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PROPOSED PREEKSTOEL BEACH ESTATE

ENVIRONMENTAL MANAGEMENT PROGRAMME

CONSTRUCTION PHASE

PROPOSED PREEKSTOEL COASTAL DEVELOPMENT ON ERF 1028, PORTION 2 OF ERF 599 AND REMAINDER OF ERF 599, STILL BAY EAST, HESSEQUA MUNICIPALITY, WESTERN CAPE

APPLICANT:
VIVREN PROPERTIES (PTY) LTD.

Compiled by: A.W. Withers
Date: November 2023 (Rev 4)
Job No: 1012
DEADP: Development Management Ref. No.: :: 16/3/3/1/D5/18/0001/17
DEADP: Environmental Law Enforcement Ref. No.: 14/1/1/E3/8/2/3/L1280/22

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LIST OF ABBREVIATIONS

Basic Assessment Report	BAR
Construction Phase Environmental Management Plan	CEMP
Compact Fluorescent Light	CFL
Critical Biodiversity Area	CBA
Department of Environmental Affairs	DEA
Department of Environmental Affairs and Development Planning	DEA&DP
Department of Water Affairs	DWA
Environmental Assessment Practitioner	EAP
Environmental Control Officer	ECO
Environmental Impact Assessment	EIA
Environmental Management Programme Environmental Management Programmes	EMPr EMPs
Heritage Western Cape High Water Mark	HWC HWM
Home Owner's Association	HOA
Interested and Affected Parties	I&Aps
Land Use Planning Ordinance, (Ordinance 15 of 1985)	LUPO
Light-emitting Diode	LED
Material Safety Data Sheets	MSDS
National Environmental Management Act, (Act 107 of 1998)	NEMA
National Environmental Management: Biodiversity Act, (Act 10 of 2004)	NEM:BA
National Environmental Management: Integrated Coastal Management Act, (Act 24 of 2008)	NEM:ICMA
National Forest Act, (Act 84 of 1998)	NFA
National Heritage Resources Act, (Act No. 25 of 1999)	NHRA
National Water Act, (Act No. 38 of 1998)	NWA
Operational Phase Environmental Management Plan	OEMP
Polyvinyl Chloride	PVC
Resident Engineer	RE
Small Medium Micro Enterprises	SMMEs
South African Heritage Resources Agency	SAHRA
South African Manual for Outdoor Advertising Control	SAMOAC
Withers Environmental Consultants	WEC

DETAILS OF THE EAP WHO COMPILED THE EMPR

Aubrey Withers of the then Withers Environmental Consultants (Pty) Ltd. compiled the original EMPr in September 2014 and at that stage had been in the environmental consulting space for 25 years, during which time he had written about 225 reports. Many of these environmental projects have dealt with diverse and complex environmental and planning projects. He has undertaken environmental planning for many coastal resorts and residential development projects, which included various dune stabilisation programmes. Aubrey was also instrumental in the fore-running work undertaken for DEADP for the Spatial Coastal Management of the Western Cape's coastal environment when he was a director of Dennis Moss Partnership. Aubrey has also had extensive experience with the approvals of and construction supervision of all residential developments, civil services (roads, pipelines, waste disposal facilities [including their decommissioning], waste treatment facilities and electrical substations). He has also been appointed to assist many local authorities and government departments, including the DEADP, with the review of complex development applications and environmental management programmes of proposed developments, especially along the coast and a number of Structure Plans for coastal towns (Spatial Development Frameworks).

His previous experience encompassed 12 years experience in lecturing (at the Civil and Building Department of the Port Elizabeth Technikon), mineral exploration (uranium, gold; base metals; platinum; chrome and diamonds); groundwater development (specifically in Namibia, Northern Province, North West Province, and the Western Cape Province); geotechnical geology; civil engineering and building construction.

Aubrey's curriculum vitae is given as **Appendix 13** at the end of this EMPr.

SECTION A: THE SCOPE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

This section describes the scope of the Environmental Management Programme (EMPr) of the Preekstoel Coastal Estate[1] and how the document is to be used. The applicability of the EMPr is for the following landholdings in Still Bay East (refer to **Figure 1** and **2**):

- the proposed development on the landward portion of Erf 1028 and a portion of Portion 2 of Erf 599 have been consolidated into one new Erf, now known as Erf 2343, and is now owned by Vivren Property Developers (Pty) Ltd.;
- the coastal section of Erf 1028 (previously owned by Preekstoel Residential Development), which is now known as Erf 2341, has been transferred to the Hessequa Municipality and has been rezoned to Open Space III for conservation purposes, i.e., a coastal conservation corridor; and
- Erf 593 was previously owned by Classico Developments, but which joined Vivren Properties in a joint venture of the Preekstoel Coastal Estate, which included a land swop with Hessequa Municipality for the inland portion of Portion 2 of Erf 599. In terms of the agreement with Hessequa Municipality, Erf 593 has been transferred to the Hessequa Municipality.

The EMPr, together with its various Environmental Management Programmes (EMPs), must be read together with the Conditions of Approval that the Department of Environmental Affairs and Development Planning (DEADP) issued on 6 February 2018 (refer to **Section C** and **Appendix 1a**), and which were subsequently reviewed by the Minister of Local Government Environmental Affairs and Development Planning on 2 August 2018 (**Appendix 1b**)[2]. An extension of time for compliance was granted by the Minister (**Appendix 1c**).

To allow this EMPr to be a "stand alone document", the main environmental background information pertaining to the proposed development is included into this EMPr document (refer to **Section B**).

The EMPr incorporates the recommendations of the BAR and the recommendations contained in the specialist reports, in respect of the various mitigating actions that need to be undertaken during the construction phase of the project, so as to:

(a) minimise potential adverse impacts;
(b) enhance potential beneficial impacts of the project; and
(c) enhance the biodiversity of the applicable erven associated with the development, namely Erven 2341, 2343 and 593;

thereby ensuring sustainable development to take place.

This EMPr covers the spectrum of pre-construction, construction and post construction phases of the project. The directives and guidelines covered in respect of the above phases are provided by the various Environmental Management Plans (EMPs). The EMPr is basically the *'management tool'* for providing management guidelines for the construction supervision of the project to ensure that environmental impacts are minimised to levels of acceptable change. In addition, the EMPs provide the necessary guidelines to the Environmental Control Officer (ECO), Consulting Engineers, Construction Supervisor (of the appointed Contractor), Site Agent of the developer (Mr Andre Muller) and, to the Developer (Vivren Properties (Pty) Ltd.) to ensure that:

[1] The Preekstoel Coastal Development was the name of the proposed development at its inception. It was also called the Preekstoel Coastal Estate. This name has recently been named the Preekstoel Beach Estate. These names are synonymous with each other.
[2] The Environmental Authorisation issued by the DEADP on 6 February 2018 was appeal by Vivren Properties (Pty) Ltd. Certain of the Conditions of Approval were amended by the Minister of Local Government on 2 August 2018.

- initially the contractors and their subcontractors fulfil their construction role in an environmentally responsible manner to reduce impacts (for both construction of services and building of houses).

The EMPr also contains a Fire Management Plan to prevent fires from spreading from the development property (Erf 2343) and in turn fighting fires that may come in from the surrounding properties to the north and east, and to eventually manage the ecology of the Blombos Strandveld vegetation within the development property (Erf 2343), Erf 593 and Erf 2341 (**Appendix 4**).

Please Note: We do not believe that fire will play a major role in vegetation composition, primary productivity and nutrient cycling because the only seed base within the soils will be that of rooikrans, given that the area was covered with a large mobile dune plume in the 1920's, which was later stabilised with the planting of rooikrans vegetation by the then Department of Forestry. It will take a long time before fire will be used for conservation and ecological management ideals, if ever.

The EMPr covers such aspects as the Vision set by the Developer for the project. Various Goals have been put forward for the achieving the Vision. A number of specific EMPs are put forward for achieving the various Goals of the development. To achieve these Goals, various Environmental Objectives are set for each of the EMPs. The preparation of this EMPr has also been undertaken based on the guiding principles of adaptive management, which is a structured, iterative process in which decisions are made using the best available information, with the aim of obtaining better information through monitoring of performance (Management Strategy Evaluation, 2009). Adaptive management can lead to revision of parts of the environmental management plan as is shown below.

Adaptive management enables landowners and managers to:

i) Learn through experience;
ii) Take account of, and respond to, changing factors that affect the biodiversity of the sites;
iii) Develop or refine management processes;
iv) Adopt best practices and new innovations in biodiversity conservation management; and
v) Demonstrate that management is appropriate and effective.

Various performance requirements or Targets are put forward for the specific Management Actions to be taken, as described below:

- **Environmental Objectives**

These objectives provide the means for achieving the overall environmental aims arising from the environmental policy that the relevant management entity (Developer and any other development entity that may develop any approved phase of the overall project) sets itself, and which are quantified where possible.

- **Environmental Targets**

  These are detailed performance requirements, which are quantified where possible, and that arise from the environmental objectives. Targets need to be set and met in order to achieve the desired objectives.

- **Management Actions**

  These are specific strategies and actions that are instituted for achieving the environmental targets within a specific timeframe. The actions are specific and measurable.

- **Monitoring Actions**

  These are specific strategies and actions that monitor the management actions of rehabilitation and what works and what is not working so that adaptive management ideals can be introduced to ensure that the management actions are having the desired effects, i.e. reducing environmental impacts (wind erosion, species die off), and improving biodiversity of the area by planting appropriate locally indigenous strand and Blombos Strandveld species that can weather the harsh coastal conditions of the area.

It is the responsibility of Vivren Properties (Pty) Ltd. (and any other development entity that may develop any approved phase of the overall project) to ensure adherence to the recommendations of the EMPr, the Conditions of Approval set by the DEADP and the Minister, and to review the results of the monitoring programmes and to facilitate any corrective action that may be necessary. It should be noted that Vivren Properties will be responsible for the implementation and monitoring (via the monthly ECO[3] checklists and the required Annual External Environmental Audits) of environmental issues that may arise during the Construction Phase of the project.

As part of their immediate responsibility, the Developer, Vivren Properties (and any other development entity that may develop any approved phase of the overall project), will need to appoint an ECO (Environmental Control Officer) to regulate the Construction Phases of the project, which is to comprise a number of phases for the development of various precincts of the approved development, in accordance with the EMPr's Conditions of Approval. The EMPr and the Conditions of Approval must form part of the tender documentation to ensure that the appointed contractors understand what their environmental contract obligations are for each phase of the development.

The duties of the various entities involved in the Construction Phase of the project are as follows:

1. The ECO will:
   - Meet with the Developer and consulting engineers to hand over the site of a particular phase of the development to the appointed Contractor and go through the content of the EMPr and ensure that the Contractor understands the environmental conditions of the contract;
   - Meet with the Contractor and staff before construction commences to initiate the EMPr and to go through the environmental "do's and don'ts" of the project (Induction Programme);
   - Assist with the clearing of the alien vegetation of the development site;
   - Attend monthly site meetings to assess progress and compliance with the Conditions of Approval and the recommendations of the EMPr;
   - Train and assist a team of workers to rehabilitate Erf 593 by firstly clearing of alien vegetation, follow-up weeding of alien vegetation seedlings and later, the planting of locally indigenous Blombos Strandveld plants;

[3] ECO (Environmental Control Officer) will be undertaken monthly

- Complete an ECO Checklist after each monthly site meeting and distribute it to all the relevant role players within five (5) working days, as part of the Construction Phase of the project. The ECO Checklist will act as environmental site instructions for the duration of the installation of the services and construction of buildings; and
- Assist the developer with educational material for educating the public about the sensitivity of the frontal dune system and why these dunes are important for the safety of inland structures and their role in maintaining the functioning of the coastal ecosystem.

Note: the developer will also need to appoint and external Environmental Assessment Practitioner (EAP) to undertake annual external environmental audits of the project (installation of services for a specific phase and again after the construction of buildings have been completed for a particular phase of the project).

2. The Developer's Site Agent (Andre Muller) will monitor the day-to-day progress of the construction process. The consulting engineer should conduct monthly site visits and meetings with the Contractor and ECO. Should any environmental problems arise during the Construction Phase, the Site Agent and/or consulting engineer must immediately inform the ECO to undertake a site visit to assess and attend to the potential environmental problem(s). All works where environmental problems exist are to be stopped until the ECO has been to site and assessed the situation and rectified the problem(s).

3. The results of the monitoring programmes (site meetings), which will be contained in the monthly ECO Checklists, will be used for the compilation of the annual external audit reports by the external auditor. Such external audit reports should be submitted to DEADP, CapeNature, Hessequa Municipality, the developer and the appointed ECO.

SECTION B: BACKGROUND INFORMATION

B.1 PROJECT DESCRIPTION AND APPROVAL CONTEXT

B.1.1 Description of the Proposed Development

The proposed residential development on Erf 2341, Still Bay East will comprise 114 single residential erven, one commercial unit (boutique hotel/restaurant), internal roads, Private Open Spaces, and a utility zone (refer to **Figure 3**).

The development site is 137 691m^2 in extent, and will comprise the following:

- Residential: 114 single residential (58 540m^2)
- Boutique Hotel and Restaurant (3 147m^2)
- Roads (16 608m^2)
- Open Space III (32 838m^2), comprising the coastal corridor between the (ecological zone) parallel to the high water mark
- Private Open Space (22 083m^2) system within the development (landscaped corridor) and small clubhouse facilities.
- Utility Zone: (2 468m^2) comprising maintenance/security building, boat/trailer storage area etc.
- A wooden boardwalk across the frontal dune to provide access to the beach.
- Public Parking Area (30 parking): (1 225m^2)
- Biolytic Waste Water Treatment Plant (modular system): (300m^2)
- Public Ablution Facility (75m^2)

The development of the proposed Preekstoel Coastal Development will require:

1. the **demarcation of the boundaries** of the property, including the low-risk coastal management line (conservation setback line) parallel to the seashore;
2. **mass earthworks**[4] will be undertaken landward of the low-risk coastal management line (conservation or ecological management set-back line) in order to create stable building platforms for various development precincts;
3. the **installation of engineering services;**
4. the disturbed areas (which will form part of the development's open space system) to be re-vegetated with locally indigenous Blombos Strandveld plants. This open space system will serve as a corridor, linking to the frontal dune system and areas to the north of the low-risk coastal management line, through Erf 599 and to the northeast through Erf 593 with the adjacent Geelkrans Nature Reserve. These corridors aim to contribute to the ecological connectivity of the area (**Figure 4**)

A low risk coastal management line[5] (refer to **Figure 4**) has been determined for the proposed development and comprises the following:

- An erosion setback line which is the risk (of erosion caused by sea level rise) with a 100 year return period – i.e. therefore with a 1% chance of taking place in any given year during the ensuing 100 years;
- An ecological management setback line which defines the landward edge of the intact Blombos Strandveld dwarf thicket vegetation growing on the steep slope of the aeolianite scarp, its crest and the area back from the crest and the area within the stable back-dune slack of the frontal dune system. The natural vegetation seaward of this line will form a conservation corridor along the coastline of Erf 1028 (now Erf 2341);

[4] The **mass earthworks** will comprise the following: identify a suitable nursery site; remove alien vegetation by bulldozer and stockpile for chipping; stockpile chipped alien vegetation; distribute chipped alien vegetation over such platforms; and follow up the rehabilitation once all services have been installed.

[5] The low risk coastal management line defines the boundary seaward of which no infrastructure or building may take place and comprises the erosion setback line and the ecological management setback line.

- A building management line, which in this project, is taken as a line 5m landward of the ecological management setback line and is meant to protect the natural vegetation from edge effects caused by disturbances of development and landscaping and can be vegetated with fynkweek (*Cynodon dactylon*) or buffalo (*Stenotaphrum secundatum*) grasses and Blombos Strandveld plant species.

The low-risk coastal management line has been determined inland from the high water mark to:

- ascertain how far the frontal dune system and the ancient aeolianite cliff will recede due to future sea level rise and associated coastal erosion;
- determine where the edge of the littoral active zone of the frontal dune system is and where the edge of the good quality dwarf Blombos Strandveld vegetation is that grows on the steep aeolianite foreland scarp and the climax vegetation growing in the stable back-dune slack; and
- determine a 5m building line landward of the littoral zone and the dwarf Blombos Strandveld vegetation to prevent the edge effects of the proposed development on these two zones.

The low-risk coastal management line was therefore required to guide the planning of the proposed site development plan for the proposed Preekstoel Beach Estate (refer to **Figure 4**).

One wooden boardwalk will be sited over the rehabilitated frontal dune system to provide pedestrian access to the beach, thereby providing protection to the sensitive coastal vegetation and prevent erosion of the frontal dune. A public access point to the beach through the property will be provided adjacent to the existing access road (R305 or MR 355) with a 1.5m wide servitude[6] running over the frontal dune to the high water mark. Once the frontal dunes[7] have been fully rehabilitated, a boardwalk will be constructed over the newly formed dunes to the beach. Continued maintenance of the boardwalk may be required to remove any windblown sand from it. It will be important to ensure that the boardwalk remains stable and does not constitute a risk to the public using it. Initially, it will be the responsibility of the developer to construct and maintain the boardwalk over the frontal dune system and once all development has been completed this responsibility will shift to the Home Owners Association (HOA) (as specified in the Operational Management Plan)[8].

In terms of engineering services, the following will be undertaken (refer to **Figure 5**):

- **Water:**
  The Hessequa Municipality has confirmed that there is sufficient potable water capacity for the proposed development, which will be supplied via an existing 150mm water main located at the neighbouring development on Galjoen Street (to the west). A new water supply ring main has been installed from the reservoir to the development by the developer. The water connection for the proposed development will be taken from this new 200mmØ connection at Kabeljou Street.

  The Hessequa Municipality has, however, stated that certain water network capacity upgrades will be required based on the GLS Consulting Engineers report (the Municipality's bulk services engineers)[9]. No new reservoir facility, or booster system is required for the proposed development. A new bulk water meter has been installed for the development.

- **Sewage:**
  The Hessequa Municipality and the Department of Water and Sanitation (DWS) have confirmed that the proposed development can only accept limited sewage from the development (about 44 houses) at the existing sewer pump station located between the Municipal caravan park and the (public) beach parking area (to the west of the development site), as the sewage infrastructure does not have additional capacity to carry all the sewage to be generated by the proposed development.

[6] A registered servitude has been registered over Erf 2341

[7] The frontal dunes refers to the area between the current access point and about 200m to the east, i.e. to the start of the steep foreland scarp and between the high water mark and the low-risk coastal management line.

[8] The Operational Management Plan is contained in a Separate Report.

[9] The necessary network capacity upgrades have been undertaken by the developer.

The Municipality and DWS have further confirmed that upgrades and expansion to their existing wastewater treatment works (WWTW) in Still Bay will need to be undertaken before any further developments take place in Still Bay. The GLS Report has indicated that the sewage network would require upgrading (larger pipes and greater capacity pumps) before the proposed Preekstoel Coastal Development could connect to the sewerage network. All required upgrades will need to be paid from the developers' bulk services levies. These levies will be insufficient to effect all such upgrades.

Given the above, the DWS suggested that a package sewage plant could be considered to be constructed for treating the sewage to be generated by the proposed development. The treated effluent would conform to the General Standards specified in the National Water Act, 1998 (Act 36 of 1998) (NWA). An application was submitted to DWS for the construction of the package sewage plant by way of a Water Use License application in terms of Section 21 of the NWA[10]. A trial period using the treated effluent in the two small ponds within the development may be undertaken to assess the level of algae in these ponds.

- **Stormwater Drainage:**
  All stormwater flow in excess of the 5 year pre-development flow will be accommodated on site in a detention pond system (forming part of the landscaped public open space area within the central low point of the development site) (**Figure 6**). Two small water features within the development will collect and retain the excess stormwater from the detention pond (low swale). The water features will be clay (or PVC) lined to prevent stormwater from seeping into the groundwater. Treated sewage effluent, to a General Standard specified by DWS, may be pumped to these water features or ponds. The treated effluent will not be allowed to be used for the irrigation of the locally indigenous strand plants and Blombos strandveld plants to be established on the frontal dune system that will need to be rehabilitated.

- **Electricity Provision:**
  The Hessequa Municipality has confirmed that the proposed development will be able to connect to the bulk electrical supply of the area as the electrical substation has been upgraded. Houses will be connected to underground electrical cables from mini-substations.

- **Fibre Network Services:**
  An underground fibre network has been installed within Phase 1 of the development.

- **Access:**
  Access to the proposed development will be off the Main Road 355 (R305) and will be 6m wide, excluding the kerbs, and will be an exposed aggregate concrete brick-paved road. In addition, internal roads will be (5m wide), and will also be an exposed aggregate brick-paved road and will have kerbs.

- **Solid Waste:**
  Domestic Solid waste will be collected by the HOA and stored at a refuse facility near the gatehouse from where the Municipality will collect for disposal at the Melkhoutfontein Solid Waste Site. As such, no door-to-door solid waste collection service will be provided by the Municipality.

- **Access to the Beach**
  Access to the Beach will be from one boardwalk to be constructed by the developers over the frontal dune system at the end of the R305 (MR 355) road. A 1.5m servitude has been registered over Erf 2341 for this purpose. The developer will construct the boardwalk and will also maintain the boardwalk in good working order. Once the development has been completed the HOA will take over the maintenance of the boardwalk.

[10] A General Authorisation has been issued by the DWS. According to the EA issued by the DEADP, the irrigation of the rehabilitation of the frontal dunes and the irrigation of the landscaping within the development may not take place by using the treated effluent and only potable water from the Municipality should be used.

The necessary reticulation for the required services such as water, sewage and electricity (municipal) will be installed by the developer. The new package sewage plant will be constructed by the developer. Internal roads will also be constructed by the developer and will connect to the existing Provincial R305 tar road (MR355) within Still Bay East. Fibre optic cables will be installed to the residential development. The existing Dunes Municipal reservoir will supply sufficient potable water to the proposed development. The solid waste generated by the development will be collected by the Home Owners Association and temporarily stored in a refuse storage area for collection once a week by the Hessequa Municipality. Mandatory recycling of waste must be undertaken.

Land Exchange Agreement and Zoning of the Properties

The proposed development is part of a land exchange agreement between the Applicant (Vivren Properties) and the Hessequa Municipality. The agreement states that once all the necessary rezoning, development and land use approvals have been obtained, that the Remainder of Erf 593 (which was then [April 2017] currently owned by the applicant) will be exchanged for a portion of Portion 2 of Erf 599. The public parking area and the BWWTW will be sited on a small portion of land (Portion 2 of Erf 599) to the west of the development which is owned by Hessequa Municipality)[11]. The former property will then be consolidated with the landward section of Erf 1028 (forming the development site, i.e., Erf 2343). Erf 593 has also been transferred to the Municipality (**Figure 7**). The coastal corridor on the former Erf 1028 has been rezoned to Open Space III[12] and will form a greenbelt or conservation ecological corridor along the coastline (now known as Erf 2341) (**Figure 7**). This conservation corridor may be incorporated into the Geelkrans Nature Reserve in the future if so desired. A proposed maintenance agreement for this coastal corridor between the Municipality, and for now the developer, (and later the Home Owners Association of the development) has been put forward by the developer's attorney (refer to **Appendix 7**). This supersedes Condition of Approval 21 of the EA (which is legally not possible).

The development property has been consolidated into Erf 2343 and is now owned by Vivren Properties (Pty) Ltd. and has been rezoned and sub-divided into various Residential Zone l and Residential Zone ll, Private Open Space and Roads in terms of the By-Laws of the Land Use Planning Act of the Hessequa Municipality (**Figure 7 and Appendix 8**). Erf 593 has retained its "Undetermined" zoning and has been transferred by Vivren Properties to the Municipality (refer to **Appendix 8**).

Alternative Layouts

Two layout options were considered for the proposed residential development together with the option of not implementing the development (i.e. the "no-go" option). Both layouts occur on the same properties i.e., Erf 1028 and a portion of Remainder Erf 599 (now Erf 2343), and fall within the urban edge of Still Bay. The preferred development option was approved by the DEADP.

No – Go Option

In terms of the "No-go" development option, the properties would have remain undeveloped. In the long term, the impacts of not developing on the biological environment are likely to be low negative.

[11] Land Exchange Provision 4.1 in the 'Agreement between Hessequa Municipality and Vivren Properties (Pty) Ltd. (**Appendix E4** of the BAR).

[12] The coastal corridor has already been rezoned to Open Space III by the Municipality for conservation purposes. It has also been transferred to the ownership of the Municipality. However, the maintenance of the conservation corridor will be undertaken firstly by the developer and then by the Home Owners Association, once all development has been undertaken.

B.1.2 Description of the Biophysical Environment

A site visit was undertaken during July 2012 and again in January 2014 and March and June 2016 by the appointed EAP, Withers Environmental Consultants (WEC)[13], accompanied by the appointed Town Planners, Sibane Planning and Development in order to describe and assess the biophysical environment and features of the proposed development area. The specialist consultants who were appointed to undertake a number of specialist assessments, visited the development site individually. The specialist assessments undertaken included:

Engineering Services Report	. ICON Consulting Engineers
Capacity Analysis of Bulk Services	. GLS Consulting Engineers
Traffic Impact Assessment	...DECA Consulting Engineers
Botanical Impact Assessment	...Nick Helme Botanical Surveys
Heritage Impact Assessment	...Agency for Cultural Resource Management
Visual Impact Assessment	... Megan Anderson Landscape Architects
Delineation of a Low Risk Coastal Management Line	Aubrey Withers of WEC
Dune Geomorphology Specialist Study	Illenberger & Associates

Topography

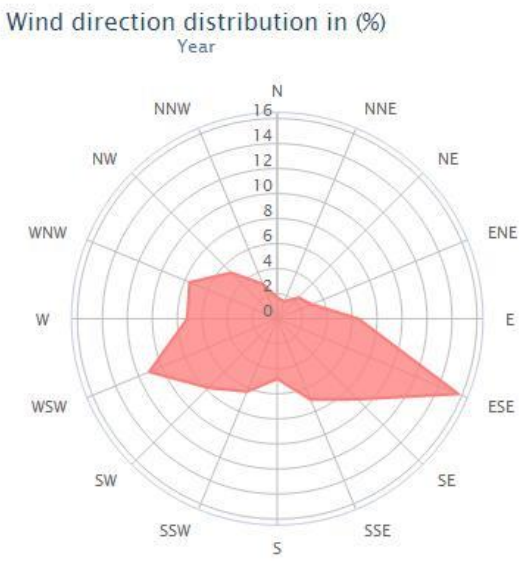
Primary coastal dunes front the western section of the site where they rise to about 11m above mean sea level (amsl) (near the boundary with the caravan park). These dunes vary between 8.5m at the end of the tar road to 11.5m to the east in line with the outcropping of aeolianite (calcretised windblown sand) near the seashore[14]. The primary dune system gives way to aeolianite cliffs along the eastern coastal section along the seashore. The aeolianites form a steep vegetated scarp rising from the HWM (2m) to between 15m in the west to 15.5 m on the eastern boundary of Erf 1028 (Now Erf 2341). A northeast (9m amsl) to southwest (4.5m amsl) undulating depression has been eroded into the ancient dune plume landscape and aeolianites behind the steep scarp and primary dunes, respectively. The old dunes of the dune cordon formed during the Holocene between the mouth of the Goukou River and up to 1.5km north of the coastline and about 5km to the east. These dunes rise to about 16m in the northwest and 15m in the northeast.

Climate

The area experiences a Mediterranean climate, with cool, wet winters, and warm, dry summers. The hottest month of the year is January, while July is the coolest. The average daily maximum temperature ranges from 16°C in winter to 22°C in summer, extremes reaching 42°C and 32°C respectively. The average daily minimum temperature ranges from 7°C in winter to 15°C in summer, extremes can occasionally drop to 4°C and -4°C respectively. Westerly to south-westerly winds occur most frequently and predominantly in the winter to spring period. Velocities can be high with the average of the daily maximum strength being 15m/s (54km/hr). Although secondary in frequency of occurrence, easterly and southeasterly winds have a greater maximum average speed of 18m/s (64.8km/hr) and blow mainly in spring and summer. These winds play an important role in aeolian sand transport, especially as their occurrence and strength peaks in the summer-autumn periods when the upper beach sand and dune sands are dry. Northwesterly berg winds can blow in winter.

[13] As from August 2021 to present known as Aubrey Withers Environmental Consultant.

[14] The rooikrans vegetation planted by the then Department of Forestry to stabilise the mobile frontal dune system and the mobile dune system back from the seashore collected wind blown sand off the beach and frontal dune system (by blow-outs) in the so-called backdune area by the ESE and WSW prevailing winds. This backdune area grew higher and higher over the past 75 years, and longer, with continued erosion of the frontal dune system due to anthropogenic impacts (trampling of vegetation and the use of offroad vehicles over the frontal dune system).



Still Bay falls in a climatic region that receives rain almost equally in all seasons, with peaks in autumn and spring. Rains are generally brought by passing cold fronts from the west and can also be caused by the high pressure system ridging in moist air over the land behind the cold front. The mean annual precipitation (MAP) for the Goukou River catchment is 482mm, while in the upper catchment within the Langeberg Mountains, the MAP is 634mm.

Geology and Soils

The geologic history of the Southern Cape coastline is very interesting and has been shaped by the many eustatic changes in sea level throughout its geological history.

The Cenozoic sediments (deposited during the last 10 million years ago (Ma) were deposited along the coastal plain between Plettenburg Bay and Cape Hangklip and comprise an assemblage of marine, estuarine, fluvial, lacustrine and aeolian sedimentary deposits belonging to the Bredasdorp Group. These sediments were deposited on a peneplaned surface of Table Mountain Group quartzitic sandstones and Bokkeveld shales during the various sea level fluctuations of the past 10Ma. Coastal erosion of the Table Mountain and Bokkeveld rocks took place during the Tertiary Period (some 65Ma) just after the break-up of Gondwanaland.

The sediments occurring on the properties of the proposed Preekstoel Coastal Development belong to the older Waenhuiskrans Formation which overly the Wankoe Formation calcarenites. The Waenhuiskrans Formation comprises a weak calcarenite or aeolianite. Such aeolianites formed from “fossilisation” of ancient wind-blown dunes that developed along the coast when the sea levels dropped substantially (up to 100m lower than present day sea level), i.e. during the Mid- to Late Pleistocene (1Ma to 125 000 years before present). Cross-bedding of the slip faces of these ancient dunes is clearly visible in the weathered outcrops along the property to the east.

Subsequent rises in sea level eroded these aeolinites forming the present day coastline and steep foreland scarp and sea cliffs. The Waenhuiskrans aeolianites were subsequently inundated and covered by light grey dunes (large dune plume or cordon) during the Holocene to Recent Period (some 9 000 to 2 000 years ago), when sea levels were 3-4m higher than they are today. A number of pulses of dune inundation would have taken place during this period. These aeolian deposits belong to the upper horizon of the Bredasdorp Group, namely the Strandfontein Formation. It is this mobile dune plume that was stabilised by the then Department of Forestry by using rooikrans plants imported from Australia. It should be noted that no Blombos strandveld covered these mobile dunes and as a result, there is no seedbank within these once mobile dunes. The only seedbank is from the rooikrans planted on these mobile dunes.

Surface Water and Groundwater

There are no perennial or seasonal watercourses on the property. The low-lying undulating, elongated southwest-northeast depression behind the primary dune and steep aeolianite scarp of the property could become damp if a perched water table exists above an impervious calcrete layer, particularly during the wet winter period. This depression has been filled in with dune sand extracted from the northern section of the development property and stable building platforms have been developed for the first phase of the development.

Two interconnected small water features (ponds) in the lowest part of the depression to the west, which will also double up as stormwater detention ponds will be created.

An unconfined aquifer (primary aquifer) occurs within the pervious Holocene to Recent dune sand and Late Pleistocene aeolianites that overly deeper impervious shales of the Bokkeveld Group. These shales occur well below sea level, with a result that freshwater continuously leaks into the sea (hydraulic gradient is towards the sea). A salt water wedge would probably occur beneath the primary dunes in the west and the steep aeolianite foreland scarp to the east.

Flora and Fauna

The proposed development site formed part of a historically stabilised dune cordon. The stabilisation was undertaken by the then Department of Forestry during the early part of the 1900's, who planted rooikrans (*Acacia cyclops*), a woody alien plant species native to Australia. The seaward slopes of the steep aeolianite foreland scarp are relatively pristine and have a less than 10-15% alien plant cover. The leeward side is heavily invaded (> 80% cover), with the worst invaded parts of the plateau and low-lying middle area of the property having a rooikrans cover of > 80%.

The aeolianite foreland scarp is vegetated by a resilient and widespread indigenous plant community that is typical of coastal dunes on the south coast, namely dwarf Blombos Strandveld, which includes species such as *Searsia crenata*, *Maytenus procumbens*, *Diospyros dichrophylla* (bladder nut), *Euclea racemosa* (sea guarrie), *Pterocelastrus tricuspidatus* (kershout), and *Lauridia tetragona*. The seaward slopes of the aeolianite foreland scarp system are largely pristine while the leeward side is heavily invaded by Rooikrans vegetation. The aeolianite rocky outcrops just above the high water mark support a number of succulent and bulbous species not present on the dunes.

The primary indigenous thicket forming species occur in low numbers on the site and cover less than 10% of the actual area. Less common are the protected tree species *Sideroxylon inerme* (milkwood) and *Tarchonanthus littoralis* (camphor tree). The north-eastern third of the site still supports small remnant patches of indigenous vegetation between the dense Rooikrans stands.

The indigenous vegetation on the leeward side of the dune crest has been mapped by the South African National Biodiversity Institute (SANBI) as Blombos Strandveld, which is regarded as Least Threatened in terms of its conservation status. In terms of the Hessequa Fine Scale Conservation Plan approximately 60% of the development site has been designated as a Critical Biodiversity Area (CBA). However, little natural vegetation exists in this area, as the bare mobile dunes were fixed by the alien rooikrans.

The indigenous species diversity on the inland plateau (eastern part of the site) is relatively low, due to the relatively young age of the substrate, in combination with the dense stands of rooikrans which have outcompeted the indigenous flora.

No rare or localised plant species are found on the site and there is a low likelihood of such species occurring. However, two protected species in terms of the Forest Act of 1974 occur namely *Sideroxylon inerme* (White Milkwood) and *Tarchonanthus littoralis* (camphor tree). A permit is required from the Department of Environment, Forestry and Fisheries to allow for the removal or even pruning of White

Milkwood trees. **Note**: the possible presence of these two tree species was brought to the attention of contractors and their staff during the site induction meeting.[15]

Rehabilitation of the frontal dune system and the steep foreland scarp will be undertaken by systematically removing alien invasive vegetation. Once the frontal dune system has been reshaped and all the deep blow-outs have been filled with sand it will be re-vegetated by planting suitable hardy coastal vegetation (e.g. *Chrysantemoides monilifera* bietou, *Sersia crenata*, dune crowberry, *Arctotheca populifolia* dune daisy, sea pumpkin, *Tetragonia decumbens* kinkelbossie, *Carpobrotus acinaciformis* suurvy, *Passerina rigida*, etc. The list of plants belonging to the Blombos Strandveld that can be considered to be planted within the development area, frontal dune system and steep aeolianite foreland scarp are given in **Appendix 5**.

In terms of Fauna, species diversity is low, probably due to the high density of alien vegetation over the majority of the property. However, small mammals and rodents still occur on the property. These include striped mouse (*Bathyergus suillus*), Cape dune molerate (*Rhabdomys pumilio*), Striped Pole Cat (*Ictonyx striatutus*), Dassie (*Procavia capensis*) etc. Bushbuck (*Tragelaphus scriptus*) have also been spotted in the area. The region also supports a large snake population, some lizards and amphibians. Tortoises like the Angulate tortoise (*Chersina angulate*) may also occur on site. Birds are also found on site.

Some of the small mammals and birds will be displaced during the construction phase, but during the operational phase they will have the chance to return and re-establish themselves in the indigenous vegetation that will be established in the Private Open Spaces and gardens of the development.

B.1.3 Socio-Economic Characteristics of the Surrounding Area

The Hessequa Municipality has a population of slightly more than 52 000, who live in just under 16 000 households. The Municipality's population showed a positive growth of ± 16 % for the period 2001 - 2011.[16] However, Ward 1 (Stilbaai, Melkhoutfontein, Gouritsmond & Rural Area) experienced a below average population growth in general, and a sharp decline in ages 0 -35. The labour force in general grew by 2.1% during this period, most of which people are between the ages of 35 and 65. Ward 1 also shows the highest categorical growth in Hessequa, with a growth of 56.9% in the senior citizen category.

The Hessequa Municipality primarily comprises 4 main ethnic groups, i.e. Coloureds, Black Africans, Indians or Asians and Whites. According to the latest National Census statistics, 68.82% of the population is Coloured, 7.46%% Black African, 0.38% Indian/Asian and 23.34% White.

Unemployment and poverty affects a large number of people within the Municipal Area. 8.1% of residents are unemployed which is more than the 7.9% in 2001. In 2011 49.5% of the Hessequa population was employed while 42.3% couldn't be categorised as employed or unemployed. The economically active portion of the Hessequa population is below 40% of the total population.

In terms of contributions to the local economy, the contribution of construction has more than doubled from 6.8% ten years ago to the current 15.6%. This is currently the 3rd largest contributor to the local economy following the trade (20.3%) and community service (18.5%) sectors.[17]

Still Bay originated as a small holiday settlement on the east bank (Lappiesbaai) before expanding and crossing the Goukou River to the west bank. The Still Bay village attained Municipal status in 1966.
A small local community of Melkhoutfontein is located to the north of the town and on the east bank of the Goukou River. Today, the town of Still Bay functions primarily as a service centre for the holiday industry of Still Bay and the surrounding environs. The regional interior of the Still Bay area comprises large farms where cereal crops and stock farming takes place.

[15] One small stunted milkwood tree was found on the top of a dune on the site and a permit was obtained for it to be removed.
[16] http://census2011.adrianfrith.com – Accessed on 19 August 2014.
[17] Hessequa Municipality Integrated Development Plan 2012-2017

Still Bay has a population of 3514 and is made up of Still Bay East and Still Bay West. The majority of the Still Bay population (3289 people) reside in Still Bay West. The Still Bay East population amounts to 225. The predominant ethnic groups include white (92.34%), black African (3.5%) and coloured (3.24%). Afrikaans is the most widely spoken language in Still Bay with English as the second most spoken language.

Opportunities for work in Still Bay are very limited, comprising mainly un-skilled domestic and garden and building maintenance personnel. However, requirements for skilled personnel in the commercial, building and tourism industries have emerged in the recent past.

The proposed development will contribute to the creation of job opportunities in the construction and in the operational phases. The training of staff will also be facilitated (skills development of locally employed persons during the construction phase). Business opportunities will also be created for Small Medium Micro Enterprises (SMMEs)[18] during the construction phase as well as after completion of the development in the form of a Boutique Hotel, restaurants, garden services, cleaning services, security services etc.

Other economic benefits include the generation of rates and taxes for the Hessequa Municipality and contributions from medium-high income home owners to the local economy (supporting the local businesses).

The expected annual income/ contribution to the economy that will be generated as a result of the proposed development constitutes to ± R 10 000 000 (Assume a 5 year development period). About 200 employment opportunities over 5 years will also be created during the construction phase of the development.

B.2 ENVIRONMENTAL LEGAL REQUIREMENTS OF THE APPLICATION

B.2.1 National Environmental Management Act (Act No. 107 of 1998)

The **National Environmental Management Act** (Act No. 107 of 1998) (NEMA) aims to provide for cooperative environmental governance:

- By establishing principles for decision-making on all matters relating to the environment; and
- By means of two mechanisms, namely: Environmental Implementation Plans, and Environmental Management Plans.

In order to be in a position to develop the proposed Preekstoel Beach Estate, the Developer needs to obtain Environmental Authorisation from the DEA&DP to lawfully undertake listed activities, listed in Listing Notice 1 and Listing Notice 3 of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), and which came into effect in December 2014 (and revised in April 2017). The applicable listed activities are provided below.

[18] Five local indigent workers and one manager from Still Bay assisted with the erection of brushwood fences and the same workers assisted with the planting of locally indigenous strand plants on the reshaped frontal dune area. A local BBEE paving team was also employed by the developer for undertaking the paving of Phase 1 of the development. Other general construction employees from Still Bay assisted with the installation of services.

GN No. R. 983 Activity No(s):	Describe the relevant **Basic Assessment Activity(ies)** in writing as per **Listing Notice 1** (GN No. R. 983 as amended by GNR 327)	Describe the portion of the development as per the project description that relates to the applicable listed activity.
Activity 17	*"Development-* *(iii) within the littoral active zone;* *(iv) in front of a development setback; or* *(v) if no development setback exists, within a distance of 100 metres inland of the high- water mark of the sea or an estuary, whichever is the greater; in respect of-* *(c) embankments;* *(d) rock revetments or stabilising structures including stabilising walls;* *(e) ~~buildings of 50 square metres or more; or~~* *~~(f)~~ infrastructure **or structures** with a development footprint of 50 square metres or more."*	Certain structures of the proposed Preekstoel Coastal Development development will be located landward of the determined Low Risk Management Line (e.g. boardwalks to provide access to the beach) (between the low risk line and the HWM).
Activity 18	*The planting of vegetation or placing of any material on dunes and exposed sand surfaces of more than 10 square metres, within the littoral active zone for the purpose of preventing the free movement of sand, erosion or accretion, excluding where – (i) the planting of vegetation or placement of material relates to restoration and maintenance of indigenous coastal vegetation undertaken in accordance with a maintenance management plan; or (ii) where such planting of vegetation or placing of material will occur behind a development setback.*	Undertake the re-vegetation of blow-outs on the coastal dunes on Erf 2341, Still Bay East. This will include the ongoing maintenance of the frontal dune system after each storm event. The Maintenance Management Plan (EMP) will guide such re-vegetation and ongoing maintenance.
Activity 19A[19]	*The infilling or depositing of any material or more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from: (iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is greater but excluding where such infilling, depositing, dredging, excavation, removal or moving-* *(a) will occur behind a development setback;* *(b) is for maintenance purposes undertaken in accordance with a maintenance management plan."*	The rehabilitation of the frontal dune system will require the infilling of more than 10m^3 of sand. The re-vegetation of the frontal dunes with locally indigenous species will be carried out once the earthworks for the frontal dune system has been completed. The long term maintenance of the frontal dune system within the western sector of Erf 1028 will be undertaken into the future. One boardwalk will be constructed over the frontal dune system. Mass earthworks was undertaken landward of the low risk management line (setback line) to provide stable building platforms for housing (i.e., within 100m of the high water mark.
Activity 24	*The development of (ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8m; but excluding a road (c) which is 1km of shorter*	Kabeljou Street needs to be constructed from scratch off MR 333 (Preekstoel Street) and will have a road reserve greater than 13.5m.
Activity 27	*"The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation;"*	More than 1ha but less than 20 ha of "indigenous vegetation" will be cleared.
GN No. R. 985 Activity No(s):	Describe the relevant **Basic Assessment Activity(ies)** in writing as per **Listing Notice 3** (GN No. R. 985 as amended by GNR 324)	Describe the portion of the development as per the project description that relates to the applicable listed activity.
Activity 4	*The development of a road wider than 4 metres with a reserve less than 13,5 metres (f) In Western Cape ii. areas outside urban areas: (aa) areas containing indigenous vegetation.*	The width of the internal roads will be 5m wide with a road reserve less than 13.5m.
Activity 6	*The development of resorts, lodges, hotels and tourism or hospitality facilities that sleeps 15 people or more. (f) In Western Cape:* *ii. Outside urban areas:* (aa) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (bb) Within 5km from national parks, world heritage sites, areas identified in terms of NEMPAA or from the core area of a biosphere reserve.	The development proposal includes a boutique hotel that will sleep more than 15 people.

[19] Note that this activity relates to the rehabilitation of the frontal dune system, which is contained in a separate report, but is described here in the EMPr for the Construction Phase for fulfilment sake.

Activity 12	*The clearance of an area of 300 square metres or more of indigenous vegetation where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan* *(a) In Eastern Cape, Free State, Gauteng, Limpopo, North West and Western Cape provinces:* *i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004* *ii. within critical biodiversity areas identified in bioregional plans;* *iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas.*	The vegetation on site is regarded as Blombos Strandveld, which is not listed in terms of Section 52 of NEMBA. However Activity 12 may be triggered since White Milkwood trees (*Sideroxylon inerme*) occur on the site[20]. Whilst most of the property contains dense stands of Rooikrans (*Acacia cyclops*) shrubs, patches of indigenous vegetation do occur and may be removed during the mass earthworks. Milkwood trees will, however, be retained as far as possible. Patches of Milkwood trees predominantly occur in the coastal corridor, which will be conserved. The two properties are designated as falling within a critical biodiversity area (CBA) in terms of the Hessequa Fine Scale Conservation Plan. To our knowledge, no bioregional plan in terms of Chapter 3 of NEM: Biodiversity Act has been published for the region. The removal of vegetation will take place within 100m inland of the high water mark of the sea.

Activities triggered in Listing Notice 1 and 3 require an independent environmental study (Basic Assessment Process) to be conducted. Withers Environmental Consultants (WEC) was appointed to undertake the Basic Assessment Process in terms of the NEMA.[21]

The NEMA EIA Regulations requires that an EMPr be submitted together with the Basic Assessment Report to demonstrate how environmental management and mitigation measures will be implemented.

As such, an EMPr was submitted to DEA&DP for approval along with the Basic Assessment Report. This proposed development was approved by the DEA&DP, and a condition of approval required that the original EMPr be revised to ensure that all relevant Conditions of Approval have been adequately captured[22].

The content of this revised EMPr has also been aligned with Section 24 (N) of the NEMA (107 of 1998) and the EIA Regulations Appendix 4 of 2014 (as amended) which lists the required content of an "environmental management programme" (refer to **Appendix X**).

B.2.2 National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEM:BA)

A permit will be required to remove or move the protected White Milkwood trees that occur on the development site, in terms of the NEMBA Threatened or Protected Species Regulation 2007.

The clearance of the dominant alien invasive species on the development site, rooikrans *Acacia cyclops* (Category 1b Listed), is in line with the NEMBA Alien and Invasive Species Regulations, 2014.

B.2.3 National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008) (NEM:ICMA)

The Coastal Protection Zone (defined in terms of section 16 of the NEMBA) refers to an area along the inland edge of coastal public property. The Coastal Protection Zone is regarded as the area 1 000m from

[20] *Western Cape Milkwood Forest is classified as an endangered ecosystem in Government Gazette No. 1002 of 9 December 2011, promulgated in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEM:BA). The White Milkwood tree is a protected tree under Section 15 of the National Forests Act (Act 30 of 1998) and a permit is required from DAFF to cut, disturb, damage, destroy or remove a protected tree.*

[21] The Environmental Authorisation was approved on 6 February 2018. An Appeal Authorisation was approved on 2 October 2018.

[22] Given that the original EMPr was not approved prior to the commencement of construction, the DEADP has requested that the EMPr be divided into two documents, namely a Construction EMPr and an Operational EMPr.

the High Water Mark (HWM) for rural areas (i.e. areas that remain undeveloped) or 100m for developed urban areas[23]. The proposed development is therefore located within the Coastal Protection Zone (i.e. within 1km from the HWM in an undeveloped area), albeit that the development area is within the urban edge of Still Bay.

A low risk coastal management line (comprising an erosion setback line, an ecological management line or conservation buffer line) has been determined for the property in terms of Section 25 of NEM:ICMA by the coastal specialist Aubrey Withers of WEC[24] (refer to Delineation of the Low Risk Coastal Management Line report in Appendix G 6 of the BAR). The natural area between the low risk coastal management line and HWM has been rezoned to Public Open Space (POS) for conservation purposes. The natural protected area will be rehabilitated by the phased removal of alien vegetation (rooikrans), filling of blow-outs by mechanical means with sand from the backdune area and planting suitable hardy coastal vegetation (sea wheat, bitou and strand creepers). A single boardwalk will be constructed over the frontal dune system to provide public access to the HWM. Continued public access will also be available through the development to the Geelkrans Nature Reserve.

Relevant consideration must be given to Section 17 of the NEM:ICMA, which outlines the purpose of the coastal protection zone (CPZ), since the proposed development is within the CPZ, as defined above. By determining a low risk coastal management line (development setback line) and by protecting the area between the HWM and the low risk management line, relevant consideration is being given to S17 of the Act.

Furthermore, S62(2) of the Act states that an organ of state may not authorise land within the CPZ to be used for any activity that may have an adverse effect on the coastal environment without first considering an environmental impact assessment report. In addition, S63(2)(b) states that the competent authority may not issue an environmental authorisation if the development is situated within the CPZ and is inconsistent with the purpose for which the CPZ is established, as set out in S17.

B.2.4 National Heritage Resources Act (Act No. 25 of 1999) (NHRA)

Section 38 of the National Heritage Resources Act (Act 25 of 1999) (NHRA) requires that any person who intends to undertake certain categories of development in the Western Cape (see below) must notify Heritage Western Cape (HWC) at the very earliest stage of initiating such a development and must furnish details of the location, nature and extent of the proposed development.
Section 38 (1) reads as follows:
38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as
(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier over 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or activity that will change the character of a site–
- *(i) exceeding 5 000 m^2 in extent*
- *(ii) involving three or more existing erven or subdivisions thereof*
- *(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years.*

(d) the re zoning of a site exceeding 10 000 m^2 in extent;
Since the development also triggers the requirements for a Basic Assessment in terms of the NEMA, Section 38(8) of the NHRA is also applicable.

B.2.5 National Water Act, 1998 (Act No. 36 of 1998) (NWA)

The objectives of the National Water Act, 1998 (Act No. 36 of 1998) (NWA) are to provide for fundamental reform of the law relating to water resources; to repeal certain laws; and to provide for matters connected therewith. The NWA governs water use and the protection of inland water resources.

[23] Source: A User-friendly guide to South Africa's Integrated Coastal Management Act (DEA and SSI, 2009).
[24] Note that Aubrey Withers sold WEC in 2019 and now consults under the name Aubrey Withers Environmental Consultant

In keeping with the requirements of the NWA, various directives have been set out in the EMPs to minimise potable water use, to prevent pollution, and to protect surface and groundwater resources in the vicinity of the development site.

A water use license was submitted to the DWS in terms of Section 21 of the NWA for the use of a package sewage plant to treat the sewage generated by the proposed development. The treated effluent that will be treated to a general standard, will be pumped to the water features to be constructed on the property to be used for the irrigation of the private open space systems within the proposed development and the domestic gardens.

B.2.6 National Forest Act (Act No. 84 of 1998) (NFA)

A permit was submitted to the Department of Agriculture, Forestry and Fisheries under Section 15 of the NFA to cut or prune a protected tree species declared as such under the Act (White Milkwood Trees). One small milkwood trees was removed from the site in terms of a valid permit.

B.2.7 National Veld and Forest Fire Act (Act 101 of 1998) (NVFFA)

In terms of the Veld and Forest Fire Act, 1998, the developers should consider registration as a member of a local Fire Protection Association, namely the Southern Cape Fire Protection Agency (FPA). In addition, fire breaks (or fire control belts) must also be brush cut along the boundaries of all properties to control the fighting and spread of fires.

Given the small size of the private open space within the development area and the fact that no indigenous seed base is present in the dune sand, we do not believe that an ecological fire management programme should be instituted, which considers fire safety in terms of infrastructure, and which aims to actively manage for a shifting mosaic of different vegetation ages and patch sizes. Such a mosaic is achieved through controlling the spread of wildfires in the landscape, and through undertaking scientifically determined controlled burns. It may, however, be required for larger areas such are managed by the Municipality and CapeNature, to achieve sound ecological results.

Fire control belts should be of a minimum sufficient width to allow for vehicular access, and should be cleared by brush cutting at least once per year, or as required (refer to **Appendix 4**-Fire Management Plan). As noted earlier, we do not believe that fire will play a role in the maintenance of ecology re its effects on vegetation composition, primary productivity and nutrient cycling, given that the mobile dune field (devoid of any locally indigenous Blombos Strandveld) was fixed by the introduction of rooikrans plants. The only locally indigenous vegetation was that was growing on the small section of the steep aeolianite foredune area to the east of the frontal dune system. As such, the seed base of Erf 593 and the frontal dune system would only have consisted of rooikrans. It will take many years before a locally indigenous seed base of Blombos Strandveld is built up within the topsoil horizon of Erf 593. Only then can a burn be contemplated, otherwise the rehabilitation process would need to start from scratch again.

SECTION C: CONDITIONS OF APPROVAL SET BY THE DEADP

The conditions of approval contained in the environmental authorisation issued by the DEADP on 6 February 2018 (**Appendix 1a**) and included the following:

Condition 2

The non-operational component of the Environmental Authorisation is subject to the following:

2.1 The holder must commence with all the listed activities within a period of three (3) years from the date of issue of the Appeal Environmental Authorisation.

2.2. The installation of service infrastructure such of the roads, boardwalk, waste water treatment plant or sewage plant, public parking and public ablution facility must be concluded within a period of five (5) years from the date of commencement of the first listed activity. The development of the residential, hotel and restaurant buildings, the utility zone component and public open space (construction phase) must be concluded within a period of eight (8) years from the date of commencement of the first listed activity; and

2.3. The post construction rehabilitation and monitoring requirements must be finalised within a period of 12 months from the dates of the construction of the installation of service infrastructure such as the roads, boardwalk, waste water treatment plant or sewage plant, public parking and public ablution facility and the development of residential, hotel and restaurant buildings, the utility zone component and public open space /construction phase.

Condition 3

The operational aspects of this Environmental Authorisation are granted until 3l May 2028 during which time all rehabilitation and monitoring requirements and final environmental auditing and reporting must be finalised.

Condition 4

The holder shall be responsible for ensuring compliance with the conditions by any person acting on his/her behalf, including an agent, sub-contractor, employee or any person rendering a service to the holder.

Condition 5:

Any changes to, or deviations from the scope of the alternative described in section B above must be accepted or approved, in writing, by the Competent Authority before such changes or deviations may be implemented. In assessing whether to grant such acceptance/approval or not, the Competent Authority may request information in order to evaluate the significance and impacts of such changes or deviations, and it may be necessary for the holder to apply for further authorisation in terms of the applicable legislation.

Condition 6:

The holder must in writing, within 14 (fourteen) calendar days of the date of this decision–

6.1. notify all registered Interested and Affected Parties (“I&APs”) of –
6.1.1. the decision reached on the application;
6.1.2. the reasons for the decision as included in Annexure 4;
6.1.3. the date of the decision; and

6.1.4. the date when the decision was issued.

6.2. draw the attention of all registered I&APs to the fact that an appeal may be lodged against the decision in terms of the National Appeal Regulations, 2014 (as amended) detailed in Section G below;

6.3. draw the attention of all registered I&APs to the manner in which they may access the decision;

6.4. provide the registered I&APs with the:
6.4.1. name of the holder (entity) of this Environmental Authorisation,

6.4.2. name of the responsible person for this Environmental Authorisation,

6.4.3. postal address of the holder,

6.4.4. telephonic and fax details of the holder,

6.4.5. e-mail address, if any, of the holder,

6.4.6. contact details (postal and/or physical address, contact number, facsimile and e-mail address) of the decision-maker and all registered I&APs in the event that an appeal is lodged in terms of the 2014 National Appeals Regulations (as amended).

6.5. The listed activities, including site preparation, must not commence within **20 (twenty) calendar** days from the date the holder notifies the registered I&APs of this decision.

6.6. In the event that an appeal is lodged with the Appeal Authority, the effect of this Environmental Authorisation is suspended until the appeal is decided i.e. the listed activities, including site preparation, must not commence until the appeal is decided.

Condition 7:

Seven calendar days' notice, in writing, must be given to the Competent Authority before commencement of construction activities.

7.1. The notice must make clear reference to the site details and EIA Reference number given above.

7.2. The notice must also include proof of compliance with the following conditions described herein: **Condition No.: 6, 8, 10, 17** and **21.**

Condition 8:

The draft or Environmental Management Programme ("EMPr") submitted as part of the application for Environmental Authorisation must be amended to address the following aspects, and must then be re-submitted to the Competent Authority and approved prior to commencement of construction:

8.1. Incorporate all the conditions given in this Environmental Authorisation;

8.2. Comply with section 24N of the National Environmental Management Act, 1998 and Appendix 4 of the Environmental Impact Assessment Regulations, 2014;

8.3. Clearly list the impact management outcomes and impact management actions for the proposed development;

8.4. Incorporate the recommendations from specialist reports (i.e. Botanical, HIA, Visual & Traffic)

8.5. Include detail on soil protection and rehabilitation measures that can be installed in areas where erosion may occur.

8.6. Include a site plan that —

(a) indicates the services on the site in terms of the sewer pipelines, water supply and electrical infrastructure; and

(b) provides a distinction between the private open space and the public open space.

8.7. Include a detailed Storm Water Management Plan that shows exactly where the specific water features / ponds will be located and associated infrastructure will be constructed.

8.8. Include a rehabilitation plan for the Frontal Dune System on Erf 1028. The "Rehabilitation Guidelines" for the Frontal Dune System on Erf 1028 may serve as reference for such a plan.

The plan must *inter alia* address the following:

(a) only locally indigenous vegetation species may be planted on exposed sand surfaces, dunes or blow-out areas. This must clearly include locally indigenous dune vegetation.

(b) planting Marram Grass (*Ammophila arenaria)* or any other identified alien invasive species must be strictly forbidden.

(c) the irrigation plan during the non-operational phase must be detailed. The irrigation of the frontal dune with effluent must be prohibited. Only potable water or effluent treated to potable standard may be used and only for the initial establishment of the planted vegetation.

8.9. Include an Alien Vegetation Management / Eradication plan for the removal of alien invasive species and on-going management of the open space areas on the property. This plan must include targets that must be achieved. This plan must include fire management too.

8.10. Operational Aspects [25]–

8.10.1. Provide an implementation plan with clear impact management outcomes and which highlights when each phase of the development will be handed over to a Homeowner's Association or Body Corporate for management of the open spaces etc[26].;

8.10.2. Incorporate a schedule for the ECO to conduct site inspections during the operational phase of the development to monitor compliance with the Environmental Management Programme and the Environmental Authorisation;

8.10.3. Include a conservation management plan for the private open space area in the estate and Erf 593; and

8.10.4. An indication of the persons who will be responsible for the implementation of the impact management actions.

9. The EMPr must be included in all contract documentation for all phases of implementation.

10. The holder must appoint a suitably experienced environmental control officer ("ECO"), for the duration of the construction and rehabilitation phases of implementation contained herein.

11. The ECO must–

11.1. be appointed prior to commencement of any vegetation clearing or construction activities commencing;

11.2. ensure compliance with the EMPr and the conditions contained herein;

11.3. keep record of all activities on site; problems identified; transgressions noted and a task schedule of tasks undertaken by the ECO;

[25] The Operational EMPr has been put into a report on its own and is not dealt in this Construction EMPr.

[26] The Phasing of the development will be undertaken by the developers based on sales of erven, and as such no clear time table has been indicated by the developer.

11.4. remain employed until all development activities are concluded and the post construction rehabilitation and monitoring requirements are finalised.

12. A copy of the Environmental Authorisation, EMPr, any independent assessments of financial provision for rehabilitation and environmental liability, closure plans, audit reports and compliance monitoring reports must be kept at the site of the authorised activities and be made available to anyone on request, and where the holder has website, such documents must be made available on such publicly accessible website.

13. Access to the site referred to in Section C must be granted, and the environmental reports mentioned above must be produced, to any authorised official representing the Competent Authority who requests to see it for the purposes of assessing and/or monitoring compliance with the conditions contained herein.

14. The holder must, for the period during which the environmental authorisation and EMPr remain valid—

14.1 ensure the compliance with the conditions of the environmental authorisation and the EMPr, is audited;

14.2. during the construction phase, the holder must undertake annual environmental audit(s) and submit these Environmental Audit Report(s) to the Competent Authority. The final construction phase Environmental Audit Report(s) must be submitted to the Competent Authority within **two (2)** months of completion of construction;

14.3. during the operation phase, the holder must ensure that environmental audit(s) are performed regularly and submit these Environmental Audit Report(s) to the Competent Authority. During the operational phase, the frequency of the auditing of compliance with the conditions of the environmental authorisation and of compliance with the EMPr **may not exceed intervals of 5 years**;

14.4. the environmental audit report must be prepared and submitted to the Competent Authority, by an independent person with the relevant environmental auditing expertise.

15. The Environmental Audit Report, must –

15.1. provide verifiable findings, in a structured and systematic manner, on–

15.1.1 the level of compliance with the conditions of the environmental authorisation and the EMPr and whether this is sufficient or not; and

15.1.2 the ability of the measures contained in the EMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.

15.2. identify and assess any new impacts and risks as a result of undertaking the activity;

15.3. evaluate the effectiveness of the EMPr;

15.4. identify shortcomings in the EMPr;

15.5. identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr;

15.6. indicate the date on which the construction work was commenced with and completed or in the case where the development is incomplete, the progress of the development and rehabilitation;

15.7. indicate the date on which the operational phase was commenced with and the progress of the rehabilitation;

15.8. include a photographic record of the site applicable to the audit; and

15.9. be informed by the ECO reports.

16. The holder must, within 7 days of the submission of the audit report to the Competent Authority, notify all potential and registered I&APs of the submission and make the report available to anyone on request and on a publicly accessible website (if applicable).

17. Prior to commencing with the listed activities, the holder must ensure that all bulk services (i.e. water, electricity, solid waste and sewerage) and bulk infrastructure will be made available for the proposed development. Such services must be made by the Hessequa Municipality at such point or points and on such terms and conditions as may be determined and agreed upon with the Hessequa Municipality.

Further to this:

17.1. Should the municipal bulk sewer connection and bulk sewage treatment at a licenced facility not be available from the Hessequa Municipality, prior to commencement of the listed activities, the holder must construct, maintain and operate a Biological Waste Water Treatment Plant (BWWTP) / Sewage Package Plant until the municipal bulk sewer connection can be made available.

17.2. The holder must ensure the correct operation and maintenance of the Biological Waste Water Treatment Plant (BWWTP) / Sewage Package Plant to treat the sewage effluent generated by the proposed development to the prescribed final effluent standard.

17.3. The holder shall be responsible for the monitoring and reporting on the operation of the BWWTP.

17.4. The BWWTP must be completed and operational (operation ready) prior to, or at least in conjunction to the completion of service infrastructure for *Phase 1a* of the proposed Preekstoel Coastal Development.

17.5. The holder may enter into an agreement with the Hessequa Municipality to transfer the BWWTP and operation requirements thereof to the Hessequa Municipality.

18. The holder must ensure that vehicular and pedestrian access to the Geelkrans Nature Reserve is established and maintained across the property during all phases of the proposed Preekstoel Coastal Development.

Further to this—

18.1. any member of the public must be allowed to gain vehicular or pedestrian access to the Geelkrans Nature Reserve across the site;

18.2. the holder of the authorisation must have an access servitude registered across the portion of Erf 599 for the access road along the proposed alignment. Such servitude must be registered against the title deed of the portion of land of Erf 599 and must be applicable to the successors in title of the portion of Erf 599;

18.3 the holder must formalise the road access to the Geelkrans Nature Reserve at his own cost;

18.4. the Geelkrans Nature Reserve must be accessible to the public (both vehicular and pedestrian access) at all times during the construction phase of the development.

19. An integrated open space system must be established incorporating all the open space areas identified in the Final Basic Assessment Report dated May 2017 (including *inter alia* the portions of land along the beach); within the estate and Erf 593.

The open space areas on the site must –

19.1. for the duration of the construction phase be managed in accordance with an approved conservation management plan ("CMP")[27]. Where such CMP defines how the open space area is managed in an integrated manner to promote biodiversity management objectives and a conservation use.

19.2. be cleared of all alien invasive plants species within 5-years from the date the activities commence on site. The alien invasive clearing programme must include a dedicated follow-up programme to be completed during said period;

19.3. be rehabilitated and managed. Specific attention must be given to blow-outs and pathways crossing the dunes.

20. The remainder of Erf 593 must be cleared of all alien vegetation prior to the handover of the land to the Hessequa Municipality[28].

21. The holder must, prior to the activities commencing on site, register the following legally binding provisions or obligations on the land between the development setback line and the high water mark of the sea (i.e. private and public open space) to limit the use of the proposed open space area for a conservation use. Such provisions must as a minimum be a —

21.1. "Non-User Conservation Servitude"

The holder is required to register, in favour of the Hessequa Municipality and the Home Owners Association, a conservation servitude over the identified land which requires protection from development in perpetuity and in order to secure the conservation of the site. The conditions of the conservation servitude must *inter alia* address the following measures -

(a) No earthworks or any form of development is permitted within the area, except if environmental authorisation is granted and in accordance with an approved conservation management plan;

(b) No landscaping; encroachment by gardens (albeit deliberate or inattentive) or planting except for rehabilitation in terms of an approved management plan;

(c) No collection or damaging of fauna and flora;

(d) No vehicles of any type are permitted, unless ORV permit has been issued by the competent authority for the purpose thereof;

(e) Access points and access control.[29]

22. All structures and infrastructure must be setback landwards (i.e. to the north) from the "ecological management line" or "low risk management line" as determined in the BAR (dated 31 May 2017).

Further to this —

22.1. except for the public coastal access point, no buildings, structures or infrastructure may be established on the seaward side of the ecological management line (low risk management line) depicted on the layout plan (Appendix 2 of this Environmental Authorisation refers).

The 5-metre building setback should serve as reference for no development seaward of said line. The area between the low risk management line and 5-metre building line should be utilised as a buffer between the Non-User Conservation Servitude and the proposed buildings/structures.

[27] Refer to the Maintenance Management Plan for removing alien vegetation (Refer to **Appendix 3**).

[28] Whilst Erf 593 has already been transferred to the Hessequa Municipality, Vivren Properties will ensure that the rooikrans vegetation is removed from Erf 593 in terms of the Maintenance Management Plan for the removal of Rooikrans vegetation (refer to **Appendix 3** of the EMPr).

[29]. The legal registration of a "Non-User Conservation Servitude" over the conservation coastal corridor (Erf 2341) is not possible. The attorneys for Vivren Properties have drafted an agreement between the Hessequa Municipality, Vivren Properties and the HOA to rehabilitate the frontal dune system and provide access over the frontal dune system (**Appendix 7**). Erf 2341 has been rezoned to Open Space III for conservation purposes.

Where the area between the 5-metre building line and Non-User Conservation Servitude is landscaped and vegetated, only locally indigenous dune vegetation may be established.

22.2. no pathways, boardwalks or lookout decks may be established on the seaward side of the ecological management line (low risk management line), except for —

(a) the public coastal access point south of the existing road and its associated single boardwalk to the beach; and

(b) an informal pathway above the high water mark (HWM) of the sea along a section of the toe of the steep scarp to protect the fragile vegetation growing along this section, so as to provide access to the beaches and fishing spots to the east when the tides are high.

Note: If necessary, a boardwalk providing transversal access parallel to the ecological management line (low risk management line), may be established northward of the low risk line or ecological setback on Erf 1028.

23. No abstraction of water may occur to supplement the supply for the water features / ponds on the estate.

24. The frontal dune system may only be irrigated with potable water during the non-operational phase to rehabilitate the dune. No effluent may be irrigated on the frontal dune system on Erf 1028, unless such effluent is treated to a potable drinking standard for domestic use as indicated in the South African Water Standards Volume 1 Domestic Use developed by the Department of Water and Sanitation in 1996.

25. The holder must appoint a suitably qualified and experienced archaeologist for the duration of the construction phases (i.e. while alien vegetation clearing, bulk earthworks and the excavations for the services are performed) contained herein.

Should any heritage remains be exposed during excavations or any other actions on the site, these must immediately be reported to the Provincial Heritage Resources Authority of the Western Cape, Heritage Western Cape. Heritage remains uncovered or disturbed during earthworks must not be further disturbed until the necessary approval has been obtained from Heritage Western Cape. Heritage remains may only be disturbed by a suitably qualified heritage specialist working under a directive from the relevant Heritage Resources Authority.

Heritage remains include: meteorites, archaeological and/or paleontological remains (including fossil shells and trace fossils); coins; indigenous and/or colonial ceramics; any articles of value or antiquity; marine shell heaps; stone artefacts and bone remains; structures and other built features with heritage significance; rock art and rock engravings; shipwrecks; and/or graves or unmarked human burials including grave goods and/or associated burial material.

26. The BWWTP/sewage package plant must be properly maintained and correctly operated and the effluent treated to the prescribed standard. The operation and maintenance of the BWWTP must be monitored and reported on to the relevant competent authority during this period.

The holder must comply with this requirement for the duration of the operational phase, unless the facility and its maintenance and operational requirements are lawfully transferred to the Hessequa Municipality.

27. The frontal dune system on Erf 1028 may not be irrigated with water (regardless if it is potable water or treated effluent) during the operational phase.

28. For the duration of the operational phase, the open space area must be managed in an integrated manner to promote conservation and biodiversity management objectives.

The open space areas must–

28.1. be managed in accordance with an approved conservation management plan ("CMP"). The CMP must incorporate the principles, objectives and management measures of the CapeNature Stewardship Programme;

28.2. be maintained clear of all alien invasive plant species, with a dedicated long-term follow-up clearing programme.

29. The holder must ensure that for the financing of environmental management tasks, as outlined in this Environmental Authorisation and an approved EMPr, will become the responsibility of HOA.

It is recommended that future funding for the Environmental Management Fund is to be raised as part of the levy paid by all property owners and at least 10% of the net proceeds (after deduction of administration costs) go towards this fund (i.e. a trust).

30. Sign boards must be constructed on the site to:

30.1 Direct the public and residents of the Preekstoel development that the coastal public property must be accessed through the use of the authorised board walk; and

30.2 The disturbance of the vegetation and soils along the authorised boardwalk corridor must be avoided.

The conditions of approval contained in the environmental authorisation issued by the DEADP on 2 August 2019 (**Appendix 1b**) and included the following:

The Minister has excluded section G from this appeal authorisation, added Condition E3O to the authorisation and amended Conditions E2, E3 and E6 to read as follows:

Condition E 30
"Sign boards must be constructed on the site to:

30.1 Direct the public and residents of the Preekstoel development that the coastal public property must be accessed through the use of the authorised board walk; and

30.2 The disturbance of the vegetation and soils along the authorised boardwalk corridor must be avoided."

Condition E2
The non-operational component of the Environmental Authorisation is subject to the following:

2.1 . *"The holder must commence with all the listed activities within a period of three (3) years from the date of issue of this Appeal Environmental Authorisation."*
2.2. *"The installation of service infrastructure such as the roads, boardwalk, waste water treatment plant or sewage plant, public parking and public ablution facility must be concluded within a period of five (5) years from the date of commencement of the first listed activity. The development of the residential, hotel and restaurant buildings, the utility zone component and public open space (construction phase/ must be concluded within o period of eight (8) years from the date of commencement of the first listed activity; and"*

2.3. *"The post construction rehabilitation and monitoring requirements must be finalised within a period of l2 months from the dates of the conclusion of the installation of service infrastructure such as the roads, boardwalk, waste water treatment plant or sewage plant, public parking and public*

ablution facility and the development of residential, hotel and restaurant buildings, the utility zone component and public open space (construction phase)."

Condition E3:

"The operational aspects of this Environmental Authorisation are granted until 3l May 2028 during which all rehabilitation and monitoring requirements and final environmental auditing and reporting must be finalised."

Condition E6:

"The holder of the authorisation must in writing, within l4 (fourteen) calendar days of the date of the appeal decision notify all registered Interested and Affected Parties ("I&APs")-

6.1 the outcome of the appeal;

6.2 the reasons for the appeal decision; and

6.3 the date of the decision."

SECTION D: DESCRPTION OF THE PROPOSED IMPACT MANAGEMENT GUIDELINES : PROJECT POLICIES, VISION, GOALS AND PRINCIPLES

The purpose of the EMPr is to provide guidelines to the Developer and Contractor for managing the potential impacts of the development on the surrounding environment during the Planning and Design and Construction Phase.

The Developers must ensure the following by implementing / ensuring that:

- the treated effluent from the package sewage plant complies with the General Authorisation standards set by DWS (irrigation water standards);
- the mitigation of the environmental impacts identified during the Basic Environmental Assessment Process are undertaken in terms of the Regulations of the NEMA (refer to **Appendix 9**);
- the Conditions of Approval that have been issued by DEADP for the Construction Phase of the proposed project (Section C above) are carried out;
- the stated objectives and targets set by the Developer, which in turn meets the general environmental policy set for the project; and
- the environmental recommendations, including environmental monitoring put forward for the Operational Phase are carried out.

To achieve the above, it is important that the developer takes into account the site characteristics, natural surroundings and the relevant legislation, and that the EMPr is practically structured and implemented so that impacts are minimised during the Construction Phases (installation of services and construction of buildings) of the project.

D.1 ENVIRONMENTAL POLICY

The Primary Environmental Policy Statements of the Developer are the following:

- All aspects of the development and its management will be undertaken in accordance with the relevant legislation and with the vision, goals and principles put forward in this EMPr.
- The environment[30] forms the fundamental basis of the proposed project. All construction activities must, therefore, conform to the principle of environmental sustainability and must be carried out in such a way that potential negative environmental impacts on the development site and surrounds are minimised, that the ecology of the environment is enhanced and that water and energy saving measures are implemented.

D.2 VISION AND GOALS

The conceptual planning, development and operation of the Preekstoel Coastal Estate are based on the vision statement and goals set by the Developer as described below.

D.2.1 Vision

The following ***Vision*** has been set for the project:

To develop and manage the proposed Preekstoel Coastal Estate in such a way that it will:

[30] "Environment", as defined in NEMA, (Act 107 of 1998), means the surroundings within which humans exist and that are made up of- (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

- ensure sustainable development in all its facets and in particular during the Construction Phases of the project, and ensure that the degraded areas are rehabilitated to improve the biodiversity of the development site;
- ensure the conservation of the surrounding environment (biophysical, socio-economic and cultural-historic characteristic) by providing naturally vegetated corridors to existing natural areas;
- lead to a better appreciation, understanding, use and conservation of the limited resources (water and energy use);
- prevent the spread of fire from the property of the development; and
- provide temporary construction job opportunities within the local community.

D.2.2 Goals

The ***Goals*** for upholding the above vision for the proposed development on Erf 2343, Still Bay East are the following:

- To promote a conservation ethic by planting indigenous, water-wise Blombos Strandveld vegetation in private open spaces and private "gardens" (refer to the landscape plan, **Figure 8** and **Appendix 5**);

- To ensure the eradication of rooikrans from Erf 593 by undertaking the phased initial clearing of rooikrans from this property and the follow-up monitoring of the growth of seedlings of rooikrans and their removal by spot spaying of weedicide where necessary.

- To prevent seasonal water-logging of open areas through the establishment of an effective stormwater drainage system (**Figure 6**);

- To promote an ethic of waste minimisation and recycling;

- To minimise negative environmental impacts that could arise during the Construction Phase, such as dust during earthworks, wind and/or water erosion of cleared surfaces, construction noise etc.;

- To enhance positive environmental impacts (particularly socio-economic) that could arise during the Construction and Operational Phases of the project, such as the creation of job opportunities and the development of skills for the local community; and

- To ensure the health and safety of construction workers during the Construction Phases of the project in accordance with the Occupational Health and Safety Act (Act No. 85 of 1993).

D.3 FUNDAMENTAL PRINCIPLES OF THE EMPr

The EMPr is based on fundamental principles[31] derived from applicable government policy statements contained in various government documents and legislation (e.g., the *National Environmental Management Act, (Act 107 of 1998*). The following principles contained in these documents and laws will be used in the EMPr to guide the Construction Phases of the Preekstoel Coastal Estate, namely:

- **Environmental management** must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.
- **Development** must be socially, environmentally and economically sustainable, i.e. meet the "triple bottom line" criteria for development.
- **Sustainable development** requires the consideration of all relevant factors including the following:

[31] **Principles** are shared assumptions and truths that policy and action can be based upon.

- ♦ that the disturbance of ecosystems and loss of biological diversity are avoided, are minimised and remedied;
- ♦ that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
- ♦ that the development, use and exploitation of renewable resources and the ecosystems of which they are a part do not exceed the level beyond which their integrity is jeopardised;
- ♦ that a risk-averse and cautious approach is applied (also called the **Precautionary Approach**), which takes into account the limits of current knowledge about the consequences of decisions and actions.

- **Environmental management must be integrated**, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the ***best practicable environmental option***.
- **Community well-being and empowerment** must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.
- **Capacity building and education:** The EMPr must play a dynamic role in developing the understanding, skills and capacity of the employees and people in the area in order to promote sustainable development.
- **Consider all alternatives:** Considering all alternatives results in making the best decisions. The EMPr must therefore ensure that all alternatives are considered in all decision-making.
  Developmental and environmental planning, problem solving and decision-making are often complex. Possible consequences of conflicting interests as well as the consequences of not acting need careful consideration.
- **Co-ordination:** Various concerns and issues cut across the key sectors and functions in the area. Sustainability and integrated planning and management (including monitoring) therefore will depend on co-ordination and integration of all sectors and I&APs in the Still Bay area.
- **Due process:** Due process must be applied in all integrated management activities. This includes adherence to the provisions in the Constitution and statutes dealing with just administration and public participation in regional and local governance.
- **Duty of care:** Every person (Developer, contract workers and community members) associated with the development of the Preekstoel Coastal Estate have a duty to act with due care to avoid damage to the environment, or pollution of the environment or waste a precious resource. Also called the ***Environmental Responsibility Principle*.**
- **Equity:** The EMPr is to ensure equitable access to natural resources, benefits and services to meet basic needs and ensure human well-being. Each generation has a duty to avoid impairing the ability of future generations to ensure its well-being.
- **Full cost accounting:** Decisions must be based on an assessment of the full social and environmental costs.
- **Good governance:** Good governance depends on mutual trust and reciprocal relations between the various groups and sectors of the area and the controlling officials. This must be based on the fulfilment of constitutional, legislative and executive obligations, and the maintenance of transparency and accountability.
- **Prevention:** The EMPr must anticipate problems and prevent negative impacts on the environment and on people's rights.
- **Polluter Pays:** Those responsible for environmental damage must pay the repair costs both to the environment and human health, and the costs of preventative measures to reduce or prevent further pollution or degradation.
- **Subsidiary:** Regulatory responsibilities belong at the most local level at which the tasks can be carried out effectively. Environmental management structures must match the ecological scale of the managed resource.
- **Waste management:** Waste management must minimise and avoid the creation of waste at source. The EMPr is to encourage waste recycling, separation at source and safe disposal of unavoidable waste.

D.4 POTENTIAL ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION

D.4.1 Planning, Design and Construction Phase

The summary of the potential impacts and proposed mitigation to address such potential impacts have been copied from the various impact assessment Tables and are provided in the Table below (refer to **Appendix 9**).

Potential Environmental Impacts	Proposed Mitigation
Biophysical Impacts: The primary direct botanical impact is loss of any natural or partly natural vegetation within the proposed development footprint, which is considered to be a total of about 11 ha, or 85% of the site	The 5m building line and the low risk management line will be clearly indicated by means of a survey and coloured wooden droppers every 20m. Private erven, public open spaces and road verges will be revegetated only with suitable locally indigenous Blombos Strandveld plant species approved by the botanist (**Appendix 10**)**.**
Botanical Impacts: The primary indirect botanical impact is the loss of ecological connectivity.	Corridors will be incorporated into the development as part of POS, to promote ecological connectivity in the area **(Figures 3 and 4**).
Potential impacts on Biological aspects: Potential erosion of soil and pollution of ground water sources from spillages of hazardous materials (oils, paints, fuel).	The use of drip-trays under stationary plant, correct storage of hazardous materials, the use of spill-kits on site, and procedure for cleaning up and disposal of any spillages that may occur. Paint brushes are not to be cleaned in sewage drains.
Potential Pollution Impacts: Potential pollution of the site with solid waste generated during site clearance and construction (paper, plastic, timber, wire, cement bags and building rubble).	Solid waste to be removed on a weekly basis, no burning of waste will be allowed on site. Recycling will be encouraged.
Potential impacts on Socio-economic aspects: Provision of job opportunities during the construction phase, and the purchase / supply of goods and services during construction	Implementation of a "Still Bay/Hessequa First" policy in terms of temporary employment of local people during the construction phase, and for the provision of construction phase goods and services.
Potential Dust Pollution: Dust/windblown sand generated by machinery during site clearance and construction could become a nuisance to neighbouring landowners	Should dust/windblown sand become a problem to adjoining neighbours, internal roads and exposed surfaces can be kept moist form time to time until construction is completed. Alternatively the chipped rooikrans can be spread over the loose sandy surface. A complaints register should be kept on site, so that neighbouring landowner's grievances regarding dust can be addressed.
Potential Safety and Security: The safety and security of surrounding landowners could be compromised through the moving in of construction personnel into the area. Similarly, construction materials and equipment on site overnight could be at risk from a security point of view.	Security personnel would need to be appointed to guard construction materials and equipment during the construction phases. Construction personnel would not be allowed wander off site during construction.
Potential impacts on cultural-historical aspects: Impacts on cultural-historical aspects are not seen as significant given that no archaeological material was found on the site.	ECO showed the site agent and construction foreman how to identify archaeological midden sites by showing them the exposed midden site on the side of the access road through Erf 593. These personnel, and when on site the ECO, were informed to be vigilant during bulk earthworks for unearthing artefacts and particularly burial sites and to take the necessary corrective action should such objects be found, i.e. stop work in that area and cordon it off, and inform the ECO who would inform the appointed archaeologist.
Potential noise impacts: Temporary noise generated by machinery and construction personnel could become a nuisance to neighbouring landowners.	Construction should be limited to normal working hours; should not take place over weekends; and no amplified music will be allowed on site. Any construction noise should however be "drowned out" by the sound of breaking waves on the shoreline. A complaints register should be kept on site, so that neighbouring landowner's grievances regarding excessive noise can be addressed

SECTION E: CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

E.1 ENVIRONMENTAL CONTROL OFFICER AND RESPONSIBILITIES

E.1.1 Introduction

An ECO was appointed by the Developer (Vivren Properties (Pty) Ltd.) to oversee the Construction Phase of the project. This requirement is contained in the Conditions of Approval issued by DEADP. The EAP, Aubrey Withers, was appointed as the ECO.

The ECO will need to undertake periodic site visits to assess whether any environmental degradation is resulting from the Construction Phases of the project and to check compliance with the EMPs of this EMPr and with the Conditions of Approval as issued by the DEADP. The daily on-site activities will be controlled by the Site Agent and Construction Manager of the appointed Contractor. The roles and responsibilities of the ECO throughout the contract periods are provided below.

The EMPs contained in this EMPr aim to give direction and guidance to all responsible parties, to ensure that all negative environmental impacts are mitigated, and to ensure compliance with the Conditions of Approval as have been issued by the DEADP. The responsible parties during the Construction Phases of the project, all of whom will need to co-operate closely to minimise or avoid potential environmental impacts, are the Contractor (Construction Manager and Site Foreman), RE, the Developer's Site Agent and the ECO.

The roles and responsibilities of the ECO, the level and type of competency required of the ECO, and frequency of site visits are outlined below.

E.1.2 Roles and Responsibilities of the ECO

In terms of the roles and responsibilities of the ECO, the ECO shall:

- regulate the various phases of the project in accordance with the Conditions of Approval issued by the DEADP; and the recommendations made in the BAR, which have been captured in this EMPr.
- assist the Developer, the Contractor's Construction Manager, the Site Agent and RE with instituting the EMPs prescribed in this EMPr;
- meet with the Contractor and construction teams, before construction begins, to enlighten them regarding the environmental sensitivities of the site and how to go about their construction methodology and site husbandry, so as to prevent negative environmental impacts from occurring, i.e. conduct an environmental induction training programme for each phase of the project;
- assist the construction team with the removal of alien vegetation to assist in the search for any archaeological resources to assess their heritage sensitivities, if any;
- assist the surveyor with the demarcation of the ecological management line and the building management line, and supervise the mass earthworks for creating building platforms of the various development precincts, to ensure that the natural vegetation within the ecological corridor is not damaged;
- conduct periodic site visits (as scheduled below) to assess any environmental degradation resulting from the project, to monitor compliance with the Conditions of Approval issued by the DEA&DP, and the recommendations of the EMPs (to ensure that environmental impacts are minimised and mitigated), and to assess and monitor the success of the rehabilitation/landscaping programmes;
- report to the Developer, Contractor's Construction Manager, Site Agent, and RE during monthly site meetings of progress on the implementation of the EMPr and compliance with the

Conditions of Approval and implementation of the relevant mitigation measures contained in the EMPs;
- stop construction works if, in his/her opinion, there is a serious threat to or impact on the environment as a result of the construction operations;
- attend regular site meetings to discuss progress of the project with the Contractor's Construction Manager, Site Agent and RE;
- issue an ECO Checklist after each site meeting to act as site instructions for recording any irregularities or non-compliance with the EMPs and construction progress in general;
- undertake a final ECO Checklist for the completion of a particular section of the construction phase of the project (e.g. completion of the construction of building platforms and their stabilisation, completion of the installation of bulk services for a particular phase of the development).

If the ECO at any stage indicates to the Contractor that the relevant requirements of the EMPs are not being complied with, he will **issue the necessary instructions** (verbally to the Construction Manager and Site Agent and in writing in the ECO Checklist) for mitigation.

If mitigation is not timeously applied and environmental degradation continues, the ECO will then instruct the RE to **stop construction works** until such time that the necessary measures have been satisfactorily undertaken.

The ECO will also inform the relevant officials of the DEADP of any serious non-compliance issues (if applicable). Only once all prescribed environmental control mechanisms and/or Conditions of Approval have been implemented to the satisfaction of the ECO will instructions be given to commence with the contract. The ECO Checklist will record any irregularities or non-compliance with the recommendations of the various EMPs. Such instructions can also be followed up with an email to the Site Agent and the Contractor's Construction Manager.

E.1.3 Level and Type of Competency of ECO

A suitably experienced environmental practitioner, with at least 5 years relevant site supervision experience, will need to act as the ECO. Aubrey Withers has more than 34 years experience as an ECO.

E.1.4 Frequency of Site Visits[32]

The ECO should undertake regular site visits. The ECO has undertaken the following site visits during Phase 1 of the project:

- 3 November 2021: site hand over meeting with consulting engineers, quantity surveyor, ASLA contractors, including site agent and developers to discuss construction programme and site sensitivities, mass earthworks and demarcation of setback lines;
- 4 March 2022: ECO site meeting with ASLA to check on clearing of the site of rooikrans and minor amounts of locally indigenous Strandveld plants (mostly various Searsia species) and mass earthworks;
- 13 April 2022: ECO site meeting with ASLA to check on mass earthworks;
- 20 July 2022: attend the site handover to the Contractor (ASLA) and assist with siting of site offices, storage areas and toilets, and inform the contractor of the relevant environmental sensitivities of the site for the start of the installation of Municipal services;
- 26 July 2022: inform Marius Venter (and Jessica Christie) re start of installation of municipal services;

[32] This section has been revised according to actual dates when site supervision actually took place. The revision of the original programme was necessary as only the first phase of Construction took place and not the whole site was to be developed as one project. This meant that less frequent site supervision was necessary due to small scale of construction activities.

- 4 August 2022: undertake an environmental induction training session of construction personnel and discuss construction programme with ASLA personnel, and demarcation of Low Risk Management Line (ecological management setback line);
- 12 August 2022: The ECO undertook an ECO construction site meeting to check on construction progress.
- 8 September 2022: ECO site meeting with ASLA to check on construction progress;
- 10 October 2022: ECO site meeting with ASLA to check on construction progress;
- 17 November 2022: ECO site meeting with ASLA to check on construction progress;
- 12 December 2022: ECO site meeting with ASLA to check on the completion of construction of the first phase of the installation of Municipal services and internal roads and paving;
- 31 January 2023: After meeting with the Municipality in Still Bay re the progress with the first phase of the development, the ECO also visited the development site with the developers, town planner, quantity surveyor, RE and the developer's attorney to assess the completed first phase of the installation of Municipal services and internal roads of the development.

Future site visits for the ensuing Construction Phases of specific precincts (phases) of the development must be undertaken as above with similar content.

The Developer must retain the services of an ECO to supervise the future construction phases of the development (e.g., the installation of Municipal services, the rehabilitation of the Private Open Space (POS) [landscaping] through the central section of the development, the construction of the boardwalk, the construction of the Package Sewage Plant and the building of houses).

E.1.5 External Audits

An external auditor (EAP) must undertake annual environmental audits until the whole development has been completed in terms of the Construction Phases. These audits will be undertaken to assess compliance with the environmental authorisation, the content of the Construction EMPr and to ensure that the POS areas within the development have been rehabilitated successfully. The external auditor will need to ensure that satisfactory rehabilitation of the disturbed areas within the construction site have taken place. These audits are also to be sent to the DEADP, CapeNature, the Hessequa Municipality, the Developers and the appointed ECO.

Once all the phases of the development have been completed, a final external audit must be undertaken within two months of the completion of all construction.

Content of the External Environmental Audit Reports, must:

- provide verifiable findings, in a structured and systematic manner, on–
    - the level of compliance with the conditions of the environmental authorisation and the EMPr and whether this is sufficient or not; and
    - the ability of the measures contained in the EMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity.
- identify and assess any new impacts and risks as a result of undertaking the activities;
- evaluate the effectiveness of the EMPr;
- identify shortcomings in the EMPr;
- identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr;
- indicate the date on which the construction work was commenced with and completed or in the case where the development is incomplete, the progress of the development and rehabilitation;
- indicate the date on which the operational phase was commenced with for each phase of the development and the progress of the rehabilitation;
- include a photographic record of the site applicable to the audit; and
- be informed by the ECO reports.

The holder must, within 7 days of the submission of the audit report to the Competent Authority, notify all potential and registered I&APs of the submission and make the report available to anyone on request and on a publicly accessible website (if applicable).

E.1.6 Education Programmes

The ECO gave (and will do so for future construction phases) a presentation to construction staff to familiarise them with the environmental aspects of the contract. The Contractor's Construction Manager, site foreman and all staff must attend this meeting. Staff must fill in the attendance register of this environmental induction programme.

The content of the Education Programme to be presented to the contractors will include:

(i) **Introduction:** the environmental and socio-economic sensitivities of the site will be explained (including the potential discovery of archaeological material or burial sites). Reinforce an environmental ethic amongst staff and explain the consequences of not complying with the Conditions of Approval and the content of the EMPr (e.g. issuing of a stop works order).

(ii) **Environmental Pollution:** engender an ethic of waste pollution management and how plastic bags and paper waste cause, not only a visual pollution, but can lead to blockages of stormwater drains, which in turn can lead to flooding, and wild animal death if ingested by them. All solid waste must be stored in wind–proof bins to prevent waste being blown around the site. Explain also that burning of waste[33], especially PVC can cause toxic air pollution that is harmful to man and to the atmosphere, and that unsupervised fires can lead to run-away fires. The importance of the use of chemical toilets will also be emphasised.

(iii) The negative **consequences of oil and diesel pollution** will also be explained and that it is imperative to work carefully with such hazardous substances.

(iv) **Fire Controls:** ensure that open fires are controlled on site by using safe receptacles for making fires and ensure that fire control belts are in place around the boundaries of the applicable properties.

(v) **Adherence to Speed Limits:** Speed limits of construction vehicles whilst driving in Still Bay must be adhered to in order to protect pedestrians, children and animals and to prevent accidents, and especially on site as the public (pedestrians, cyclists and cars) will be allowed to traverse the construction site to get to the Geelkrans Nature Reserve.

(vi) **Soil Erosion:** Prevent erosion from diversion, restriction or increase in stormwater. Rainwater should be appropriately channelled to prevent erosion or flooding. If erosion occurs, appropriate measures (such as the construction of temporary detention ponds) may need to be undertaken to prevent erosion. All bare sandy surfaces must be prepared by the spreading of wood chips (from alien vegetation) or straw and or old thatching reed onto the surfaces.

(vii) **Dust Pollution:** Reasonable measures to minimise the generation of dust should be undertaken. Areas where earth is moved may require wetting with water in order to reduce dust. If dust problems persist, the affected areas may require covering with straw or wood chips.

(viii) **Noise Pollution:** Local by-laws and regulations in terms of noise will be enforced on site. Construction should only take place during the week during normal working hours and no amplified music will be allowed on site.

[33] **NOTE:** The burning of waste on site will not be permitted.

(ix) Construction staff will **not be allowed access** to neighbouring properties and will not be allowed to traverse the rehabilitated frontal dune system or the steep aeolianite foreland scarp.

(x) The importance of **personal hygiene and the use of chemical toilets** will be explained to the Contractor's staff.

The ECO provided construction staff with fliers of the above in three languages regarding the main points described above (**Appendix 12**). Notice boards were erected to keep the public off the rehabilitated frontal dune system.

E.1.7 Communication Procedures on Site

A site instruction book/file should be kept on site by the appointed Contractor for the purposes of recording specific important site instructions that need immediate attention. The monthly ECO Checklist will serve as a general record of environmental contractual issues that need to be addressed in the course of the Construction Phases.

E.1.7.1 Site Instruction Entries

The ECO Checklists will be used for the recording of general site instructions as they relate to the environmental scope of works on site. The site instruction book will, however, also be used for issuing "stop work" orders for the purposes of immediately stopping any particular activities of the contract due to the environmental risk or impact that may result. The ECO is to complete an ECO Checklist after each site visit and distribute this checklist to the Contractors, Consulting Engineers, Developer, DEADP, CapeNature and Hessequa Municipality to serve as a record of proceedings. The ECO Checklist must be circulated as soon as possible after the ECO site visit and the contractors must give immediate attention to any issues that need to be dealt with as is contained within the ECO Checklist.

E.1.7.2 Minutes of the Site Meetings

The Minutes of each monthly site meeting by the RE must be forwarded to the ECO, Contractor and Developer within one week of the meeting taking place. The minutes of the meeting must record any environmental issues that have been raised by the ECO in the ECO Checklist and that need to be addressed or rectified by the Contractor.

E.1.7.3 Method Statements

Method statements from the Contractor may be required for specific sensitive activities, e.g. deep trenching for sewage lines or for deep excavations for the creation of building platforms. A method statement forms the baseline information for work that takes place in sensitive areas or under sensitive conditions and is a "live document", i.e. modifications can be negotiated between the Contractor and ECO/RE 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.

E.1.7.4 Preliminary Works

1. Demarcate the boundaries of the property and the Low Risk Coastal Management Line and the 5m Building Line by means of stakes.

2. The lay down area for the site office and storage of building materials and equipment must be demarcated by the appointed ECO and the surface of the laydown area hardened by compaction.

3. The public open space area through the middle of the site must be demarcated and cleared of its alien vegetation. This area could also be used as a temporary nursery area for storing removed

natural vegetation for the duration of the construction phase to harden plants to the prevailing climatic conditions.

4. Clear alien vegetation from the development area and stockpile brushwood for chipping. Chipped stockpiles should be stored within the central public open space areas. Very little indigenous vegetation was located over the development site and the majority of vegetation removed comprises rooikrans and manatoka shrubs.

5. Mass earthworks for the first phase of the development were undertaken as soon as the whole development area had been de-vegetated of nearly 100% of rooikrans. Once stabilised building platforms have been created, their bare sandy surfaces and exposed edges should be stabilised using wood chips, to prevent wind erosion. The private open space area should also be shaped to contain stormwater berms and swales of the two proposed stormwater pond systems.

6. Once the mass earthworks have been completed and the surfaces stabilised, the installation of Municipal services for Phase 1 was commenced. The rehabilitation of the disturbed areas will need to be undertaken soon after construction to prevent wind erosion.

7. The services for the hotel and town houses or group housing and the first phase of seafront houses will be undertaken as a first phase of the development.

E.1.7.5 Ensuing Phases of Development

1. Each ensuing phases of the development will follow the above programme, starting with the demarcation of the property and the Low Risk Coastal Management Line and the 5m Building Line by means of stakes.

2. The lay down area for the site office and storage of building materials and equipment must be demarcated by the appointed ECO and the surface of the laydown area hardened by compaction.

3. Mass earthworks for the second phase of the development to create stabilised building platforms where their bare sandy surfaces and exposed edges will be stabilised using wood chips, to prevent wind erosion. The private open space area should also be shaped to contain stormwater berms and swales of the two proposed stormwater pond systems.

4. The installation of Municipal services for the second phase (and ensuing phases) can commence. The rehabilitation (landscaping) of the disturbed areas will need to be undertaken shortly after the construction of Municipal services and roads to prevent wind erosion.

5. . In addition, the clearing of rooikrans will continue within Erf 593 in terms of the maintenance management plan, as well as the clearing of regrowth of rooikrans seedlings over the whole development area. Spot spraying with the recommended herbicide will probably be required.

6. The ECO will need to supervise each phase of the development. In addition, an external environmental audit will need to be completed annually for the ensuing construction phases.

7. The above methodology will be undertaken until all phases of the development have been completed.

E.2 GENERAL CONSTRUCTION MANAGEMENT PROGRAMMES

ENVIRONMENTAL POLICY:
During the construction of the Preekstoel Coastal Estate it must be ensured that all negative environmental impacts are mitigated to prevent any temporary or permanent environmental impacts or effects and ensure the safety and good health of all construction staff.

OBJECTIVE:
To control all aspects of the Construction Phase (which encompasses both the construction of civil services and the construction of buildings/houses) by implementing the necessary mitigation and recommendations to prevent any temporary or permanent negative environmental impacts from occurring.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Establish appropriate partnerships and good relationships with local authorities, local community and contractors	1. Ensure appropriate communication with all local authorities (Municipality, CapeNature), local communities, and contractors. 2. Contractors to be fully informed by the ECO as to their environmental contractual obligations. 3. The ECO to give a presentation to Contractor and site staff to familiarise them with the environmental aspects of the contract. The Contractor and staff must attend this meeting and sign the attendance record. 4. Appropriate signage that indicates the contact details of the Developer, Contractor, RE (or RE's representative) and ECO must be provided on site. 5. Before site clearance commences a service agreement shall be entered into between the Developer and the Municipal Council.	To be undertaken by professional team and ECO, project manager (consulting engineer and/or site agent) as an on-going process during construction planning phase. ECO to monitor environmental contractual obligations of contractors on an on-going basis. ECO, Site Agent and RE to meet with Contractor and staff before construction commences to initiate the EMPr. Contractor/RE to ensure that appropriate signage is put in place. Developer/RE to ensure that this directive is complied with.
Set up of construction site and site offices and undertake **construction and earthworks** without adversely affecting the environment	1. Communicate with Contractor to ensure that all the environmental specifications are understood and carried out. 2. The Contractor must point out and demarcate the construction site and site offices. This area should be fenced off (screened), and should be locked outside working hours. 3. Control all construction in terms of the Construction Guidelines (refer to **Appendix 2**) and in terms of the content of this EMPr. This will include the storage of topsoil (if present)[34].	To be undertaken by ECO and Site Agent before construction commences. To be sanctioned by the ECO before construction begins. ECO to inform and induct the construction staff with respect to the content of the Construction Guidelines prior to commencement of construction. ECO, Site Agent and/or RE to monitor compliance.

[34] The topsoil horizon comprised a layer of rooikrans leave litter and seeds. The topsoil will not be kept.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Set up of construction site and site offices and undertake **construction and earthworks** without adversely affecting the environment (continued)	4. Construction material (concrete raw materials) must be stored in designated areas in a neat and orderly manner.	Area for construction material to be designated by the ECO and to be in secured area ECO, Site Agent and/or RE to monitor compliance.
	5. Contractor to store building rubble in a suitable designated area, with rubble removed from site on a weekly basis (if not to be used as fill).	Area for building rubble storage to be designated by the ECO. Contractor to remove builder's rubble on weekly basis. ECO, Site Agent and/or RE to monitor compliance.
	6. The final dumping site for all spoil must be indicated by the Contractor (e.g. a Municipal landfill site), for approval by the RE and ECO.	ECO, Site Agent and/or RE to assess spoil dumping site, and to monitor condition of road/s.
	7. Trucks removing spoil must remain on designated access road/s within the development area. Such access road/s must be well maintained.	ECO, Site Agent and/or RE to monitor compliance. Safety Officer to monitor road safety conditions throughout contract periods.
	8. Road construction signs to be erected along appropriate roads.	Safety Officer to monitor road safety conditions throughout contract periods.
	9. Driving regulations through Still Bay and on site must be adhered to at all times.	Safety Officer to monitor for duration of contract.
	10. Personal Protective Equipment must be provided to ensure safety of workers and adequate facilities must be provided to ensure that relevant minimum standards apply to working conditions. Working conditions must be in line with the requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).	Safety Officer to monitor working conditions and safety throughout the Construction Phases).
	11. All solid waste to be kept in appropriate weather and scavenger proof containers and removed from the site by the Contractor on a weekly basis to a licensed waste disposal facility. The burning of solid waste and paper on site will not be allowed. Recyclable waste (e.g. paper, glass, tins, plastic) should be recycled if possible.	ECO, Site Agent and/or RE to monitor compliance on an ongoing basis.
	12. Ensure that fire control belts are in place and staff are aware of the fire risks in the area.	ECO, Site Agent and/or RE to monitor compliance.
	13. At all places where construction takes place, the Contractor shall provide litter bins, containers and refuse collection facilities for later safe disposal to the approved site.	ECO, Site Agent and/or RE to monitor compliance on an ongoing basis.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Set up of construction site and site offices and undertake **construction and earthworks** without adversely affecting the environment (continued)	14. Recyclable waste (e.g. paper, glass, tins, plastic) should be recycled if possible. To this extent, separate bins should be provided and workers should be educated regarding recycling.	ECO, Site Agent and/or RE to monitor compliance throughout the Construction Phase.
	15. The Contractor shall ensure that at work closure at the end of every work day the site is left in a clean and safe condition overnight or over periods when there is no construction activity.	ECO, Site Agent and/or RE to monitor compliance.
	16. The requirements of the National Environmental Management: Waste Act (Act No. 59 of 2008) must be adhered to throughout the construction and operational phases of the development.	ECO, Site Agent and/or RE to monitor compliance throughout the Construction Phase.
	17. Concrete mixing must be restricted to a designated area on site. Such an area should be bunded / enclosed by an impermeable surface.	ECO, Site Agent to monitor compliance. Contractor to remove cement residues from site as directed or at end of contract.
	18. All remaining cement residues are to be removed from site at the end of each phase of the development.	ECO, Site Agent to monitor compliance.
	19. All excavations deeper than 1.5m should be protected from collapsing by shoring up with boards (safety officer to advise).	ECO, Site Agent and/or SHE officer to monitor compliance.
	20. Disturbed areas where dust can arise should be kept moist by spraying with water from a water bowser or other suitable means such as straw or wood-chip stabilisation.	ECO, Site Agent and/or RE to monitor the generation of any dust and advise the Contractor to mitigate accordingly.
	21. The various setback lines must be demarcated in the field by a surveyor and must be checked by the ECO before any earthworks are undertaken.	ECO, Site Agent and/or RE to monitor compliance.
	22. All forms of development (houses and bulk services infrastructure, roads and disposal of stormwater) must take place landward of the proposed building line setback as demarcated.	ECO, Site Agent and/or RE to monitor compliance.
	23. No development should take place on slopes steeper than 1:4	ECO, Site Agent and/or RE to monitor compliance.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Prevent possible **negative impacts of construction personnel** on the environment	1. Contractors will be responsible for the conduct of their personnel on site, as it pertains to trespassing, littering, and unacceptable social behaviour. 2. During the construction period, the facilities shall be maintained in a neat and tidy condition and the site shall be kept free of litter. 3. ECO must inform construction personnel of environmental rules to apply during construction period. 4. The RE must maintain strict supervision over all construction activities. 5. All construction workers should stay within the development area demarcation, and not trespass onto neighbouring properties. 6. The Contractor must provide temporary chemical toilet facilities at the stores/site office area when building work is being conducted there. A minimum of one toilet shall be provided per 15 persons at each working area or as stipulated by the local authority. The toilets must be kept in a clean and sanitary condition, and must be regularly serviced i.e. at least once a week. 7. Chemical toilets may not be positioned closer than 50m from the sea, shall be provided with doors and shall be secured to prevent them from blowing over. 8. Construction staff will not be allowed to stay on site and should be bussed to site each day. Security personnel may be required to live on site. 9. The contractor shall maintain a complaints register on site. 10. Construction staff must be kept off the frontal dune system and steep foreland scarp to prevent the trampling of vegetation	Contractor responsible for social management. Site Agent and RE to monitor compliance throughout the construction period. ECO, Site Agent and/or RE to monitor Contractor's compliance wrt littering for duration of contract ECO to meet with Contractor staff prior to construction in new areas to inform them of the sensitivities of the site and how to conduct themselves. ECO and Site Agent to monitor all construction activities for duration of contract. ECO, Site Agent and/or RE to monitor Contractor's compliance for duration of contract. ECO, Site Agent and/or RE to monitor Contractor's compliance for duration of contract. ECO, Site Agent to monitor for duration of contract. ECO, Site Agent and/or RE to monitor compliance. ECO, Site Agent and/or RE to monitor compliance. ECO, Site Agent and/or RE to monitor compliance for duration of contract.
Ensure **appropriate training** of staff to prevent accidents and ensure **health and safety of staff** on site	1. The Contractor is to ensure that the working conditions on site adhere to the minimum requirements of the Occupational Health and Safety Act (Act No. 85 of 1993). 2. The appropriate training of staff must be given to prevent accidents and the appropriate protective gear is to be issued.	The Contractor is to ensure compliance and that a Health and Safety official is appointed to undertake the necessary audits to ensure compliance. The Safety Officer is to ensure that appropriate training and protective gear is given to personnel for specific tasks and to monitor compliance.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Ensure **appropriate training** of staff to prevent accidents and ensure **health and safety of staff** on site (continued)	3. Safe drinking water for human consumption shall be available at the site offices and at other convenient locations on site. All water used on the site must be taken from a legal source and comply with recognized standards for potable and other uses. 4. If water is stored on site, distinction shall be made between drinking water and multi-purpose water storage facilities.	Contractor and Safety Officer to monitor compliance for duration of contract. Contractor and Safety Officer to monitor compliance for duration of contract.
Ensure that the Construction Phase meets the required **performance criteria**	1. Inform all contractors and their staff of the performance criteria. 2. Institute and maintain a monitoring programme of construction performance. 3. Monitor all construction work. 4. Ensure that contractors adhere to the guidelines in respect of littering, sanitation, spills of toxic substances and general behaviour.	Contractor to advise of the commencement of construction work so that the ECO can induct the contractors timeously, prior to commencement of construction. ECO and/or Site Agent to supervise worker behaviour on a daily basis and to be monitored by ECO. ECO and/or Site Agent to monitor progress and impacts and inform client of any time delays or non-performance during contract period. ECO and Site Agent to monitor significant impacts.

E.3 BIOPHYSICAL MANAGEMENT PROGRAMMES

ENVIRONMENTAL POLICY:
Conserve all aspects of the environment around and on the Preekstoel Coastal Estate site, which includes the following:

- Conserve and protect fauna, flora and any archaeological findings
- Ensure the conservation and sustainable use of resources (water and electricity) and the re-use of recyclable materials.
- Prevention of soil erosion and dust
- Reduce the risk of potential fires occurring
- Prevention of environmental pollution

E.3.1 Fauna and Flora Management

OBJECTIVE:
To conserve indigenous plants and animals that may occur within and around the development site, and to remove alien vegetation.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Minimise the removal of any vegetation during the construction phase	1. If the whole construction site is to be denuded of all vegetation, any clumps of indigenous vegetation should be moved to a nursery area within the central low point of the site for later use in the landscaping of the POS. The indigenous vegetation proved to be illusive and none was saved. 2. All alien woody plants removed must be chipped and the chips stored for sandy surface stabilisation.	ECO, Site Agent and/or RE to monitor compliance (no such indigenous clumps of locally indigenous vegetation was found on site during site clearing) ECO to monitor compliance, and to advise accordingly

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Removal and stockpiling of topsoil in a suitable area	1. Where appropriate stockpile topsoil removed from the construction site in suitable designated areas for later use in the rehabilitation of the site. 2. Stockpiling of topsoil must not exceed a height of 2m. Topsoil stockpiles should be covered with shade cloth to prevent erosion.	No topsoil was saved due to its leaf litter and rooikrans seed base, given that this area (mobile dune field) was stabilised using rooikrans seedlings and there would not be any Blombos Strandveld seed in the upper layers. No stockpile was kept.
Alien vegetation removal	1. Large areas of alien vegetation must be removed by appropriate means, e.g. bulldozer fitted with tines to pull trees out by their roots without lifting or removing excess soil.	Methods for on-site alien plant removal are to be advised by the ECO. Guidelines for clearing *Acacia cyclops* (rooikrans) are given in **Appendix 3** of this EMPr.
Demarcate the Low Risk Coastal Management Line on the site	1. The Low Risk Coastal Management Line must be clearly indicated, with fence dropper every 10 to 20m, so that there can be no confusion on the site about where the line is.	The contractor's surveyor must delineate this line and the ECO to monitor compliance, and to advise accordingly.
Careful use of Pesticides, Insecticides and Fertilizers	1. Care must be taken when using pesticides, herbicides and insecticides to prevent pollution of the environment. No pollution of surface or ground water may occur due to any activity on the property. The relevant requirements of the National Water Act, 1998 (Act No. 36 of 1998) must be complied with. 2. The relevant requirements of the Hazardous Substances Act, Act 15 of 1973 must be complied with at all times. Control over the use, storage, application, and disposal of these substances (and empty containers) is needed. 3. The relevant requirements of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, Act 36 of 1947 must be complied with at all times. 4. Pesticides/herbicides/insecticides should have low environmental toxicity (the active ingredients should have short half-lives). Use pesticides that possess chemical properties that are less conducive to runoff (such as low water solubility and high adsorption coefficients).	Chemicals to be ratified by the ECO. The use of such chemicals is to be conducted by experienced contractors. The ECO is to monitor all aspects of herbicide, insecticide and fertilizer use. Only herbicide will be used to spray the rooikrans seedings that will grow from the rooikrans chipped mulch. No fertilizer will be used.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Careful use of Pesticides, Insecticides and Fertilizers (continued)	5. Organic slow-release fertilizers should be used wherever possible http://www.iplants.co.za/ Alternatively slow release, less soluble and least mobile chemical fertilisers should be used. 6. Maintain, and clean fertilizer and pesticide application equipment in a designated area, which eliminates the potential for on-or-off site environmental pollution. 7. Mix and load pesticides and herbicides in a designated area where spills may be effectively contained and which eliminates the potential for on-or-off site environmental pollution. 8. Read and follow label instructions when applying chemical products. 9. Dispose of empty containers and waste materials (left over chemicals) at a registered waste disposal facility. 10. Current Material Safety Data Sheets (MSDS) must be available on site for all chemicals (pesticides, herbicides, fertilizers etc.) used. Such chemicals must be stored in lockable stores.	The ECO is to monitor all aspects of herbicide, insecticide and fertilizer use. Only herbicide will be used to spray the rooikrans seedings that will grow from the rooikrans chipped mulch.
Minimise disturbance to fauna	1. Contractors must not harm or disturb any wildlife, especially molerats, snakes, tortoises, lizards and birds. 2. Molerats, snakes, tortoises and other animals must be physically removed from the construction site without harming them and taken to an appropriate location (e.g. the Geelkrans Nature Reserve). Only competent snake handlers must be employed to move snakes, should it be necessary.	ECO and/or Site Agent to monitor compliance during the removal of rooikrans and the mass earthworks to create stable building platforms. The Contractor must report all incidents of harm to any fauna to the ECO and/or Site Agent.
Take the necessary measures to reduce the risk of fire on the property	1. Staff should only smoke within demarcated areas. Cigarette butts must be disposed of in the lidded waste bins provided. Waste bin lids must be replaced if these are lost. 2. No fires will be allowed on the site unless authorised by the Safety Officer. 3. Fire control belts around the boundaries of the properties must be brush cut. 4. Fire fighting equipment must be on site on a daily basis and personnel must be suitably trained in using such equipment.	ECO, Site Agent, Safety officer and Contractor to monitor throughout the construction period. ECO, Site Agent, Safety Officer and Contractor to monitor. ECO, Site Agent, Safety Officer and Contractor to monitor. ECO, Site Agent, Safety Officer and Contractor to monitor.

E.3.2 Water

OBJECTIVE:
To ensure the conservation and sustainable use of scarce water resources by instituting measures to minimise water use during the Construction Phases of the project, including awareness programmes to educate workers on the efficient use of potable water.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Institute **measures to minimise potable water use** during the Construction Phases of the project	1. No pollution of surface or ground water may occur due to any activity on the properties. The relevant requirements of the National Water Act, 1998 (Act No. 36 of 1998) must be complied with at all times.	ECO/Site Agent to monitor throughout the construction period.
	2. Wastewater, contaminated with soaps, detergents, grease, oils and other undesirable materials shall be collected in conservancy tanks and disposed of at the WWTW.	ECO and/or Site Agent to monitor compliance.
	3. Contractors must use water sparingly, e.g. use optimum moisture conditions for filling and road construction. All leaking taps and valves need to be replaced as soon as their malfunction has been noticed. Should dust become a nuisance to surrounding residents, efficient use of water to wet dusty surfaces should be employed.	ECO/ Site Agent to monitor throughout the construction period.
	4. A water demand management and conservation plan should include the installation of water saving devices such as low flow showerheads, dual flush toilets; and the training of staff to implement good housekeeping techniques in water-use reduction.	ECO/ Site Agent to monitor during the Construction Phase.
Institute measures for **stormwater** to prevent erosion, damage to property and environmental pollution.	1. The detailed stormwater design for the proposed development has been undertaken by the consulting engineers.	ECO/ Site Agent and RE to monitor construction phases .
	2. The sizing of the underground piped stormwater system has been designed to accommodate the 5 year storm event and the increased 50 year run-off will be accommodated in the new detention pond system.	ECO and RE to monitor adequate storage of stormwater after moderate rain storms and after the wet winter period (Construction Phase).
	3. The stormwater detention pond will empty into two small dams or water features within the lowest point of the central POS of the development. Filtration of stormwater into the sand beneath the detention pond will be allowed.	ECO/RE to assess designs of retention/water features.

E.3.3 Soil

OBJECTIVE:
To ensure the conservation of the soil on site of the proposed Preekstoel Coastal Estate, and institute measures to prevent soil erosion and pollution (contamination of soil) from taking place.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Prevent soil erosion from occurring (run-off and wind erosion)	1. Minimise the area to be cleared of vegetation and grasses for the installation of services. 2. Only remove vegetation immediately prior to soil stripping and / or site preparation. 3. The Contractor will protect areas susceptible to erosion by installing the necessary temporary and permanent stormwater drainage works as soon as possible. Additional measures deemed necessary by the ECO or RE must be taken to prevent surface water runoff from resulting in erosion (such as use of wood chips and straw over disturbed areas). 4. The exposed sand surfaces created during the mass earthworks must be appropriately stabilised by spreading wood chips over the sand to prevent wind and stormwater erosion 5. A suitably aligned boardwalk must be constructed over the frontal dune system for providing pedestrian access to the seashore to prevent trampling of vegetation and subsequent erosion.	ECO and/or Site Agent to monitor compliance throughout the construction period. ECO and/or Site Agent to monitor compliance. ECO to monitor site clearing and site preparation and check for any erosion that may take place. Anti-erosion measures to be discussed with and approved by the RE in consultation with the ECO if and when necessary. ECO and/or Site Agent to monitor compliance throughout the construction period. ECO and dune specialist to align boardwalk and to monitor construction and maintenance
Rehabilitate all areas where soil erosion has taken place	1. Institute soil protection and soil rehabilitation measures where erosion has taken place. 2. Institute soil protection and soil rehabilitation measures where erosion has taken place (e.g. through shaping of cut and fill slopes to the satisfaction of the RE). 3. Eroded areas may need to be backfilled and compacted. 4. Plant indigenous grass sods (or sow indigenous grass seeds on prepared surfaces) should any signs of erosion be noted. Straw or wood chips should be worked into the upper soil horizon to bind the soil and prevent dust and windblown sand where necessary. 5. All existing blow-outs occurring on the steep foreland scarp must be rehabilitated.	To be planned and facilitated by ECO and/or Site Agent when necessary throughout the construction period. Contractor to ensure that the backfilled material is compacted sufficiently to prevent subsidence in the future. ECO/Site Agent to monitor and advise accordingly. ECO/ Site Agent to monitor and advise on alternative erosion prevention measures. ECO to train specialist team and to monitor compliance when and where necessary.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Prevention of dust during the construction phase	1. All disturbed surfaces must be monitored for dust during windy periods. It may be necessary to work straw or wood chips into the disturbed surfaces to prevent dust. 2. Road surfaces may cause dust pollution during their construction and should be kept moist until such time that their surfaces are paved / tarred.	ECO/ Site Agent to advise on the use of straw/wood chips should dust become a nuisance. ECO/ Site Agent to monitor and advise on the use of water to wet surfaces to

E.3.4 Energy Management

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Use electricity sparingly during construction	1. Contractors must be informed of the efficient energy (electricity) use during construction. When not in use lights, angle grinders, motors etc. must be switched off. 2. Energy efficient building designs should be implemented by the architects, to minimise heat losses and gains. 3. Energy demand could be further decreased by inclusion of energy saving outdoor lights, which should be controlled by light sensors where applicable, and the use of gas stoves, thermal insulation in roofs and on ceilings and solar panel assisted heat pumps for hot water generation in the designs of buildings. 4. Bollard-type Street Lighting should be used to contribute to the energy efficiency of the development and prevent excessive light spillage at night.	ECO and RE to monitor for the duration of the contract period. Municipality should ensure that such specifications are incorporated in the plans to be approved. Engineers and architects to acknowledge the required actions with regard to energy saving and to incorporate into their designs. The Municipality should only approve energy efficient designs. Architects to design external lighting of building and street lights to prevent excessive light spillage at night.

E.3.5 Hydrocarbon and Hazardous Materials Management

OBJECTIVE:
To ensure that hydrocarbons and other hazardous materials are managed in accordance with the directives set out in National Legislation.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Hydrocarbon and Hazardous Materials Management to be carefully undertaken	1. The contractor shall have a hazardous material spill kit on site. 2. Prevent cement, bitumen, fuel and other hazardous material spills or clear such accidental spills as soon as possible. All hydrocarbon, tar, and bitumen spills are to be addressed immediately to prevent seeping into the ground.	ECO/Site Agent to supervise and monitor. Contractor(s) to report all fuel and oil spills to the ECO/Site Agent and to remove contaminated soil to a licensed waste disposal facility throughout the construction period.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Hydrocarbon and Hazardous Materials Management to be carefully undertaken (continued)	3. Refuelling may take place on site, provided adequate drip trays, spill absorbent material and fire-fighting equipment is used and at hand. The refuelling can either be undertaken from gravity fed diesel tanks in a bunded area, or from a mobile bowser. Small equipment, such as generators, should be refuelled whilst in a drip tray. Refuelling should always be carried out with the correct equipment (e.g. nozzles of the appropriate size).	ECO and/or Site Agent to monitor compliance throughout the construction period.
	4. If applicable, only one refuelling area should be provided at the stores/site office site. A bunded pit (to contain 110% of fuel to be stored) must be built beneath the temporary steel fuel tank. A concrete apron must be cast on the outside of the bunded area to contain diesel spills and drips.	ECO and/or Site Agent to monitor compliance throughout the construction period.
	5. The area inside the bund wall should be lined with an impervious lining to prevent infiltration of the fuel into the soil. A sand layer, ± 150mm thick can be placed on top of the floor of the bunded pit. The soil layer should be replenished from time to time according to the degree of contamination. The contaminated soil must be removed to a licensed waste disposal facility that accepts such waste.	ECO and/or Site Agent to monitor compliance.
	6. Hazard signs indicating the nature of the stored materials shall be displayed on the fuel storage tank and at any hazardous materials storage/containment structure/facility.	ECO and/or Site Agent to monitor compliance.
	7. Refuelling operations will be avoided in sensitive areas; in particular, no refuelling operation will take place within 50m of the HWM.	ECO and/or Site Agent to monitor for duration of Construction Phase.
	8. All personnel involved with refuelling of plant and equipment must be competent and have undergone task specific training.	ECO and/or Site Agent to monitor compliance.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Hydrocarbon and Hazardous Materials Management to be carefully undertaken (continued)	9. All servicing and refuelling of vehicles must be conducted over a drip tray to prevent accidental spillage of oils and fuels. Similarly any stationary concrete / bitumen and tar mixers, dumpers, compressors or generators should have drip trays under them at all times, whether they are working or not.	ECO and/or Site Agent to monitor compliance throughout the construction period.
	10. All vehicles, equipment, fuel and petroleum services and tanks must be maintained in a good condition that prevents leakages and potential contamination of soil.	ECO and/or Site Agent to monitor compliance.
	11. All parked (overnight) mechanical vehicles should have a drip tray present to prevent spillage of oils and fuels and used oil (from servicing of vehicles) should be recycled or disposed of at a hazardous waste disposal facility.	ECO and/or Site Agent to monitor compliance. The Contractors are to recycle or dispose of used oils and contaminated water at hazardous waste disposal site.
	12. Fuels, bituminous products[35], oils and hydrocarbon products (tars) kept in tins and drums must be stored in a secured, appointed area, on a concrete or impervious steel floor that is bunded, that is fenced, and that has restricted access.	ECO and/or Site Agent to monitor compliance.
	13. Fuels, bituminous products, oils and hydrocarbon products may be temporarily stored on drip-trays during working hours to prevent pollution in case of spills or leakages.	ECO and/or Site Agent to monitor compliance.
	14. Cement, bitumen and tar should stored at designated areas on site (e.g. at the construction site camp).	ECO and/or Site Agent to monitor compliance.
	15. All remaining bitumen, tar and concrete / cement residues are to be removed from site at the end construction to the satisfaction of the RE and/or the ECO.	ECO and/or Site Agent to monitor compliance. Contractor to remove residues from site as directed or at end of contract.
	16. Under no circumstances shall the spoiling of hazardous materials, tar or bituminous products on or off the site, in borrow pits or any burying, be allowed. Unused or rejected tar or bituminous products shall be returned to the supplier's production plant.	ECO and/or Site Agent to monitor compliance.

[35] The internal roads within the development area will be paved using exposed aggregate concrete paving bricks. No bitumen-based materials will be used on site.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Hydrocarbon and Hazardous Materials Management to be carefully undertaken (continued)	17. Before containment or storage facilities for fuels, bituminous products, oils and hydrocarbon products can be erected the Contractor should furnish the RE with a **Method Statement** of the details of the preventative measures he proposes to install in order to mitigate against pollution of the surrounding environment from leaks or spillage. The Method Statement should also indicate the emergency procedures in the event of misuse or spillage that will negatively affect an individual or the environment.	ECO and/or Site Agent to monitor compliance throughout the construction period.
	18. The Contractor shall provide proof to the RE that relevant authorisation/s to store fuels, bituminous products, oils and hydrocarbon products have been obtained from the relevant authority.	ECO and/or Site Agent to monitor compliance.
	19. Hazardous waste such as bitumen, tar, oils etc. shall be disposed of an approved landfill site for such materials.	ECO and/or Site Agent to monitor compliance.

E.4 SOCIO-ENVIRONMENTAL MANAGEMENT PROGRAMMES

ENVIRONMENTAL POLICY:
To conserve all aspects of the social environment (including aesthetics) and cultural-historic environment (including archaeological and heritage resources) on and around the site for the development. To adopt a Still Bay (Hessequa) first policy when employing construction companies and staff and when purchasing building materials to ensure that the socio-economic benefits accrue to the Still Bay (Hessequa) area.

E.4.1 Archaeological and Heritage Resources

OBJECTIVE:
To ensure the conservation of the archaeological and heritage resources on the property, by checking for such resources in the excavations undertaken for civil service and in those undertaken for foundations of roads and buildings and siting development away from such resources in the event that they are found.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Conserve all **archaeological settings, artefacts and heritage resources**	1. The consulting archaeologist must be present on site when the site is to be cleared of alien vegetation to assess whether any archaeological material is visible on surface.	ECO/Site Agent to alert the archaeologist when the dense alien vegetation is to be removed throughout the construction period.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Conserve all **archaeological settings, artefacts and heritage resources [36](continued)**	2. The presence of any archaeological material must be assessed by the archaeologist for their heritage significance and a report must be submitted to HWC for further recommendations. 3. The eastern boundary of the development area must be clearly demarcated and a fire break must be cut prior to earthworks commencing on the site to prevent any archaeological sites to be disturbed that have been identified on Portion 2 of Erf 599 and Erf 593 during the specialist archaeology study. 4. If any graves or unmarked human burials are discovered, they must be treated with respect and the South African Heritage Resources Agency (SAHRA) must be notified immediately and must not be disturbed further until the necessary approval has been obtained from SAHRA. An archaeologist must be contracted to remove the remains at the expense of the Developer. Note: **A permit is required for such action.**	The archaeologist must inform HWC of any finds and provide a report to them for their recommendations throughout the construction period. The ECO is to arrange and monitor. HWC and South African Heritage Resources (SAHRA) must assess any grave sites. ECO, Site Agent and Developer are to ensure that directives pertaining to heritage resources and their protection are met.

E.4.2 Socio-Economic Benefits of the Development

OBJECTIVE:
Undertake a development that is socially, environmentally and economically sustainable. To optimise the social benefits of the development, local builders and contractors should enjoy preferential appointments to install civil services and for construction of buildings.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Ensure Job Opportunities within the local community	1. Both the temporary job opportunities during the construction phase and more permanent jobs (e.g. domestic staff and security) during the operational phase should be allocated to persons from the local communities wherever possible.	Developer and/or RE should monitor the local employment strategy together with the appointed Contractors. These activities should be explored in conjunction with other developments planned for the area.

[36] No archaeological artefacts were noted during mass earthworks on the construction site.

E.4.3 Aesthetics

OBJECTIVE: To minimise the visual (aesthetic) impact of the development on the surrounding environment.		
OUTCOME	**REQUIRED ACTIONS**	**TARGET & RESPONSIBILITY**
Minimise the visual (aesthetic) **impact** of the buildings in the construction phase	1. An Architectural and Development Guideline document has been prepared by the project architect and a concept landscape plan has been prepared for the project. A VIA was also undertaken (refer to Appendix G 5 of the BAR and **Appendix 10** of this EMPr). Various mitigation measures have been put in place to minimise the potential visual impacts.	Developer/RE to ensure visual mitigation methods are considered in the design of buildings and that they are implemented. The Municipality must ensure that such design guidelines are contained in the plans before approvals are given.
	2. Locally indigenous vegetation (Blombos Strandveld) is to be used in the landscaping within the development, i.e. in 'common' areas such as Private Open Spaces corridors and along internal roads to help soften/green the built landscape and partially reduce the visibility thereof from the surrounding areas.	A registered Landscape Architect was appointed to prepare a Landscaping Guideline which will address measures to mitigate the visual impacts of the development, and which should include maintenance and monitoring directives.
	3. Landscape Guidelines must be made available to homeowners. Planting of lawn only exacerbates the visibility of the units as is evident in the adjacent resort developments. The mix of lawn, shrubs and trees should be carefully designed with the importance of trees and large shrubs emphasized, to provide further greening of the built environment.	As above
	4. The typical Blombos Strandveld plants to be used in the landscaping of open spaces and private gardens have been provided by the specialist botanist. The appointed landscape architect is to provide a full list of locally indigenous Strandveld plants to be used.	The botanist, ECO and Landscape architect must provide guidance and monitor implementation.
	5. Boundary treatments must be visually permeable, using fencing for the most part and walls at entrances only. No precast concrete walls will be allowed.	Landscape architect and ECO to advise.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Minimise the visual (aesthetic) **impact** of the buildings in the development phase (continued)	6. The seaward boundary fenceline should be carefully aligned along the ecological line by the Landscape Architect and specialist geologist so as not to impact on the ecological management setback corridor parallel to the coastline. The fence should be aligned such that it does not break the skyline, as seen when walking along the beach. The fence line should be further softened with dune shrubs such as *Searsia spp., Metalasia spp.* and *Chrysanthemoides spp*. These plants will help soften the fenceline. 7. Viewing decks and benches should be sensitively sighted so as not to visually intrude on the sensitive dune and nature reserve areas, but be part of these areas, from where the reserve and seascape can be enjoyed. 8. Planting along the fenceline, between the storage garages and the existing adjacent housing units must be undertaken to screen this area from the existing neighbours. 9. Lighting, in particular external lighting on buildings and along streets, is to be minimised and kept low by using low bollard lighting that is down lit.	Landscape architect and specialist geologist to advise and monitor compliance. Landscape architect and specialist geologist to advise and monitor compliance. Landscape architect and ECO to advise and monitor compliance. Landscape architect and ECO to advise and monitor compliance.
Ensure outdoor advertising associated with the project is not visually obtrusive	All outdoor advertising associated with this project, whether on or off the site, must comply with the South African Manual for Outdoor Advertising Control (SAMOAC).	ECO to monitor compliance

E.4.4 Security

OBJECTIVE:

To maintain and/or enhance security levels around the development site, during the Construction Phases.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Minimise security risks during the Construction Phase	1. The Contractor(s) will be responsible for the security of their builder's site and the conduct of their personnel for the duration of the services and building contracts. 2. No personal will be allowed access onto the surrounding properties.	The Contractor and Developer / RE will need to implement and monitor security steps to be taken throughout the construction phase.

SECTION F: POST-CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

ENVIRONMENTAL POLICY:
The Construction Phases of the proposed Preekstoel Coastal Estate must ensure that all negative environmental impacts have been successfully mitigated to prevent any temporary or permanent environmental impacts or effects from occurring, or at least that the impacts have been mitigated to levels of acceptable change.

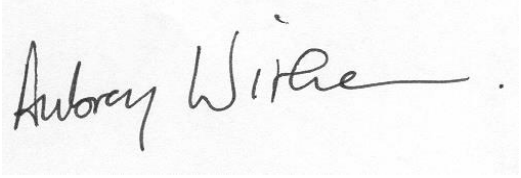
OBJECTIVE:
The objective of the Post Construction Phase of the development is to ensure that the Operational Phase of the project can be successfully implemented in the knowledge that all the necessary mitigation measures have been undertaken to prevent any temporary or permanent negative environmental impacts from occurring.

OUTCOME	REQUIRED ACTIONS	TARGET & RESPONSIBILITY
Undertake Post-construction site rehabilitation/ preparation of soil surfaces	1. All temporary structures are to be removed from the site within three weeks after completion of each construction phase of the project. 2. The Contractor must remove any remaining cement / concrete / bitumen / hydrocarbon spills within one week after completion of each phase of the project to applicable, licensed dumping sites. 3. All remaining building rubble and other forms of waste must be removed from the site, within one week after completing each phase of the project. 4. The Contractor must rehabilitate any disturbed areas (e.g. deep tracks left by construction vehicles) within one week after completing each phase of the project.	The ECO will monitor the post-Construction Phases of the project to ensure that degradation of the environment has not taken place, and that all disturbed areas have been satisfactorily rehabilitated and all remaining litter and building rubble has been removed from site.

SECTION G: CONCLUSION

The Construction EMPr is a fundamental element of the management process that is aimed at ensuring the environmental sustainability of the development of the Preekstoel Coastal Estate.

The implementation of the EMPr will also ensure that the Conditions of Approval laid down by the various authorities will be met and that the recommendations of BAR and those made by the specialist consultants are carried out. It is imperative for the EMPr to be actively implemented and used at all management levels as an integral part of the project. The ECO should ensure that the recommendations of the EMPs are carried out during the Construction Phase.



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November 2023