BRACKENRIDGE ESTATE - PLETTENBERG BAY

OPERATIONAL PHASE
ENVIRONMENTAL MANAGEMENT PLAN

REFERENCE S040
OCTOBER 2001

PLANNING PARTNERS
CAPE TOWN

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SECTION 1: CONTEXTUAL INFORMATION

1.1 INTRODUCTION

Planning Partners was appointed by Brackenridge Property Development (Pty) Ltd to compile an Environmental Management Plan (EMP) dealing with the ongoing management requirements of the development, in response to a condition of exemption in terms of the Environment Conservation Act (No. 73 of 1989), as well as a condition of approval in terms of the Land-use Planning Ordinance (LUPO). Brackenridge Estate consists of 280 single residential erven, nestled in private open space of 67 ha (see Plan).

Issues, such as the eradication of alien vegetation, fire management, erosion control, rehabilitation and pedestrian pathways, are addressed. Being an open-ended, dynamic document, it allows for changes in operational methods to be implemented. Consequently it is intended that the EMP will present practical techniques, methods and programmes for implementing the recommendations.

1.2 ABOUT THIS DOCUMENT

This document completes the environmental management system for the development. The first document dealt with the installation of services on site, and the second with environmental controls during house construction. This Operational Phase EMP describes management requirements to maintain the quality of the natural and man-made environment of the site, and to monitor activities on site which may have the potential to negatively impact on the environment. It is intended to ensure that these impacts on the existing natural surroundings are minimized throughout the existence of the development.

The requirements of this document will thus come into effect as each dwelling's construction is completed. While providing guidelines as to management in the long term, this document should be regarded as being open-ended, requiring regular review and updating in order for it to effective.

This EMP document has been divided into three sections as follows:

- **Section 1** provides the contextual information including the background to, and purpose of the EMP, as well as definitions and abbreviations applicable throughout the document.
- **Section 2** outlines the way in which this document will be implemented, identifying the key role players, and their responsibilities within the environmental management structure.
- **Section 3** provides detailed environmental management specifications, including the objectives of the management, required actions, responsible parties and frequency or time frames for each of the required actions.

1.3 EXISTING ENVIRONMENTAL CHARACTERISTICS

1.3.1 Geographical Context

Brackenridge is located in Plettenberg Bay to the west of Beacon Island Estate. The main access to the property is gained via Piesang Valley Road, with a secondary access road linking the estate with Robberg Road via Maplin Drive. The property is surrounded by agricultural land to the west and south, Piesang Valley to the north, and a residential area to the east.

1.3.2 Physiography

The site is located on a ridge, which demarcates the southern boundary of the Piesang Valley. This ridge forms part of the rocky headland that defines the half-heart bay and terminates at Robberg. Its altitude ranges from near sea level in the northeastern corner to just over 100 m on the western boundary. The development exploits mainly the eastern slopes for sea views avoiding the steeper slopes and drainage courses.

1.3.3 Geology

Brackenridge consists of consolidated conglomerate deposits belonging to the Enon Formation. These deposits, which are of Cretaceous to Tertiary age, were deposited in a structural basin underlain by less resistant Bokkeveld sediments. The conglomerate represents torrential deposits in an arid climate under strongly oxidising conditions.

The coastal deposits are partly of marine origin. The youngest deposits in the area consist of alluvial valley deposits found along the base of the ridge. White sandstone outcrops visible across the Piesang Valley belong to the Peninsula Formation, a member of the Table Mountain Group.

1.3.4 Vegetation and Fauna

Ericaceous fynbos dominates the vegetation on Brackenridge. The presence of several widely distributed tropical grasses, such as *Themeda triandra*, *Heteropogon contortus* and *Eragrostis capensis*, indicates to an affinity with grassy fynbos further east. Past farming activities have converted a large portion of the veld into grassland. Afromontane (scrub) forest elements, such as *Diospyros dichrophylla*, *Rapanea melanophloeos*, *Pterocelastrus tricuspidatus*, *Sideroxylon inerme* and *Scolopia zeyheri*, occur in the more sheltered sites on Brackenridge.

Past disturbances have also led to heavy alien infestation in large parts of the estate. Alien species encountered include pines, rooikrans (*Acacia cyclops*), hakea (*Hakea sericea*), port jackson (*Acacia saligna*), black wattle (*Acacia mearnsii*) and gums. These are currently being cleared.

A number of small mammals, such as duiker and grysbok, can be expected to occur here. The forest elements would also attract a wide variety of bird species.

1.3.5 Fire Risk

Vegetation on the site may pose a fire risk to the development. Fynbos is dependent upon periodic fires for regeneration, and any alien plants add to the fuel load. In this regard, certain management requirements are prescribed to prevent and manage fires, which may occur on the site or spread to it from adjacent properties.

1.3.6 Sensitive Coastal Area

The property falls partly into the Sensitive Coastal Area that stretches from the Blaauwkrantz River in the east to Tergniet, near Mossel Bay. Such areas are declared due to their geological or physical sensitivity, presence of important vegetation communities, archaeological resources, etc. Certain listed activities within this zone, such as earthworks and the disturbance of vegetation, require permission from Council.

1.4 DEFINITIONS

a) **Council** - the local authority, Plettenberg Bay Municipality, their successors in title or assigns.

b) **Environmental Management Consultant** - a suitably qualified environmental management professional appointed by the HOA

c) **Environmental Liaison Committee** - an advisory committee made up of various interested and affected parties, as detailed in **section 2.1.1**.

d) **Environmental Management Plan** - this document: Operational Phase EMP for Brackenridge Estate (herein referred to as the EMP), as well as any amendments, annexures or documents referred to within it.

e) **Home Owner's Association** - the Brackenridge Estate Home Owner's Association as detailed in **section 2.1.2** of this document.

1.5 ABBREVIATIONS

DECAS	Department of Environmental and Cultural Affairs and Sport
EMC	Environmental Management Consultant
ELC	Environmental Liaison Committee
EMP	Environmental Management Plan
HOA	Home Owner's Association

1.6 LEGAL STATUS OF THE EMP

By virtue of the fact that this document has been compiled to fulfill a condition of exemption in terms of the Environment Conservation Act, as well as a LUPO condition of approval, there exists a legal obligation for the specifications of this Operational Phase EMP to be complied with. This EMP includes all relevant documentation contained or referred to within it, along with any amendments or annexes to this document.

SECTION 2: IMPLEMENTATION OF THE EMP

2.1 ORGANIZATIONAL STRUCTURE

2.1.1 Environmental Liaison Committee (ELC)

The ELC was established (as a condition of approval for development) to oversee implementation of the EMP on site. This committee also serves as a consultative forum to integrate the views of the community, as well as having provided input into the compilation of the EMP.

The ELC has included representatives of the following organisations:

- Plettenberg Bay Municipality
- Plettenberg Bay Community Environmental Forum
- Brackenridge Estate HOA
- DECAS

The ELC's role as a monitoring body continuous throughout the servicing phase and construction of individual houses, and will cease to exist upon completion of this phase. Before ceasing operations, the committee will ensure that adequate measures are in place for ongoing monitoring and environmental management through the HOA.

2.1.2 Home Owner's Association (HOA)

This is a legal entity responsible for the management and maintenance of common property such as houses, services and amenities arising from the development as well as to ensure compliance with the Architectural and Landscaping Guidelines. The HOA operates according to the HOA constitution. Its members constitute the owners of erven, who shall be jointly liable for expenditure incurred in connection with the association.

The HOA has been established to control private open space and private roads. In addition, the HOA shall monitor and enforce compliance by the individual owners and shall itself comply with this EMP to ensure long-term management of the development and the associated natural environment.

2.2 ENVIRONMENTAL MONITORING

The purpose of monitoring will be to ascertain the effectiveness of environmental management, the methods employed, as well as the influence of external factors, such as people.

2.2.1 Monitoring of Veld Condition

A regular, qualitative assessment of the condition of indigenous vegetation, such as accumulation of dead wood as result of ageing, must be carried out, say once every 5 years by a specialist.

2.2.2 Fire Monitoring

The purpose will be to keep records of all fires occurring on the estate. The HOA will keep records containing the following information of all fires occurring on Brackenridge up to date:

- Date of fire occurrence
- Area burnt (size and area drawn on 1:10 000 map)
- Duration of fire

- Season
- Weather conditions
- Origin of fire
- Cause of fire
- Damage to property
- Management requirement to prevent wild fire occurrences.

2.2.3 Erosion Monitoring

The purpose will be to detect early signs of erosion, determine the need for erosion control and continued maintenance of control activities as well as to determine the success of erosion control methods. All roads, road verges, footpaths and stormwater culverts will be monitored at least once annually, but preferably after each rain storm event for signs of erosion.

Monitoring can be done by either casual observation or fixed-point photography. If any signs of erosion are detected, immediate action must be taken to either remove the cause of erosion or prevent further damage and to repair the existing erosion damage.

2.2.4 Monitoring the Condition of Minor Infrastructure

The condition and effectiveness of minor infrastructure, such as fire hydrants, information boards and footpaths, must be monitored. Maintenance must be carried out when and where required.

2.3 ENVIRONMENTAL AUDIT

A year after the implementation of the EMP, an environmental audit is to be carried out. Environmental auditing will ensure that management and conservation objectives are achieved successfully. In this regard, an experienced and suitably qualified environmental consultant must be appointed.

The consultant must be independent of the activities they audit, objective and free from bias and conflict of interest throughout the process. The consultant would be required to:

- Inspect the site in detail.
- Highlight any problems.
- Give directives with respect to specific management requirements, such as erosion control, alien regrowth treatment, planting of indigenous species, etc.
- Check that these tasks have been carried out during the next audit.
- Advise on aspects such as veld condition and burning programmes.

Environmental audits will be conducted at an annual frequency into perpetuity. The auditor will advise if this frequency proves too high with time. Audits can be carried out by means of a checklist and will focus on areas of indigenous vegetation; revegetated areas; continuous alien plant control; fire management; condition of the stormwater system; minor infrastructure; private properties; and the updating of the EMP.

The findings must be submitted to the HOA for inspection, upon which recommendations and possible corrective measures can be carried out. These reports must then be submitted to Council.

2.4 REVIEW OF EMP

The EMP document is to be reviewed every three years by the EMC. This will ensure that it remains relevant and capable of dealing with current requirements. The HOA is to refer all proposed changes

in the EMP and in environmental management practices to the ELC for approval, prior to such changes being implemented.

2.5 FINANCING FOR ENVIRONMENTAL CONTROL

Financing of environmental control requirements as outlined in this document, as they relate to the long-term management of the site, is the sole responsibility of the HOA. These funds are to be raised as part of the levy paid by all property owners. An environmental management fund should be established for this purpose.

SECTION 3: SPECIFICATIONS FOR ENVIRONMENTAL MANAGEMENT

3.1 VEGETATION MANAGEMENT

Wherever possible within erven but outside the demarcated building zones, indigenous vegetation (mainly fynbos) has been retained, as have vegetation in the road reserve and private open space. Aliens have been removed from the private open space to create a viable fynbos/scrub forest environment. All viable patches of indigenous vegetation on the site have been mapped on a vegetation plan. No vegetation in the private open space may be removed without the permission of the ELC and Council.

OBJECTIVE:
To maintain a healthy fynbos/scrub forest environment, consonant with the precepts and motivations upon which the development was approved.

APPROACH:
- Reestablish indigenous vegetation in degraded areas.
- Retain all viable vegetation outside building zones on site.
- Remove indigenous vegetation only if considered absolutely essential, and only with the ELC's and Council's consent.

3.1.1 Rehabilitation of Degraded Areas

Management Requirements:
- Suitable plant species for revegetation purposes can be obtained from indigenous plant nurseries, several of which exist locally.
- The optimal planting season is April/May, which allows the young plants access to natural irrigation with rainwater for the first season. Sowing can be conducted at any time, but preferably during the main natural seed-set time, which is October to February.
- Adequate protection, e.g. organic and inorganic soil binders, must be provided for exposed surfaces in order to prevent erosion.
- Alien grasses, except kikuyu, should be retained as they provide soil binding properties and shelter for indigenous seeds to germinate.
- No fertiliser is necessary, unless an area can be watered. Kelpak can then be provided as part of the initial irrigation procedure since it is a liquid fertiliser, which can be applied to the soil with most of the commercially available irrigation equipment.
- Maintenance of revegetated areas shall commence immediately after planting and shall continue until a satisfactorily cover has been achieved. The Contractor shall maintain the plants in a good condition throughout the maintenance period. Maintenance shall consist of erosion control, watering, weeding, fertilising, disease and pest control, etc.
- Appoint an experienced contractor to manage the revegetation.

Time Frame:
Ongoing; action as required

Responsible Parties:
HOA, Contractor, EMC

3.1.2 Protection of Indigenous Vegetation

Management Requirements:

- Do not remove any vegetation identified on the vegetation plan for retention. If essential that vegetation be removed, the appropriate process is to be followed, as described in **section 3.1.3** below.
- Take suitable action (e.g. monetary penalties) against property owners failing to protect viable vegetation on their property.

Time Frame:
Ongoing

Responsible Parties:
Property Owners, HOA

3.1.3 Removal of Vegetation

Management Requirements

- Removal of viable vegetation outside building zones on erven is to be discussed by the owner with the HOA. The HOA will decide whether removal is necessary and or desirable after assessment of the affected vegetation and determination of its status from the vegetation plan.
- Details about the vegetation (i.e. quality, extent, linkage with adjacent patches, etc) and motivation for its desired removal are to be submitted to the HOA for consideration.
- No vegetation may be removed unless consent of the HOA has been obtained.
- Comply with conditions of vegetation removal, as determined by the HOA.
- All material resulting from the removal is to be taken from the site and disposed of at an appropriate waste-disposal site, to prevent an increase in fuel load on site.

Frequency/Time Frame:
As required

Responsible Parties:
Property Owner, HOA

3.2 FIRE MANAGEMENT

The nature of the vegetation on site and in neighboring areas may pose a fire risk for the development. Fynbos is prone to bush fires, especially during the summer months when temperatures as well as fuel loads are high. Being a fire-dependant vegetation type, fynbos is adapted to short rotation burns. The scrub forest elements on site add to the fuel load.

Fire management and the prevention of wildfires on site are important aspects of the long-term environmental management of the development.

OBJECTIVE:
To use fire as a management tool for the benefit of fynbos and to prevent or minimize damage to the development (and adjacent properties) as a result of wildfires.

APPROACH:

- Allow only controlled fires according to burning plan for the estate.
- Minimize fuel loads on site.
- Establish and maintain firebreaks along the boundaries of the site.

- Ensure that all property owners are aware of the locations of fire fighting facilities and procedures to be followed in the case of a fire.

3.2.1 Fire Prevention

Management Requirements:

- No property owners will be allowed to burn any materials anywhere on the site; including on private erven.
- Outdoor fires will only be allowed for cooking purposes, in fireplaces designed for this purpose.
- General garden refuse, and all dead or waste plant material resulting from vegetation clearance, is to be removed from the site.
- All property owners are to be made aware of the risks of fire in the area.
- The HOA is to identify any other activities that may pose a fire risk or sources of fuel load on site, and advise property owners on suitable management practices to prevent fires.
- The HOA is to impose penalties on property owners for any contravention of the stated fire precaution and prevention requirements.
- The following fire precautions are to be strictly adhered to:
  i. Owners should familiarize themselves with the position of fire hydrants and hosereels on the site, and with any rules and procedures laid down by the HOA.
  ii. Fire hosereels are to be mounted in a convenient position that is visible from the road.
  iii. All owners are encouraged to install sprinkler irrigation systems on the area surrounding the house, and possibly on the roof. Any PVC pipework for these systems should be buried a minimum of 400 mm deep.
  iv. The flues of fireplaces are to be fitted with brass mesh to prevent sparks escaping.
  v. Braai places shall be built with flues.
  vi. It is recommended that gutters are not installed, as the leaf matter that can collect is a fire risk. Where gutters are not used, stormwater runoff must be dealt with in an alternative manner. Gutters should be fitted with mesh guards to prevent leaf matter collecting.
  vii. It is recommended that the design is modified where possible by incorporating fire prevention measures, such as those contained in the 'The Complete Australian Bushfire Book'.
  viii. An electronic alert system, such as Help Alert of Mancor, should be installed.

Time Frame:
Ongoing

Responsible Parties:
HOA, Property Owners

3.2.2 Fire Break

Management Requirements:

- An 8 m wide firebreak is to be cleared and maintained around the site as determined by the EMC.
- All trees and tall vegetation in this firebreak are to be cleared, and the area is to be bushcut to remove all the remaining vegetation.
- The firebreak is to be cleared annually at the beginning of the summer season in October, using bushcutters.
- All cut material is to be removed from the firebreak, and disposed of at a suitable waste-disposal site.

Time Frame:
Initial Clearing: Immediately
Maintenance: Annually during October

Responsible Party:
HOA

3.2.3 Controlled Burning

Fynbos that has not burnt for many years becomes senescent (build up of dead material) and is prone to wildfires. Given the low average annual rainfall experienced in the area, a low fire frequency of between 15 and 20 years would probably be required for the fynbos. The need for burning the fynbos patches and the fire rotation frequency must be established by a specialist and weighed up against the risk of burning small patches.

Management Requirements:
- Small fynbos management units (say 2-10 ha) should be burnt in rotation. This can be done with due recognition of seasonal preference and will reduce fire hazard, inconvenience and negative impact on aesthetics.
- Controlled burns should ideally be conducted in March and April, when the risk of uncontrolled fires is low. This period also appears to be beneficial for most fynbos species.
- A truck with a firefighting unit will be on standby at the burning site. Burning should only be conducted in the morning when the winds are calm and predictable.
- Fires must not be allowed to burn unattended or overnight. All burnt areas on the estate will be monitored constantly for a period of at least one week after a burn in order to detect recurring fires early. During hot, dry periods this monitoring period should be lengthened.
- Neighbouring landowners, as well as the local authority, shall be notified in advance when burning is planned
- Appoint an experienced contractor to implement the burning plan.
- Revegetated areas must not be burnt, until they are successfully rehabilitated as determined by a specialist.

Time Frame:
Ongoing

Responsible Party:
HOA, Contractor, Council

3.2.3 Fire Control

Management Requirements:
- Each owner is to be provided with a diagram indicating the position of hydrants and fire control equipment on site.
- Property owners are to be made aware of any rules and procedures laid down by the HOA, regarding the use or management of the fire fighting equipment.
- If required, the local fire department must be alerted at **tel (044) 533-5000** (all hours).
- HOA to provide property owners with instructions of procedures to follow in the case of a fire, including emergency contact details.
- The HOA is responsible for ensuring that firefighting facilities and equipment on site are regularly and appropriately maintained.
- This fire protocol (contingency plan) will be implemented by the HOA in collaboration with the local fire department.

Time Frame:
On occupancy of a dwelling; ongoing

Responsible Parties:
HOA, Property Owners, Council

3.3 ALIEN VEGETATION CONTROL

All alien plants occurring on the site will have been removed during the construction phase. Alien plants, however, do require ongoing management for a period of time as they readily produce large quantities of seeds, which remain dormant for long periods. Resprouting from underground parts, which have remained after initial clearing, may also occur. Regrowth of alien plant species may thus be expected for a number of years, and will require suitable control to allow indigenous species to reestablish in previously infested areas of the site.

OBJECTIVES:
To control the growth of alien plants on site and maintain a healthy fynbos/scrub forest environment. Also to establish fynbos or scrub forest in the previously disturbed/infested areas in the long-term.

APPROACH:
- Remove all remaining alien plants from the site.
- Control growth of alien seedlings resulting from the existing seed bank.
- Prohibit the planting of any alien plant species by property owners.
- Establish fynbos and scrub forest in disturbed or previcusly infested areas.

3.3.1 Control of Alien Seedlings

Follow-up of cleared areas on an annual basis, before trees can reach a seed-bearing stage, is essential for the effective control of aliens. Most of the alien trees have been removed from the site, although continuous control of the existing seed banks is essential.

Management Requirements:
- Seedlings should preferably be pulled by hand as soon as possible. If left to grow, removal of these plants becomes more difficult and costly.
- Seedling removal is most effective after the rainy season (May to August) when seeds have germinated. One-year old seedlings can be hand-pulled, preferably when soil is wet after a good rainfall.
- Do not control alien plants by brushcutting, bulldozing or any other mechanical method that disturb large areas or adjacent vegetation.
- Pulled seedlings are to be removed from the site and disposed of at a suitable waste-disposal site.
- Seedlings should not be allowed to grow to a size that requires mechanical or chemical means of removal

Time Frame:
Ongoing

Responsible parties:
HOA, Contractor

3.3.2 Removal of Large Alien Plants

Should any invasive alien plants be identified, the HOA is to ensure that these plants are suitably treated to prevent spread to other parts of the site, or adjacent areas.

Management Requirements:

- Removal of alien plants is to be undertaken by a suitably qualified and experienced tree feller.
- Large alien plants should be cut as close to ground level as possible to prevent resprouting.
- Where required, as determined by the tree feller, stumps must be treated with herbicides to prevent resprouting. As an added precaution, stumps may be split with an axe.
- Herbicide is to be painted rather than sprayed onto stumps, to prevent adjacent areas from being affected.
- Spraying or hand application of any chemical should only be undertaken by a registered contractor and experienced personnel.
- All alien plant material removed from the site is to be disposed of at an appropriate waste-disposal site. The burning or burying of this material on site is not allowed.

Time Frame:
As required

Responsible parties:
HOA, Contractor

3.3.3 Use of Chemicals for Alien Control

Management Requirements:

- Since herbicides, such as Garlon and Actipron, are also detrimental to indigenous species, they must be restricted to areas where stands of alien seedlings are so dense that all indigenous vegetation has been replaced.
- If physical removal is not possible, regrowth of any alien vegetation on site is to be chemically controlled, only if appropriate to the species, and under strictly monitored application techniques.
- Particular care is to be taken with the use of chemicals near streams and wetlands, as certain commonly used chemicals (e.g. Garlon) could negatively impact on these systems.
- Garlon, or any other chemical harmful to aquatic systems, must not be used near streams or wetlands, without consulting a freshwater ecologist or other suitably experienced or qualified individual.
- Painting on of chemicals is preferred to spraying, as this provides better control of the area being treated.
- When spraying chemicals, nozzle cones are to be used to limit areas affected by the chemical.
- Individuals responsible for the application of chemicals are to be suitably trained in the use of the equipment involved and handling of the chemicals.

Time Frame:
As required

Responsible Parties:
HOA, Contractor

3.3.4 Use of Biological Control Agents

Management Requirements:

- Biological control agents are available for the control of alien acacias and hakea. For example, the seed-boring beetle, *Melanterius servulus*, can be used for the biological control of rooikrans.
- Contact the Research Institute for Plant Protection at **tel (021) 887-5243** for more information on these agents.

Time Frame:
Ongoing

Responsible Parties:
HOA, Contractor

3.3.5 Control of Alien Planting

Management Requirements:
- Planting by property owners is to be limited to appropriate indigenous plant species.
- The HOA is to provide all property owners with a list of recommended species, which may be planted on site (see attached **Annexure** for recommended plant species).
- Property Owners may be asked to remove any plant species not considered suitable by the HOA.

Time Frame:
Ongoing

Responsible Parties:
Property Owners, HOA

3.4 MANAGEMENT OF PRIVATE OPEN SPACE

Private open space within the development includes all portions of land outside the privately owned erven, including roads, other service infrastructure, and areas on steeper slopes containing tracts of fynbos and scrub forest. Management of the general open space will be the responsibility of the HOA, which is to ensure that these portions of the site are maintained to the standard specified by the Council in the approval of the rezoning and site development plan.

OBJECTIVE:
To maintain an aesthetically pleasing and ecologically viable environment which fulfills the functional requirements of the development.

APPROACH:
- Maintain roads and services to a standard acceptable to the local authority.
- Control erosion on steep slopes.
- Control the management of waste on site.

3.4.1 Maintenance of Roads, Services and Pedestrian Network

Management Requirements:
- All roads and other infrastructure on site are to be maintained to a standard acceptable to Council, in keeping with the specifications of the site development plan.
- Reinstatement by the local authority, as a consequence of service system repairs of roads, footpaths, verges, open spaces, etc, will be undertaken only to standards normally applicable to non-private townships. Thereafter, the HOA is to reinstate brickwork, paving blocks, planting, etc to the originally specified and constructed standards and is to bear the cost of such additional work.
- The HOA is to indemnify Council (or duly appointed agent) against any responsibility or payment for repairs of any damage to roads, walls, fences, verges, etc, which may be occasioned by Council's vehicles or staff within the development.
- Any construction works required for the repair or reinstatement of services is to be undertaken according to the basic specification of the construction phase EMP, a copy of which is to be kept by the HOA. The HOA will be responsible for ensuring that suitable environmental management practices are implemented during construction.
- Infrastructure and signboards associated with the pedestrian network must be maintained.

- Informal footpaths must not be allowed to develop. Areas where trampling by pedestrians occur off pedestrian routes must be identified and measures taken to rectify the problem, e.g. by providing appropriate fencing and sign boards. This will be monitored by the HOA.

Time Period:
Ongoing

Responsible Parties:
HOA, Council

3.4.2 Erosion Control

Steep slopes in certain areas of the site may be subject to erosion if not suitably stabilised and protected. During the construction phase of the development, areas identified as likely to experience erosion, e.g. cut slopes, will have been stabilized. If erosion adversely affects the functioning or wellbeing of streams on site, eroded or eroding areas must be immediately stabilized.

Management Requirements:
- Excess stormwater runoff may damage adjacent vegetation and cause erosion. If the stormwater system does not function satisfactorily, the HOA must find an alternative solution that is of an acceptable standard.
- Erosion on site is to be monitored by the HOA, particularly after heavy rainfall.
- The cause of any erosion must be identified and the most appropriate method of stabilisation employed, such as logging, soil reparation, mulching and revegetation. In this regard, a suitable contractor must be appointed to perform the reparation.
- Plants must be stabilised and seedlings obtained and planted in disturbed areas after reparation of the soil surface.
- Areas that are unstable or susceptible to erosion are to be suitably stabilized.
- Areas that have been stabilised to prevent erosion are to be monitored and maintained.

Time frame:
Ongoing

Responsible party:
HOA

3.4.3 Waste and Litter Control

Uncontrolled littering and dumping of waste materials of any nature on the site will detract from the aesthetic quality of the development, and will impact on aspects of the natural environment associated with the development.

Management Requirements:
- Wastes and liquids must be disposed of in a satisfactorily way that causes no nuisance or any other health hazard.
- Household waste must be placed in plastic refuse bags, which will be taken to a refuse room, in a location to be agreed upon with Council. All refuse removal and disposal from this point will be undertaken by the local authority.
- No waste material of any nature may be dumped or stored in any communal area inside the development.
- Should dumping occur, the HOA is to ensure that the responsible party removes the material as soon as possible, and that a penalty is imposed on the responsible party.

- All refuse bins are to have secured lids, and are to be stored in such a position that they are not accessible to scavengers.

Time Frame:
Ongoing

Responsible party:
HOA, Property Owners