

The Proposed Residential
Development and Associated
Infrastructure on Erf No. 704
(a Portion of Erf No. 552),
Noordhoek

Chapman's Peak Estate

October 2024

Prepared for:
Amdec Residential Developments
(Pty) Ltd.

DEA&DP Reference:
16/3/3/5/A6/57/2001/22 - B

DJEC Project Number:
2005/69

OPERATIONAL ENVIRONMENTAL MANAGEMENT PROGRAMME



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PROJECT DETAILS

Project Name:
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Report date of issue:		
Revision	Date	Revised by
1	30 April 2024	Marais Geldenhuys
2	11 October 2024	Adél Groenewald

Scope of project:

An Operational Environmental Management Programme (OEMPr) is required to address the protection and ongoing management of the natural resources both on and off the site during the operational stages of the development. The overarching goal is to ensure undue or unreasonably avoidable impacts of the proposed development are avoided and that positive impacts of the development are enhanced. This document has been compiled to fulfil such requirements.

This will ensure that the greater objective of Integrated Environmental Management (IEM) which aims to promote Sustainable Development and that underpins Environmental Process in South Africa will be upheld throughout the project. The controls set out in this OEMPr are to ensure that the recommendations made in the Environmental Impact Report regarding the development have been implemented.

The document is an open-ended one, to allow for information gained during the monitoring of the activities on site to inform any changes in the OEMPr. The document must be read in conjunction with the Environmental Impact Report (EIR, Doug Jeffery Environmental Consultants, 2008; Ref. No. 2005/69), with special reference to the specialist studies and recommendations. It is intended as a working document to guide the Homeowners Association (HOA) to manage activities on site on an ongoing basis in an environmentally sustainable manner.

The OEMPr includes environmental goals objectives, management actions, monitoring requirements, criteria for monitoring and remedial actions where actions are ineffective. The key aspects that are addressed in this OEMPr are:

- Protection and management of natural water sources
- Proper Storm Water Management
- Waste Management
- Alien vegetation management

Assumptions and Limitations:

This OEMPr has been compiled during the EIA phase of the project. The management strategies in this report have been made, based on the assumption that the mitigation measures recommended by the specialists have been made conditions of approval in the Environmental Authorisation, should approval be granted. This OEMPr will have to be amended following on any approvals made, to ensure that all the recommendations are captured as management strategies, as well as any other conditions that may be made. More detailed plans, specifying timing of actions and associated costs, may be required prior to implementation of the OEMPr, for such strategies as:

- Water Sampling
- Effluent management
- Alien clearing

GLOSSARY

C.A.P.E	Cape Action Plan for the Environment
CEMPr	Construction Environmental Management Programme
CFR	Cape Floristic Region
DEA&DP	Department of Environmental Affairs and Development Planning
DEAT	Department of Environmental Affairs and Tourism
DWAF	Department of Water Affairs and Forestry
ECA	Environment Conservation Act (73 of 1989)
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
HWC	Heritage Western Cape
I&APs	Interested and Affected Parties
IEM	Integrated Environmental Management
LUPO	Land Use Planning Ordinance
NEMA	National Environmental Management Act
NEMBA	National Environmental Management: Biodiversity Act
NFA	National Forestry Act
NHRA	National Heritage Resources Act
NWA	National Water Act
OEMPr	Operational Environmental Management Programme
ROD	Record of Decision
SANBI	South African National Botanical Institute
SAHRA	South African Heritage Resources Agency
TIA	Traffic Impact Assessment
VIA	Visual Impact Assessment
WWTW	Waste Water Treatment Works

SECTION 1: PROJECT INFORMATION

1.1. General

This OEMPr has been prepared using information from the EIA process, undertaken by Doug Jeffery Environmental Consultants (Ref: 2005/69) and Environmental Impact Assessment of Freshwater Ecosystems compiled by Kate Snaddon. The EIA was based on a number of specialist studies and the recommendations made in these reports form the basis for the management actions required on site. The specialists involved in the project have reviewed the OEMPr.

1.2. Site Location

The 26.9 ha property lies north of the southern start of Chapman's Peak Drive and is bordered by erven to the north and east, with Table Mountain National Park making up the western boundary. The site is primarily southeast facing, and the central and southern portion has been extensively remodelled by earthmoving machinery associated with quarrying. The remainder of the site is heavily forested, with plantations of alien pines and gums being dominant. These trees have been in place for many decades, and there is currently little natural vegetation persisting under these trees. A dam is located in the disturbed area. The Table Mountain National Park is located to the west of the site. Refer to **Figure 1** and **Figure 2** for the locality and development plans.

1.3. Proposed Project and Operational Activities

The proposed Chapman's Peak Estate development on Erf 704 Chapmans Peak (a portion of Erf 552 Chapmans Peak) comprises of the following:

Land Use	Total extent
Residential plots	27

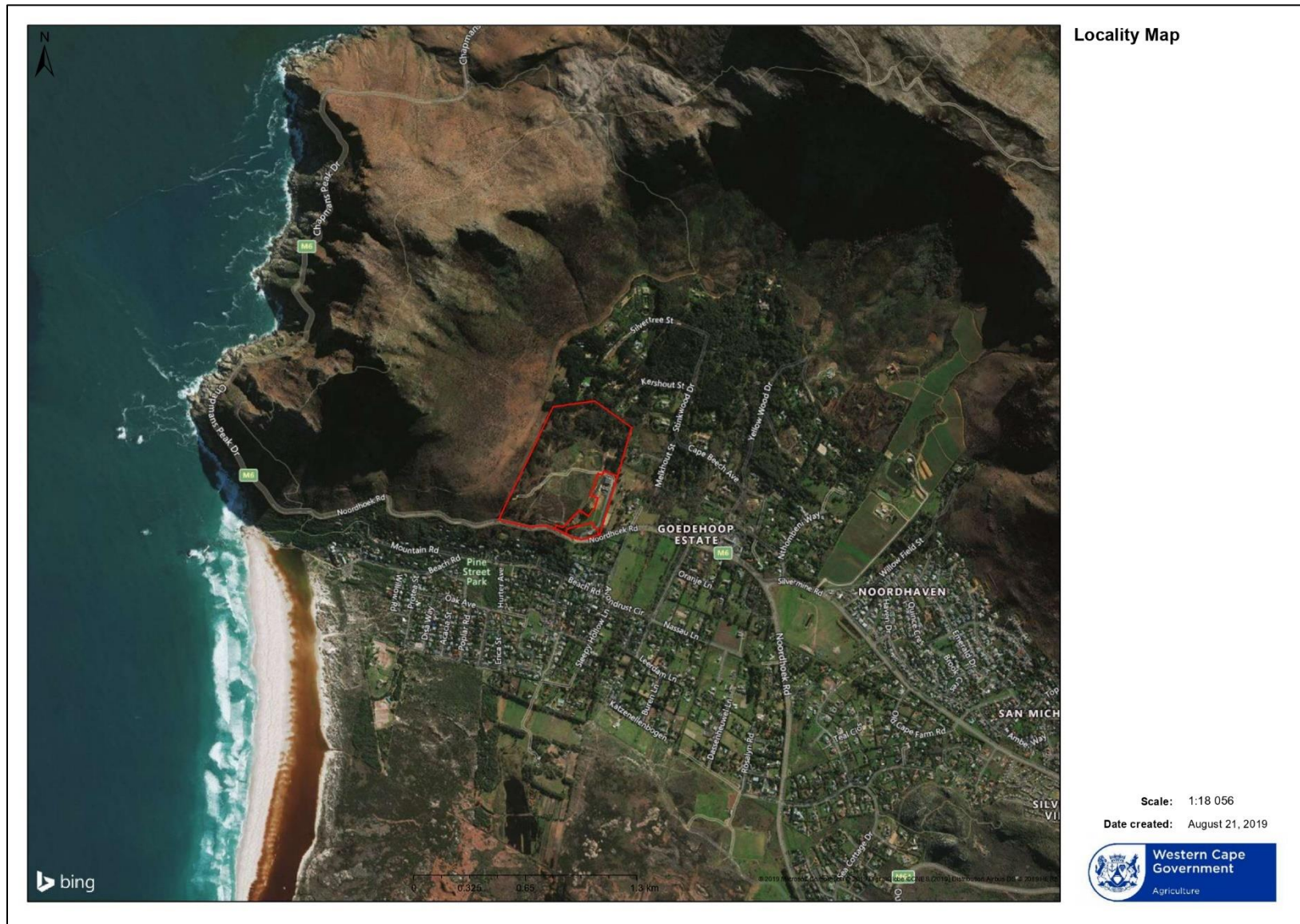


Figure 1: Locality Plan

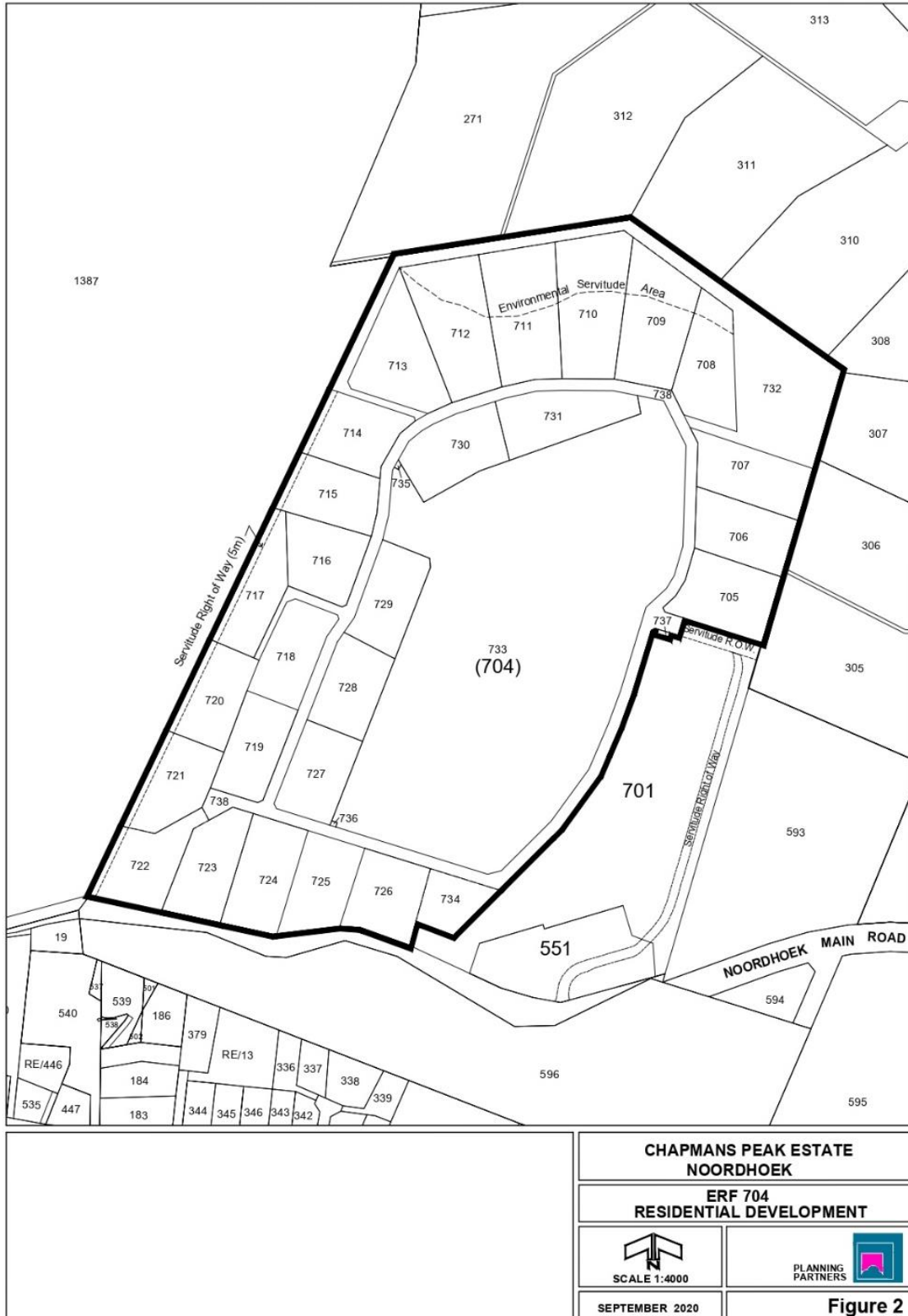


Figure 2: Approved Site Plan

1.4. Landscaping

Landscaping must comply with the Architectural and Landscaping Guidelines (see **Annexure A**), and the EA. These guidelines inform owners of the estate's building requirements, including architectural standards and approval procedures.

SECTION 2: SITE INFORMATION

2.1. Freshwater Characteristics

The underlying kaolin-rich soils on site are relatively impermeable and force water to the surface, where it seeps down the slopes of the mountain, either in distinct streams and runnels, or as marshy hillside seeps. Plants characteristic of such hillside seeps (e.g. *Berzelia* sp.) were observed in the western section of the site.

Two streams on the property join to flow into the Goeie Hoop River, which flows down into the Noordhoek Valley (**Figure 3**). Stream 1 enters the property near the north-western corner, flowing from a pipe that has been placed under a rock-filled bridal path on the neighbouring property. On the site, the stream flows under pines for most of its length on the property. It is joined by Stream 2 just inside the north-eastern property boundary. Afforestation with pines, and also the presence of gums and acacias (*Acacia longifolia*), has had a significant impact on the stream. The main impacts are excessive uptake of water by these exotic species, modification of the stream's bed and banks due to living trees as well as fallen logs and leaf litter, and smothering of the stream bed with pine leaf litter. In addition, there are a number of roads that cross through the stream, impeding flow and causing erosion down and upstream of the roads.

After the confluence of streams 1 and 2, the stream flattens out into a wetland that occupies the north-eastern corner of the property, dominated by the wetland plant, *Cliffortia graminea*. Also recorded here was bracken, *Pteridium aquilinum*, and sedges such as *Isolepis* sp. This wetland feeds into a pond on the neighbouring property. It is unlikely that the wetland on the property provides suitable breeding habitat for the endangered Western Leopard Toad, due to the lack of open water >50cm depth, but the neighbouring pond could well provide such habitat. However, the presence of identified breeding sites for the Toad in the Noordhoek Valley means that the species is likely to frequent the site. The streams and the wetland are likely to be important for the migration of the Toad, and other aquatic and semi-aquatic fauna, and as a refuge.

A small dam located near the south-western corner of the property retains water that is conveyed across the site in pipes and ditches. In addition, a large concrete ditch runs across the site that presumably catches runoff seeping down the mountain slope and directs it the south-western corner of the property and, probably, the dam. There are several erosion gullies up the slope from the dam, indicating that there is considerable runoff during the wet winter months.



Figure 3: Freshwater characteristics

SECTION 3: SUMMARY OF THE FRESHWATER IMPACTS ASSOCIATED WITH THE PROPOSED ACTIVITY

An EIA was done of the freshwater ecosystems that will be impacted on by the development.

The following impacts are likely to be associated with the operation of the development:

- Loss of hillside seep area: The hillside seep area in the western portion of the site is a rehabilitated site. However, this seep now supports a number of wetland plants in good numbers and condition. The loss of this area will represent a loss of seep habitat.
- Loss of wetland: The small wetland in the north-eastern corner of the property provides valuable seasonal wetland habitat. The wetland has a good cover of wetland plants (sedges and others) which provide excellent refuge for fauna and flora. It is highly likely that toads and frogs using the adjacent pond also use this wetland for refuge, movement and feeding.
- Loss of riverine habitat: The streams that cross the site are valuable ecosystems linking the lower Noordhoek Valley with the mountain slopes, thus providing corridors for the movement of a number of fauna and flora. Although the streams flow only during the wet winter months, these seasonal systems provide important aquatic and semi-aquatic habitat. The streams have been heavily impacted by afforestation with pines, but can relatively easily be rehabilitated. Encroachment of the proposed built platforms into or close to the streams would lead to a loss of riverine habitat.
- Removal of alien trees: This is an opportunity to remove a large proportion of the pine and gum trees, that infest the site and cause erosion and build-up of leaf and branch litter in the stream. Their removal will allow rehabilitation of the stream and the introduction of a more diverse community of plants within the stream corridor. Removal of the exotics is also likely to lead to more water flow in the streams.
- Rehabilitation of the stream: Rehabilitation of the stream can be relatively easily achieved through removal of the pine and gum trees. This will allow light to penetrate into the stream corridor, thereby encouraging the growth of a more indigenous and diverse plant community. Re-shaping of the stream channel into a more defined channel, and re-shaping of the banks to become less steep, will also ensure a more natural and ecologically functioning system.
- Pollution of aquatic ecosystems: Residential stormwater runoff contains a number of potentially harmful pollutants, including fuels and oils, lead, fertilizers, herbicides and detergents. Runoff from the vineyards will contain fertilizers, pesticides and herbicides. Unless conveyed elsewhere, this runoff is likely to enter aquatic ecosystems downstream of the site.
- Pollution from horse stables/equestrian centre: Runoff from the areas used by horses is likely to contain organic pollutants from faeces and urine, and also feed.
- Increased stormwater runoff: The construction of hardened surfaces on the property and irrigation of the vineyards will lead to an increase in the quantity of runoff flowing across the site. High volumes of natural runoff currently flow across the site, and so this increase will have downstream impacts, if not adequately dealt with.

OPERATIONAL ENVIRONMENTAL MANAGEMENT PROGRAMME (OEMPr)

- Increased erosion and sedimentation: Runoff from residential areas can lead to increased mobilisation of fine sediments during rain and storm events.
- Increased disturbance of aquatic fauna and flora: The proximity of homes to the streams and wetland will lead to an increase in disturbance in the form of noise, light, pets and physical disturbance from trampling.
- Introduction of alien invasives: Residential gardens and landscaped areas may contain exotic species that easily invade into natural areas, thus outcompeting indigenous species, and leading to a loss of diversity.
- Removal of cutoff drain: The cutoff drain effectively drains the lower slopes of the mountain below the drain. The natural runoff that should run across the site is diverted into the small dam in the south-eastern corner of the property. This cutoff drain should be removed, and the runoff allowed to flow across the central open space.

SECTION 4: LEGAL CONTEXT

4.1. Legal context

The following sections briefly summarise those sections of the South African legislation and guideline documents that pertain to the conservation and management of rivers and wetlands:

4.1.1. National Environmental Management Act, 1998 (Act No 107, 1998)

The National Environmental Management Act of 1998 (NEMA), outlines measures that...."prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

Of particular relevance to this assessment is Chapter 1(4r), which states that sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

4.1.2. RAMSAR Convention of 1995

Signatories of the convention (which include South Africa) are obliged to promote the conservation of wetlands, whether they are listed or not.

4.1.3. Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)

Key aspects include legislation that allows for:

Section 6: Prescription of control measures relating to the utilisation and protection of vleis, marshes, water sponges and water courses. These measures are described in regulations promulgated in terms of the Act, as follows:

Regulation 7(1): Subject to the Water Act of 1956 (since amended to the Water Act 36 of 1998), no land user shall utilise the vegetation of a vlei, marsh or water sponge or within the flood area of a water course or within 10 m horizontally outside such flood area in a manner that causes or may cause the deterioration or damage to the natural agricultural resources.

Regulation 7(3) and (4): Unless written permission is obtained, no land user may drain or cultivate any vlei, marsh or water sponge or cultivate any land within the flood area or 10 m outside this area (unless already under cultivation).

4.1.4. Cape Nature Conservation Ordinance (Ordinance 19 of 1974; amended in 2000)

This ordinance provides measures to protect the natural flora and fauna, as well as listing nature reserves in the Western Cape that are managed by the Western Cape Nature Conservation Board (WCNCB). This ordinance, with the Western Cape Nature Conservation Board Act of 1998 was amended in 2000 to become the Nature Conservation Laws Amendment Act. Lists of endangered flora and fauna can be found in this act.

4.1.5. National Water Act, 1998 (Act No. 36 of 1998)

The following non-consumptive water uses relate to activities that may impact on the integrity and function of water resources and the overall quality of the resource, and which require a permit, or exemption, in order to proceed:

- a. Impeding and diverting the flow of water in a watercourse;
- b. Irrigation of land with water containing waste;
- c. Power generation activities where the flow regime of the water resource is altered;
- d. Intentional recharge of an aquifer with waste or water containing waste;
- e. Discharging waste or water containing waste (*this includes stormwater*) into a water resource or in a manner that may detrimentally impact on the water resource;
- f. Altering the beds, banks, course or characteristics of a water resource.

4.1.6. Western Cape Provincial Spatial Development Framework

- All wetland eco-systems shall be protected such that their ecological and stormwater purification function is maintained. Water abstraction from and effluent discharge into wetlands should be prohibited.
- No urban development (including roads) or intensive agriculture within a wetland or river, or within 30m of a wetland or river, measured from the wetland boundary.
- River Corridors include the main stems of all rivers and their tributaries which shall be protected by a minimum 30 metre buffer from urban development, and intensive (ploughing) and extensive (grazing) agriculture.
- To maintain a minimal level of biodiversity functioning – seed transport, animal movement - a network of interconnected ecological corridors throughout the Province must be instituted.

4.2. Legal status of the OEMPr

4.2.1. Operational OEMPr

The OEMPr has been compiled as a requirement of the EIA process, as specified by the DEA&DP. Acceptance of the OEMPr by DEA&DP, as stated in the Environmental Authorisation (EA) that may be issued at the conclusion of the EIA process, will impose a legal obligation on the Holder of the EA/HOA of Chapman's Peak Estate to comply with the specifications of the OEMPr. This OEMPr includes all relevant documentation contained within or referenced in it, along with any amendments or annexures. Any changes to the OEMPr must receive approval from DEA&DP.

This EMPr provides recommendations for the Operational Phase of the proposed development. The Holder of the EA/HOA must ensure that the Operational Phase upholds the core principles of 'Duty-of-Care-to-the-Environment' and the ideals of sustainable development.

SECTION 5: ENVIRONMENTAL PERSONNEL

5.1. Developer / Holder of the EA

The Holder of the EA, Amdec Residential Developments (Pty) Ltd., has the overall responsibility to ensure that the development complies with the conditions set out in the EA and OEMPr.

In this case, Amdec Residential Developments (Pty) Ltd., is also the Developer of Chapman's Peak Estate.

The responsibilities of the Developer include:

- Overseeing the implementation of the OEMPr and ensuring that all parties involved in the development operations adhere to its requirements.
- Establishing a HOA to manage ongoing compliance with the conditions of the EA and ensure the effective implementation of the OEMPr.

5.2. Homeowners' Association (HOA)

The HOA will comprise all owners of land units within the development, as set out in the Constitution of Chapman's Peak Estate HOA (**Annexure B**).

The responsibilities of the HOA include:

- Appoint an Environmental Officer (EO) to oversee Project Contractors and ensure environmental management requirements are met.
- Appoint an independent environmental consultant on a consultancy basis, if needed, with whom the EO must liaise as required to ensure the effective implementation of the OEMPr.
- Ensure that all decisions regarding environmental procedures and protocols by the Operations Manager, are reviewed and approved prior to implementation.
- Provide the EO with the authority to monitor compliance with the OEMPr among individual homeowners.
- Approve the compilation of a maintenance routine, including tasks, budget, and timing, which must also be approved by the Provincial Environmental Authority (DEA&DP).
- Ensure staff are available to undertake maintenance activities as specified in the OEMPr.
- Approve environmental monitoring plans and any amendments to the OEMPr. Also ensure that amendments made to the OEMPr are approved by the Provincial Environmental Authority (DEA&DP), if and when required.
- Address any non-compliance issues reported by the EO, in accordance with the HOA constitution (**Annexure B**) and regulatory requirements.
- Facilitate communication and coordination with relevant stakeholders, including the DEA&DP, regarding compliance and any necessary amendments to the OEMPr.
- Support the EO in monitoring and implementing the OEMPr.
- Assist in the resolution of conflicts regarding environmental matters.
- Maintain records of meetings held with the EO to review tasks and ensure accountability.

5.3. Environmental Officer (EO)

The HOA will be responsible for appointing an individual from their ranks, known as the Environmental Officer (EO) to oversee the implementation of the OEMP. The EO should have appropriate training and experience in the implementation of environmental management specifications. Contractors are answerable to the EO for non-compliance with the requirements stated in the OEMPr.

The responsibilities of the EO will include the following:

- Monthly meeting between the HOA and the EO must be held to identify required tasks for the month, and to ensure that the tasks for the previous month have been adequately undertaken. Minutes of the meeting must be taken and records maintained for review during the audit..
- Compilation of a maintenance routine, with tasks, budget and timing thereof, to be approved by the HOA and the Provincial Environmental Authority (DEA&DP). Staff must be made available to undertake the maintenance activities, as set out in this OEMPr.
- Monitoring the performance of the Contractor (and Sub-contractors) and ensuring compliance with the OEMPr (and associated Method Statements, if required).
- Assisting in the resolution of conflicts regarding environmental matters.
- Obtain specialist environmental input, as required.

5.4. Lead Authority

The Lead or Competent Authority, DEA&DP, will need to review the draft OEMPr submission (this document or amendments thereof). Based on the review, the authority will either (i) approve the OEMPr (with or without conditions), (ii) return the OEMPr for further improvement and resubmission, giving guidance on what needs to be revised or added, or (iii) reject the OEMPr, giving reasons.

Once the OEMPr has been approved, the lead authority may have the following role to play:

- Review Monitoring and Audit reports, if required.
- Participate in an Environmental Monitoring Committee associated with the project, if relevant.
- Review whether there is compliance by the HOA with the terms of the OEMPr and EA specifications and permit/license conditions. Whenever necessary, the authorities should assist the Owners and relevant personnel in understanding and meeting the specified requirements.
- The authorities may perform random controls to check compliance. In case of persistent non-compliance, the EO will be required to provide an action plan with corrective measures and have it approved by the authorities.

SECTION 6: STAKEHOLDER ENGAGEMENT

This OEMPr has been reviewed by the relevant specialists on the project team to ensure that recommendations have been incorporated into the management strategies for the site. This OEMPr is presented to the authorities, the public and all relevant stakeholders for review as part of the EIA process (together with the Environmental Impact Report). All comments made on the document will be incorporated into the revised OEMPr, and verified with the relevant specialists, as required.

Once the OEMPr has been approved by the DEA&DP it can then be adopted by Amdec Residential Developments (Pty) Ltd. for implementation as part of the operational phase of the development.

The DEA&DP must approve any revisions to the approved document. Notification of the revision must be made available to relevant stakeholders.

SECTION 7: AUDITING, REVIEW AND FUNDING

7.1. Audits

Six months after the effective date of the implementation of the OEMPr, an audit is to be undertaken. This audit report will detail the progress, problems and issues arising from the management of all components of the site, as well as recommendations for improved environmental management. This is to identify any problems or potential problems with the environmental management procedures on the Estate, to establish additional issues requiring attention and amendments required to the terms and conditions of the OEMPr. The audit report is to be submitted to the DEA&DP.

An annual audit is to be undertaken for the first three years and thereafter the audit is to be undertaken every second year. The auditor is to be a suitably qualified and experienced independent environmental auditor, and the audit is to be done in association with the ECO. The audit must detail the procedures followed in terms of scheduling of tasks and reporting thereof, as well as the responsibilities and resources attached to the management tasks. Records of all audits must be maintained with the OEMPr for safekeeping, to allow for ongoing monitoring of the effective implementation of the OEMPr during the review process (see **Section 7.2**). The audit report must be forwarded to the DEA&DP for their records.

7.2. Review of OEMPr

The OEMPr is to be reviewed annually for the first three years and then once every five years thereafter, by an independent environmental consultant, unless otherwise required by the authorities and the HOA. The auditor is to highlight issues to be addressed in the OEMPr, or changes required, during the annual audit. These points are to be included as annexures to the OEMPr and to be considered during the review of the process. Recommended changes to the OEMPr must be forwarded to the DEA&DP for their approval, and subsequent incorporation into the OEMPr.

The review must address the following (this list is not exhaustive):

- Changes in legislation that may be relevant to the ongoing management of the site.
- Unexpected impacts of the development or management activities.
- Impacts of the development or management activities of greater intensity, extent and significance than predicted.
- Inadequate mitigation measures that were originally proposed.
- Secondary impacts that may have resulted from mitigation measures that have been implemented.
- Commissioning of new phases of the development.
- Decommissioning of certain phases of the development.
- Expansion of operational activities.

7.3. Record Keeping

Records must be kept of the following:

- Routine implementation and maintenance schedules, budgets and costs.
- Monitoring Reports.
- Complaints received and responses made.
- Training needs analyses.
- Minutes of meetings.
- Audit reports and reviews of the OEMPr.
- Changes to the OEMPr.

Records must be kept with all the documentation of the HOA. These must be made available for review on request, based on adequate motivation. Copies of audit reports and reviews, as well as changes to the OEMPr must be forwarded timeously to the relevant authorities.

SECTION 8: NON-COMPLIANCE

Allegations of non-compliance by members of the public, stakeholders, residents and visitors to the Estate, Authorities and management of the staff must be reported to the EO for investigation. All such allegations must be recorded in written format, together with the findings of the investigation. These records must be stored for consideration during the audit process. All acts of non-compliance must be reported to the Operations Manager. The action to remediate acts of non-compliance must be identified by the EO in consultation with a suitable specialist (if required) and a cost attached to this. The individual responsible for the act of non-compliance must be financially responsible for the remediation of any damage to the environment. The instruction to remediate must come from the Operations Manager.

SECTION 9: FUNDING

The funding for the implementation of the OEMPr, the appointment of any specialists, the annual audit of compliance with the OEMPr, as well as the review of the OEMPr is the responsibility of the HOA.

Funding must cover:

- Training of staff for implementation of the management actions
- Implementation of management activities
- Management and Protection of streams and wetlands
- Review and auditing of the OEMPr and Development

SECTION 10: MANAGEMENT GOALS

The management program sets the procedure for Chapman's Peak Estate HOA to achieve its environmental policy and goals. This program is broken down into the following components, which detail the various goals and the objectives set to meet the goal of management of its streams and wetlands. It also describes the various management activities that can achieve these objectives, together with the monitoring and target criteria.

GOAL 1: Eradication of Invasive Vegetation

GOAL 2: Erosion and Storm Water Management

GOAL 3: Stream and Wetland rehabilitation

GOAL 4: Fire Management

GOAL 5: Monitoring

GOAL 6: Waste Management

Programme 1: Eradication of Invasive Vegetation

1.1. Background and Objective:

A large portion of the pine and gum trees should be removed. They infest the site and cause erosion and build-up of leaf and branch litter in the stream. Their removal will allow rehabilitation of the stream and the introduction of a more diverse community of plants within the stream corridor. Removal of exotics is also likely to lead to more water flow in the streams.

The first phase of alien clearing occurred during the construction phase according to the guidelines in the CEMPr. The aim of this programme is therefore to control the alien vegetation that could possibly re-sprout or establish due to disturbance of the site during the construction phase. This will protect the integrity of the natural systems on site and promote the preservation of biodiversity. Most of the invasive alien plants on site should be removed. It is acknowledged that some of the larger trees will probably be maintained for visual screening and shade, but these will remain possible sources of invasion of surrounding land, and especially on the lower slopes of Chapman's Peak. All smaller invasive shrubs (such as *Acacia* and *Hakea* species) must be removed on the site.

It is thus recommended that the applicant set up a long-term Environmental Management Fund that will allow for ongoing annual, alien clearing work on the site. Undertake follow-up alien clearing on an ongoing, annual basis.

No invasive alien plants should be planted on site (see CARA legislation and listings), and only suitable locally indigenous Peninsula Sandstone Fynbos, Peninsula Granite Fynbos and Cape Flats Dune Strandveld plant species should be used for landscaping. The landscaper should confirm the planting list with the botanist. A diverse mix of locally indigenous plants on public and private open spaces (gardens) will help offset the negative impacts of loss of habitat and natural vegetation, and will encourage various birds, insects, and small mammals to return to the site.

1.2. Responsibility:

It is the responsibility of the HOA to ensure that all alien and other undesirable invasive vegetation is cleared as far as possible from all natural systems on the Estate. Local trained Labour must be made available to carry out the identified tasks, as per the appropriate timing schedules. It is the responsibility of individual homeowners to ensure that such vegetation is removed from private properties and that non-invasive and preferably indigenous plants are planted in gardens.

1.3. Actions:

1.3.1. General

- i. Workers must be familiarised with the appearance of alien and invasive plants, including weeds and garden exotics (e.g. morning glory, nasturtiums) versus desirable plants. This must form part of routine training by the EO for all workers engaged in this activity.
- ii. It is the responsibility of the contractor to ensure that he or she is fully informed of the extent of all alien vegetation to be cleared.
- iii. Removal of weedy or invasive plant material from the streams and wetland areas is to be done by hand as far as possible, when plants are still small.
- iv. The landscaper should confirm the planting list with the botanist. A diverse mix of locally indigenous plants on public and private open spaces (gardens) will help

offset the negative impacts of loss of habitat and natural vegetation, and will encourage various birds, insects, and small mammals to return to the site.

1.3.2. Alien Clearing Follow-Up Programme

- i. The cut stumps from the initial clearing that may have coppiced (re sprouted) must be slashed or cut to less than 100mm above the ground. Cut stumps must be treated using an approved herbicide treatment.
- ii. Trees under 1 meter in height must be uprooted by hand.
- iii. Trees above 1 meter in height must be slashed or cut to less than 100mm above the ground.
- iv. All material should be removed off site.

1.3.3. Herbicide Applications

- i. The contractor must provide proper herbicide applicators. All workers are to wear suitable protective clothing and equipment as specified by manufacturers of mechanical equipment.
- ii. All herbicide containers are to be kept on a suitable ground sheet and away from direct sunlight.
- iii. The mixing of herbicide is to take place on the same day that it will be applied. Only an amount sufficient for use that day should be mixed, as the active ingredients in the herbicide deteriorate quite rapidly. No herbicide mixture mixed on a previous day should be use for application to alien vegetation, as it will not be effective.
- iv. Herbicide is to be applied to stumps immediately after cutting / felling.
- v. Herbicide must be applied directly to the affected plant, and not to the surrounding area.
- vi. All herbicide mixture used must contain appropriate dye for identification of finished areas. Refill sites are to be carefully chosen to ensure no damage to vegetation.
- vii. Herbicide spray will not be allowed. Herbicide to cut stumps should be applied using a sponge or brush.

1.3.4. Follow-Up Clearing Programme

- i. First follow-up – this must take place and be completed 4 to 6 months after completion of the initial clearing that took place during the construction phase.
- ii. Second follow-up – This must take place and be completed within 4 to 6 months of completion of the first follow-up.
- iii. Due to the relatively small amount of aliens present on the site the two follow-ups should be sufficient.
- iv. Alien control following this must be done on a yearly basis, preferably midway through spring.
- v. Records must be kept on the alien clearing, how it was done, what aliens were removed, how they were removed and areas of where they were removed from.

Programme 2: Erosion and Storm Water Management

2.1. Background and Objective:

Residential storm water runoff contains a number of potentially harmful pollutants, including fuels and oils, fertilizers, herbicides and detergents. Runoff from the vineyards will contain fertilizers, pesticides and herbicides. Unless conveyed elsewhere, this runoff is likely to enter aquatic ecosystems downstream of the site.

The construction of hardened surfaces on the property and irrigation of the vineyards will lead to an increase in the quantity of runoff flowing across the site. High volumes of natural runoff currently flow across the site, so this increase will have downstream impacts if not adequately managed.

It is essential that erosion control and storm water management be prioritised.

2.2. Responsibility:

It is the responsibility of the HOA to ensure that all areas cleared of vegetation are adequately stabilised to prevent erosion. Monitoring for erosion throughout the Estate is vital to ensure that remediation actions are initiated timorously. Labour must be made available to carry out the identified task. It is the responsibility of individual homeowners to ensure that such actions are performed on private properties.

2.3. Actions:

- i. The Contractor shall under no circumstances damage vegetation or soil around trees/shrubs, unless this has been identified for removal during the construction phase.
- ii. The contractor shall not make any cuts, roads or tracks unless these are pegged out by the contractor and approved by the EO in writing prior to any tracks being made.
- iii. Monitoring of all areas on site for erosion must be undertaken monthly and after heavy rainfall episodes.
- iv. Immediate steps must be made to rehabilitate any areas showing signs of erosion, as per the instructions of the EO, and the landscape architect, if applicable. If necessary, relevant specialists should be consulted with regard to appropriate emergency or other stabilisation measures that need to be introduced, where these may be at variance with the ecological integrity of the affected system.
- v. Straw can be used to stabilise large tracts of exposed sand temporarily, subject to the approval of the EO.
- vi. Stormwater runoff should preferably be retained on site, in retention ponds that are large enough to allow the evaporation and filtration of runoff, before preferably discharging into the municipal stormwater system.
- vii. If the stormwater must be discharged into natural watercourses, then the stormwater retention ponds should be planted with appropriate wetland plants that would assist in cleaning the water before it enters the watercourses. The high volumes of natural runoff that flows across the site (evidence for this is the many runnels across the site) could be conveyed across the private open space in the middle of the site in an earth-lined, landscaped channel that will add to the aesthetic value of the site.
- viii. The runoff from areas used by horses can be expected to be polluted with faeces, urine and excess horse food, while the runoff from irrigated vineyards will contain fertilizers, pesticides, herbicides and other agricultural chemicals. These will all elevate the concentration of organic nutrients and other pollutants in the runoff, which will have a negative impact on the natural ecosystems, all of which are sensitive to changes in water

quality. Cut-off drains should be constructed downhill from all areas used by horses and from the vineyards, and the runoff in these drains conveyed to detention ponds that are monitored for water quality. Water from these detention ponds should only be discharged into natural watercourses if the quality is of an acceptable standard (as specified in the DWAF Water Quality Guidelines (DWAF, 1996).

- ix. Stormwater must be directed into detention pond(s) and not into the stream or wetland.
- x. Litter traps should be placed at various points on the stormwater system, where they can easily be maintained.
- xi. Runoff should also not be allowed to flow onto the property below the site, as this runoff will enter the streams in the Noordhoek Valley.
- xii. Stormwater should be conveyed into detention ponds that are earth-lined, to allow filtration of water into the ground, thereby reducing the quantity.
- xiii. Stormwater should, where possible, be conveyed along earth-lined channels, or as sheet flow. The open space on the property could be used for this purpose. An artificial stream can be constructed that crosses the open area, conveying stormwater to the detention pond planned for the south-eastern corner.

Programme 3: Stream and Wetland Rehabilitation

3.1. Background and Objective:

There are two streams on the property – one (stream 1) flows just inside of the northern boundary of the property, while the other (stream 2) joins this stream just inside the property boundary, towards the north-eastern corner. Once these streams have joined, they flow into the Goeie Hoop River, which flows down into the Noordhoek Valley. After the confluence of streams 1 and 2, the stream flattens out into a wetland that occupies the north-eastern corner of the property. A small dam is located near the south-western corner of the property. It appears that this dam retains water that is conveyed across the site in pipes and ditches. In addition, a large concrete ditch runs across the site (see figure 1) that presumably catches runoff seeping down the mountain slope and directs it the south-western corner of the property and, probably, the dam

3.2. Responsibility:

It is the responsibility of the HOA to ensure that all streams and rivers are protected and maintained. No pollution or degradation must occur.

3.3. Actions:

- i. A buffer of 20m from the bank of each stream should be established. No hardened development can take place within the buffer areas, but pathways and boardwalks can be placed within this area. Property boundaries can encroach into the buffer, but landscaping and planting of gardens will be governed by strict controls (e.g. no kikuyu grass).
- ii. A preferred route for the stream should be defined, especially for those parts of the channel that are now indistinct. All debris must be removed from the streams channel and banks. The banks of the stream should be shaped to form gentle slopes of approximately 1:6 or 1:7. The banks can be stepped to accommodate this gentle gradient within the buffer zone. The longitudinal gradient of the stream can also be stepped, in order to slow down the flow and thus prevent erosion and sedimentation. The steps can be achieved through the wise use of gabions, tree trunks and boulders. The bed of the stream must resemble the natural bed, i.e. cobble and gravel.
- iii. The stream bed and banks should be re-planted with appropriate species, which will be determined by the landscaper and ecologist.
- iv. The wetland at the bottom of the slope, at the confluence of the two streams, should be delineated, and a buffer of approximately 20m be established in order to protect the system from disturbance. It is recommended that the buffer around the streams be allowed to incorporate this wetland.
- v. Road crossings across the streams should be kept to a minimum, and should be designed with input from an ecologist. Bridges should preferably span the width of the streams and be high enough to allow light to reach the streams bed and banks.
- vi. If possible, at least some of the hillside seep should be retained between houses. The landscaping on the rest of the property should aim to resemble this plant community which has been rehabilitated to form a diverse plant community.
- vii. Unless the dam is to be used for stormwater runoff (see below), it should be removed, and the area it occupies rehabilitated. The area should be planted with appropriate sandplain fynbos species.
- viii. Stormwater runoff should preferably be retained on site, in retention ponds that are large enough to allow the evaporation and filtration of runoff, before preferably discharging into

the municipal stormwater system. If the stormwater must be discharged into natural watercourses, then the stormwater retention ponds should be planted with appropriate wetland plants that would assist in cleaning the water before it enters the watercourses. The high volumes of natural runoff that flows across the site (evidence for this is the many runnels across the site) could be conveyed across the private open space in the middle of the site in an earth-lined, landscaped channel that will add to the aesthetic value of the site.

- ix. The runoff from areas used by horses can be expected to be polluted with faeces, urine and excess horse food, while the runoff from irrigated vineyards will contain fertilizers, pesticides, herbicides and other agricultural chemicals. These will all elevate the concentration of organic nutrients and other pollutants in the runoff, which will have a negative impact on the natural ecosystems, all of which are sensitive to changes in water quality. Cutoff drains should be constructed downhill from all areas used by horses and from the vineyards, and the runoff in these drains conveyed to detention ponds that are monitored for water quality. Water from these detention ponds should only be discharged into natural watercourses if the quality is of an acceptable standard (as specified in the DWAF Water Quality Guidelines (DWAF, 1996).
- x. Rehabilitation of the streams should focus on the removal of alien tree species – primarily pines and gums – from the property, especially from the riverine corridor, wetland and hillside seep. All leaf litter and woody debris should be removed from the streams and wetlands. If necessary, the bed and banks of the streams should be re-shaped to address problems of erosion and sedimentation.
- xi. Due to the fact that the principle impact affecting the streams is the afforestation with pines and gums, this is an opportunity to rehabilitate these stream reaches with, it is predicted, excellent chances of success. The removal of alien tree species is likely to lead to an increase in runoff, especially in stream 1. This increased runoff could serve to flush the stream of the buildup of sediment, nutrients and organic debris that have built up over the years.
- xii. It is recommended that all exotic trees within approximately 10m of the stream's centre line be removed, while some pine trees can be retained in the remainder of the stream corridor, with the aim of removing these slowly over time. This will prevent erosion of the slopes, and will protect landscaped areas from the wind. Pine trees smaller than approximately 30cm diameter should be removed, while clumps of larger individuals can be retained. The density of trees should not exceed approximately 5 per 100m².
- xiii. All other exotics (gums, acacias etc) must be removed from the site.

Programme 4: Fire Management

4.1. Background and Objective:

The aim of this programme is to ensure that fire occurring in the neighbouring areas does not represent an undue threat to the Estate and that activities on site do not pose an increased fire risk to the natural areas. Many Fynbos systems are fire driven, and species diversity is maintained by fires at appropriate intervals (de Villiers *et al* 2005).

To ensure that wildfire mitigation informs the annual operational planning for the Chapman's Peak Estate, Amdec Residential Developments (Pty) Ltd. appointed NCC Operations (Pty) Ltd. to draft an Integrated Wildfire Management Plan for the Estate. This Integrated Wildfire Management Plan (**Annexure C**) must be implemented.

4.2. Responsibility:

It is the responsibility of the Estate HOA to ensure that all alien invasive vegetation is cleared as far as possible from all natural systems on the Estate to decrease the fuel load on site to acceptable levels and to develop contingency plans for fire fighting in case of fire on site. Labour must be made available to carry out the identified task, as per the appropriate timing schedules. It is the responsibility of individual homeowners to ensure that such alien invasive vegetation is removed from private properties and responsible behaviour with regard to fires is adopted.

4.3. Actions:

- i. The entire site must be kept free of alien invasive vegetation to reduce the fuel load and thus reduce the fire risk on site.
- ii. No fires, with the exception of controlled and supervised braai fires in designated areas on private properties shall be lit on the Estate.
- iii. All fires starting on the boundary of the Estate will be regarded as a potential hazard and contingency plans for dealing with this must be adhered to.
- iv. An adequate fire break must be maintained on the western boundary of the property.
- v. The HOA should consult Cape Nature and SANParks regarding the width and position of the fire break.
- vi. Any vegetation, debris, dead trees or material that is flammable should be removed from the fire break.
- vii. The HOA must ensure that fire break areas are easily accessible to emergency vehicles and firefighting equipment.
- viii. The fire break must be inspected regularly to ensure that the fire break remains continuous.
- ix. The procedure to be followed in case of a fire must be set with the relevant sections of the Local Authority. This information must be easily accessible to all homeowners on the Estate.
- x. Necessary firefighting equipment must be kept on site: Six fire beaters, water hydrant/hose points at identified areas.
- xi. A map showing fire escape routes, fire hydrant/ hose points, and fire emergency contact numbers must be given to all homeowners and displayed at prominent places on the Estate.
- xii. Access must be allowed into the site for emergency vehicles in the case of a fire on the Estate or on its boundaries. Fire trucks must stay on the existing roads in the development and may in no circumstances drive through conservation areas, unless absolutely necessary.

- xiii. Standard firefighting equipment must be kept at a central point on the Estate for immediate use in case of a fire on the Estate, with clear and reasonable access to this equipment for responsible residents of the Estate. This must be controlled by the EO.
- xiv. A fire officer must be appointed who will be responsible for the firefighting equipment and keeping the fire and emergency plan updated and available to all homeowners.

Programme 5: Monitoring

5.1. Background and Objective:

It is vital that certain aspects of the environment are monitored on a regular basis to ensure that the conditions are not deteriorating and that management activities are achieving their goal. Furthermore, monitoring can also provide information on problems that may arise over time. Recording of these conditions on a regular basis will provide base line data over time, against which the effectiveness of management activities can be assessed.

5.2. Responsibility:

It is the responsibility of the HOA to ensure that the activities listed below are monitored on a regular basis and that the results are recorded for future reference by the EO. Labour must be made available to carry out the identified tasks, as per the appropriate timing schedules.

5.3. Actions:

- i. Monitoring of the following must take place and remediate undertaken where required as detailed in the relevant sections of this document.
 - o Vegetation monitoring/ mapping: on the streams Programme Wetland area (Programme 3)
 - o Alien vegetation: Programme Eradication of Alien Invasive Vegetation. (Programme 1)
 - o Erosion: Programme Erosion (Programme 2)
 - o Litter: Programme Waste Management (Programme 6)
- ii. All conservation areas, streams, storm water channels and open spaces must be monitored for litter on a weekly basis. These areas must be monitored on a monthly basis, and after heavy rainfall episodes for erosion.
- iii. There must be monitoring of areas where there has been removal of invasive vegetation on a monthly basis for
 - o Seedling regeneration of alien species
 - o Resprouting of mature alien plant species
 - o Erosion
- iv. The storm water channel, and areas where storm water is discharged have been suitably landscaped to prevent erosion, as part of the development phase. Should erosion occur, immediate steps must be taken to remediate the problem and prevent further erosion. This must be done in consultation with a suitably qualified specialist in this field.
- v. Natural systems must be monitored on a monthly basis to ensure that there has been no invasion of alien invasive species into systems that are in good biological condition.
- vi. The condition of pathways through the wetland/river system must be inspected twice a year and maintenance and repair done as required.

Programme 6: Waste Management

6.1. Background and Objective:

The DEA&DP has instituted a policy of waste reduction, reuse and recycling, with which is supported by the City of Cape Town. The authorisations for this development require that a Waste Management Programme be implemented to minimise waste and actively prevent waste from impacting on other owners, the environment and adjacent landowners. This programme aims to uphold this policy.

Waste will be largely limited to household and garden waste and litter. Any complaints or queries regarding refuse removal or waste disposal are to be referred to the HOA, who is to ensure that the issue is dealt with promptly.

6.2. Responsibility:

It is the responsibility of the HOA to ensure that waste on the Estate is dealt with in accordance with the OEMPr and to ensure compliance with the programme by the private owners. Labour must be made available to carry out the identified task, as per the appropriate timing schedules. It is the responsibility of individual homeowners to ensure that waste on private properties is dealt with as prescribed in this OEMPr.

6.3. Actions:

6.3.1. Recycling

- i. All households must be encouraged to apply best practise in terms of waste management, to reduce waste produced, re-use resources wherever possible and to recycle appropriately.
- ii. Opportunities may be provided on site to facilitate the collection of relevant waste products such as paper, glass and tin at central points, for collection by relevant organisations.

6.3.2. Indoors

- i. Residents must be encouraged to sort waste to allow for recycling.
- ii. All indoor waste not suitable for recycling is to be placed in outdoor bins for collection by the local authority as part of their regular collection system. Bins must have lids to prevent scavengers and distribution of refuse by wind.
- iii. Bins must be kept within the grounds of individual homeowners until collection time.
- iv. Bins must then be placed in the area designated by the HOA for collection of waste.

6.3.3. Outdoors

- i. There is to be no burying or burning of waste on site.
- ii. No wastes of whatever nature are permitted to be placed or dumped on any Estate road or verge or in any Private Open Space area. All garden waste is to be removed to an approved waste disposal site in the greater area. This is the responsibility of the individual homeowner.
- iii. No garden clippings or any other waste material should be dumped in the open space corridors, including the conservation area, their buffer areas, detention ponds, storm water channels and storm water outlets.
- iv. Garden waste from the Estate must be removed to an approved waste disposal site, as part of the landscaping contract.

- v. Monitoring for litter throughout the Estate is to take place on a weekly basis, and litter is to be collected and disposed of in a central collection point, for removal off site to an approved waste disposal site.
- vi. The fouling of any Estate road with any substance by any person is prohibited.
- vii. No paints or any other chemicals shall be disposed of anywhere except at a licensed landfill site.
- viii. No cement, concrete, mortar, plaster, etc shall be mixed on the ground or on any road surface under any circumstances.
- ix. No waste from cement, concrete, mortar, plaster or wastewater from washing of such equipment are to be disposed of anywhere on the Estate.
- x. No pet excrement shall be left in any Private Open Space or on any Estate road or verge.

ANNEXURES

Annexure A: Design Manual, Architectural and Landscape Design Guidelines

Annexure B: Draft Constitution for the HOA

Annexure C: Integrated Wildfire Management Plan