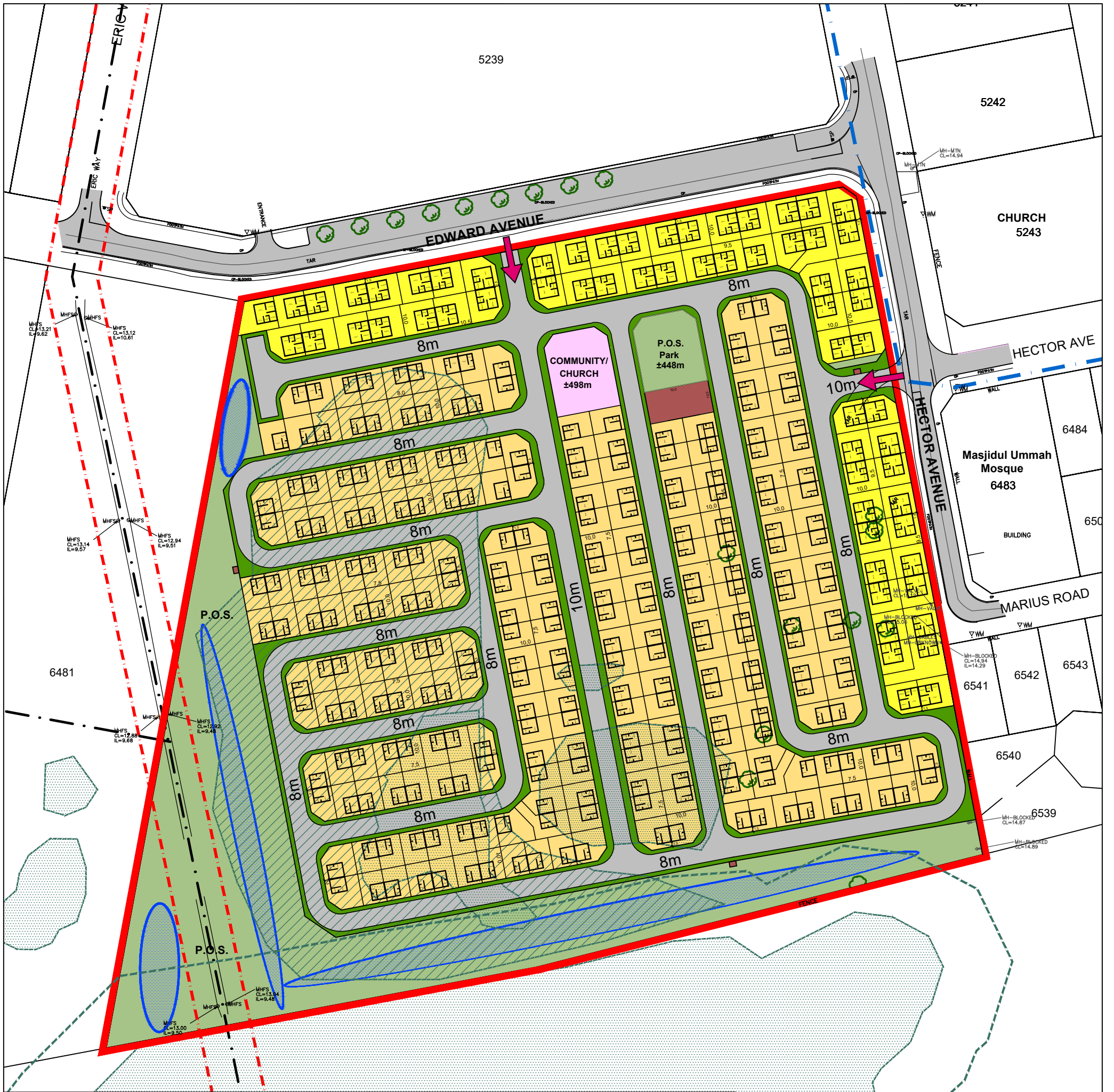
The work described in this Method Statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm:

_____ (Print name)

_____ (signed) Dated: _____

Appendix B

Site Development Plan



Appendix C
Declaration of Understanding

DECLARATIONS

CONTRACTOR'S DESIGNATED ENVIRONMENTAL OFFICER: The work described in this CEMP and associated Method Statements , if carried out according to the methodology described, is satisfactory to prevent or control environmental harm:

_____ (Print name)

_____ signed) Dated: _____

PERSON UNDERTAKING THE WORKS: I understand the contents of this CEMP and associated Method Statements and the scope of the works required of me. I further understand that this CEMP and associated Method Statements may be amended on application to other signatories and that the ECO and Construction Manager/Engineer/Implementing Agent will audit my compliance with the contents of this CEMP and associated Method Statement:

_____ (Print name)

_____ signed) Dated: _____

ENVIRONMENTAL CONTROL OFFICER: The work described in this CEMP and Associated Method Statements, if carried out according the methodology described, is satisfactory to prevent or control environmental harm:

_____ (Print name)

_____ signed) Dated: _____

APPROVING AUTHORITY (i.e. the Employer's Construction Manager): The works described in this CEMP and associated Method Statements are approved:

_____ (Print name)

_____ signed) Dated: _____