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**PROPOSED DEVELOPMENT OF ERF. 332,
PEARLY BEACH**

Environmental Management Programme**Client:****Arawen Properties (Pty) Ltd**

ENVIRONMENTAL MANAGEMENT PROGRAMME DETAILS

Detailed Project Name	Proposed Subdivision and Development of Erf. 332, Pearly Beach
DEA&DP Ref. No.	N/A
DJEC Ref. No.	2009/13
Client / Applicant Name	Arawen Properties (Pty) Ltd
EMP Produced For	Arawen Properties (Pty) Ltd
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	BSc. majors in Botany & Zoology MSc. in Botany Registered as a professional Environmental Assessment Practitioner with the Interim Certification Board for Environmental Assessment Practitioners of South Africa Registered with the South African Council for Natural Scientific Professions as a Natural Scientist More than 20 years experience coordinating EIA processes		NDip. - Nature Conservation B-Tech - Nature Conservation Certificate Qualifications: Project Management and ISO 14001 Environmental Management Systems Implementation Member of IAIAAsa Several years of varied biodiversity and conservation management experience. More than two years of experience in the environmental management field and as an Environmental Control Officer.	

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ENVIRONMENTAL MANAGEMENT PROGRAMME DOCUMENT INFORMATION

This Draft Environmental Management Programme Document is submitted in partial fulfilment of the required Environmental Impact Assessment undertaken to obtain an Environmental Authorisation issued by the Department of Environmental Affairs and Development Planning.

Environmental Authorization is required to be obtained from the competent authority for activities as detailed and specified under the National Environmental Management Act (NEMAA), (Act No. 107 of 1998), as amended.

NEMAA is a national act, which is enforced by the Department of Environmental Affairs (DEA). In the Western Cape, these powers are delegated to the Department of Environmental Affairs & Development Planning (DEA&DP).

Should DEA&DP issue a favourable Environmental Authorisation for the proposed activities and accepts the EMP as part of the process; this will confer a legal obligation to comply with the specifications of the EMP on the Applicant. This EMP includes all relevant documentation contained or referred to within it, along with any amendments or annexures to this document. The Department of Environmental Affairs and Development Planning must approve any changes to the EMP.

It is then the responsibility of the Applicant to undertake the following:

- Appoint an Environmental Control Officer (ECO) to monitor the implementation of this Environmental Management Programme, where required to do so by DEA&DP.
- Bind any and all contractors undertaking work on these sites, to the specifications in this same Environmental Management Programme, as well as annexures and any amendments thereto.

The above being noted, the EMP document in principal is intended to be a living/organic document with flexibility that allows for changes, deviations and adjustments at the discretion of the ECO, as necessary during the construction/development process. This having been said any significant changes or updates must be communicated to the Directorate within 14 days of such changes or updates being made for approval.

This EMP comprises of three main sections and annexures:

Section 1 – General Information & Background

This section provides the relevant background to the project. This insures that an overall understanding of the site and the activities required is achieved for all relevant parties.

Section 2 – Construction Phase of the EMP

This section addresses all issues relating to the physical construction, preparation for construction, monitoring during construction, decommissioning of non-permanent items on the site as well as the landscaping and rehabilitation directly after construction is completed. This section will have most relevance to the appointed contractors.

Section 3 – Operational Phase of the EMP

This section details the environmental requirements for the project/activity in the long term, addressing the operational or functional phase.

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Annexures

The annexures attached to this EMP are referred to in both the Section 1, 2 and 3 of this document. All sections must be read in conjunction with the Annexures.

Although section 2 and 3 are implemented at different stages of the project the sections of this EMP cannot be read in isolation to one another. The document must therefore be distributed and viewed as a whole and in its entirety.

It must be noted that the EMP by its nature is implemented at the construction and operational phases i.e. once the designs and plans have already been finalised. Therefore it is the sole responsibility of the Applicant/Developer and the ER to ensure that the design, planning and layout of the development and associated infrastructure incorporates the recommendations and requirements of the EIR and the Environmental Authorisation and associated specifications as these design aspects are not addressed in the EMP and are therefore not monitored by the ECO.

Definitions, Acronyms and Abbreviations:

For the purpose of this EMP the following definitions, Acronyms and Abbreviations will apply:

<i>Alien vegetation</i>	means all undesirable invasive vegetation, defined as but not limited to, all declared category 1 and category 2 plants in terms of the Conservation of Agricultural Resources Act (43 of 1983) (CARA) amended regulations 15 and 16 as promulgated in March 2001.
<i>Construction activity</i>	refers to any action taken by the Contractor, his subcontractors, suppliers or personnel in undertaking the construction work, otherwise referred to as "Works"
<i>Construction area(s)</i>	refers to all areas used by the Contractor in order to carry out the required construction activities. This includes all offices, accommodation facilities, testing facilities / laboratories, batching areas, storage & stockpiling areas, workshops, spoiling areas, access roads, traffic accommodation (e.g. bypasses), etc.
<i>Environment</i>	means the surroundings within which humans exist and that are made up of - <ul style="list-style-type: none"> ▪ land, water and atmosphere; ▪ micro-organisms, plant and animal life; ▪ any part or combination of the above and the interrelationships among and between them; ▪ the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.
<i>Environmental Impact</i>	refers to any change to the environment, whether desirable or undesirable, that would result directly or indirectly from any construction or operational activity.
<i>Hazardous material / substances</i>	refers to any substance that contains an element of risk and could have a deleterious effect on the environment.
<i>Local Authority</i>	otherwise referred to as the "Municipality" or "Council" is the local municipal authority that operates or is responsible in said area.
<i>Rock Breaking</i>	Refers to the process where rapidly expanding chemicals are placed into rock or similar hard substance that result in a sudden and forceful expansion causing the rock or similar to break with a sudden release of energy. This however does not include the use of small scale slow expanding chemical products with little or no energy released during application and operation.

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<i>Vegetation rehabilitation</i>	refers to the re-establishment of locally indigenous vegetation with a similar species composition to that which naturally occurs in the area.
<i>Environmental Authorization</i>	also referred to as the ROD is the Record of Decision as issued by the Provincial Government Department arising from the application for Environmental Authorization through either a basic assessment or full EIA process.
<i>Applicant/Developer/Employer</i>	The person or legal entity that has made application to the competent authority for environmental authorizations and who will have the overall, total and ultimate responsibility to adhere to and ensure adherence to the relevant legislation and comply with the environmental authorization.
<i>Owner/s</i>	This could remain the applicant/developer/employer, or where the property/facility has been sold the new legal entity or person/s that have taken ownership as well as the responsibility of the EMP and environmental authorization. The owner is normally referred to during the operational phase. Also responsible for appointing an OM when there is no POA involvement.

ACRONYMS AND ABBREVIATIONS:

BAR	Basic Assessment Report
DEO	Designated Environmental Officer (appointed by the Contractor during construction)
DEA&DP	Department of Environmental Affairs and Development Planning
DEA	Department of Environmental Affairs
DWA	Department of Water Affairs
EA	Environmental Authorisation (see above)
ECA	Environment Conservation Act
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Programme (This document)
EO	Environmental Officer
ER	Employer's Representative (represents the Employer/Applicants interest and oversees the project). Is responsible for making decisions and ensuring all the requirements of the EA and EMP are met on behalf of the Applicant.
HOA	Home Owners Association
HWC	Heritage Western Cape
I&AP	Interested and Affected Party
MS	Method Statement
MSDS	Material Safety Data Sheet
NEMAA	National Environmental Management Act, (Act No. 107 of 1998), as amended.
NHRA	National Heritage Resources Act (Act No. 25 of 1998)
NWA	National Water Act
OM	Operations Manager
PPC&E	Personal Protective Clothing and Equipment

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PPP	Public Participation Process
RDB	Red Data Book (lists of endangered, vulnerable, threatened, extinct species)
ROD	Record of Decision. Now known as Environmental Authorisation
SAHRA	South African Heritage Resources Agency

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SECTION 1

GENERAL BACKGROUND INFORMATION

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1.1 GENERAL BACKGROUND

Consideration is being given to the development of Erf. 332, Pearly Beach, situated in Pearly Beach, Western Cape. The property is currently zoned as Central Business Zone restricted to a hotel and is currently vacant.

It is proposed that a residential development be established. The proposed development will consist of 14 residential erven of approximately 600m² in size. Access will be provided by means of an 8m road. A single pedestrian walkway to the beach will be provided. Two private open spaces will be provided which will make up approximately 25% of the subject property. Please see annexure 2.

Architectural guidelines have been drawn up and will be governed by a Home Owners Association. The architectural style to be adopted will lean towards organic, thus using natural materials, subdued earthy colours and slate roofs to live in harmony with the natural surroundings.

Maximum coverage is 50% of the site. This will include all roofed areas and is measured to the external face of the outside walls. The maximum height of any residential building is 7.5m above natural ground level measured from the average height of the area surrounding the building.

Doug Jeffery Environmental Consultants (Pty) Ltd. are undertaking the relevant Environmental Impact Assessment (EIA) and the Public Participation Process required in terms of the National Environmental Management Act (NEMAA), (Act No. 107 of 1998), as amended.

1.2 SITE INFORMATION

1.2.1 SITE LOCATION

Pearly Beach is a small cape coastal resort town situated east of Gansbaai. It is in a part of the Western Cape known as the Southern Overberg and is approximately 185 km from Cape Town.

The subject property is located on the corner of Esplanade and Arcadia Street within Pearly Beach.

1.2.2 CULTURAL AND HERITAGE

During the Archaeological assessment of the site small patches of low density scatters of shellfish remains and a few stone flakes were documented on the proposed development site.

Remains of a small, Later Stone Age occupation site was also documented on the west facing slopes of a large vegetated sand dune located alongside Arcadia Street in the eastern portion of the proposed development site. Apart from a few small patches of relatively well preserved shellfish remains, a handful of quartzite stone flakes and chunks, including one upper grindstone/hammerstone, and several pieces of adiaagnostic pottery, were also counted. Some tortoise bone was also noted.

Some displaced shellfish was also noted in the dune cutting where Arcadia Street has cut through the large dune, while some quartzite, quartz, limestone and silcrete stone flakes and a small piece of ostrich eggshell were found on the steep, highly eroded sandy slopes.

1.2.3 BIOPHYSICAL ENVIRONMENT

1.2.3.1 Vegetation

According to the national classification of the vegetation of South Africa, Pearly Beach is situated in Overberg Dune Strandveld. The conservation rating of Overberg Dune Strandveld is Least Threatened.

The vegetation on Erf 332 Pearly Beach is typical Overberg Dune Strandveld. It consists of a mosaic of areas of dense dune thicket and areas that are fairly open with the thicket shrubs sparse or absent. The more open areas are characterized by more obvious presence of graminoid species, particularly *Ischyrolepis eleocharis*. In these areas the white sand is exposed.

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The dune thicket is 1 – 1.5 m tall (mid-high), woody and dense but is not particularly spiny. It is remarkably uniform with the thicket canopy wind-shorn by the coastal winds and sea-spray. The vegetation has a uniform appearance and height with a few shrubs emerging above the shrub canopy. The species-richness is low with a suite of companion species accompanying the dominant species.

A concentration of milkwood trees (*Sideroxylon inerme*) is found in the south-east sector of the site. These trees are specially protected by law so any development would have to take them into account.

There are relatively few alien invasive woody shrubs in the central part of the site. These are all *Acacia cyclops* (rooikrans). The majority of the woody invasive shrubs and trees are found along the Esplanade Street boundary with a concentration of *Acacia cyclops* and *Myoporum tenuifolium* (manatoka) in the north-east corner of the site. This is also the most disturbed part of the site with some illegal dumping having taken place there. Kikuyu grass (*Pennisetum clandestinum*) an aggressive exotic invader has also established in this area.

1.3 ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

The National Environmental Management Act (NEMAA), (Act No. 107 of 1998), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority based on the findings of an Environmental Assessment. NEMAA is a national act, which is enforced by the Department of Environmental Affairs (DEA). In the Western Cape, these powers are delegated to the Department of Environmental Affairs & Development Planning (DEA&DP).

In terms of NEMA, the following activities require Environmental Authorisation:

Government Notice R386 listed activities:

- 1 (k) *The construction of facilities or infrastructure, including associated structures or infrastructure, for the bulk transportation of sewage and water, including storm water, in pipelines with -*
 - (i) *an internal diameter of 0,36 metres or more; or*
 - (ii) *a peak throughput of 120 litres per second or more;*
- 2 *Construction or earth moving activities in the sea or within 100 metres inland of the high-water mark of the sea, in respect of –*
 - (f) *buildings; or*
 - (g) *infrastructure*
- 3 *The prevention of the free movement of sand, including erosion and accretion, by means of planting vegetation, placing synthetic material on dunes and exposed sand surfaces within a distance of 100 metres inland of the high-water mark of the sea.*
- 5 *The removal or damaging of indigenous vegetation of more than 10 square metres within a distance of 100 metres inland of the high-water mark of the sea.*
- 6 *The excavation, moving, removal, depositing or compacting of soil, sand, rock or rubble covering an area exceeding 10 square metres in the sea or within a distance of 100 metres inland of the high-water mark of the sea.*
- 12 *The transformation or removal of indigenous vegetation of 3 hectares or more or of any size where the transformation or removal would occur within a critically endangered or an endangered ecosystem listed in terms of section 52 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).*

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- 15 *The construction of a road that is wider than 4 metres or that has a reserve wider than 6 metres, excluding roads that fall within the ambit of another listed activity or which are access roads of less than 30 metres long.*
- 16 *The transformation of undeveloped, vacant or derelict land to –*
- (b) *residential, mixed, retail, commercial, industrial or institutional use where such development does not constitute infill and where the total area to be transformed is bigger than 1 hectare.*

In terms of National Environmental Management: Waste Act, 2008 (No. 59 of 2008) a licence is being applied for to address the following activities:

Category A Activities: Section 20 (b) of The National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)

- 2 *The storage including the temporary storage of hazardous waste at a facility that has the capacity to store in excess of 35m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons.*

1.4 STAKEHOLDER ENGAGEMENT

This EMP is presented to the authorities, as part of the Environmental Assessment process (Conditions of Environmental Approval).

Once the Department of Environmental Affairs and Development Planning has approved the EMP, the Applicant and at the later operational stage, the Property Owner/Home Owners Association (HOA) can then adopt it for implementation as part of the operational phase of the development.

The Department of Environmental Affairs and Development Planning must approve any substantive revisions to the approved document. If requested by DEA&DP, notification of the revision must be made available to relevant stakeholders

1.5 ENVIRONMENTAL RESPONSIBILITIES

The implementation of this EMP requires the involvement of several stakeholders, each fulfilling a different but vital role to ensure sound environmental management during the construction phase.

The following stakeholders will be involved with the EMP either during the construction phase, operational phase or both.

1.5.1 LEAD AUTHORITY: DEA&DP

The Department of Environmental Affairs and Development Planning is the designated authority responsible for authorising the development and approvals. This Directorate has overall and total responsibility for ensuring that the Applicant Arawen Properties (Pty) Ltd complies with the conditions of its Environmental Authorisation as well as this EMP during the construction phase and operational phases.

The Department of Environmental Affairs and Development Planning will also need to review the draft EMP submission (this document or amendments thereof). During the construction and operational phases of the EMP the lead authority may have the following role to play:

- Review environmental reports.
- Review whether there is compliance with the terms of the EMP and Environmental Authorisation specifications and permit/license conditions. Whenever necessary, the authorities should assist the

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Residents/owners associations/Applicant and relevant personnel in understanding and meeting the specified requirements.

- Ensure and timeously recommend suitable corrective measures are undertaken by the Applicant/ER where required.
- Enforcing compliance by the Applicant.
- The authorities may perform random controls to check compliance. In case of persistent non-compliance, the OM will be required to provide an action plan with corrective measures and have it approved by the authorities.

1.5.2 DEVELOPER/EMPLOYER/APPLICANT: ARAWEN PROPERTIES (Pty) Ltd

Under South African environmental legislation, the Applicant / Employer is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts. Arawen Properties (Pty) Ltd as the Applicant / Employer therefore has overall environmental responsibility to ensure that the implementation of the construction phase of this project complies with the relevant legislation and the conditions of the environmental authorisation. To this end the Applicant will ensure that they are fully familiar with the requirements of the Environmental Authorisation and this EMP.

The developer will be responsible for the development and implementation of all the conditions of the Environmental Authorisation in terms of the design of the development and construction thereof. The developer will thus be responsible for the implementation of this EMP prior to and until new owners take over this responsibility.

The ECO will not and cannot be held liable legally or otherwise as a result of non-compliance with the Environmental Authorisation or this EMP.

1.5.3 DEVELOPER/EMPLOYERS REPRESENTATIVE

The Employer's Representative (ER) acts as the Employer's on-site implementing agent and has the responsibility to ensure that the Employer's responsibilities are executed in compliance with relevant legislation, environmental authorisation and EMP.

Any on-site decisions/inputs regarding environmental management are ultimately the responsibility of the ER.

The ER (assisted by the ECO where necessary) will have the following responsibilities, *inter alia*, in terms of the implementation of the Construction phase of this EMP:

- Ensuring that all the necessary environmental authorisations and permits have been obtained.
- Reviewing and approving the Contractor's method statements with input from the ECO where necessary.
- Assisting the Contractor in finding environmentally responsible solutions to problems with input from the ECO.
- Responsible for ensuring total compliance with the requirements of the ROD and this EMP.
- Ordering the removal of person(s) and/or equipment not complying with the EMP specifications.
- Issuing fines for transgressions of site rules and penalties for contravention of the EMP.
- Providing input into the ECO's ongoing internal review of the EMP that is submitted as a report to the Employer and ER.

1.5.4 ENVIRONMENTAL CONTROL OFFICER

The Environmental Control Officer (ECO) will be an independent environmental consultant/company appointed by the Employer/developer to monitor and review the on-site environmental management and implementation of the construction phase of this EMP by the Contractor.

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The ECO is **not** responsible for issuing instructions, ensuring or enforcing compliance with the ROD or EMP. 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's duties are as follows:

- Assisting the ER, where requested, in ensuring that the necessary environmental authorisations and permits have been obtained.
- Maintaining open and direct lines of communication between the ER, Employer, Contractor and the public with regard to environmental matters.
- Assisting with the appointing of specialists (botanists, wetland specialists, etc.), as requested, to advise the Engineer / Client / ER.
- Reporting on environmental issues noted on site during site inspections at construction site meetings.
- Assisting, if requested, with the training of all construction staff, including day workers, as to the requirements for working on the site.
- Reviewing and approving the Contractor's construction method statements together with the ER.
- Regular site monitoring inspections of all construction areas with regard to compliance with this EMP.
- Monitoring adherence to the EMP, the environmental authorisation and approved method statements at all times, thereby ensuring that environmental impacts are kept to a minimum.
- Assisting the Contractor/ER in finding environmentally responsible solutions to problems.
- Advising the ER on the removal of person(s) and/or equipment not complying with environmental specifications.
- Recommending the issuing of fines for transgressions of site rules and penalties for contraventions of the EMP to the ER.
- Reporting on the implementation of the EMP and compliance with the environmental authorisation on a regular basis.
- Recommending additions and/or changes to the EMP to the directorate, if deemed necessary.
- Compiling a final report regarding the EMP and its implementation during the construction period and submitting this report to the Employer and the competent authority.

The ER will ensure that the ECO is provided (in writing) with emergency contact details for the following:

The Client/Applicant
The Employers Representative.
The Contracts Manager (Contractor)

Should an environmental emergency situation arise (as deemed as such by the ECO) the ECO will contact the relevant role players to notify them of the situation. Should the Applicant, ER or contracts manager not be immediately reachable, via the emergency numbers provided to the ECO to address the matter, the ECO is permitted to call for actions and take decisions that are felt, in the opinion of the ECO, to be in the best interest of the environment and to attempt to rectify the situation. Any and all resulting costs, legal implications, damage to infrastructure or similar aspects resulting from either the ECO's instructions or actions or impacts resulting from the incident itself will be the responsibility and for the account of the applicant or contractor. The ECO will not be held liable in any manner.

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1.5.5 CONTRACTORS DESIGNATED ENVIRONMENTAL CONTROL OFFICER (DEO)

The Contractor refers to the team appointed by the Employer to undertake the construction activities for the project.

The appointed Contractor **is required to appoint** a competent individual as the Contractor's on-site Designated Environmental Officer (DEO). The DEO must be appropriately trained in environmental management and must possess the skills necessary to impart environmental management to all personnel involved in the contract.

The DEO will be responsible for overseeing the Contractor's day to day internal compliance with the EMP requirements and ensuring that the contractor adheres to all environmental specifications.

The DEO will be responsible for keeping detailed records of all site activities that may pertain to the environment (in the form of a site book). Additional responsibilities of the DEO include *inter alia*:

- To be familiar with the Environmental Authorisation and this EMP as well as all the related requirements and specifications.
- Daily site inspections and site notes.
- Supervision of work where environmental management is a key aspect (e.g. in sensitive areas, with high environmental risk, etc.).
- Communicating with and providing information to the ECO as well as reporting any incidents or issues arising or that may potentially arise on site.
- Completing temporary site-closure checklists and submitting to the ECO.
- Keeping a photographic record of progress on site from an environmental perspective.
- Keeping a register of complaints in the site office and recording and dealing with any community comments or issues.
- Maintaining an environmental site file with all the relevant environmental admin including hazardous waste disposal certificates, environmental induction registers, letters of permission, a copy of the ROD and this EMP, copies of all approved method statements and performance reports.
- Keeping a record of on-site incidents and accidents and how these were dealt with and will be prevented in future.
- Environmental induction of staff (the ECO will assist if required or requested).

1.5.6 OTHER AUTHORITIES

Other authorities involved in activities relating to the implementation the EMP could include the local municipal authorities and Heritage Western Cape.

1.5.7 HOME OWNERS ASSOCIATION 'HOA' (OPERATIONAL PHASE)

The implementation of the operational section of this EMP (section three) is the responsibility of the Home Owners Association (HOA), and each property and homeowner is bound to comply with the EMP as well as the conditions of the Environmental Authorisation issued for the development.

The HOA may form an environmental advisory sub-committee to facilitate the operational environmental management of the development.

The HOA should appoint an individual who will co-ordinate and ensure the implementation of the EMP during the ongoing operational phase, on behalf of the HOA, known as Operational Manager (OM).

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1.5.8 OPERATIONS MANAGER 'OM' (OPERATIONAL PHASE)

A project or operations manager (OM) must be identified/appointed by the HOA to assume over-all responsibility for managing any Project Contractors and for ensuring that the operational environmental management requirements for the development are met. The Operational Manager, should also has the authority to stop any activity in contravention of the EMP, must approve all decisions regarding environmental procedures and protocol relating to the operational phase (section 3) of this document.

The operations manager is funded by and reports to the HOA or if required the environmental advisory sub-committee.

1.6 ENVIRONMENTAL PERFORMANCE REPORTING

1.6.1 CONSTRUCTION PHASE ENVIRONMENTAL PERFORMANCE REPORTS

The appointed ECO, as referred to in section 1.5.4, will produce an environmental performance report on a regular basis for the duration of the construction phase of the project.

The performance report will be submitted to the ER, Contractor and the Department of Environmental Affairs and Development Planning.

Should there be issues of non-compliance or transgressions noted by the ECO, the environmental performance reports issued will be considered by the ECO to be the required formal notification to the Department of Environmental Affairs and Development Planning of such transgressions and non-compliance on the site. Should DEA&DP feel it necessary the responsibility will be theirs to take up the matter and address it further in a timeous manner.

The report will, to the best of the ECO's ability and in accordance with information provided to them as well as be a true reflection of concerns and observations noted on site. The report will highlight environmental aspects relating to the construction phase of the project during the reporting period.

The ER and the Contractor as well as DEA&DP are required to read these reports and take action as necessary.

1.6.2 OPERATIONAL PHASE ENVIRONMENTAL AUDITS

An operational audit shall be undertaken 12 months after the construction phase has been fully completed. This initial operational audit should be funded by the Applicant/Developer.

Thereafter an operational audit will be under taken every 2 years. This will be arranged and funded by the HOA.

All operational audits must be undertaken by an independent environmental consultant.

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SECTION 2

CONSTRUCTION PHASE OF EMP

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2.1 AIMS OF SECTION

The purpose of the Construction Phase of this EMP (Section 2) is to ensure that the impacts on the environment are kept to a minimum and to facilitate appropriate environmental input during the construction phase of the project. This includes ensuring that the mitigation measures described in the EIR are implemented, continued monitoring during the project and to ensure the involvement of interested and affected parties (I&APs) in a meaningful way. This EMP (Section 2) thus also specifies the framework within which the contractor must carry out operations.

As required by the EIA process being undertaken by *Doug Jeffery Environmental Consultants (Pty) Ltd.* this EMP is submitted in part completion of the required application.

2.2 THE EMP BILL OF QUANTITIES

This Environmental Management Programme forms part of the Contract Document. The EMP must be read in conjunction with the contract documents including the Specifications, and where applicable, the Bill of Quantities. Where a conflict exists between the Specifications and Bill of Quantities and the Environmental Management Programme the matter shall be brought to the attention of the client/client's representative for resolution. The ER is responsible for the compliance of the contractor with this document and the Environmental Authorisation from DEA&DP.

The rates quoted for each activity in the Bill of Quantities shall include for compliance with the Environmental Management Programme. No separate item shall be priced in the bill for compliance with the Environmental Management Programme. Sufficient funding must be available to address the environmental management needs of the project.

2.3 CONSTRUCTION PHASE EMP ADMINISTRATION

The ECO must be informed at least three weeks prior to the commencement of activities on site in order for the required notifications to be made as required by the conditions of the Environmental Authorisation.

Copies of this EMP shall be kept at the site office and will be distributed to all senior contract personnel. All senior personnel (including the project team) are required to, and responsible for familiarising themselves with the contents of this document, its requirements and specifications.

All relevant and related documentation and records as set out in this EMP or records as requested by the ECO/ER are to be presented for monitoring by the Contractor/DEO at the request of the ECO or ER. This should include but is not limited to:

- Waste disposal certificates or similar record of responsible waste disposal
- Records of environmental education
- DEO daily site notes and photographic records
- Approved Method Statements
- Incident reports
- Complaints register

The Contractor will ensure that all required records are gathered and maintained for the duration of the contract and all related works.

2.3.1 ORGANISATIONAL STRUCTURE FOR CONSTRUCTION PHASE

Details of the organisational structure are presented in Figure 1. The structure illustrates the reporting procedures for stakeholders in the implementation of this EMP.

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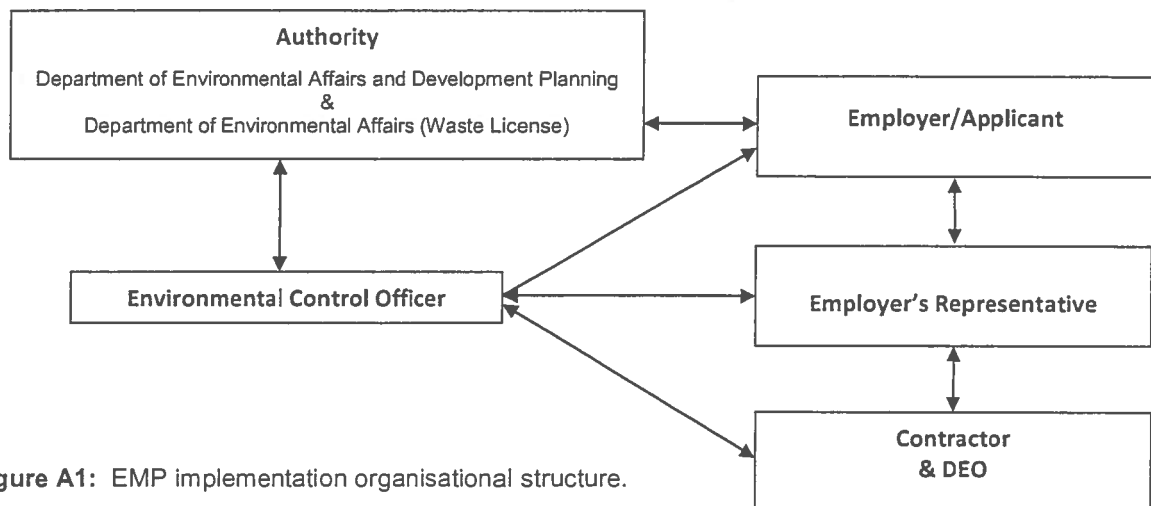


Figure A1: EMP implementation organisational structure.

2.3.2 ENVIRONMENTAL AWARENESS TRAINING

The ECO in consultation with the contractor shall ensure that adequate environmental awareness training of senior site personnel takes place and that all construction workers receive an induction on the importance and implications of the EMP. The presentation shall be conducted, as far as is possible, in the employees' language of choice.

As a minimum, training should include:

- Explanation of the importance of complying with the EMP.
- Discussion of the potential environmental impacts of construction activities.
- The benefits of improved personal performance.
- Employees' roles and responsibilities, including emergency preparedness.
- Explanation of the mitigation measures that must be implemented when carrying out their activities.
- Explanation of the management structure of individuals responsible for matters pertaining to the EMP.

The Contractor / DEO shall keep records of all environmental training sessions, including names and dates.

Annexure 3 contains some useful environmental awareness materials.

It is the responsibility and duty of the Applicant, ER and all senior contract personal to read the EMP as well as the Environmental Authorisation and be personally familiar with all their requirements and specifications.

Notwithstanding the specific provisions of this particular section it is incumbent upon the Contractor to convey the sentiments of the EMP to all personnel involved with the works.

2.4 COMMUNITY RELATIONS

2.4.1 COMPLAINTS AND INFORMATION

The Contractor shall erect and maintain information boards in the position, design and dimensions specified. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the Engineer or ER. The contractor shall also keep a "complaints register" on site. The register shall contain all contact details of the person who made the complaint and information regarding the complaint itself as well as any follow up undertaken, if required.