

Annexure “D”

BRACKENRIDGE ESTATE - PLETTENBERG BAY

**Environmental Management Plan
House Construction**

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SECTION 1: CONTEXTUAL INFORMATION

1.1 BACKGROUND

An Environmental Management Plan (EMP) describes mitigation measures in detail, and is prescriptive, identifying specific individuals or organisations responsible for undertaking specific tasks to ensure that impacts on the environment are minimised during construction. As an open-ended document, information gained during on-going monitoring of procedures on site could lead to changes in the recommendations and specifications of this document.

This document is intended to guide and manage the construction of 280 houses on Brackenridge Estate, in the context of a private conservation estate, with an emphasis on retaining the scrub forest and fynbos character of the site.

It has been compiled as a condition of exempting the development from certain provisions in the Environment Conservation Act (No. 73 of 1989), as well as condition of approval in terms of the Land-use Planning Ordinance (LUPO). It forms an agreement between Council and the Home Owner's Association, providing for the suitable protection of environmentally sensitive features on the site during the house construction phase.

1.2 COMMITMENT TO THE EMP

The EMP specifies the procedures to be followed by the Building Contractor in order to eliminate or reduce adverse impacts of the construction works on the natural surroundings.

A copy of the EMP will be issued to each builder/contractor at the tender stage to allow for costs of implementing the EMP to be included in the cost estimates. This will also ensure that each contractor is aware of his responsibilities prior to commencing work. Copies of the EMP will be made available to each Site Foreman, who will be required to familiarize him/herself with the contents of the document and ensure that procedures are followed accordingly.

Each Builder involved in the project will be expected to sign for, and thus acknowledge receipt of the EMP from the Home Owner's Association, and thereby will be expected to abide by the specifications of the document, as well as annexures, and any amendments thereto.

1.3 LEGAL STATUS OF THE EMP

The requirement for this document as conditions of both LUPO and exemption of the activity in terms of the Environment Conservation Act, ascribes legal status to the EMP and any subsequent amendments thereto. The EMP includes all relevant documentation within this report and/or referred to within it.

1.4 KEY TERMS AND ABBREVIATIONS

a) Builder -

- (i) the main contractor as engaged by the Owner for the execution of the works, including all sub-contractors appointed by the main contractor of his own volition for the execution of parts of the works;

- (ii) any other contractor from time to time engaged by the Owner directly in connection with any part of the Works which is not a nominated subcontractor or a subcontractor to the main contractor.
- b) **Building zone** – the section of each erf within which the construction of buildings is allowed.
- c) **Council** - the local authority, Plettenberg Bay Municipality, its successors in title or assigns.
- d) **Days** - the days of the week excluding Sundays and legal public holidays.
- e) **Environmental Management Plan (EMP)** - this document as amended or varied with the approval of the Council from time to time, to control the implementation of the works on the site in such a way as to ensure that they do not result in undue adverse impacts on the environment.
- f) **Environmental Control Officer (ECO)** - a suitably qualified independent environmental manager to be appointed prior to construction of individual houses, and his/her successor/s, should he/she cease to hold such appointment for any reason, to oversee the implementation of the EMP until the completion of works on the site. See **Section 1.5.1**.
- g) **Erf** - means a portion of privately owned land within the site, within the boundaries of which a residential dwelling will be constructed.
- h) **Home Owner's Association (HOA)** – the legal entity responsible for the management and maintenance of common property such as buildings, services and amenities arising from the development. See **Section 1.5.2**.
- i) **Owner** – the legal owner of each erf.
- j) **Site** – Brackenridge Estate, Plettenberg Bay.
- k) **Site Foreman** - the employee of the Builder responsible for the day to day control of all activities and operations on site.
- l) **Works** - the building construction operations and all related and incidental works such as, but not limited to, site works and earthworks, in connection with the construction of individual dwellings.

1.5 ENVIRONMENTAL CONTROL ON SITE

1.5.1 Environmental Control Officer

The responsibilities of the ECO during the construction of individual dwellings will include:

- To visit the site directly prior to the start of construction of each dwelling, ensure that all indigenous vegetation to remain on site have been suitably fenced, and agree with the Builder on sites for batching and stockpiling.
- To environmentally educate and raise the awareness of the Builders and their staff as to the sensitivity of the site at the start of construction and to target responsible individuals as key players for environmental education, to facilitate the spread of the correct environmental attitude during the contract work.

- To visit the site at the completion of each house, ensure vegetation identified for retention on site have not been damaged or removed, and ensure that the site and surrounding areas have been suitably cleared.

During the construction of each house and associated structures, the ECO is to visit the site on a regular basis in order to undertake the following tasks:

- To review method statements and determine the most environmentally sensitive options of *modus operandi* for the construction related tasks, when considered necessary by the ECO.
- To make on-site decisions regarding vegetation removal or retention, taking cognizance of the sensitivity of the vegetation.
- To oversee the implementation of environmental procedures set out in this document.
- To maintain an open and direct channel of communication with the Owner, who will be immediately aware of the actions of the ECO at all times, especially as they relate to implementation policy and corrective actions as detailed in this document.
- To take immediate action on site where clearly defined no-go areas are violated, or in danger of being violated, and to inform the Owner and HOA immediately of the occurrence and the action taken.
- To keep a site diary of any incidents of environmental disturbance or damage, instructions or recommendations to builders and owners, and penalties recommended to the HOA.
- To enforce penalties for transgressions of the specifications laid out in this document.

1.5.2 Home Owner's Association

The HOA is to ensure that a suitably qualified independent environmental manager is appointed as ECO prior to the start of construction of individual dwellings on site. The HOA will also be responsible for monitoring and enforcing compliance with the EMP by individual owners.

SECTION 2: COMMUNICATION, METHOD STATEMENTS AND GENERAL REQUIREMENTS

2.1 CONTRACTUAL COMMUNICATION PROCEDURES ON SITE

An Environmental Site Diary is to be kept by the ECO, for the purpose of recording details of the activities on site, any problems encountered or comments or complaints received from the public about works on the site. This book is to remain on site at all times, to allow for the builder, HOA or ECO to refer to it at any stage.

2.2 COMMUNICATION NETWORK

There is to be continual communication between the Builder and the ECO. The ECO will advise the Builder on factors relating to the EMP and all environmental matters on site.

The ECO is empowered to order the Builder immediately to cease any activities or operations that are required to be stopped as a matter of urgency to prevent serious environmental impacts or potential impacts on the site or any of the adjacent properties or areas outside the borders of the site. The ECO shall without delay report any such actions to the HOA and the Owner. The suspension will be enforced until corrective action has been taken, with no extension of time for such delays. In such a case, all costs are to be borne by the Builder.

2.3 METHOD STATEMENT FORMAT

The ECO may request the Builder to submit a method statement for any construction activity, which may have a significant environmental impact. On such a request to the Builder, the Builder is to submit a method statement detailing:

- **What** - a brief description of the work to be undertaken;
- **How** - a detailed description of the process of work, methods and materials;
- **Where** - a description/sketch map of the locality of the work; and
- **When** - the sequencing of actions with due commencement dates and completion date estimates, prior to the start of the construction activity.

The Builder is not to commence any activity for which a method statement has been requested until the ECO has commented on the method statement. Method statements and comments are to be kept for record purposes by the ECO.

2.4 PROGRAMMING OF CONSTRUCTION EVENTS

The ECO must be supplied with a detailed programme of all construction activities, with scheduled commencement and completion dates by each Builder, to allow for suitable environmental monitoring. The construction programme should take into account the local conditions on the site.

Due to the topography of the site, construction activities will need to be carefully programmed to avoid unnecessary erosion and delays in construction as a result of destabilisation during the rainy season.

2.5 GENERAL REQUIREMENTS

2.5.1 Building and Planting Restrictions

Future Owners will be entitled to built a single residential dwelling on their properties within building control measures as imposed by the approved Architectural Guidelines. A simple and concise set of design principles, guidelines and controls has been compiled to guide and inform the future development of housing on Brackenridge Estate.

The most suitable position for the development platform must be determined by taking the presence of indigenous vegetation into account. Ideally, the house should be positioned on the most disturbed portion of the erf. Building plans and positioning on the erf must be submitted to the HOA for approval.

All plant species except those listed in the approved plant list in the Landscape Guidelines are considered undesirable for planting, given the natural qualities of the site, and should therefore not be permitted. However, this list is not comprehensive and will be updated from time to time. Local indigenous plant nurseries should be approached for information on acceptable plant material. Alien vegetation must be manually removed from the erf on a regular basis.

2.5.2 Protection of Vegetation

Apart from the vegetation identified by the ECO for removal from the building zone on each erf prior to the start of construction, no vegetation is to be removed without the written permission of the ECO during the construction phase, or the HOA thereafter. Damage to indigenous vegetation anywhere on the site will be subject to penalties as outlined in **section 4.2**.

The removal of or damage to milkwoods (*Sideroxylon inerme*) by any person, without the necessary permit, could result in legal action against that person in terms of the National Forests Act (No. 84 of 1998).

Vegetation close to proposed houses being constructed, which could be damaged during the execution of works, as determined by the ECO, must be fenced prior to the start of works on site, as described in **section 3.1.4**.

2.5.3 Visual Impact

The reduction of visual impact of the development will largely be dealt with by protection of existing vegetation on the site, as well as the landscape and architectural guidelines.

2.5.4 Noise Management

The Builder shall comply with all noise regulations applicable to the works on site. The Builder shall take measures to limit noise levels as a result of construction activities and equipment on site, e.g. install and maintain silencers on machinery. The provisions of SABS 1200A Subclause 4.1 regarding 'built up areas' shall apply to all areas within audible distance of residents.

Appropriate directional and intensity settings are to be maintained on all hooters and sirens. No amplified music shall be allowed on site. The Builder shall not use sound amplification equipment on site, unless in emergency situations.

Working hours are, as far as reasonably practical, to be limited to 07h00 to 18h00 of any weekday, and 07h00 to 14h00 on Saturdays.

2.5.5 Cleanliness of Public Roads

The Owner and Builder must ensure that construction vehicles do not spill or drop any construction materials (sand, cement, debris, etc) onto public or private roads. If this should occur, it is the responsibility of the Builder to ensure that the roads are suitably cleaned.

2.5.6 Fire Control

As the site is located in a fire-prone area, the Builder is to take appropriate measures to guard against accidental fire. It will be presumed that any bush fire that starts on the erf, or within 100 m thereof during the construction period, will be the responsibility of the Builder, who will incur legal liability therefore.

All excavation equipment is to carry fire extinguishers, and all staff is to be able to use them, if required. In the case of any welding, grinding or other 'hot' work, a fire extinguisher is to be readily available to extinguish any fire that may result from these activities.

No open fires may be lit anywhere on the construction site. The burning of refuse or vegetative material on site as a means of disposal is strictly prohibited.

2.5.7 Emergency Procedures

All accidents and emergency situations (including fires, chemical spills etc) are to be reported to the ECO. The ECO must be notified of any emergency situation on site immediately after the relevant emergency services have been contacted.

Fire

In the case of a fire occurring on site, the ECO is to be notified immediately. If fairly localised, an effort should be made to extinguish the fire immediately, and if required, the assistance of the local fire department is to be sought by the safety steward. The local fire department can be contacted at **tel (044) 533-5000**.

Chemical spillage

For hydrocarbon chemical spillage, Enretech #1 or a similar bioremedial product, approved by the ECO is to be used in order to mop up or transform the hazardous substance into a non-hazardous form. An adequate supply of the relevant product is to be kept on site by the Builder. The ECO is to be notified immediately of the occurrence of any chemical spill, and to supervise the use of the product, or any other remedial action required in the cleanup operation.

Accidents

The Builder must provide and maintain a suitable first aid kit on site, with a member of staff suitably qualified in first aid on site during working hours, in accordance with the Occupational Health and Safety Act of 1993. In the case of any accident resulting in serious physical injury, an ambulance can be contacted at **tel 10177** (all hours).

2.5.8 Public Complaints

All public complaints received are to be registered by the ECO or Builder, and addressed immediately. Public complaints and responses are to be recorded in the Site Diary.

2.5.9 Bylaws and Regulations

All national and provincial laws and regulations, as well as all local authority bylaws and regulations which apply to housing construction and the development of this site are to be adhered to.

SECTION 3: SPECIFIC REQUIREMENTS

3.1 SITE ESTABLISHMENT REQUIREMENTS

3.1.1 Erf Definition and Demarcation

Prior to any works commencing, the erf boundaries, as well as the boundaries of the building zone are to be clearly demarcated with fencing panels or danger tape. Once this has been done, all works, including stockpiling of construction and waste materials, are to be strictly confined to the demarcated boundaries.

3.1.2 Environmental Awareness Training for Site Personnel

All teams involved in housing construction are to be briefed on their obligations towards the environmental controls and methodologies. The briefing will usually take the form of an on-site talk and demonstration by the ECO, aimed at all levels of the Contractor team.

The environmental awareness education programme is to commence with entry onto site, prior to any construction activities taking place by each building team. All personnel are to be made aware of the details of the EMP, which will be applicable to them, in the languages of the site staff. Contractor teams are to also be made aware of penalties issued by the ECO in terms of environmental conduct on site, as well as safety and emergency procedures to be followed.

3.1.3 Toilet Facilities

Suitable sanitary facilities must be provided by the Builder for all staff on site, according to SABS standards, i.e. one toilet per 15 workers. The Contractor shall ensure that ablutions are restricted to the facilities provided. Where chemical toilets are provided, the Contractor shall ensure that they are kept in a hygienic condition and emptied regularly. Toilets are to be emptied before weekends, public holidays or builders holidays. Waste from the toilets is to be disposed of to the satisfaction of the ECO and Council.

Care must be taken that no spillage occurs when chemical toilets are cleaned, and that contents are properly stored and removed off site. Should a spillage occur, it is to be cleaned up to the satisfaction of the ECO. Toilets shall be located where their use would result in minimal impact on the environment, and may not be placed in areas where running or standing water occurs during winter. Toilets are to be secured to prevent them from blowing over.

3.1.4 Fencing of Vegetation

Indigenous vegetation outside building zones shall be fenced to the satisfaction of the ECO. Fencing shall consist of 1.8 m long timber posts (90 mm in diameter) at 2 m centres, driven 600 mm into the ground, supporting a wire mesh. All fencing is to be erected prior to construction works commencing on site, and is to be maintained in position and in good repair for the duration of the works. No materials, rubble or equipment are to be stored or stockpiled within the fenced areas, and no one is to enter these areas. Any deviations from these specifications are subject to the approval of the ECO.

3.1.5 Vegetation Clearance

All vegetation within the boundaries of each erf, which may be removed to allow for construction within the building zone, must be indicated on the site plan by the ECO. Vegetation is to be removed at the owner's discretion, based on the design of the house. No vegetation outside of the building zone on each erf may be removed without approval of the ECO as well as Council.

Search and rescue of indigenous plants, which could be used for rehabilitation afterwards, should be undertaken by an experienced contractor prior to clearing or any works. Care shall be taken to keep root damage to a minimum when rescuing these plants. Storage of plant material should take place at a nursery for the duration of the construction phase. Mulching of cleared vegetation to be used as mulch layers is highly recommended.

3.1.6 Stripping of Topsoil

The topsoil, which contains indigenous seeds, bulbs and rootstocks, shall be stripped from the site by the Builder for later use in rehabilitation. Topsoil shall be stockpiled at a suitable site in neat piles not exceeding 2 m in height. Care shall be taken to prevent compaction or pollution of the topsoil. Stockpiles shall be convex at the top to promote runoff. Where required, the Builder shall take anti-erosion measures by covering the topsoil with suitable mulch and/or seeding the stockpiles with a fast-growing indigenous annual grass.

3.2 CONSTRUCTION PHASE REQUIREMENTS

3.2.1 Preparation of Building Materials

All building materials are to be prepared at a batching area identified by the Builder and approved by the ECO, within the building zone, to enable the effects of cement and other substances, and the resulting effluent to be more easily managed.

3.2.2 Material Handling and Storage

The Builder must identify areas, for stockpiling building materials and excavated material, to be approved by ECO. Stockpile sites should preferably be in areas with a gentle gradient. Stockpiles should be suitably stabilised if required.

3.2.3 Effluent and Waste Management

General Wastes

All waste materials are to be stored within the fenced boundaries of the erf during construction, and removed from site once construction is completed. Waste shall be stored in closed containers to prevent dispersal by wind. Bins are to be provided on site for storage of litter and empty cement bags, which is to be strictly controlled.

Discharge of Construction Water

All cement effluent from mixer washings and other runoff from work areas must be contained on the erf in a suitably lined sedimentation pond and removed from the site at the end of the contract. No effluent, including harmful substances such as paint or solvents may be discharged on the erf. Stormwater runoff from the site shall be channeled into the stormwater system, or contained on site so as not to transport any pollutants off site, nor cause any off-site erosion.

3.2.4 Maintenance of Equipment

No mechanical equipment or work vehicles are to be stored, serviced or refueled on site, unless otherwise approved by the ECO. In such a case these activities are only to be in areas which are suitably equipped with drip trays or other impervious materials to prevent contamination of the ground. The Owner or ECO may order the removal of equipment that is causing environmental damage by leaking oil or fuel until such equipment has been repaired.

3.2.5 Runoff and Erosion Control

The Builder shall take measures to control runoff from the erf onto adjacent properties or the roadway, or spillage of muddy water into streams. All runoff from the erf shall be channeled into sedimentation ponds or the stormwater system.

Care must be taken at all times to prevent erosion on the construction site. As erosion is likely to occur on the steeper erven, the Builder is to provide stabilisation where needed to the satisfaction of the ECO. Should any erosion be detected on site, the ECO and Builder will identify the cause of such erosion and ensure that the most appropriate method of mitigation or stabilisation is employed as soon as possible.

3.2.6 Removal of Spoil

No excavated material shall be removed from the site to any location, whether it be private or public property, without the prior written approval of Council. In this respect the ECO shall be permitted to order the Owner, the Builder or any other person to cease such removal and shall immediately report such removal to the Council.

3.2.7 Earth Shaping

Any major earthworks are to be restricted to the building zone. Bulldozer and heavy machinery operators are to be under constant supervision, and are to be made aware of all the environmental obligations and penalties for transgressions, as they have the potential to inflict severe damage to the surrounding environment.

3.2.8 Construction Traffic Management

Movement of construction vehicles on public roads shall be to Council's approval, specifically the traffic manager in terms of road safety. All construction vehicles carrying materials must use sheeting to prevent loss of loads due to wind or rain.

Construction vehicles may only access erven via the completed road system. Any deviation from this specification for any reason must be approved by the ECO.

3.3 POST-CONSTRUCTION REHABILITATION

3.3.1 Site Clean-up

The Builder is to ensure that all structures, equipment materials and facilities used on site for construction activities are removed once the house has been built. The construction site shall be cleared, and cleaned to the satisfaction of the ECO and the Owner.

3.3.2 Revegetation

The success of rehabilitation after construction is regarded as integral to the aesthetics and intended functioning of the final development. Disturbed areas will revert through the process of succession back to natural veld, only if left undisturbed for a considerable period of time and, most importantly, if kept clear of aliens. This process of rehabilitation can however be speeded up by revegetation using rescued plant material, mulched vegetation and topsoil (stripped from the construction site before construction). The use of any alien plants is firmly considered undesirable.

Provision shall be made for sowing by hand, planting of cuttings and bulbs, use of topsoil, biodegradable netting and the use of mulch. The Contractor shall replace the topsoil to an appropriate depth. If there is insufficient topsoil, the Contractor shall supplement it with brush-cut mulch and/or wood chips at a ratio not greater than 1:1. The mulch/chips shall be mixed with the topsoil prior to application.

Plant material shall be watered before it is removed from its containers for planting. Directly after having been planted, each plant shall be well watered with a view to settling the soil. After the soil has settled, additional soil shall be added where required to bring the replaced soil in the hole to within 100-150 mm of the surrounding soil surface, so as to ensure that sufficient water can be retained in the hole around the plant. After planting, the soil surface around the plant shall be covered with mulch to minimize evaporation.

The Contractor shall only revegetate areas when all operations, which may require movement of construction equipment or pedestrian access over revegetated areas, have been completed. No movement of construction equipment, trucks or workers shall be allowed onto areas that have been revegetated, and only equipment required for the preparation of areas and maintenance will be allowed to operate in areas to be revegetated.

3.3.3 Maintenance

The Contractor shall be responsible for maintaining the plants in a good condition throughout the maintenance period. Maintenance shall begin when the planting commences and shall continue until provisional acceptance by the Owner of all planting works. Following provisional acceptance, there shall be a maintenance period of 1 month, after which maintenance will become the responsibility of the Owner. All planted material shall be regularly watered to ensure adequate germination and growth.

Special care must be taken to ensure that revegetated areas are kept free of alien plants. Remove all weeds and invasive grass manually, making sure to remove the roots also. All woody alien seedlings shall be pulled out by hand before they reach 300 mm in height. Put weeds directly into a refuse bag and remove from site to an approved disposal site. Kikuyu must be controlled by hand pulling or spraying.

Remedial work shall be implemented immediately by the Contractor during incidents of erosion.

SECTION 4: COMPLIANCE AND MONITORING

4.1 ENVIRONMENTAL MONITORING

The monitoring of works on site is necessary to demonstrate compliance with the specifications of the EMP and to allow for problems or issues of non-conformance to be identified and appropriate corrective measures to minimize environmental impact to be implemented. Monitoring should include visual checks by the Builder on a daily basis, checks on particular requirements for site activities by the ECO, as well as a review of site documentation.

4.2 TRANSGRESSIONS AND PENALTIES

Transgressions relate to actions by the Owner, Builder or contractor team members whereby damage or harm is inflicted upon the environment or any feature thereof and where any of the conditions or specifications of the EMP are infringed upon. In the instance of environmental damage, the damage, where possible, is to be repaired and rehabilitated using appropriate measures, as specified and undertaken by appropriate specialists, and to the satisfaction of the ECO, for the account of the responsible party.

Where infringement of the specifications or conditions of the EMP is registered, appropriate remedial action or measures are to be implemented for the account of the responsible party. Where non-repairable damage is inflicted upon the environment or non-compliance with any of the EMP obligations is registered, the Owner or Builder may face a monetary penalty to an amount specified by the ECO. The ECO is to recommend any monetary penalties to the HOA. The latter shall provide the responsible party with a written notice, specifying the time period during which remedial actions are to be taken, failing which the monetary penalty will be imposed.

Transgressions are most likely to occur with respect to litter on site, damage to vegetation and erosion. The following penalties are suggested for the above mentioned transgressions:

Litter: In the case of excessive litter on site, the ECO is to allow the Owner/Builder 24 hours in which to remove the litter or face a monetary penalty at the ECO's discretion.

Damage to vegetation: A monetary penalty to the maximum of R8 000 is to be paid for damage to vegetation outside the demarcated building zone or without the permission of the ECO. The responsible party will further be responsible for reinstating the damaged area to the satisfaction of the ECO.

Erosion: Erosion resulting from any work on site is to be rectified at the cost of the Owner/Builder, and to the satisfaction of the ECO.

Runoff: Should runoff not be properly controlled on site, and stormwater or construction effluent enter a stream, the ECO shall impose a monetary penalty to the maximum of R1 000 per incident.

Should the HOA become aware of any transgressions, the ECO is to be notified immediately. If excessive infringement with regard to any of the specifications is registered, the Owner may terminate the Builder's contract.

4.3 SITE RECORD

The ECO is to submit a brief summary report detailing activities, progress, compliance or transgressions from EMP, and environmental problems experienced with the construction of each house, to the HOA.

4.4 REVIEW OF EMP

The EMP shall be reviewed by the ECO on an ongoing basis. Based on observations during site inspections, the ECO shall determine whether any procedures require modification to improve the efficiency and applicability of the EMP on site. Any such changes or updates shall be submitted to the HOA, as well as being included as an annexure to this document.