Environmental Management Programme

Development of a single residential dwelling on Farm 974/1, Misty Cliffs, Cape Town

PREPARED IN COMPLIANCE WITH THE REQUIREMENTS OF THE EIA REGULATIONS, GN 326 OF 2017 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, ACT NO. 107 OF 1998

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DATE: 29 January 2026

APPLICANT
Aaron Samuels & Rachael Joseph

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REPORT DETAILS

DEVELOPMENT OF A SINGLE RESIDENTIAL DWELLING ON FARM 974/1, MISTY CLIFFS, CAPE TOWN: ENVIRONMENTAL MANAGEMENT PROGRAMME

APPLICANT

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Report purpose

This Environmental Management Programme is prepared as part of a Section 24G retrospective Environmental Authorisation application for the development of a single residential dwelling on farm 974/1, Misty Cliffs, Cape Town in terms of the Environmental Impact Assessment Regulations, 2014 (as amended). It prescribes control methods to mitigate and manage negative environmental impacts and enhance positive impacts associated with the construction and operation of the development and provides a programme for monitoring the performance of personnel in applying such methods.

DOCUMENT CONTROL

Date	Version
02 May 2025	Draft 1
31 October 2025	Draft 2
29 January 2026	Final

DECLARATION OF EAP'S INDEPENDENCE

I, Jeremy Rose, appointed by Aaron Samuels & Rachael Joseph as Environmental Assessment Practitioner for the Section 24G Retrospective Environmental Authorisation Application for the development of a single residential dwelling on Farm 974/1, Misty Cliffs, Cape Town hereby declare that the information provided in this report and supporting documentation is complete and correct to the best of my knowledge; that other than fair remuneration for work performed in terms of this application I have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; that I have disclosed, to the Applicant, the specialist(s), the Competent Authority and registered interested and affected parties all material information that have or may have the potential to influence the decision of the Competent Authority; that I have ensured that information in respect of the application was distributed or was made available to registered interested and affected parties and that participation will be facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments; and that I am aware that a false declaration is an offence in terms of Regulation 48 of the NEMA EIA Regulations.

Jeremy Themba Rose BSc (Hons), Reg. E.A.P. 2019/1116, Pr.Sci.Nat. 120148, IAIAsa member 5781
Infinity Environmental (Pty) Ltd: Director & Principal EAP

RECORD OF REVISIONS

Rev. No.	Reason for Revision	Section Revised	Revised By	Effective Date
00	Draft	ALL	J. Rose	02 May 2025
01	Second round of public engagement	ALL	J. Rose	06 November 2025
02	Final		J. Rose	28 January 2026

EMPR OVERVIEW

Chapter 1	**INTRODUCTION**
Chapter 2	**APPROACH AND STRUCTURE**
Chapter 3	**PROJECT ROLES AND STRUCTURE**
Chapter 4	**DESIGN AND CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN**
Chapter 5	**ENVIROMENTAL AWARENESS TRAINING PLAN**
Chapter 6	**POST DEVELOPMENT ENVIRONMENTAL MANAGEMENT PLAN**

1 INTRODUCTION

1.1 Project Background

Farm 974/1 (the site) is located north of Misty Cliffs on the Cape Peninsula, abutting the Table Mountain National Park. It is a privately owned property approximately 15 hectares in extent. The landowners propose to construct a single residential home on the lower part of the steeply sloping site. Vegetation clearing was started on the site in early February 2025 without the required environmental authorisation. Approximately 400 square metres of vegetation was cleared on the site without the required environmental authorisation, and a further 200 square metres of indigenous vegetation were damaged on an adjacent land parcel (Farm 979/9) forming part of the Table Mountain National Park. Works were ceased when the applicants were made aware that the works required environmental authorisation. The applicants intend to apply for *ex post facto* approval of the unauthorised clearing, and will also seek environmental authorisation to continue with the proposed development of the access road and house. This Environmental Management Programme (EMPr) has been prepared for the construction and post-construction phase of the development.

1.2 Site location

The site (Farm 974/1) is approximately 15 ha in extent and located in the City of Cape Town Municipality, approximately 2km northwest of Scarborough and 0.2km northwest of the town called Misty Cliffs. The farm is zoned for Agricultural use and is classified as a Critical Biodiversity Area. The site is bounded by other farms of the same Agricultural zoning but that fall within the Table Mountain National Park to the north and east. Figure 1-A shows the location and context of the site.

Figure 1-A: Locality Map

1.3 Environmental Sensitivities

The site is a portion of vacant, undeveloped, densely vegetated land on the slopes of the mountains overlooking Misty Cliffs and the Atlantic Ocean. The site is located within the Core Cape Subregion of the Greater Cape Floristic Region which supports almost half of all the plant species in southern Africa while occupying only 0.1% of the world's land surface. Many of the plant species in this region do not occur elsewhere and are under threat from agriculture, alien plants and urbanisation. The southwestern Cape is a major national and global conservation priority, exhibiting a number of threatened plant species, which developments in this area need to consider.

1.3.1 Terrestrial biodiversity

The site is a portion of vacant, undeveloped, densely vegetated land on the slopes of the mountains overlooking Misty Cliffs and the Atlantic Ocean. The site is located within the Core Cape Subregion of the Greater Cape Floristic Region which supports almost half of all the plant species in southern Africa while occupying only 0.1% of the world's land surface. Many of the plant species in this region do not occur elsewhere and are under threat from agriculture, alien plants and urbanisation. The southwestern Cape is a major national and global conservation priority, exhibiting a number of threatened plant species, which developments in this area need to consider.

The site is vegetated by Cape Flats Dune Strandveld (Endangered) and Peninsula Sandstone Fynbos (Critically Endangered). The impact assessment by botanical specialist Nick Helme (2025) confirmed the presence of these two vegetation types on the site. There is a gradual transition between the vegetation types as one moves upslope with elements of Peninsula Sandstone Fynbos present within the development footprint but increasing in coverage and dominating the region upslope of the development footprint.

The botanical specialist noted that the site was essentially pristine prior to vegetation clearing with no alien invasive vegetation present on the site (Helme, 2025). In a regional (South Peninsula) context the vegetation in the proposed house footprint is of Medium sensitivity or importance (see Figure 1-B), as it is of fairly high plant diversity, with four recorded SoCC, and the actual plant community is well conserved within the TMNP, although the vegetation type (Cape Flats Dune Strandveld) is under-conserved, and severely threatened outside the TMNP. High sensitivity areas are found on the property below the M65 (rare seepage areas), and above the proposed development area (high density of Near Threatened *Protea lepidocarpodendron* and other SoCC). The farm portions to the north (farm 976-RE) and east (farm 979) form part of the Table Mountain National Park.

Four plant Species of Conservation Concern (SoCC) were observed on the site as listed below:

- *Protea lepidocarpodendron* (black-bearded sugarbush / bearded Protea)

This species is Redlisted as Near Threatened and at least 100 plants are located in the footprint of the originally proposed house location (at 55masl). Few of this species occur below the 40m contour and only about ten occur in the region of the proposed development footprint. The population of over 600 plants on the site above the development footprint is considered regionally significant.

- *Aspalathus chenopoda ssp. chenopoda* (Peninsula fluffy Capegorse)

This species is Redlisted as Rare and is a common shrub on this site and within the proposed development footprint (>50 plants). This plant lives for six to seven years post fire and thereafter sits in the seedbank until the next fire. No living plants occur on the site at present (unburned for > 20 years) and the presence of this species on the site is not considered regionally significant.

- *Asparagus lignosus* (Katdoring)

This species is Redlisted as Near Threatened but is widespread from Vanrhynsdorp to George. The few plants of this species on the site are not considered regionally significant.

- *Cliffortia carinata* (Trident Caperose)

This species is Redlisted as Rare and is restricted to the Cape Peninsula to Caledon region. The four plants on the site are not considered regionally significant.

- *Leucospermum concarpodendron ssp. viridum* (Kreupelhout / green tree pincushion / yellow pincushion)

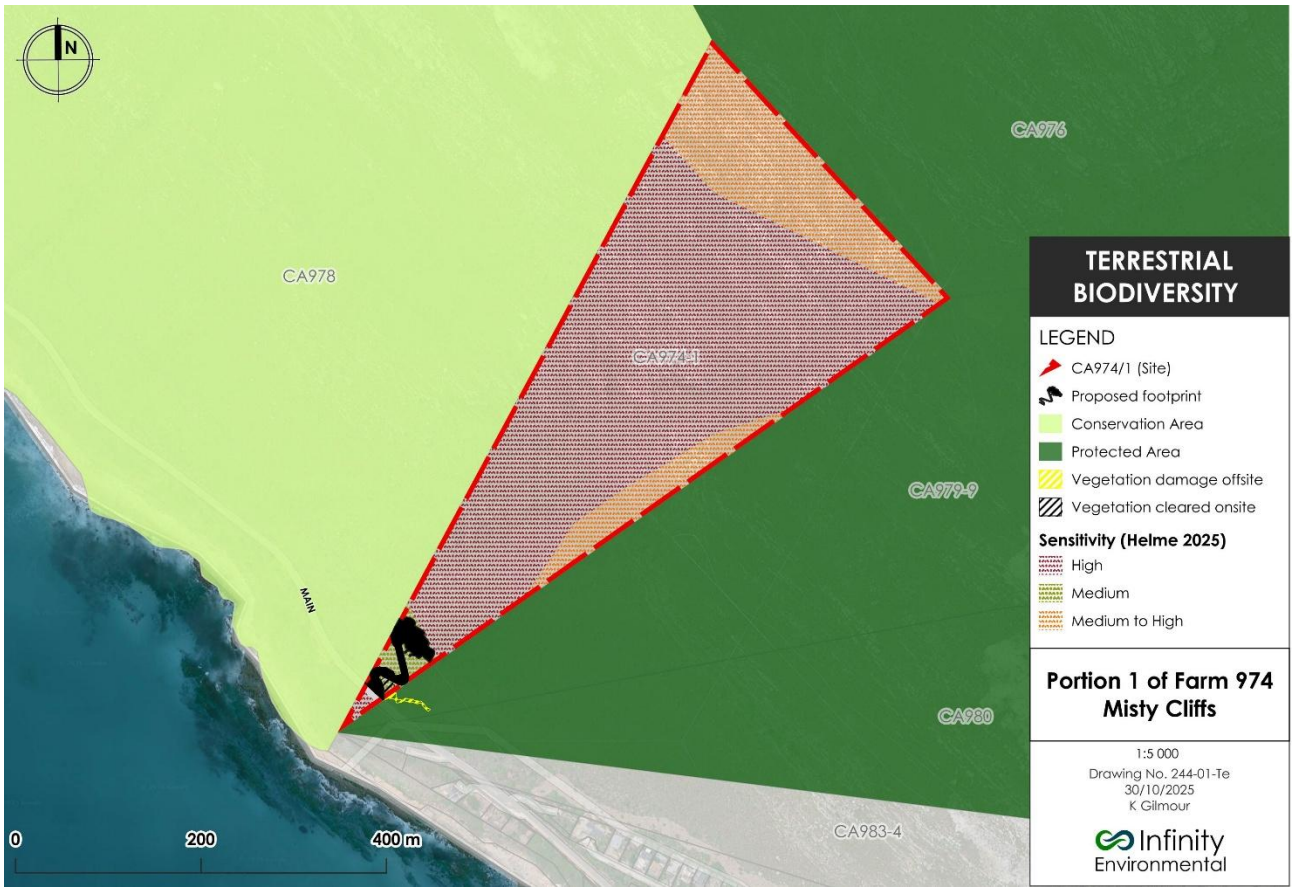
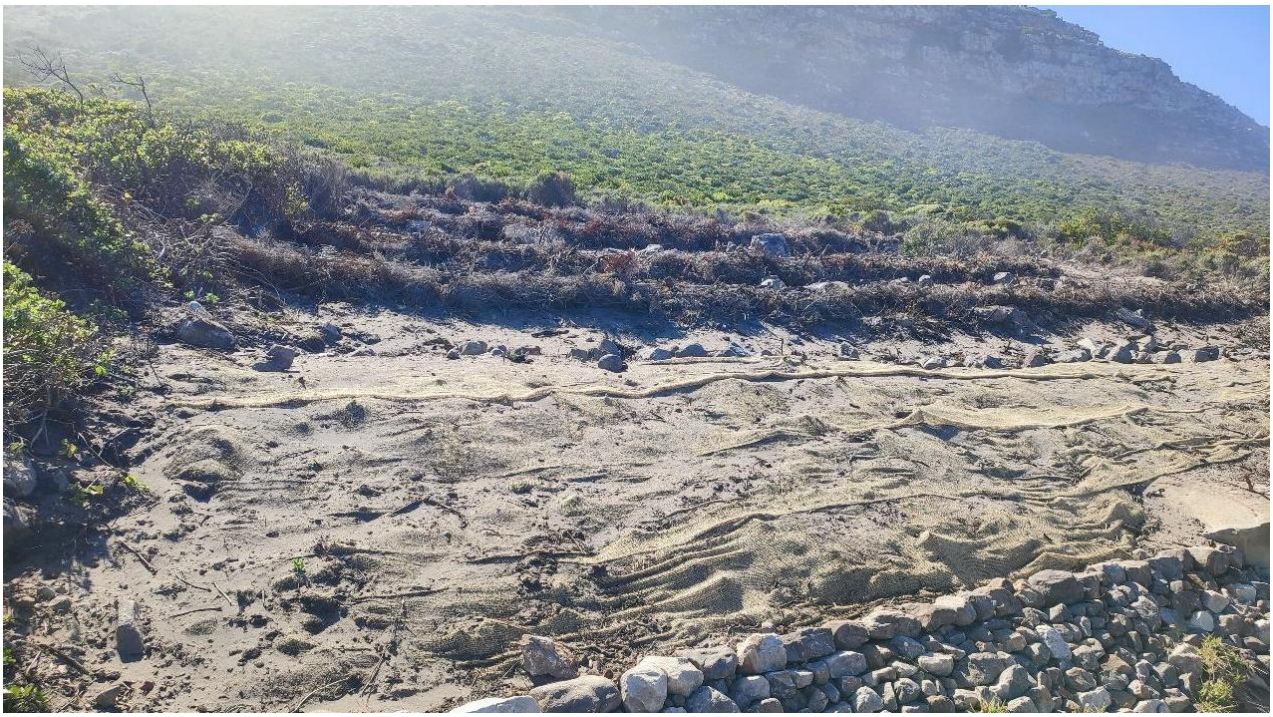


Figure 1-B: Protected areas in the vicinity, and vegetation sensitivity on the site



Photograph 1: View of the cleared area on Farm 974/1, after rehabilitation and slope stabilisation. Photo taken from the M65. (Extracted from botanical specialist report: 2025)

1.3.2 Aquatic biodiversity

Topographic mapping identifies a stream flowing through the site, and the valley on the site is known as the Varingkloof (or 'fern valley' indicative of wetland habitat). Freshwater specialist Antonia Belcher was appointed to confirm the presence of the stream and identify any potential wetland habitat on the site. The specialist confirmed that a seep wetland rather than a stream is located on the midslopes of the Varingkloof valley, with associated distinct vegetation. The seep is mostly sub-surface with no defined channel or surface flows. There are also minor patches of coastal wetland along the shore that are fed by daylighting of deep aquifers and maintain small patches of sedges.

The unauthorised vegetation clearing occurred more than 100m downslope of the seep and east of the drainage area. It is unlikely to have had any impact on the seep or Varingkloof drainage area. The area of disturbance for the proposed house and driveway will be at least 60m east of the Varingskloof drainage and seep area and about 50m upslope of the M65 road. The only aquatic features thus likely to be at any risk of degradation from the proposed activities are the small patches of coastal wetland that are fed from the surfacing of groundwater at the shore. The potential risks to these features would be in terms of flow interception and contamination. The wetlands are fed from deep groundwater that is unlikely to be intercepted by the proposed activities. Any water quality impacts are also likely to be insignificant given the extent of the wetlands; and their distance from the residence with the surfaced road and associated drainage systems in between.

Figure 1-C: Aquatic features on the site, as delineated by Belcher (2025)

Photograph 2: View of the site, as seen mid-slope looking upslope towards the kloof and seep area (extracted from freshwater specialist comment on watercourses – Belcher, 2025)

Photograph 3: View of the coastal wetland areas downslope of the site (extracted from freshwater specialist comment on watercourses – Belcher, 2025)

1.3.3 Heritage specialist

The site has low archaeological sensitivity, with shell middens having been recorded on the rocky shoreline well outside the footprint of the affected property. The site is not an environment favourable to fossil bone preservation due to overall slow overall burial rates, excluding infrequent slumping in places. Due to the typically slightly acidic groundwater draining off the Peninsula Fm. mountains, the long-term preservation of any fossil bones at depth in the porous talus is unlikely. Accordingly, the talus has very low palaeontological sensitivity.

A strong wilderness character embodies the landscape, where the proposed development is located at the interface between the steep, densely vegetated slopes of the Mountains, and the rugged coastline of the Atlantic Ocean. The landscape character is bisected by the Main Road/M65, while the village of Misty Cliffs is located 300m south of the proposed development site.

The appointed heritage specialist found no significant heritage or cultural impacts to be associated with the proposed development, and Heritage Western Cape has concurred that 'there is no reason to believe that the proposed dwelling on Farm 974 Portion 1, Main Road, Misty Cliffs, will impact on heritage resources.' Should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay.

1.4 Impacts identified during the EIA

Based on the specialist studies, the following potential direct impacts, as indicated in Table 1 have been identified. Appropriate management and mitigation measures are included within this EMPr (where required) as per the recommendations made in the specialist studies to ensure the potential impacts are adequately mitigated and managed during all phases of the project.

It should be noted that other impacts for which specialist studies were not undertaken but where mitigation or management actions may be required, are also included in this EMPr.

This project seeks to set in place a management programme that will allow for the legal and sustainable construction of the single residential unit. Such interventions are important to mitigate and manage negative environmental impacts and enhance positive impacts associated with the construction of the property and provides a programme for monitoring the performance of personnel in applying such methods.

Table 1: Key Impacts identified during the EIA process

Specialist study	Impacts identified and assessed	Description of impacts assessed
Botanical (Terrestrial Biodiversity)	• **Impact of unauthorised indigenous vegetation clearing and damage**	• The clearing of approximately 400m^2 shown in Figure 1-B. The vegetation loss in this area is temporary, and should largely recover within a few years, except in the portion (perhaps 60m^2) that will be within the new access road. • The damage to approximately 200 m^2 of indigenous vegetation on Farm 979/9 which falls part of the Table Mountain National Park.
	• **Terrestrial biodiversity impacts due to the development of the house and access road**	• The primary construction phase botanical impact would be loss and degradation of the pre-existing natural vegetation in the approximately 2200m^2 development area (including access road). • Post-construction phase impacts include loss of previous levels of good ecological connectivity across the area, and associated habitat fragmentation, likely disruption of natural fire cycles in close proximity to the house, plus the difficult to measure impacts of indigenous seed dispersal disruption by invasive alien Argentine ants *(Linepithema humile*).
	Cumulative Impacts	• The cumulative ecological impacts are in many ways equivalent to the regional ecological impacts, in that the vegetation type impacted by the new development has been, and will continue to be, impacted by numerous developments and other factors (the cumulative impacts) within the region. The primary cumulative impacts in the region are loss of natural vegetation and threatened plant species to ongoing agriculture, urban development and alien plant invasion (Mucina & Rutherford 2012; Helme et al 2016).
Freshwater	**Potential disturbance of watercourses**	• The only aquatic features likely to be at any risk of degradation from the proposed activities are the small

(Aquatic Biodiversity)		patches of coastal wetland that are fed from the surfacing of groundwater at the shore. The potential risks to these features would be in terms of flow interception and contamination. The wetlands are fed from deep groundwater unlikely to be intercepted by the proposed activities.
Landscape	**Soil erosion and slope destabilisation**	• The site is steep, and the unauthorised clearing of indigenous vegetation resulted in the increased risk of erosion and associated risk to road users directly below the site. • Erosion will also need to be managed and mitigated during the construction phase
Impacts identified by the EAP	**Impacts on wildfire management and impacts of wildfire hazard on development**	• The site is located within a fire-prone and fire-dependent ecosystem, and is located in an area at high risk from periodic wildfires that could damage or destroy structures on the site if not adequately planned and designed for, and managed during the construction phase.
	Faunal impacts due to loss of habitat	• The construction of the proposed dwelling may impact the fauna on the site as a result of habitat alteration and construction-related activities.
	Baboon management	• Chacma baboon (*Papio ursinus*) are common on the Cape Peninsula. Impacts on this species includes safety risks associated with construction material, conflict with construction workers and property occupiers particularly if food is left out or waste is not disposed of appropriately.
	Waste management	• Types of waste that will be generated during and post construction include building materials (e.g. concrete spoil, bricks, tiles etc.), domestic waste and recyclable waste (e.g. wood, plastic etc.)
	Light impacts	• The proposed development of a single residential dwelling will include lighting, although this is proposed to include LED bulbs, lighting control systems (motion and lux sensors), and outdoor solar LED units will reduce the overall energy use. Therefore, the overall impact of lighting on nocturnal animals and as a visual nuisance is anticipated to be very low.
	Traffic impacts	• The proposed development is located directly adjacent to the coastal main road (Witsands Road) and traffic impacts are likely to occur associated with the movement of construction vehicles to and from the site.
	Noise and vibration	• Construction of the proposed development will include earthworks on the site and associated noise and vibration caused by earthmoving machinery. The location of the site outside of the urban development of Misty Cliffs localises these impacts to the site itself and road users. • Rock blasting may be required to create the platforms and roadway
	Dust	• Construction of the proposed development will include earthworks on the site and associated dust from earthmoving machinery. The location of the site outside of the urban development of Misty Cliffs localises these impacts to the site itself and road users.

	Visual disturbance / impacts on sense of place	• The proposed development is to be located off the coastal main road (Witsands Road) which means that some visual disturbance is possible during the construction phase especially for road users. The construction of the development will not inhibit the views of any adjacent properties due to the dwelling being outside of the urban footprint of Misty Cliffs and above the coastal main road (scenic drive). The impacts on visual elements and sense of place are not anticipated to be significant due to the context of the proposed development (small private dwelling outside of the urban edge).
	Socio-economic impacts	• The construction of the proposed development is anticipated to provide temporary employment for construction workers and economic support to companies from which building materials are bought which has, albeit small, positive impacts on the local economy.

The No Go alternative is usually considered to mean a continuation of the status quo, which in this case is taken to mean no further habitat loss to development, no alien plant invasion, some fire suppression in parts due to proximity of Misty Cliffs houses, and no grazing or trampling by livestock. Confidence in the likelihood (or absence) of impacts is moderate to high, and the No Go alternative would on balance be the environmentally preferred alternative, with perhaps a Neutral botanical impact (Helme, 2025).

In respect of a section 24 application, the option of not implementing the activity ("no-go"), includes the option of ceasing the activity, not implementing continuation of the activity, refusal of the commenced activity and complete rehabilitation of the affected site. In this case, the refusal of the activity and rehabilitation of the site would result in the rectification of existing and avoidance of future indigenous vegetation loss. Although no significant negative impact on aquatic ecosystems or freshwater resources (Belcher, 2025) is anticipated, the botanical specialist has noted that the anticipated loss of indigenous vegetation on the site associated with the construction of the proposed development poses a Low negative impact due to the small scale of the development, large area of the site and avoidance/minimised impact on SoCC. Post construction, the development is anticipated to have a Low to Medium negative botanical impact in the immediate vicinity of the house due to fire suppression, disrupted ecological connectivity and mostly due to the impact of Argentine ants on seed dispersal. According to Helme (2025), the No Go alternative would clearly have had a lower direct (construction phase) botanical impact than the clearing and/or the proposed development - presumably best rated as Neutral.

The applicant, who is also the landowner, is willing and eager to rectify the damage done to the indigenous vegetation on Farm 974/1 and Farm 979/9, and has carefully considered the advice of the botanical specialist in the location of the proposed house. The development of a single residential dwelling is considered a primary use of the land zoned for Agricultural Use and the adjustment of the house position and use of green technologies reflect the applicants desire to minimise, mitigate and avoid environmental degradation where possible should authorisation of the development be granted. Thus, although the proposed development is associated with actual and potential negative impacts to the affected area, the proposed single residential house has already

acquired municipal approvals for construction in addition to the appointment of construction and landscaping contractors. Given that the site is privately owned by the applicant, the proposed small, private, single residential development is considered a reasonable use of the land that is also permitted as a primary use according to the Agricultural zoning of the site, provided that negative environmental impacts are not unacceptable. With implementation of recommended avoidance, mitigation and management measures outlined in this report, the risk to aquatic and terrestrial ecosystems can be adequately reduced. **The No-go Alternative is not preferred**.

1.5 Mitigation of impacts

This EMPr gives effect to the mitigation measures prescribed in the environmental impact assessment. Recommended mitigation measures prescribed by the specialists are set out in Table 2.

Table 2. Key mitigation measures prescribed during the EIA process

Specialist study	Impacts	Specialist mitigation measures
Botanical (Terrestrial Biodiversity)	**Terrestrial biodiversity impacts due to the continued development of the house and access road**	• All approved development footprints must be surveyed and staked out prior to any site development. • Once this has been done a temporary fence (2 strand rope or wire, and/or with 1m high black shade cloth) must be erected at a reasonable 3m distance from the approved footprints, to allow for working space, and no disturbance of the vegetation beyond this fence may be allowed. • The steepest parts must covered with staked biodegradable biddim cloth (to control wind and water erosion), loose rock has been stacked on the slope along the M65, and the cut branches must be stacked along the contours at 4m intervals (to break and prevent significant surface flow runoff), with seed shaken out onto the bare surfaces between the stacked vegetation. • Loose rock must be stacked on the slope along the M65, and the cut branches must be stacked along the contours at 4m intervals (to break and prevent significant surface flow runoff), with seed shaken out onto the bare surfaces between the stacked vegetation • No material may be dumped or stored beyond the fence • Only locally indigenous Fynbos/Strandveld plant species should be planted on site, and the planting list is to be approved by the botanist. • No soil should be brought onto site, to minimise the likelihood of Argentine ant invasion. • Compost should also ideally not be brought onto site, for the same reason, and thus compost should be made only from locally sourced organic matter, such as that generated by the required annual firebreak clearance. • Care should be taken to avoid or minimise organic waste, rubble, construction related disturbance and dumping, as these all attract and provide nest sites for alien invasive Argentine ants. • Search and Rescue for all useable plant material from the development footprint (probably mostly the few bulbs and succulents on site) must be undertaken prior to site development, and the rescued plants kept in a nursery for re-use on site once construction is complete

		• A firebreak around the dwelling would be advisable, particularly on the south, east and north sides. This firebreak should be brushcut (no soil disturbance) every November, and should be at least 5m wide, and ideally as much as 10m wide. • A roof sprinkler system would be strongly recommended, to reduce fire danger. • Gutters should be metal, not plastic, also to reduce the risk of flying embers setting alight the gutters. • A professional entomologist or ant control expert should be brought in a year after construction is complete to monitor and survey for Argentine ants (*Linepithema humile*). If detected they should be poisoned using 9% Fipronil* which the workers will disperse to their nest sites.
Freshwater (Aquatic Biodiversity)	**Potential disturbance of watercourses**	• Adequate stormwater, sanitation and solid waste services must be in place and properly maintained. The stormwater management measures must prevent direct runoff from the residence and road onto the downstream R65 tar road and from there into the sensitive coastal wetlands. Infiltration of stormwater and dispersion of the flow should be encouraged through use of permeable paving, planting of local indigenous vegetation and shaping of the surface to prevent concentration of runoff; • If a conservancy tank is to be utilised, it must be regularly evacuated and maintained to ensure that no contamination of groundwater takes place. • Any consideration of groundwater use would need to follow an investigation to ensure that the abstraction of groundwater would not impact on the groundwater flow to the downstream coastal wetland; • Only appropriate local indigenous vegetation should be utilised to landscape the disturbed areas within the residence and access road, and care should be taken to not introduce any alien invasive plant seed to the site; • A buffer from the Varingskloof drainage corridor and seep areas, as delineated in Figure 1-C, should be maintained into which no activities associated with the proposed residence should take place such as the establishment of wide firebreaks (greater than 10m) around the residence or access roads.
Heritage	**Potential archaeological and palaeontological resources**	• The appointed heritage specialist found no significant heritage or cultural impacts to be associated with the proposed development • Heritage Western Cape has concurred that 'there is no reason to believe that the proposed dwelling on Farm 974 Portion 1, Main Road, Misty Cliffs, will impact on heritage resources.' • Should any heritage resources, including evidence of graves and human burials, archaeological material and paleontological material be discovered during the execution of the activities above, all works must be stopped immediately, and Heritage Western Cape must be notified without delay.

* Buczkowski, G. and T. Wossler. 2019. Controlling invasive Argentine ants, Linepithema humile, in conservation areas using horizontal insecticide transfer. Scientific Reports, 9:19495.

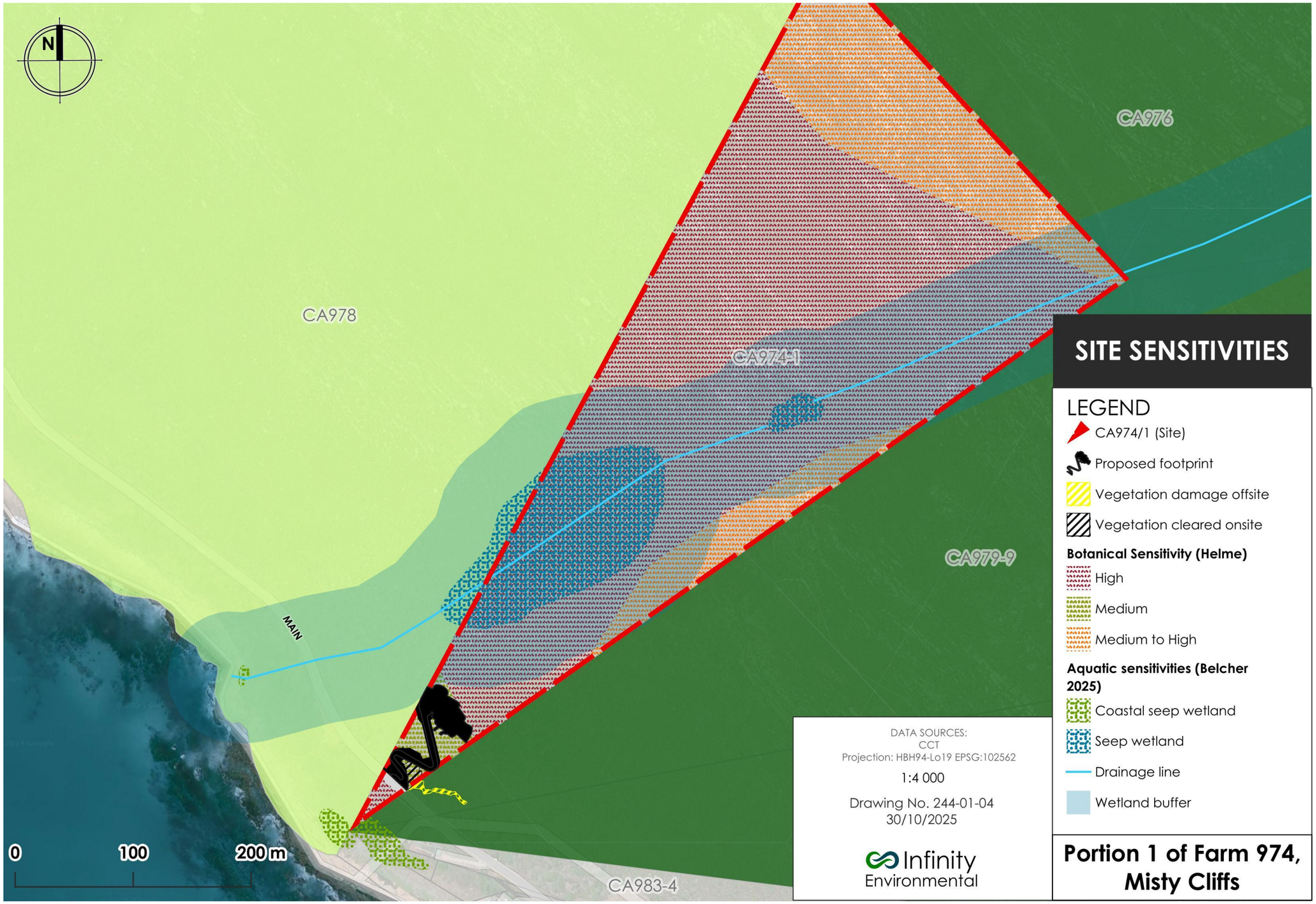


Figure 1-D: Proposed development superimposed on terrestrial and aquatic sensitivities

1.6 Authors of the EMPr

This EMPr has been compiled by the Environmental Assessment Practitioner (EAP) based on best practice environmental management requirements. Details of the EAP who prepared the EMPr are as follows:

Table 3: Authors of the EMPr

Authors	Qualification	Professional registrations	Years of experience	Relevant expertise
Jeremy Rose	B.Sc. (Hons) Environmental and Geographical Science	Registered E.A.P. 2019/1116 Pr.Sci.Nat 120148 Member of IAIAsa	11+	More than 50 EIAs or EMPrs
Kelly Gilmour	M.Sc. Biological Science (Marine)	Candidate E.A.P. 2024/8037 Cand.Sci.Nat. 169880 Member of IAIAsa	2	Project support for 3 EIAs or EMPrs
Kudakwashe Chimatira	B.Sc. (Hons) Geography and Environmental Studies	Candidate E.A.P 2023/7160 Member of IAIAsa	3+	4 EIAs or EMPrs

Jeremy Rose has 11 years' experience in the field of environmental management and impact assessment and has managed multiple EIAs and Basic Assessments in South Africa. He holds an Honours degree in Environmental and Geographical Science and is an Environmental Assessment Practitioner duly registered with the Environmental Assessment Practitioners Association of South Africa. Kelly Gilmour and Kudakwashe Chimatira are registered Candidate EAPs.

The EMPr also draws on specialist reporting and assessments by the specialists listed in.

Table 4: Specialist studies

Role	Organisation	Name
Botanical Specialist	Nick Helme	Nick Helme Botanical Surveys
Freshwater Specialist	Antonia Belcher	BlueScience
Heritage Specialist	Jonathan Kaplan	Agency for Cultural Resource Management

2 APPROACH AND STRUCTURE

2.1 Structure of EMPr

The EMPr is structured as a set of nested environmental management plans, as shown in Figure 2-A. Aspects of these will be supplemented by more detailed levels of planning as and when the proposed development is implemented, as indicated.

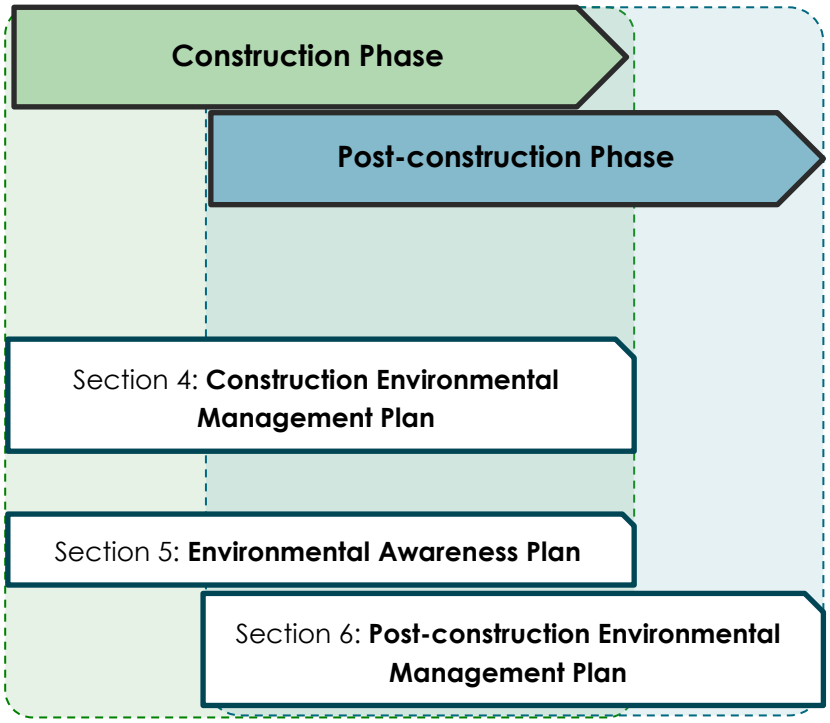


Figure 2-A. Schematic of EMPr content and structure

2.2 Legislative compliance

A key objective of the EMPr is to satisfy the requirements of Appendix 4 of the amended NEMA EIA Regulations published in Government Notice No. R 326 of 7 April 2017. These regulations prescribe the content of the EMPr and specify the type of supporting information that must accompany the submission of the report to the competent authority. An overview of where the requirements are addressed in this EMPr is presented in Table 5.

Table 5: Compliance with EIA Appendix 4 Requirements

Appendix 4 of EIA Regulations	
1. An EMPr must include- (a) details of– (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 1.6 of EMPr
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 1.1 and sections 4 to 6: 1st column of table
c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Figure 1-D
(d) a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including— (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Sections 4 and 6: 2nd column of table
e) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	Sections 4 and 6: 3rd column of table
(f) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Sections 4 and 6: 4th column of table
g) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Sections 4 and 6: 5th column of table
(h) an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 3 and Sections 4 and 6: 6th column of table
(i) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Sections 4 and 6: 5th column of table
j) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Sections 4 and 6: 4th column of table

(k) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Sections 4 and 6, responsible parties noted in Section 3.
l) an environmental awareness plan describing the manner in which— (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 5
m) any specific information that may be required by the competent authority	Not applicable

2.3 Content of the EMPr

Where applicable, each section of the EMPr is divided into three phases of the project life cycle, namely:

- The Pre-construction Phase, which includes the activities undertaken without environmental authorisation;
- The Construction Phase, which begins after environmental authorisation is granted with commencement of physical activities on site and ends when the development has been fully constructed; and
- The Post-construction Phase, which begins once construction of the single residential development and access road is complete.

There is likely to be overlap between the above phases. A decommissioning phase is not included, as it does not apply to the single residential development. The EMPr includes the findings and recommendations of the EIA Process and specialist studies and or compliance statements. The EMPr may be updated with additional information or actions during the design, implementation, and operational phases if applicable. A standardised approach is followed, in which outcomes are set, followed by management actions aimed at achieving the objectives. Management actions are accompanied by monitoring requirements, responsibilities, and targets where applicable. A tabular format is used for ease of reference.

Key terms used in the EMPr include:

- **Impact:** The potential positive or negative impact of the development that needs to be enhanced, mitigated or eliminated (as appropriate) to a desired state
- **Outcomes (objectives):** The desired state after mitigation or management
- **Management Actions:** The actions needed to achieve the objectives of enhancing, mitigating or eliminating impacts; taking into consideration factors such as responsibility, methods, frequency, resources required and prioritisation.
- **Monitoring:** The key monitoring actions required to check whether the outcomes are being achieved, taking into consideration methodology, frequency and responsibility.

2.4 Overarching objective

The overarching objective, from which the detail contained in this EMPr flows, is **to construct and operate the project in a manner that -**

- **Reduces** the risk of pollution or damage to ground or surface water, ecosystems, soils and air.
- **Minimises** nuisance and disruption to people residing in, working in or moving through the area.
- **Adheres** to all relevant environmental legislation.

2.5 Amendment of this EMPr

- Amendments shall be made as and when required to keep this EMPr up to date, and to provide for adaptive management in support of the management outcomes set out in the approved EMPr and the EIA.
- The EMPr may be amended due to:
    - Legislative changes;
    - Changes to the roles and organisational structure set out in chapter 3;
    - Amendments to the environmental authorisation;
    - Audits of the EMPr carried out in terms of the EIA Regulations;
    - Based on the annual reviews as set out below; or
    - Whenever deemed necessary by the competent authority.
- Amendments will be numbered sequentially (e.g. Amendment 001, Amendment 002, Amendment 003 etc.). The status of a particular page shall be reflected in the appropriate space of each page. Each amendment shall also have an effective date (the date on which the amendment was made).
- Amendments to the impact management **actions** may be effected immediately by the authorisation holder and must be reflected in the next environmental audit report submitted to the competent authority in terms of regulation 34 of the EIA Regulations. The record of revisions must be updated accordingly, and the revision number and status of a particular page shall be reflected in the appropriate space of each page.
- Amendments to the impact management **outcomes** stipulated in this EMPr are subject to an application for amendment to the competent authority, which must be submitted for approval by the authorisation holder and may require public participation. Such an amendment shall only become effective once approved by the competent authority.

2.6 Review of this EMPr

- The EMPr should be reviewed if and when deemed necessary.
- The Authorisation Holder will keep a record of all dates of review, even if review did not necessitate an amendment to the EMPr.
- The review may take the form of an internal audit or may form part of the external audit conducted in terms of regulation 34 of the EIA Regulations.
- The main aims of a review of the EMPr for purposes of a revision will, among other things, be to determine the following:
    - Ability of the EMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis
    - Conformity and adherence to the minimum legislative requirements;
    - Simplicity and clarity of the content and text; or
    - The incorporation of practical experience gained during implementation

3 PROJECT ROLES AND STRUCTURE

The general roles to be defined are those of the:

- Authorisation holder
- Environmental Control Officer
- Contractor (Principal Contractor / Landscape specialist/ Project Manager); and
- Environmental Auditor

The specific titles referred to may vary, but the intent of this section is to broadly define expectations and responsibilities for key role players in the implementation of the EMPr.

3.1 Authorisation Holder

The holder of the Environmental Authorisation, should it be issued, will be responsible for ensuring that the conditions of such authorisation are fully adhered to. It is expected that the authorisation holder will appoint the Environmental Control Officer and Contractor during the implementation phase. The responsibility for the implementation of this EMPr lies with the Authorisation Holder. Commonly, responsibilities borne by the Authorisation Holder are delegated to a project manager.

Key responsibilities include ensuring that:

- The ECO is provided with the necessary information in order to adequately undertake their responsibilities.
- This EMPr is included in the contractual agreements with all contractors and subcontractors,
- Method Statements requested by the ECO are provided timeously.
- Corrective action is implemented as required; and
- Appropriate records and information regarding compliance with the EMPr requirements are maintained and made available to the ECO.

3.2 Environmental Control Officer

An independent Environmental Control Officer (ECO) must be appointed for the duration of the implementation phase of the development to ensure compliance with the EMPr and conditions of the EA. The ECO's role also includes monitoring compliance with other environmental legislation, the monitoring of environmental impacts, and the keeping of accurate records.

The ECO shall update the EMPr when necessary and shall compile a monitoring checklist or protocol based on the EMPr. The ECO's role includes the following aspects:

- Periodic environmental audits during the implementation phase of the proposed project to monitor and record environmental impacts and nonconformances, and to monitor site activities to ensure adherence to the specifications contained in the EMPr, using a monitoring checklist.
- Maintain a record of site visits and audits, a copy of the environmental authorisation (should it be granted) and other permits and licenses, a register of non-conformances, and a copy of previous environmental audits.
- Prior to commencement, the ECO must meet on site with the Contractor representative to confirm designated development and no-go areas and to confirm the method statements required.
- Request, review and approve Method Statements from the contractor and sub-contractors prior to the commencement of the activities concerned.
- Ensure that the contractors and sub-contractors and their employees have received the appropriate environmental awareness training.

- Meet with the contractors to discuss the implementation of this document.
- Identify appropriate corrective measures if transgressions occur.
- Keep a register of monitoring activities and results
- Assist in finding environmentally acceptable solutions to implementation problems.
- Identify and make amendments to the EMPr where appropriate.
- Conduct an environmental inspection on completion of the implementation period and prepare a close-out report.

3.3 Contractor

The role of the contractor is as follows:

- The Project Contractor shall ensure that all employees, contractors and sub-contractors are made aware of the EMPr and their responsibilities.
- A Landscape contractor shall be responsible for landscaping, slope stabilisation rehabilitation and associated activities
- Prior to commencement, the Contractor must meet on site with the ECO representative to confirm designated development and no-go areas and to confirm the method statements required.
- Liaise with the ECO and Authorisation Holder (or representative) and ensure that works on site are conducted in an environmentally sensitive manner in accordance with this EMPr.
- Maintain on site a copy of this EMPr and all environmental authorisations and licenses pertinent to the development on site.
- Ensure that all appointed contractors and sub-contractors repair, at their own cost, any environmental damage because of a contravention of the specifications contained in the EMPr, to the satisfaction of the Project Owner's ECO.
- Ensure that all employees (permanent and temporary) and all sub-contractors that work on the site for longer than two days, receive environmental awareness training within one week of being on site.
- Designate an Environmental Officer (EO), or employ a designated suitably qualified individual to fulfil the role of an Environmental Officer, to monitor and report on the daily activities on-site during the implementation period. The Contractor and individual contractors may designate Environmental Officers to liaise with the ECO on environmental matters.

NOTE: If the vertical alignment of the water pipe crossing the site needs to be realigned as a result of its depth relative to the proposed driveway, the procedures as stipulated by the AIA will be followed and an Asbestos approved contractor might be required to undertake the water connections and realignment of the pipe.

3.4 Environmental Auditor

An independent Environmental Auditor must be appointed for the duration of the implementation phase of the development responsible for assessing the ECO's and subsequently the Contractor's compliance with environmental regulations, policies, and standards as stipulated in the EMPr and ECO Reports.

The Environmental Auditor's role includes the following aspects:

- Periodic environmental audits (biannual) to perform comprehensive audits to evaluate the environmental performance of an organization. This includes site inspections, reviewing documentation (i.e) EMPr, ECO Reports and other documentation contained in the Contractor's file.

- Conducting follow-up audits to ensure that corrective actions have been implemented and to verify ongoing compliance.
- Preparing detailed audit reports that summarize findings, including areas of compliance and non-compliance, and providing actionable recommendations for improvement.

4 DESIGN AND CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

The outcomes, management measures, and monitoring requirements detailed in this section are applicable to the design and implementation phases of the proposed activity.

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
4.1 Terrestrial biodiversity impacts due to the development of the house and access road	Prevent terrestrial biodiversity disturbance beyond the development footprint Control the spread of alien and invasive plant species Minimise habitat loss and degradation of indigenous vegetation	4.1.1 **Demarcate approved development footprints by surveying and staking out prior to any site development.** 4.1.2 **No construction-related activities or further damage should occur on Farm 979/9. The property boundary should be demarcated using temporary fencing to mark the 'no-go' area'.** 4.1.3 **Erect a temporary fence (2 strand rope or wire, and/or with 1m high black shadecloth) must be erected at a reasonable 3m distance from the approved footprints, to allow for working space, and no disturbance of the vegetation beyond this fence may be allowed.** 4.1.4 **No material may be dumped or stored outside the demarcated works areas.**	Site inspection	Prior to construction	ECO
		4.1.5 **Conduct a Search and Rescue for all useable plant material from the development footprint prior to site development, and maintain the rescued plants in a nursery for re-use on site once construction is complete**	Check records of plant collection (lists, counts) and photos of replanting	Before site clearance After construction completion	ECO
		4.1.6 **Rehabilitate any areas disturbed during construction to the satisfaction of the ECO. Only locally indigenous Fynbos/Strandveld plant species should be planted on site, and**	Species list determined by botanist and planting/rehabilitation monitored after construction	After construction completion	Botanist and ECO

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
		the planting list is to be approved by the botanist.			
		4.1.7 **No soil should be brought onto site, to minimise the likelihood of Argentine ant invasion.** 4.1.8 **No soil should be brought onto site, to minimise the likelihood of Argentine ant invasion.** 4.1.9 **Compost should also ideally not be brought onto site, for the same reason** 4.1.10 **Care should be taken to avoid or minimise organic waste, rubble, construction related disturbance and dumping, as these all attract and provide nest sites for alien invasive Argentine ants.**	ECO inspections	Periodically during construction phase	ECO
		4.1.11 **Disturbed areas must be monitored for opportunistic alien and invasive plant species (e.g. *Acacia cyclops*) which should be removed. This includes the vegetation damaged on Farm 979/9 during the unauthorised clearing of vegetation.**	Monitoring of vegetation on site during construction during ECO inspections	Ongoing throughout the construction phase	ECO
4.2 Potential disturbance of watercourses	Avoid disturbance of the downslope coastal wetland Avoid encroachment into the delineated seep wetland buffer	4.2.1 **Adequate stormwater, sanitation and solid waste services must be in place and properly maintained. The stormwater management measures must prevent direct runoff from the residence and road onto the downstream R65 tar road and from there into the sensitive coastal wetlands. Infiltration of stormwater and dispersion of the flow should be encouraged through use of permeable paving, planting of local indigenous**	Monitoring of construction activities and ECO inspections	Ongoing throughout the construction phase	Contractor and ECO

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
		vegetation and shaping of the surface to prevent concentration of runoff.			
		4.2.2 **A buffer from the Varingskloof drainage corridor and seep areas, as delineated in Figure 1-C, should be maintained into which no activities associated with the proposed residence should take place such as the establishment of wide firebreaks (greater than 10m) around the residence or access roads.**	Demarcated on site (e.g. temporary fence) Monitoring of construction activities to ensure no-go areas are avoided daily and via ECO inspections	Prior to construction Ongoing the throughout construction phase	Contractor ECO
		4.2.3 **Waste must be managed appropriately and disposed of offsite at the nearest appropriate landfill / waste management facility.**	Monitor waste disposal slips and waybills via site audits and record non-compliance and incidents.	Ongoing the throughout construction phase	Contractor and ECO
		4.2.4 **Portable ablution facilities should be routinely cleaned and securely fastened to the ground.**	Monitor service slips and record non-compliance and incidents	Ongoing the throughout construction phase	Contractor and ECO
		4.2.5 **Any consideration of groundwater use would need to follow an investigation to ensure that the abstraction of groundwater would not impact on the groundwater flow to the downstream coastal wetland.**	A groundwater investigation by a qualified groundwater specialist must be completed before any abstraction takes place	If / when groundwater abstraction is required.	ECO
4.3 Stormwater runoff	Minimise erosion and runoff	4.3.1 **Slow the flow of surface runoff and allow for collection of sediment on site.**	Use of sandbags to slow down the runoff and allow for the collection of sediment behind the bags. Use of silt fences to retain sediment within the site.	Ongoing the throughout construction phase	ECO and Contractor
		4.3.2 **Ensure stormwater design minimises stormwater runoff post construction**	Inclusion of green roofs and lawns	Designs finalised before construction	Authorisation holder, civil

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	**Frequency**	**Monitored by**
		4.3.3	Rainwater harvesting in 3 x 10 000 L Jojo tanks Stormwater cutoff trenches to divert surface flows around the building A slightly depressed section constructed out of stone riprap will be placed at the outlet of the headwalls and cutoff channels to trap sediment and discharge the stormwater runoff over a wider area (mitigating erosion)		engineer, architects
4.4 Faunal impacts due to loss of habitat	Minimise disturbance to faunal species	4.4.1 **Any faunal species found on the site are to be relocated by an appropriately trained and permitted person to a safe area offsite. A record of any found and relocated from excavations is to be kept.** 4.4.2 **Every morning all open trenches should be checked for wildlife. Any trapped animals must be released in the vegetation closest to the trench. If venomous snakes become trapped an expert in dealing with these animals must be called upon to assist with relocation. All necessary permits must be obtained**	Register of animals found / relocated kept on site	Ongoing the throughout construction phase	Contractor and ECO

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
		4.4.3 **The site should be kept clean and secure during construction to avoid risk of injury or harm to animals typical of the area.**	Monitoring of construction activities and ECO inspections		
4.5 Soil erosion and slope destabilisation	Minimise soil erosion, improve slope stability and reduce risk to road users	4.5.1 **Erosion mitigation measures should be implemented for areas left exposed on steep slopes.** 4.5.2 **This can include the use of staked bidim cloth or other measures as approved by the ECO.** 4.5.3 **During the rainy season erosion control measures may need to be reassessed and interventions such as silt curtains installed.**	Monitor construction activities and identify areas at risk of erosion on site	Ongoing the throughout construction phase	Implemented by Contractor Monitored by Contractor and ECO
4.6 Light impacts	Minimise light impacts	4.6.1 **Keep construction lighting to a minimum and prohibit "always-on" bright security lighting** 4.6.2 **Security lights should be automatically controlled to go off after five minutes** 4.6.3 **Light pool to be contained within the area of the property**	Installation and monitoring of appropriate lighting systems	Ongoing the throughout construction phase	Implemented by Contractor Monitored by Contractor and ECO
4.7 Traffic impacts	Minimise traffic impacts during construction phase	4.7.1 **The contractor must provide a traffic marshal for situations where heavy construction traffic may impede normal traffic flows on any roads adjacent to the site.**	Traffic marshal to direct traffic flow	As needed during construction	Contractor
		4.7.2 **All drivers and machinery operators must exercise due caution when entering/ exiting the site.** 4.7.3 **Construction vehicles must adhere to the load carrying capacity of road surfaces and adhere to all other prescriptive regulations regarding the use of public roads by construction vehicles.** 4.7.4 **Any large or abnormal loads (including hazardous materials) that must be**	Monitoring of activities daily and via ECO inspections	Ongoing throughout the construction phase	Contractor and ECO

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
		transported to/ from the site are routed appropriately, and that appropriate safety precautions are taken during transport to prevent road accidents 4.7.5 **All vehicles travelling on site must adhere to the specified speed limits (10kph)** 4.7.6 **Warning signage (i.e. "trucks turning") must be erected near the access point to the site.** 4.7.7 **No member of the workforce will be permitted to drive a vehicle under the influence of alcohol or narcotic substances.** 4.7.8 **No construction traffic may access the site after normal working hours as defined by the local authority.**			
4.8 Visual disturbance / impacts on sense of place	Minimise visual impacts and disturbance to the sense of place	4.8.1 **Manage stockpile and laydown areas for cleanliness and appearance.** 4.8.2 **Roof and screen waste areas.** 4.8.3 **Avoid unnecessary signage or advertisement on site.** 4.8.4 **Works to be restricted to site perimeter.** 4.8.5 **Stockpiling of rubble and soil in designated areas.** 4.8.6 **Consult with the ECO when determining the appropriate site for the site camp.** 4.8.7 **The site camp must be kept neat and tidy and free of litter at all times.** 4.8.8 **Waste must be managed according to the EMPr and the mitigation measures listed above in terms of waste management. Good housekeeping practices on site must be maintained to ensure the site is kept neat and tidy.** 4.8.9 **The site camp, storage facilities, stockpiles, waste bins, and any other temporary structures on site should be located in such a**	Monitor by visual inspections daily Observations during site visits to be recorded in ECO monitoring audit reports	Ongoing throughout the construction phase	Contractor ECO

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
		way that they will present as little visual impact to surrounding residents and road users as possible. 4.8.10 **The site camp may require visual screening via shade cloth or other suitable material.** 4.8.11 **Construction vehicles must enter and leave the site during working hours.**			
4.9 Noise and vibration	Minimise noise and vibration impacts	4.9.1 **All equipment utilised, and activities undertaken must be compliant with the Western Cape Noise Control Regulations, P.N. 200/2013.** 4.9.2 **Restrict construction activities generating noise outputs of 85 dB (A) or more to stated working hours. Should the Contractor need to do this work outside of these hours, the approval of the ECO must be obtained, and surrounding land users must be informed prior to the work taking place.** 4.9.3 **No amplified music shall be allowed on site. The use of audio equipment shall not be permitted unless the volume is kept sufficiently low to be unobtrusive. The Contractor shall not use sound amplification equipment on site, unless in emergency situations** 4.9.4 **Silencers must be installed and mounted on machinery, vehicles and earth-moving equipment** 4.9.5 **The Contractor must post signage indicating contact details of the Contractor and/or ECO on the site to allow for reporting of complaints.**	Maintain complaints register on site. If two or more noise complaints are received, the ECO must investigate whether the noise generated on site exceeds thresholds outlined in the Western Cape Noise Control Regulations	Ongoing throughout the construction phase	Contractor and ECO
		4.9.6 **In the event of rock blasting, the blast must be covered with a sufficient overburden of**	Maintain complaints register and ensure rock	As needed	Contractor, ECO and suitably

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
		soft soil. The soil should be fine with no large rocks and boulders. 4.9.7 **Blasting near the industrial and private structures will require zero fly rock. Controlling fly rock, and ground vibration should be prioritised.** 4.9.8 **Neighbours must be notified in advance of blasting operations.** 4.9.9 **Monitoring of the blast operations by a suitably qualified person is recommended.** 4.9.10 **A dilapidation survey of any infrastructure within the blast radius, as determined by a suitably qualified person.**	blasting is led by a suitably qualified person		qualified personnel.
4.10 Dust		4.10.1 **Exposed surfaces should be stabilized immediately. Areas left bare for longer than two weeks must be covered to reduce windblown dust.** 4.10.2 **Screening and/or temporary fencing to control the movement of sand on the site should be installed if necessary.** 4.10.3 **Non-potable water should be used for short-term dust stabilisation. Grey water of sufficient quality may be used.** 4.10.4 **Excavation, handling, and transportation of erodible materials must be avoided under high wind conditions.** 4.10.5 **Access and haulage roads established within the site must be constructed of a suitable material that does not generate excessive dust when driven on** 4.10.6 **Off-road vehicle and plant movements within the site must be avoided as far as possible, and strict speed limits must be enforced to reduce dust generation.**	Review works programme beforehand to confirm best time for activities Monitor activities daily and report non-compliance ECO site inspections	Prior to construction Ongoing throughout the construction phase Ongoing throughout the construction phase	Contractor and ECO Contractor ECO

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
4.11 Impacts on wildfire management and impacts of wildfire hazard on development	Prevent property damage and/or loss	4.11.1 **Review construction and building plans to ensure consistency with the house designs which should be based on the concept of the 'Home Ignition Zone' which acknowledges that most home ignitions in wildfires occur due to embers and small flames. Specifically:** 4.11.2 **Planted 'green' roofs and planted trellises with locally indigenous, fire resistant species.** 4.11.3 **Roof eaves should not have openings that permit embers to blow into the roof space. Vents should be screened with non-combustible mesh, and soffits should be flat to direct fire outward.** 4.11.4 **Gutters and fascias should be made from non-combustible materials** 4.11.5 **Wooden decks should be avoided.** 4.11.6 **Non-combustible roof coverings and wall treatments are required.** 4.11.7 **Roof sprinklers or an irrigation system that permits the wetting down of walls, gutters, and surrounding vegetation should be installed**	Review building plans	Prior to construction	Authorisation holder, Contractor and ECO
		4.11.8 **Basic fire-fighting equipment must be available at all construction areas and facilities including a fire extinguisher of the appropriate type when welding or other "hot" activities are undertaken.**	Fire-fighting equipment to be present on site Compliance to be monitored	As soon as construction commences	Contractor
		4.11.9 **The Contractor shall appoint a fire officer who shall be responsible for ensuring immediate and appropriate action in the event of a fire.**	Appoint a fire officer Toolbox talks to include briefing all work personnel about the	When construction commences When construction commences on site and whenever new site personnel are present	Contractor

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
		4.11.10 **The Contractor shall ensure that all site personnel are aware of the procedure to be followed in the event of a fire.**	appropriate fire response procedures		
		4.11.11 **The Contractor shall submit a fire control and fire emergency method statement to the ECO for approval. The method statement shall detail the procedures to be followed in the event of a fire and the name of the appointed fire officer.**	Fire control and fire methods statement	Prior to construction	Submitted by Contractor Reviewed by ECO
		4.11.12 **Smoking shall not be permitted in those areas where it is a fire hazard. Such areas shall include any areas where the vegetation or other material is such as to make liable the rapid spread of an initial flame.**	Monitored on site ECO site inspections	Daily Ongoing throughout the construction phase	Contractor ECO
		4.11.13 **Firebreaks must be prepared and maintained with a width of between 8 and 10 metres, narrowing to approximately 6 metres east of the driveway where their width is constrained by the property boundary.** 4.11.14 **Firebreaks must be prepared by brush cutting, by hand, and must not include ploughing or ripping of topsoil.** 4.11.15 **Firebreak maintenance must take place in October-November annually, and must result in significantly reduced fuel loads and low vegetation heights within the break. They should be prepared in such a way as to permit 4x4 vehicle access** 4.11.16 **Waste material from firebreak preparation must be disposed of by mulching or composting on site, but may not be stacked within 5 metres of the break itself.**	Vegetation surrounding the demarcated development footprint should be brush cut to form the fire break as demarcated in Figure 6-A. The firebreak should be brush cut and should be at least 5m wide.	During the construction phase	Implemented by Contractor Monitored by ECO

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
4.12 Baboon management	Prevent baboon incidents during construction	4.12.1 **Correct disposal of waste to reduce the impact on baboons. This includes disposal of food waste to avoid attracting the baboons, as well as maintaining a well-organised site to prevent risk of injury to the baboons.** 4.12.2 **Avoid interactions with baboons by respecting them (i.e. don't throw rocks, run, make sudden movements, or provoke them)** 4.12.3 **Contact the Baboon Hotline should human-wildlife conflict occur.**	Regular site cleaning and removal of waste Site personnel to be trained on the appropriate procedures to be followed if baboons enter the site	Weekly or as required When construction commences on site and whenever new site personnel are present	Contractor
	Implementation of appropriate baboon-proof building designs	4.12.4 **Review building plans to ensure they incorporate baboon-proof aspects such as:** 4.12.5 **Round handles for exterior doors and internal bolts for sliding doors and windows** 4.12.6 **Doors, windows, fanlights, skylights and furniture should be resistant to inquisitive baboons able to operate ordinary types of knobs, handles, latches etc.** 4.12.7 **Door-closers are recommended where appropriate**	Review building plans	Prior to construction	Authorisation holder, Contractor and ECO
4.13 Waste management	Reduce waste management impacts	4.13.1 **Consult with the ECO when determining the appropriate site for the site camp.** 4.13.2 **The site camp must be kept neat, tidy and free of litter at all times.** 4.13.3 **Contractor is to prepare and implement a waste management plan for the construction phase.** 4.13.4 **Designate a waste management area, which should be an area of hardstanding with a roof and sides or consist of separate bins and skips and located outside of the 5-metre watercourse buffer**	Site monitoring daily and report non-compliance Monitor via site audits, keeping record of disposal slips and waybills Record noncompliance and incidents	Ongoing throughout the construction phase	Contractor and ECO

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
		4.13.5 **Litter and construction waste should be collected on site by the end of each day and stored in bins, skips, or other suitable storage** 4.13.6 **Only baboon-proof or lockable bins may be used on site.** 4.13.7 **Food waste must be stored in bins or skips that are covered and cannot be accessed by flies or rodents.** 4.13.8 **Waste should be separated into hazardous, general, and recyclable waste streams, with clearly designated bins and skips for each waste type.** 4.13.9 **Hazardous wastes, including materials contaminated with oils and hydrocarbons, must be removed from site by a suitably licensed contractor and manifests provided.** 4.13.10 **Other non-hazardous solid waste (e.g., refuse) to be disposed of at a licensed landfill.** 4.13.11 **A suitable waste contractor must be appointed to collect waste from site on a regular basis for correct disposal. Proof of disposal (waybills or waste disposal slips) must be retained and kept on file for auditing purposes.** 4.13.12 **If the volumes of waste stored exceed 80m³ for hazardous waste and/or 100m3 for general waste the National Environmental Management: Waste Act (NEM:WA) National Norms and Standards for the Storage of Waste in terms of Government Notice (GN) No. 926 of 29 November 2013 must be adhered to.** 4.13.13 **All rubble and waste must to be removed from site regularly and completely removed from site at the end of the construction phase.**			

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring		
			Method	Frequency	Monitored by
		4.13.14 **A method statement for the management of waste should be prepared by the contractor for review by the ECO** 4.13.15 **A method statement for the management of waste during the construction phase should be compiled by the contractor for review by the ECO .**			

5 ENVIRONMENTAL AWARENESS TRAINING PLAN

This section outlines the training by which the authorisation holder (via its appointed contractor during the construction phase) will inform its employees of environmental risks and the manner in which risks must be dealt with to avoid pollution or degradation of the environment. It may be adapted as needed to suit the circumstances in which it is implemented.

Course	Required attendees	Presented by	Course content	Timing	Records to be kept
Construction phase Environmental Awareness Training for manager	• Project Manager appointed by the authorisation holder • Principal contractor's contract manager, site agents, and assistant site agents (as applicable) • Contractor's designated environmental officer or SHE representative	ECO	• Overview of environmental authorisations and permits granted • Basic environmental law • Roles of the ECO, authorisation holder, project manager, and contractor • Purpose and content of method statements • Site sensitivities, including locations and sensitivity of wetland areas and conservation area • Management actions and measures for the construction phase as detailed in this EMPr • Record keeping requirements • Emergency procedures • Reporting and compliance monitoring	Prior to commencement of construction	• Declaration of adherence to Construction phase EMPr, signed by Contractor's representative • Register of attendance
Environmental Awareness Training for site personnel	• All site staff and personnel, including temporary staff and visitors to site • Maximum of 20 attendees at any one session	Contractor's designated environmental officer	Environmental do's and don'ts, including: • Access to work areas, location and identification of no-go areas • Damage to or picking of vegetation	Before any staff member begins work on site	• Register of attendance, identifying all attendees by name and ID number, the topics covered, the presenter, and the date and time.

Course	Required attendees	Presented by	Course content	Timing	Records to be kept
			• Managing animals found on site • Smoking and fires • Storing and handling fuels and oils • Storing and handling chemicals • Management of cement, cement bags, slurry, and wash water • Dust and noise • Water wastage • Waste management and litter • Waste site management • Ablution facilities • Plant and machinery maintenance and load management • Accident and incident reporting		

6 POST CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

The residential development on Fram 974/1, Misty Cliffs, in the post development phase will likely have potential impacts on the recipient community. The outcomes, management measures, and monitoring requirements detailed in this section are applicable only to the post development phase of the proposed estate and assumes completion of construction activity per precinct.

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring Actions		
			Method	Frequency	Responsibility
4.14 Impacts on wildfire management and impacts of wildfire hazard on development	Prevent damage and/or loss to property	4.14.1 **Implement firebreaks surrounding the development according to the fire management plan (Figure 6-A)** 4.14.2 **Functional roof sprinkler system and metal gutters**	The firebreak should be brush cut and maintained at least 5m wide	Every November	Authorisation holder
		4.14.3 **Fire-resistant planted roofs should be monitored for the accumulation of debris or opportunistic sprouting of other flammable plant species**	Any non-succulent species removed routinely	As needed	Authorisation holder
4.15 Post-construction impact on indigenous vegetation	Minimise loss of ecological connectivity Minimise invasion by Argentine ants	4.15.1 **Only locally indigenous Fynbos/Strandveld plant species should be planted on site, and the planting list is to be approved by the botanist.**	Seeds from on-site indigenous vegetation should ideally be used, or species approved of by the botanist	As needed	Authorisation holder
		4.15.2 **No soil should be brought onto site, to minimise the likelihood of Argentine ant invasion.**	A professional entomologist or ant control expert should be brought in to monitor and survey for Argentine ants.	1 year post construction	Authorisation holder
		4.15.3 **If Argentine ants are detected, they should be poisoned.**	Ants poisoned using 9% Fipronil which the workers will disperse to their nest sites.	As needed	Authorisation holder

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring Actions		
			Method	Frequency	Responsibility
4.16 Post-construction waste generation	Reduce waste management impacts	4.16.1 **The proposed development intends to use a conservancy tank which will be routinely cleaned** 4.16.2 **Managing grey water. Sewage will be reticulated to an appropriate wastewater treatment facility** 4.16.3 **Domestic waste will be adequately managed with the use of baboon-proof bins**	Monitoring and maintaining of waste management infrastructure	Ongoing throughout the post-construction phase	Authorisation holder
4.17 Post-construction baboon management	Avoid raiding of the residence or waste storage areas by troops of chacma baboons	4.17.1 **Routine food waste removal and good hygiene in waste storage areas.** 4.17.2 **Only baboon-proof or lockable bins may be used on site.** 4.17.3 **Lockable pantry or food cupboard and fridge cupboard** 4.17.4 **Round handles for exterior doors and internal bolts for sliding doors and windows** 4.17.5 **Doors, windows, fanlights, skylights and furniture should be resistant to inquisitive baboons able to operate ordinary types of knobs, handles, latches etc.** 4.17.6 **Door-closers are recommended where appropriate** 4.17.7 **Compost bins and worm farms should be lockable, and fruit and vegetable gardens enclosed by baboon-proof cages** 4.17.8 **Exclusion of any fruit trees and external compost heaps unless in a locked caged area or surrounded by fencing.** 4.17.9 **Contact the Baboon Hotline should human-wildlife conflict occur.**	Monitoring of baboon related incidents Report incidents	As required	Authorisation holder
4.18 Post-construction light pollution	Minimise light impacts	4.18.1 **Keep lights to a minimum and "always-on" bright security lighting shall not be allowed** 4.18.2 **Security lights should be automatically controlled to go off after five minutes**	Installation and monitoring of appropriate lighting systems	As required	Authorisation holder

Environmental aspect or impact	Impact Management Outcomes	Impact Management Actions	Monitoring Actions		
			Method	Frequency	Responsibility
		4.18.3 **Light pool to be contained within the area of the property**			
4.19 Potential pollution of watercourses	Prevent pollution to seep wetlands on site and coastal wetlands below the site	4.19.1 **Adequate stormwater, sanitation and solid waste services must be in place and properly maintained.** 4.19.2 **A buffer from the Varingskloof drainage corridor and seep areas, as delineated in Figure 1-C, should be maintained into which no activities associated with the proposed residence should take place such as the establishment of wide firebreaks (greater than 10m) around the residence or access roads.** 4.19.3 **Conservancy tanks must be routinely cleaned and sewage taken to an appropriate wastewater treatment facility to ensure that no contamination of groundwater takes place.**	Installation and maintenance of appropriate conservancy tank system No activities other than (minimal width and appropriately designed) private walking trails should occur beyond the development footprint	As required	Authorisation holder
4.20 Post-construction visual impacts / sense of place	Reduce the potential for negative visual impacts	**The visually sensitive design of the property provides mitigation against negative visual and sense of place impacts. These include:** 4.20.1 **Stone-faced walls** 4.20.2 **Planting of indigenous gardens (only locally indigenous Fynbos/Strandveld plant species should be planted on site, and the planting list is to be approved by the botanist)** 4.20.3 **'Buried', stepped and curved nature of the architecture embedding the house into the mountainside** 4.20.4 **Rehabilitation of areas disturbed during construction with locally indigenous vegetation (approved by the botanist) to increase visual buffering**	Aesthetically sensitive designs to be maintained	As required	Authorisation holder

ANNEXURE A

Figure 6-A: Proposed fire break surrounding the property footprint

ANNEXURE B

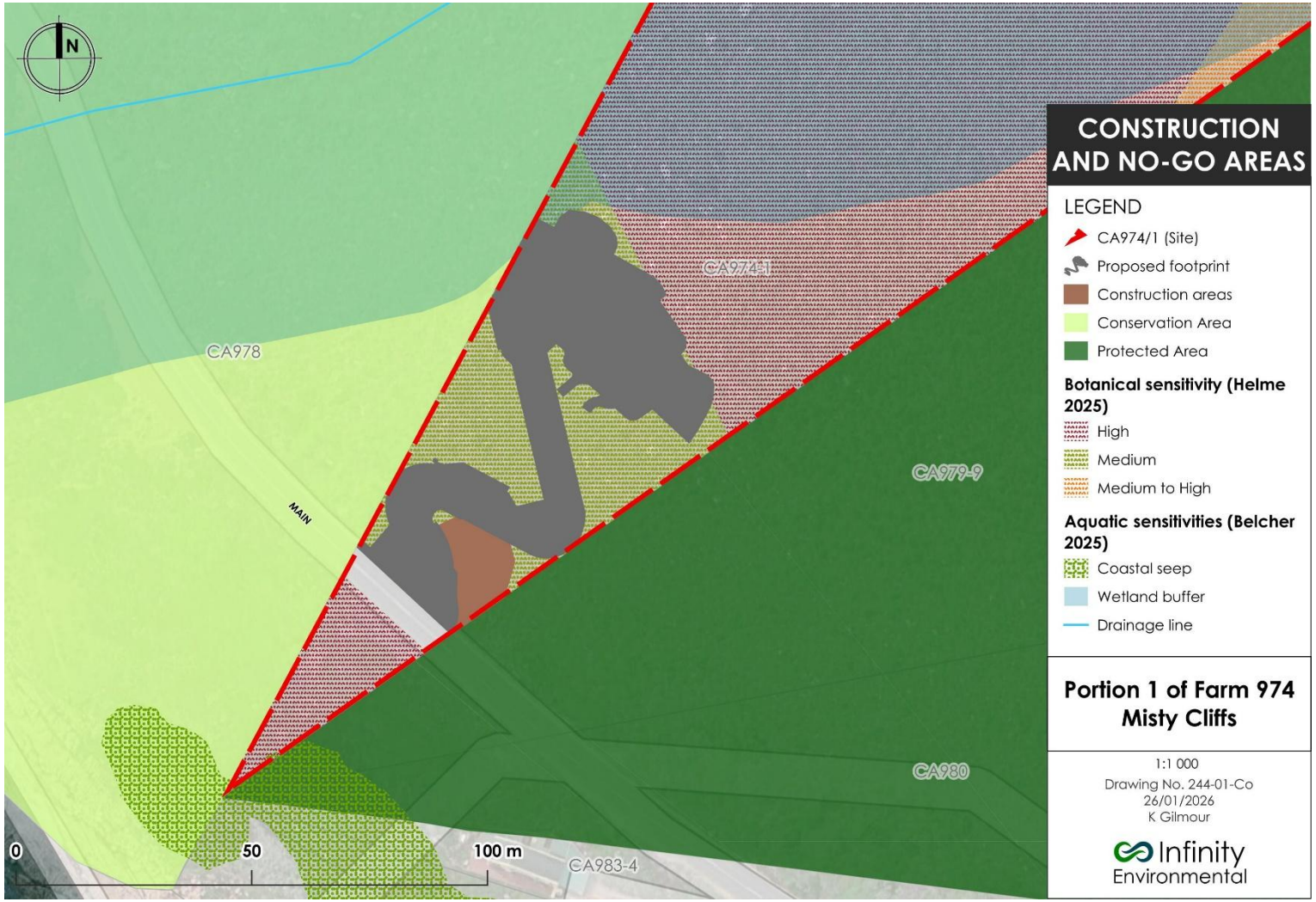


Figure 2: All areas except the proposed footprint and construction areas are no-go areas