ENVIRONMENTAL MANAGEMENT PLAN PART 2

(LONG TERM MANAGEMENT)

VILLAGE ON SEA (Portion of Extension 27)

MOSSEL BAY

C. M. GAIGHER
CODEV
OCTOBER 1998

ENVIRONMENTAL MANAGEMENT PLAN FOR THE LONG TERM MANAGEMENT OF VILLAGE-ON-SEA AND ITS ASSOCIATED OPEN-SPACES

1. GOAL OF THE ENVIRONMENT MANAGEMENT PLAN

The goal of the rehabilitation and future management of the development area and its associated open spaces can be stated simply as:

"The long-term preservation and/or rehabilitation of the site and valuable natural ecosystems present in the context of low-density, environmentally sensitive development."

2. MANAGEMENT OBJECTIVES

Management is thus aimed at ensuring that:

- Services are laid with the least impact possible on the natural environment;
- Development is undertaken in an environmentally responsible manner (as prescribed in this EMP the Constitution of the Home Owner's Association and the Architectural Code
- The site and its associated open-spaces are rehabilitated and managed in terms of a monitored long term Environmental Management Plan executed by the Home Owner's Association (HOA).

3 DEVELOPMENT AND MANAGEMENT OF THE SITE

The development of the site is in the form of low density development in an informal layout as laid down in accepted layout plans.

According to the conditions of approval the concept of development is that of "foot print development within a conserved and managed natural area The floor coverage is dictated by local by-laws (60 % of the plot) while the coverage and extent of plot clearance for "gardening purposes" are prescribed. --- 80 m in the latter case. This is interpreted for practical purposes as allowing for development of 75% of the plot, while an identified 25 % of the plot must be managed as a natural area as a buffer between the plot and the surrounding nature area. (These areas will be identified by an environmental consultant and will consist, as far as possible, of the portion of the property having the biggest "interface" with the conserved open space.)

In terms of conditions of approval there will be no boundary fences for individual erven (although internal fencing, within the 75 %, as prescribed by the architectural code, will be allowed for security purposes). The undeveloped portions of the plot will for management purposes form part of the greater open space (although the primary responsibility for the management of this area will rest with the individual home owner).

Associated with the development of erven, there is a considerable area of open space both within the development area and as a buffer natural area along the coast.

The following management areas are distinguished:

- Roads and road reserves
- Private development areas
- Open spaces.

These are dealt with separately.

3.1 ROADS AND ROAD RESERVES

The management objective for roads and road reserves is to **establish a low- impact stable access system with a permanent surface within an area of natural, protected vegetation.** Specifications with regard to the construction phase are laid down in the PART 1 of the Environmental Management Plan.

The end-product of rehabilitation envisaged is restored natural vegetation within the "environmental potential" of the area concerned. As a number of different environmental areas, ranging from thicket to limestone fynbos to fynbos on neutral or acidic sands are present and substrata (soils) and species composition differ, rehabilitation and long term management of specific areas will differ.

Important aspects of road and road reserve design and construction are:

- The absence of curbs (to allow natural movement of fauna);
- Effective dispersal of storm water except where if follows natural drainage lines, to prevent concentration of flow and erosional impacts,
- Effective rehabilitation and re-vegetation with appropriate locally indigenous species
- Maintenance of vegetation cover and control of erosion
- Aesthetic aspects of telephone and power reticulation and street lighting
- Control of alien plant re-growth (which will be greatly encouraged by the disturbance)
- A single, low impact drive-way to individual residences, made of approved materials as described in the Architectural Code.
- Controlled off-road parking restricted to within plots so there will not be negative impacts on road reserves, stability and natural vegetation.

<u>PRESCRIPTIONS WITH REGARD TO THE LONG TERM MANAGEMENT OF ROADS AND ROAD RESERVES ARE:</u>

1. Stabilisation and rehabilitation initiated during the construction phase must be maintained by ensuring that future germination and spread of undesirable alien vegetation is controlled. This was done at the time of the laying of services and must be maintained on at least an annual basis. Species of concern are in particular alien acacias and kikuyu grass --- *Pennisetum clandestinum*.
2. The road reserve will be checked initially on a three-monthly basis and after a year on an annual basis for erosion and remedial action taken.
3. Any "bare patches" found during these inspections must be re-stabilised by mulching with "clean" (weed-free) organic mulches or replanted with approved grass species (Kweek --- *Cynodon dactylon* or buffalo grass --- *Stenotaphrum secundatum*)
4. The Architectural code must address all structures in the road reserve (including lighting, signs and sicjnac as well as access to erven and permitted "drive-ways" (stability, environmental compatibility, stormwater run off and aesthetic impact of the latter must be considered while the greater the uniformity the less the visual impact)
5. Off-road parking within the development area must be restricted to private erven and be within the developed 75% of the plot.
6. No littering or dumping of any material will be allowed in the road reserve.

7. Beyond the establishment of locally indigenous plant species, according to the rehabilitation plan and ecological area concerned, no “gardening” will be permitted in the road reserve and no watering or fertilising will be undertaken unless it is done on the recommendations of a qualified environmental consultant.
8. Limited bush-cutting may be necessary for visibility or other reasons. This will only be allowed in consultation with an environmental consultant --- with special attention being given to preservation of rare or protected species.
9. Fire management will basically involve control over alien plant re-infestation to reduce fire hazard. Aspects of controlled burning (if necessary) will be addressed during an annual audit and because of a number of variables will be made on an ad hoc basis in consultation with Cape Nature Conservation. All other fires will be extinguished immediately in terms of a Fire Management Contingency Plan.

3.2 DEVELOPMENT AND MANAGEMENT OF PRIVATE ERVEN

The development/management objective in the development of private erven is **to limit the impacted area to a minimum and to create a visually harmonious development in the context of a wider conserved and managed environment.**

Aspects of concern are:

- Limiting impact during both the construction phase and later development of the erven.
- Controlling private “gardening” to prevent undesirable impacts on neighbouring natural areas (including the undeveloped portions of the erf).
- Controlling general domestic activities so that they do not impact on natural areas.
- Managing water run-off, etc., so that it does not cause erosion problems.
- Littering and spread of undesirable materials into natural areas.
- Etc.

<u>PRESCRIPTIONS WITH REGARD TO THE DEVELOPMENT OF PRIVATE ERVEN ARE AS FOLLOWS:</u>

1. No boundary fences may be erected and boundaries will be marked only by inconspicuous markers placed by the surveyor although internal fencing for security reasons or to contain pets will be allowed provided it conforms to prescriptions of the Home Owner’s Association and Architectural Code.
2. The coverage, design and access to the house will be dictated by municipal by-laws, the Constitution Of The Home Owner’s Association and the Architectural Code, in practical terms this translates to a maximum of 75% of the plot that may be developed, while the 25 % outside the ‘garden” area and “footprint” of the house must be retained as a natural area as a buffer between the developed portion of the property and the adjoining nature area.
3. During construction of the house this area shall be clearly identified and beyond the footprint of the house all activities associated with the building of the house (including the stockpiling of building materials, cement/concrete mixing, etc.) shall be confined to this area
4. The only access to the construction site will be along the final alignment of the “drive way” which will be clearly marked during the construction phase.

5. Special care must be taken to ensure that no cement, paint or other contamination of natural veld occurs; the construction area using temporary “coffer dams” if necessary.
6. Labour must be controlled and made aware of the sensitivity of the natural area. Access must be discouraged and the opening up of paths prohibited. Cooking fires must be restricted to the identified work area.
7. Fauna and flora in the natural area must not be disturbed.
8. Adequate toilets must be established on site.
9. All litter, building rubble and excess building material must be cleared up and removed.
10. The Home Owner’s Association will authorise a building inspector, or establish a “works committee” to oversee the above.
11. Future gardening, car parking, etc. will be restricted to within the 75 % development area. No gardening, fertilising or watering is allowed outside the development area.
12. Homeowners are strongly encouraged to use locally indigenous plants native to the area and specific to the environment in which their house is built in the “garden area”. Advice in this regard is readily available from an environmental consultant, Cape Nature Conservation or local wildflower nurseries. A list of indigenous trees which are suitable for garden plantings is available. A list of plant species occurring in the area is attached.
13. No undesirable, potentially invasive plant species may be used in private gardens. This includes in particular gums, exotic acacias and proclaimed weeds. The only lawn species that will be allowed are locally indigenous grasses such as kweek *Cynodon dactylon* and buffalo grass *Stenotaphrum secundatum*.
14. The rest of erf will be kept clear of the above invasive species by the property owner.
15. No informal, private footpaths through the natural area will be developed by individual property owners, although a system of communal paths, using already disturbed areas can be established by the HOA in consultation with an environmental consultant.
16. Fire Management
    In order that fynbos areas are maintained in a healthy condition and desirable species regenerated, it is necessary that they are burnt at intervals of 10 to 15 years or longer. Property owners must be aware of this fact, which is partially the reason for having the buffer area, and must take it into account in the design of houses, establishment of fire control sprinkler systems WHERE NECESSARY and selection of building and roof materials.

    The desirability of burning will be reviewed during an annual audit by a trained environmental consultant in consultation with Cape Nature Conservation

    It should be noted that non-flammable species such as aloes, white milkwood trees. keurboom, candle wood, etc can be successfully used as fire “dampers”.

3.3 MANAGEMENT OF OPEN SPACES

The management objective for open spaces, which include the public open space along the coast in front of the development (on a 99 year lease to Village-on-Sea) as well as open spaces within the development, is to **rehabilitate and manage the open spaces according to their maximal environmental potential and to preserve the ecosystems they represent.**

Areas of concern are:

- Full stabilisation and rehabilitation of disturbance resulting from the development of services (sewage pipelines in particular).
- Systematic clearing of alien invasive vegetation which was not burnt or which has germinated or re-sprouted since the most recent fire.
- Stabilisation and rehabilitation of areas impacted by erosion.
- Management of public/private facilities in the forms of hiking trails and paths.
- Maintenance and rehabilitation of indigenous vegetation including areas degraded by alien infestation according to the ecosystems they represent.

PRESCRIPTIONS WITH RESPECT TO THE MANAGEMENT OF OPEN SPACES ARE AS FOLLOWS:

1 Rehabilitation and Stabilisation

a) Rehabilitation of areas disturbed by the laying of service (in particular sewage lines) is to be monitored and maintained to ensure that natural vegetation is successfully reinstated, alien plant infestation is controlled and erosion is contained. Any bare or eroding areas created by physical disturbance are to be stabilised with packed branches, bark mulches or, if necessary, planting in of suitable locally indigenous ground covers or grasses on advice of an ecologist.

b) Rehabilitation of other areas will basically consist of allowing natural revegetation to occur by controlling re-infestation by alien vegetation.

c) Eroding areas associated with roads and paths will be identified and rehabilitated by infilling, packing of branches or run-off diversion.

d) Once the construction phase has been completed and the HOA has become established a detailed site inspection will be done and strategies determined for specific problem areas in a written report.

2 Removal of Alien Vegetation

a) During development, the development site and associated open spaces was cleared of alien vegetation. A particularly important component of long term management of Open Spaces is however the **sustained removal of invasive alien vegetation**, which has regenerated since initial clearing during the construction phase. This must be done according to a **fixed, monitored schedule**. An area of particular concern is the public open space on the seaward side of the development (leased area), which has basically been cleared during the construction phase, but the maintenance of which, in terms of conditions of approval, becomes the long-term responsibility of the HOA.

b) Control must routinely be done on at least an annual basis, on a time schedule agreed by the HOA, but before the annual independent audit. Shortly after the establishment of the HOA (and preferably a committee established specifically for this purpose) an on-site inspection will be held and a rehabilitation schedule agreed upon. A written time-frame and strategy for different species will be submitted to the Local Authority and Cape Nature Conservation for approval.

3 Fire Management

For the healthy maintenance of fynbos, occasional fires are essential: the ‘frequency’ and time of burning will, however, depend on a large number of variables including rates of growth and seed formation, the species present and the specific plant

communities involved. The desirability of burning specific areas will be assessed during an annual audit by a qualified environmentalist, who will make recommendation in this regard in consultation with Cape Nature Conservation and the Local Authority where necessary.

All “accidental” fires will be extinguished as soon as possible. Management of fires in the development and associated open spaces will be dictated by a **Fire Management Contingency Plan** which must be drawn-up by the HOA in consultation with the Local Authority and submitted to them for approval.

4 General

Open spaces are basically nature reserve areas. They are to be protected against abuse (such as littering; dumping of garden or other refuse or building rubble; informal occupation; hunting; wood gathering; etc.). Special care must be taken to prevent off-road vehicular movement over the property or the proliferation of informal footpaths.

The HOA (or an “environmental committee” established for this purpose) shall invite complaints and/or do inspections on **at least an annual basis** and report to the Association who will take appropriate action. (Minutes of such meetings must be available for scrutiny)

4. AUDITING

As mentioned above, an **Annual Audit** by a qualified environment consultant from the date of the establishment of the HOA shall be commissioned (on the account of the HOA). He/she shall inspect the site and submit a **written report** on compliance with this EMP, especially with respect to rehabilitation, adherence to the alien eradication programmes and erosion management. This report shall be submitted to the HOA, Local Authority and Cape Nature Conservation. **Such remedial action as recommended in this report shall be taken immediately.**

Appendix 1.

PLANT SPECIES FOUND IN THE DIFFERENT VEGETATION TYPES AT VILLAGE-ON-SEA

FYNBOS ON NEUTRAL SANDS:

AIZOACEAE

Aizoon rigida

Phamaceum sp.

ANACARDIACEAE

Rhus lucida forma lucida

ASTERACEAE

Chrysanthemoides monilifera

Elytropappus rhinocerotis

Helichrysum patulum

Metalasia erectifolia

M. muricata

Osteospermum imbricatum ssp. nervatum

Syncarpha paniculata

Tarchonanthus camphoratus

Ursinia nudicaulis

BORAGINACEAE

Lobostemon sp.

BRASSICACEAE

Heliophila sp.1

Heliophila sp.2

Heliophila sp.3

CAMPANULACEAE

Lobelia coronopifolia

Roella cf. incurva

CELASTRACEAE

Pterocelastrus tricuspidatus

COLCHICACEAE

Androcymbium eucomoides

CYPERACEAE

Ficinia secunda

Ficinia sp. I

Ficinia sp. 2

Hellmuthia membranacea

ERICACEAE

Enca discolor

ERIOSPERMACEAE

Enospermum sp.

FABACEAE

Aspalathus sp.

Indigofera sp.

Wiborgia sp.

GENTIANACEAE

Chironia baccifera

GERANIACEAE

Pelargonium candicans

P. capitatum

HYACINTHACEAE

Lachenalia algoensis

IRIDACEAE

Freesia alba

Moraea polyanthos (both blue and white forms)

MESEMBRYANTHEMACEAE

Drosanthemum spi.

Drosanthemum sp2.

Lampranthus elegans

OLEACEAE

Olea europaea ssp. afncana

POACEAE

Ehrharta ramosa

Poaceae sp.

POLGALACEAE

Muraltia sp.

Polygala myrtifolia

P. wittbergense

PROTEACEAE

Leucospermum praecox

Protea lanceolata **(Red Data Species – Vulnerable)**

Protea repens

RESTIONACEAE

Ischyrolepis cf. sieberi

Thamnochortus sp.

RHAMNACEAE

Phylica ericoides

Phylica stipularis

Phylica sp.

ROSACEAE

Cliffortia falcata

RUBIACEAE

Anthospermum galioides

A. spathulatum

RUTACEAE

Agathosma apiculata

Diosma sp.

Euchaetis burchellii

SANTALACEAE

Colpoon compressum

SCROPHULARIACEAE

Dichisma ciliata

Manulea cheiranthus

Nemesia versicolor

Sutera aethiopica **Red Data Species - Not Threatened**

STERCU LIACEAE

Hermannia decumbens

H. flammula

H. hyssopifolia

H. lavandulifolia

H. salviifolia

Hermannia sp.

THYMELEACEAE

Gnidia caniflora

Gnidia cf. foucadei

Passerina vulgans

Struthiola striata

LIMESTONE FYNBOS:

(Limestone endemics in bold type)

APIACEAE

Centella sp. nov *(Cf. capensis)* **Not yet described but very likely a rare limestone endemic**

ASTERACEAE

Disparago kraussii

Berkheya coriaceae

Syncarpha paniculata

BRASSICACEAE

Heliophila sp.1

Heliophila sp.2

CYPERACEAE

Ficinia praemorsa

Ficinia truncata

EUPHOR BIACEAE

Adenocline pauciflora **Red Data Species - Not Threatened**

FABACEAE

Indigofera sp.

IRIDACEAE

Freesia refracta

Gladiolus rogersii

MESEMBRYANTHEMACEAE

Drosanthemum sp.

Lampranthus dregeanus

Ruschia sp.

POACEAE

Cymbopogon marginatus

RUTACEAE

Acmadenia heterophylla

SCROPHULARIACEAE

Lypena violacea

STERCULIACEAE

Hermannia trifoliata **Red Data species - Not Threatened**

ZYGOPHYLLACEAE

Zygophyllum sp.

COASTAL THICKET:

AIZOACEAE

Tetragonia fruticosa

ANACARDIACEAE

Rhus longispina

APOCYNACEAE

Carissa bispinosa

ARALIACEAE

Cussonia thyrsiflora

ASPARAGACEAE

Asparagus aethiopica

A. lignosus

ASPHODELACEAE

Aloe arborescens

ASTERACEAE

Chrysanthemoides monilifera

CAMPANULACEAE

Cyphia dentariaefolia var. dentariaefolia **(Red Data species - insufficiently known, only collected in Mossel Bay area.)**

CELASTRACEAE

Lauridia tetragona

Maytenus heterophylla

Putterlickia pyracantha

CRASSULACEAE

Cotyledon orbiculata var. orbiculata

EBENACEAE

Diospyros dichrophylla

Euclea racemosa

E. undulata

EUPHORBIACEAE

Euphorbia burmanii

E. erythrina

FABACEAE

Schotia afra var. afra

HYACINTHACEAE

Omithogalum longibracteatum

LAMIACEAE

Stachys aethiopica

MESEMBRYANTHEMACEAE

Carpobrotus sp.

OLEACEAE

Olea europaea ssp. africana

RUTACEAE

Clausena anisata

SALVADORACEAE

Azima tetracantha

SANTALACEAE

Colpoon compressum

SAPOTACEAE

Sideroxylon inerme

SOLANACEAE

Lycium ferocissimum

TILIACEAE

Grewia occidentalis

VITACEAE

Rhoicissus digitata

ZYGOPHYLLACEAE

Zygophyllum morgsana