APPENDIX H

Specialist Report(s), if any

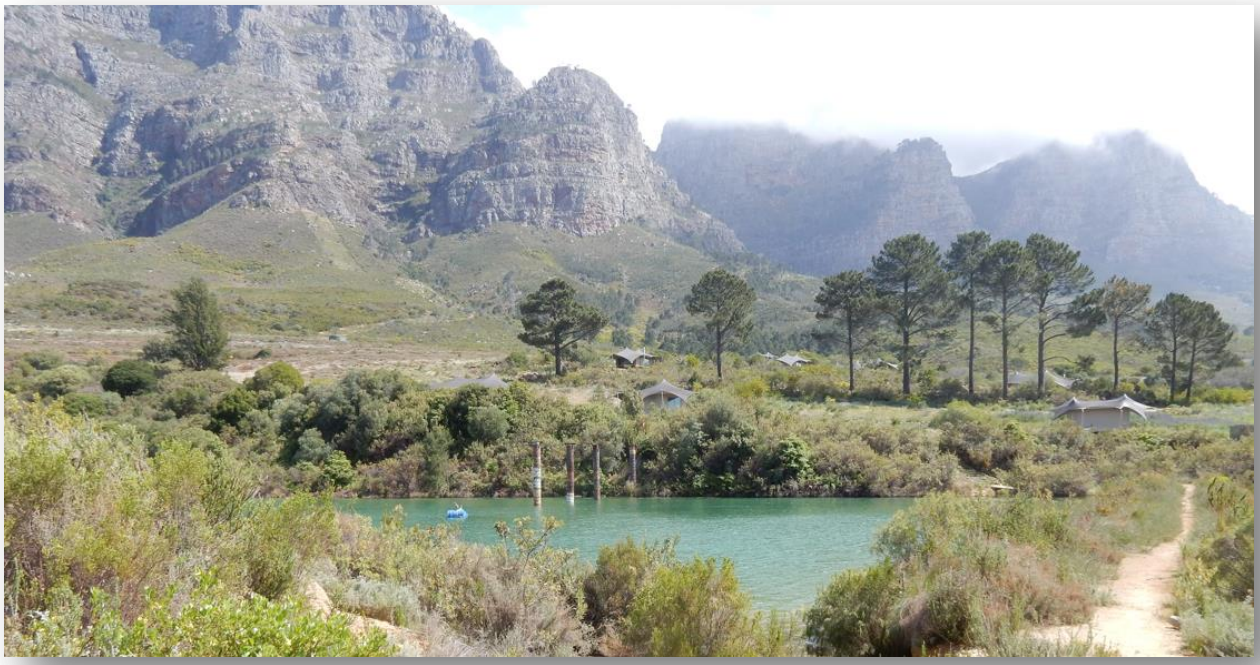
APPENDIX H (i)

Freshwater Impact Assessment

Freshwater Consulting

Environmental Impact Assessment of Founders Estate 5 Tented Camp, Boschendal Estate

Freshwater ecosystems



October 2021

DRAFT REPORT

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Submitted to: Chand Environmental Consultants

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Reg. No. 2007/064216/23

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1 Introduction

1.1 Background and Approach

The Freshwater Consulting Group (FCG) was approached by Chand Environmental Consultants to provide an environmental impact assessment (EIA) of the inland aquatic ecosystems potentially affected by development activities at the Tented Camp site on Boschendal Estate. The Tented Camp development is considered to be temporary, as the structures and services will be dismantled in the future. The inland aquatic ecosystems on the broader Boschendal Estate have been assessed by FCG on a number of occasions in the past, and a map of wetlands, watercourses and their recommended ecological buffers was provided for a Constraints Analysis of the whole site (see Figure 1.1), in March 2019 (Snaddon, 2019).

Specifically, the terms of reference for the EIA, and the approach followed, were as follows:

- Determine the location and extent of affected inland aquatic ecosystems. A site visit on 26th March 2020 enabled delineation (according the DWAF (2005) guidelines) of the inland aquatic ecosystems affected by the development. The ecosystems were mapped using a hand-held GPS, accurate to 2 – 3m. Suitable buffers were proposed around the aquatic ecosystems, based on the protocol of MacFarlane and Bredin (2016). The site was re-visited on 23rd September 2021, in order to further ground-truth the 2020 delineation.
- Assess the condition and ecological importance and sensitivity of the inland aquatic ecosystems: the accepted protocols for the assessment of ecological importance and sensitivity (EIS) and present ecological state (PES) were used.
- Describe and assess the impacts associated with the construction and operational phases of the development. The impacts expected to affect the inland aquatic ecosystems on and around the site were identified and described for the construction/removal and operational phases, according to the EIA regulations (April, 2017). The current layout was compared against the no go option.
- Provide input to water use authorisation: A number of Section 21 water uses are triggered by the development, and in addition, the development lies within the regulated area (within 500m of a wetland, and within 100m of a watercourse) for Section 21 (c) and (i) water uses. The relevant water uses were identified, and input provided for the authorisation process.
- Write a baseline report: the results of the site visit and the assessments described above are reported here. The report also highlights concerns regarding current development activities, and recommends mitigation measures for reducing or managing impacts.

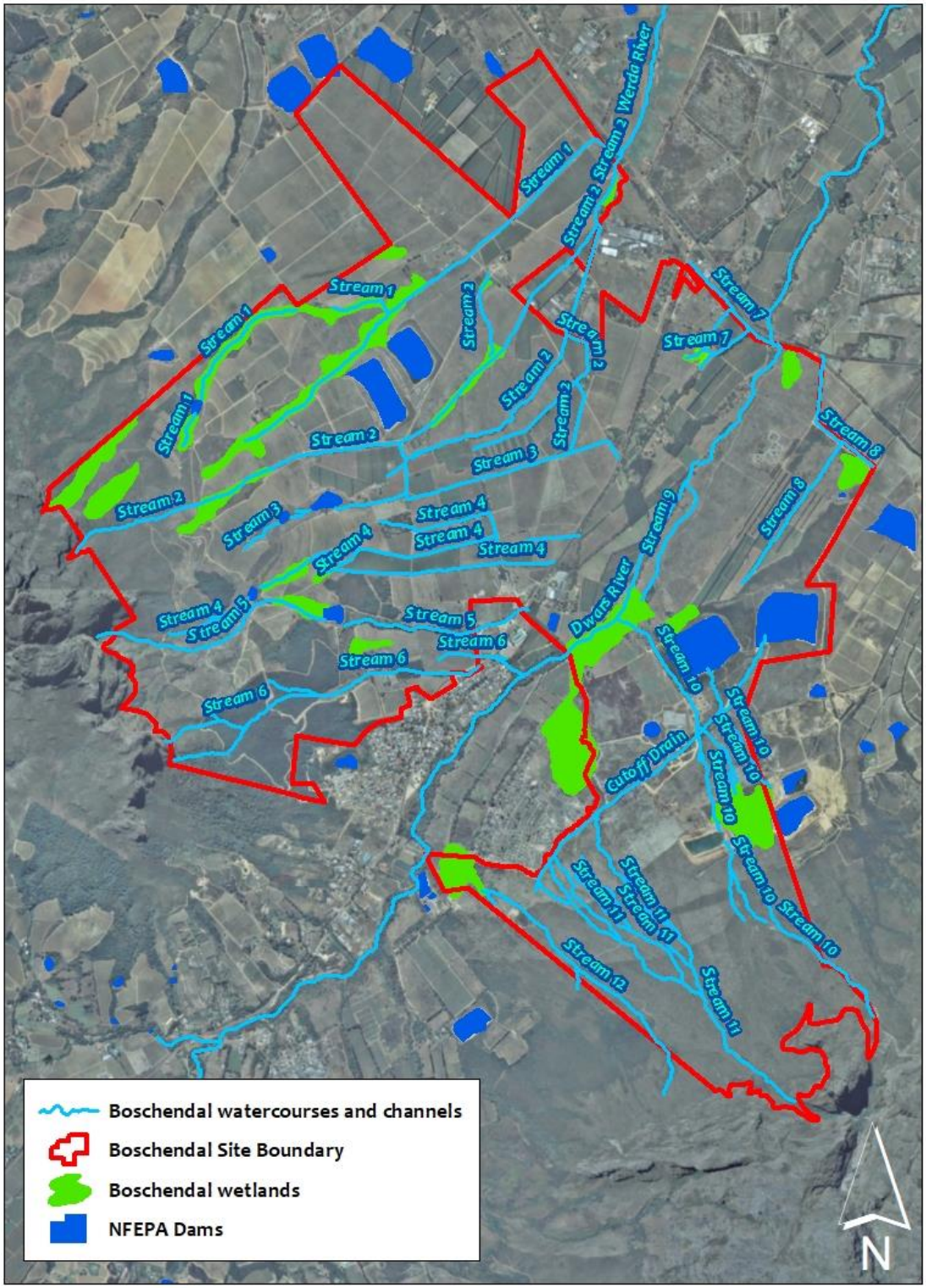

Figure 1.1 **Map of the wetlands and watercourses on Boschendal Estate, as mapped by the author of this report for a Constraints Analysis in 2019. Also shown are the farm dams as depicted on the National Freshwater Ecosystem Priority Area map for the area. Only some of the farm channels are mapped here, and only where they connect with a watercourse.**

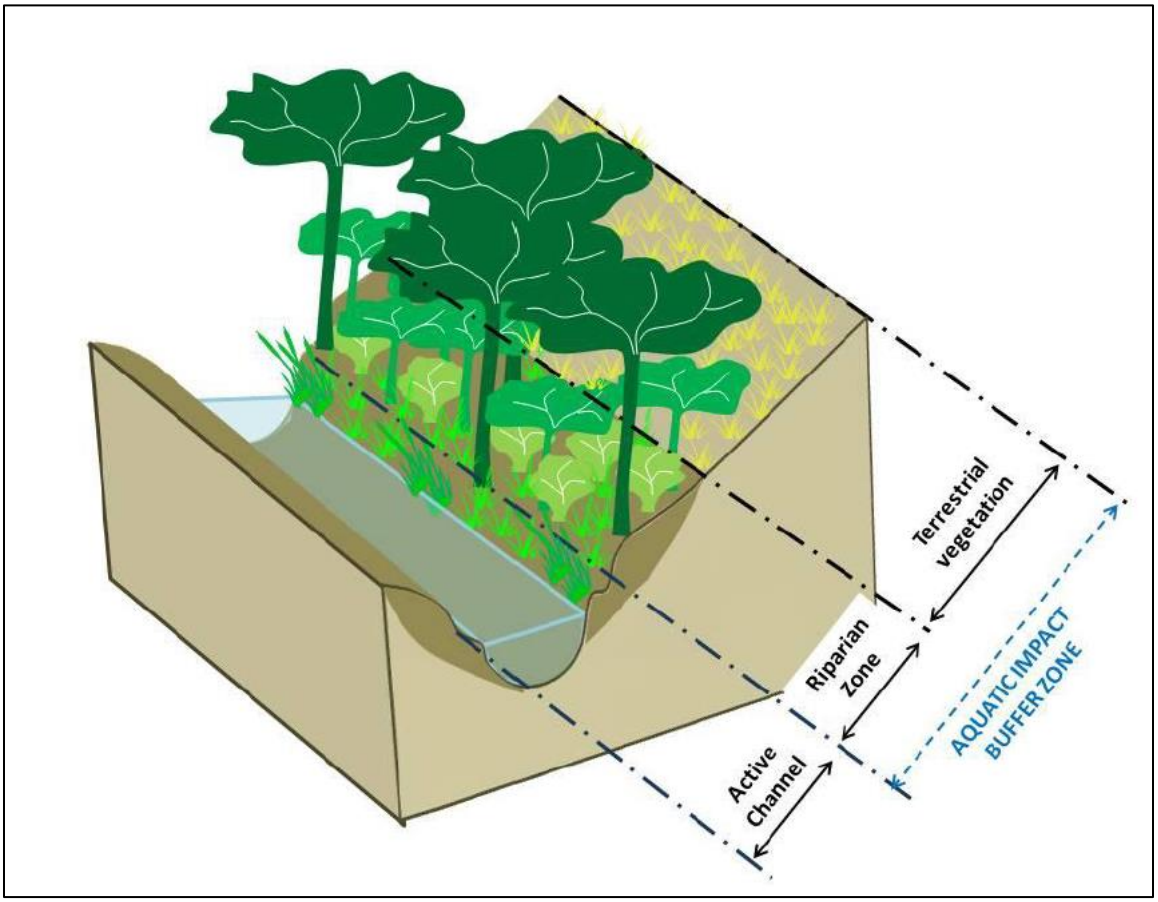

Figure 1.2 Schematic diagram indicating the boundary of active channel and riparian habitat, and the areas potentially included in an aquatic impact buffer zone (MacFarlane and Bredin, 2016). The buffer (measured from the edge of the active channel) protecting a watercourse must include the riparian zone, and can extend into terrestrial vegetation.

1.2 Definitions

The following definitions from the National Water Act (1998) are adhered to in this report:

- Watercourse:
    a. A river or spring;
    b. A natural channel in which water flows regularly or intermittently;
    c. A wetland, lake or dam into which, or from which, water flows; and
    d. Any collection of water which the Minister may, by notice in the Gazette, declare to be watercourse, and a reference to a watercourse includes, where relevant, its bed and banks;
- Wetland:
    - Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.
- Riparian areas or zones (see Figure 1.2):
    - Includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.

1.3 Limitations

Mapping was done with a hand-held GPS in order to save time and costs. Accuracy is estimated as being approximately 2-3m. Delineation of wetlands was done using the indicators described in the DWAF (2005) guidelines for delineation of wetlands and riparian areas. Primary data were not collected from any of the aquatic ecosystems, however, the visual assessments done for this baseline assessment, and historical data collected on Boschendal Estate since 2005, are considered sufficient for the purposes of this project.

1.4 Use of this Report

This report reflects the professional opinions of its author. It is the policy of FCG that the full and unedited contents of this report should be presented to the client, and that any summary of the findings should only be produced in consultation with the author.

1.5 Declaration of Independence

This is to confirm that Kate Snaddon, the specialist consultant who is responsible for undertaking this study and preparing this environmental impact assessment report, is independent, and has no vested interests, financial or otherwise, in the development under consideration.

1.6 Specialist Details

The author of this report is an independent specialist consultant, with 23 years of experience in the field of freshwater ecology, registered with the South African Council for Natural Scientific Professions (Ecologist, registration number 400225/06).

2 Description of the affected area

The Tented Camp site is located in quaternary catchment G10C, in the Berg River Water Management Area, and the Stellenbosch Municipality. This catchment has a mean annual rainfall total of 1200 mm per annum, and lies in a high rainfall intensity zone (*sensu* Schulze, 2007).

The Boschendal Estate comprises a number of farms covering an area of approximately 1800 ha on either side of the Helshoogte Road (R310) which runs from Stellenbosch, *via* Johannesdal and Pniel, to the R45. Most of the Estate, and this site in particular, falls within the ecoregion known as the south western coastal belt (from Kleynhans *et al.*, 2005a) (see Table 2.1 for main attributes of the ecoregion).

Table 2.1 Main attributes of the ecoregions that intersect with the study area (from Kleynhans *et al.*, 2005a).

Ecoregion	Terrain morphology	Dominant vegetation types	Altitude	Mean Annual Precipitation	Rainfall seasonality
South Western Coastal Belt	Moderate relief plains; Closed hills; Mountains	West Coast Renosterveld; Sand Plain Fynbos; Mountain Fynbos	Mainly 0-300 mAMSL; hills up to 900 mAMSL	0 to 1500 mm/year	Winter

Historically, the vegetation across much of the Estate, including the Tented Camp site, would have been Boland Granite Fynbos (Skowno et al., 2019), with Swartland Alluvium Fynbos, which is typical of riverine valley floors and floodplains, around the Dwars River (Rebelo *et al.*, 2006). The Boland Granite Fynbos is an endangered vegetation type found in the Dwars River Valley and on the surrounding mid-slopes, while the Swartland Alluvium Fynbos is critically endangered.

Most of the Estate has been heavily disturbed through agricultural activities (primarily orchards), road construction and use, housing, and some industry (e.g. a logging operation in the eastern portion of the site), and very little of the original vegetation type remains.

A number of small tributaries of the Dwars or Berg River cross the study area on both sides of the R310. Those on the northern side of the road drain the Simonsberg Mountains, and many of these join to form a tributary (the Werda River) that flows directly into the Berg River. The watercourses on the southern side of the R310 originate on the Groot Drakenstein Mountains, and flow directly into the Dwars River. The streams on both sides of the R310 are relatively undisturbed in their upper catchments, arising on relatively pristine mountain slopes, but the watercourses are significantly altered from their natural state as soon as they flow into the cultivated areas – this is especially the case on the northern Simonsberg side. Many of the streams enter farm dams scattered across the Boschendal site. There are numerous agricultural drains crossing the site, serving to channel surface water away from houses and fields (some of these are mapped in Figure 1.1).

There are a few wetlands on Boschendal Estate, some of which are associated with the agricultural drains and channels, while some are remnants of more extensive wetland areas, which have been impacted (drained or filled in) by the surrounding activities.

The “Tented Camp” site is located adjacent to Stream 1, as mapped in 2007 and 2019. Stream 1 is a tributary of the Werda River, which ultimately flows in the Berg River. The riparian area around Stream 1 is typical of mountain streams in this area (see Section 3 for a description of the plant species characterising the riparian area). Stream 1 has good water quality (visual assessment) and seasonal surface flow.

Figure 2.1 Farm dam into which Stream 1 flows. The riparian vegetation around Stream 1 continues around the margins of the dam, and can be seen here. The Tented Camp can be seen in the background.

3 Delineation of inland aquatic ecosystems

The Department of Water and Sanitation has produced a wetland and riparian zone delineation manual (DWAF, 2005) that describes the indicative characteristics that can be used to distinguish between wetlands or riparian zones and the surrounding terrestrial landscape. These indicators are:

- **Vegetation**: the presence of plants adapted to or tolerant of saturated soils (hydrophytes) or alluvial soils;
- **Soils**: in the case of wetlands, the presence of wetland (hydromorphic) soils that display characteristics resulting from prolonged saturation, and for riparian areas, the presence of alluvial soils and / or deposited material;
- **Hydrology**: a high water table that results in saturation at or near the surface, leading to anaerobic conditions developing in the top 50 cm of the soil;
- **Terrain**: the position in the landscape that allows for retention of water and the development of wetlands, or for riparian areas, association with a watercourse.

All of the inland aquatic ecosystems observed and delineated for this study are **watercourses and their associated riparian areas**. The DWS delineation protocol requires the delineation of the outer boundary of the riparian areas, as these must be included as part of the aquatic ecosystem.

The delineation of riparian areas relies most heavily on the vegetation, as there is often insufficient saturation of soils in riparian areas to allow for the development of hydromorphic soils (DWAF, 2005). Furthermore, the water table can be relatively distant from the soil surface, and riparian plants are often deep-rooting individuals, seeking water at depth.

The outer boundary of a riparian area is frequently found where there is a noticeable change in:

- Plant species composition relative to the adjacent terrestrial area; and
- Physical structure, such as vigour or robustness of growth forms (e.g. health, size, structure), relative to the adjacent terrestrial areas.

There was a clear boundary between terrestrial vegetation and riparian vegetation at the Tented Camp site. The riparian vegetation typically comprised:

- Tree species of various ages, with a few mature individuals, including *Searsia angustifolia*, *S. glauca*, *Kiggelaria africana*, *Olea europaea* subsp*. africana*, *Brabejum stellatifolium*.
- Grasses such as *Pennisetum macrourum*, and restios;
- Shrubs such as *Leucodendron* spp., and bracken (*Pteridium aquilinum*) occur around the margins of the riparian area.

The delineated riparian area for the Tented Camp site is shown in Figure 3.3.

Figure 3.1 **(Top) Bracken and (bottom) tree species – *Kiggelaria africana* (middle), *Olea europaea* subsp. *africana* (right) and *Searsia angustifolia* (left) – typical of the riparian areas on the Tented Camp site, Boschendal Estate. The *Seriphium plumosum* (slangbos) in the foreground is characteristic of the more terrestrial vegetation.**

Figure 3.2 Riparian area below the dam wall at the Tented Camp site, showing the clear boundary between riparian and terrestrial vegetation (the pale grey *Seriphium plumosum*) (yellow dashed line).

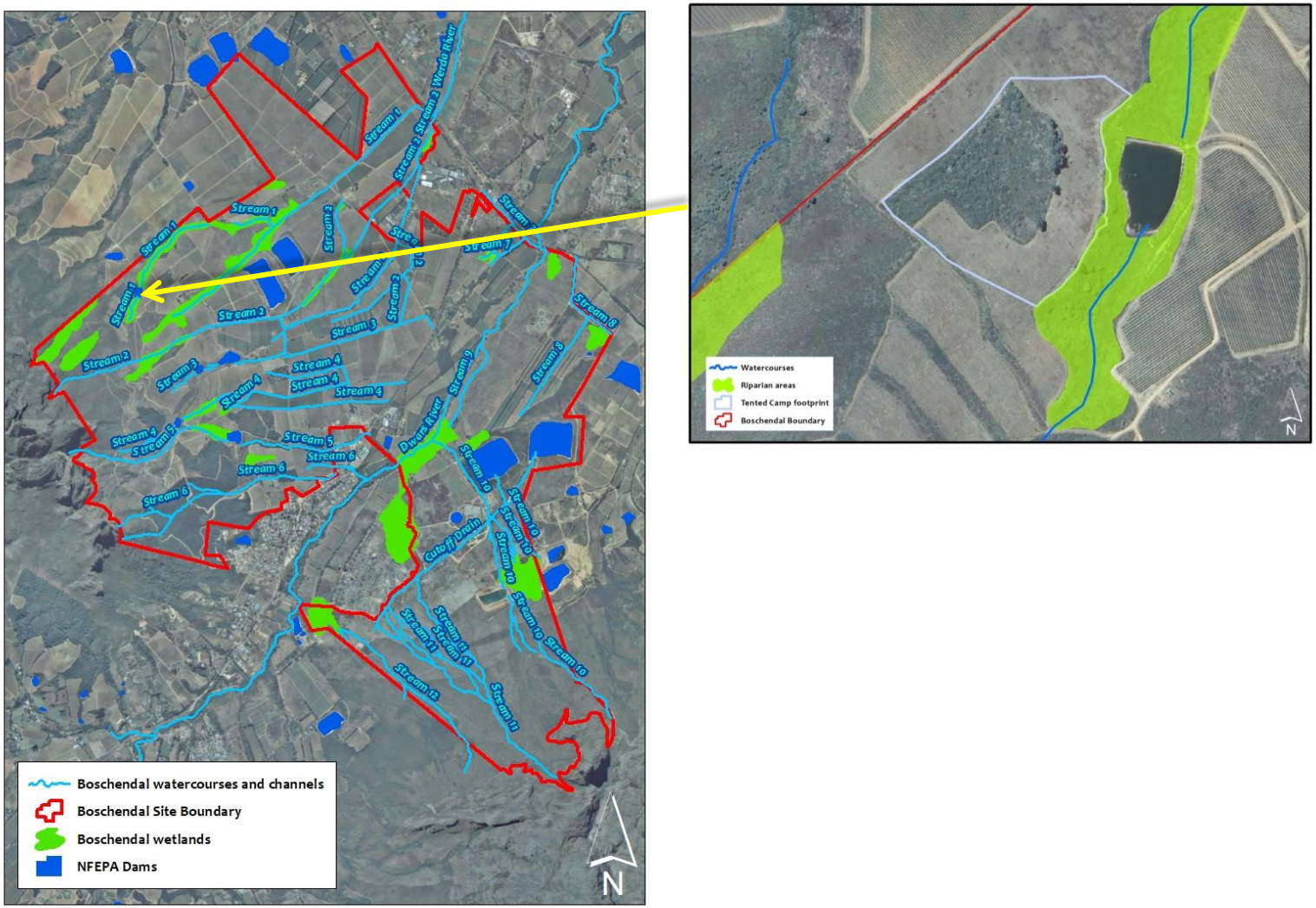

Figure 3.3 **Location of the Tented Camp site on Boschendal Estate (yellow arrow), and the riparian areas (green polygons) delineated at the Tented Camp site (top right).**

4 Assessment of conservation importance of the affected freshwater ecosystems

4.1 Conservation Status

According to the National Freshwater Ecosystem Priority Area (NFEPA) project maps, the sub-catchment in which the Tented Camp site lies has no FEPA status. The Western Cape Biodiversity Spatial Plan (Pool-Stanvliet et al., 2017) identified large areas on the Boschendal Estate as Critical Biodiversity Areas, however these lie predominantly on the Drakenstein side of the property (see Figure 4.2), and most of these CBAs are terrestrial. Stream 1 and its riparian area are categorised as Ecological Support Areas.

In summary based on the above, the Tented Camp sub-catchment is not of significant conservation importance, either regionally or nationally.

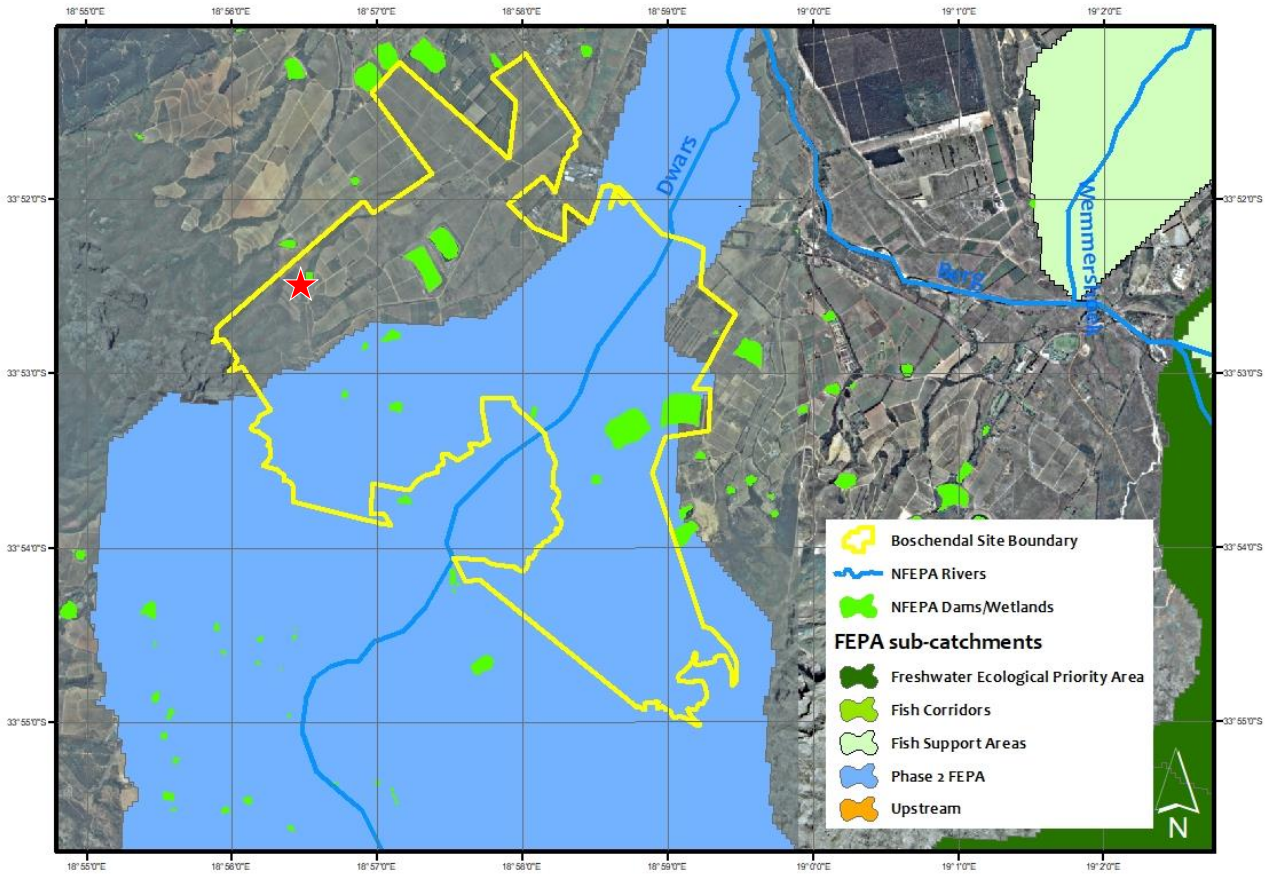

Figure 4.1 National freshwater priorities for the conservation of freshwater biodiversity and ecological processes in and around the Boschendal Estate. The Tented Camp site is marked as a red star. (Map adapted from the NFEPA map (Nel *et al.*, 2011)).

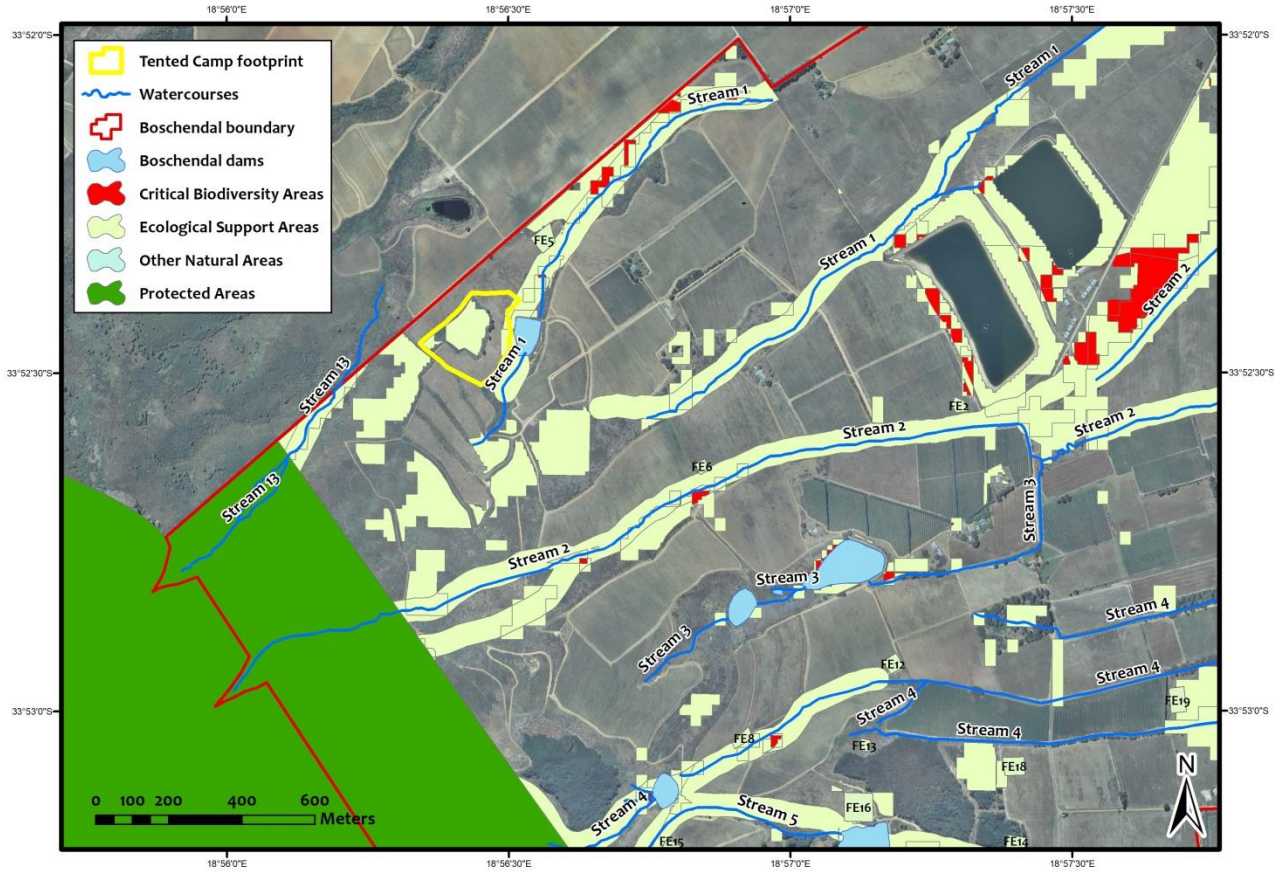

Figure 4.2 Map of Critical Biodiversity Areas, Ecological Support Areas and Protected Areas within and around the Tented Camp site. Adapted from the Western Cape Biodiversity Spatial Plan (Pool-Stanvliet et al., 2017).

4.2 Present ecological status, ecological importance and sensitivity of the inland aquatic ecosystems

4.2.1 Methods

An assessment of the conservation importance of an inland aquatic ecosystem (i.e. watercourse or wetland) should combine assessments of both the present ecological state (PES) or integrity of the ecosystem and its ecological importance and sensitivity (EIS). The *ecological integrity* of an ecosystem is defined as its ability to support and maintain a balanced, integrated composition of physico-chemical and habitat characteristics, as well as biotic components on temporal and spatial scales that are comparable to the natural characteristics of ecosystems of the region. The integrity of a system is directly influenced by its current state, and how much the system has been altered from the reference or unimpacted condition. The *ecological importance* of a freshwater ecosystem is an expression of its importance to the maintenance of ecological diversity (i.e. both species and habitat diversity) and functioning on local and wider scales. *Ecological sensitivity* (or fragility) refers to the system's ability to resist disturbance and its capability to recover from disturbance once it has occurred (resilience) (Resh *et al.,* 1988; Milner, 1994). Both abiotic and biotic components of the system are taken into consideration in an assessment of ecological importance and sensitivity. It is strongly biased towards the potential importance and sensitivity of a particular section of a stream or river, as it would be expected under *unimpaired* conditions.

4.2.1.1 Present Ecological State

In the 1990s, the then Department of Water Affairs (now Department of Water and Sanitation, DWS) Resource Directed Measures (RDM) approach provided methods for the assessment of ecological integrity and of ecological importance and sensitivity, in the context of the determination of the ecological management class for riverine ecosystems as part of the Reserve Determination procedure (DWAF, 1999). This procedure could be followed at different levels of detail – desktop, rapid, intermediate and comprehensive. In 2005, the methods were revised during the development of the EcoClassification approach (Kleynhans *et al.*, 2005b), and the indices were reviewed. EcoClassification refers to the determination and categorisation of the Present Ecological State (PES; health or integrity) of various biophysical attributes of rivers relative the natural or close to the natural reference condition. This approach also allows for different levels of assessment, depending on time and budget, and the requirements of the assessment.

The rapid approach was followed for this study. Essentially this approach was based on assessment of existing impacts on two components of the river - the **riparian** zone and the **instream** habitat, using visual information.

Assessments were made separately for both components, but data for the riparian zone were interpreted primarily in terms of their potential impact on the instream component. Criteria within each component are pre-weighted according to the importance of each, and each criterion is scored between 0 and 25, with six descriptive categories ranging from 0 (no impact), 1 to 5 (small impact), 6 to 10 (moderate impact), 11 to 15 (large impact), 16 to 20 (serious impact) and 21 to 25 (critical impact). The criteria are provided in Table 4.1. The total scores for the instream and riparian zone components were used to place the river reach in a habitat integrity category (A – E/F) for both components (Table 4.2).

Table 4.1 Criteria used in the assessment of Present Ecological Status of watercourses (from Kleynhans, 1996).

Criterion	Relevance
Water abstraction	Direct impact on habitat type, abundance and size. Also implicated in flow, bed, channel and water quality characteristics. Riparian vegetation may be influenced by a decrease in the supply of water.
Inundation	Destruction of riffle, rapid and riparian zone habitat. Obstruction to the movement of aquatic fauna and influences water quality and the movement of sediments.
Water quality modification	Originates from point and diffuse point sources. Measured directly or agricultural activities, human settlements and industrial activities may indicate the likelihood of modification. Aggravated by a decrease in the volume of water during low or no flow conditions.
Flow modification – floods and low flows	Consequence of abstraction or regulation by impoundments. Changes in temporal and spatial characteristics of flow can have an impact on habitat attributes such as an increase in duration of low flow season, resulting in low availability of certain habitat types or water at the start of the breeding, flowering or growing season.
Bed modification	Regarded as the result of increased input of sediment from the catchment or a decrease in the ability of the river to transport sediment. Indirect indications of sedimentation are stream bank and catchment erosion. Purposeful alteration of the stream bed, e.g. the removal of rapids for navigation is also included.
Channel modification	May be the result of a change in flow, which may alter channel characteristics causing a change in marginal instream and riparian habitat. Purposeful channel modification to improve drainage is also included.
Exotic macrophytes	Alteration of habitat by obstruction of flow and may influence water quality. Dependent upon the species involved and scale of infestation.
Exotic fauna	Invasion by exotic fauna will influence indigenous biodiversity, with possible knock-on effects for habitat quality and availability.
Solid waste disposal	This refers to litter and any other solid waste, i.e. a direct anthropogenic impact which may alter habitat structurally, obstruct flow, or have a direct impact on biota. Also a general indication of the misuse and mismanagement of the river.
Indigenous vegetation removal	Impairment of the vegetated buffer will reduce its ability to protect the river from sediment and polluted runoff from the surrounding catchment. Refers to physical removal for farming, firewood and overgrazing.
Exotic vegetation encroachment	Excludes natural vegetation due to vigorous growth, causing bank instability and decreasing the buffering function of the riparian zone. Riparian area habitat diversity is reduced, and timing and quality of food source (leaves, wood, etc) for aquatic biota altered.
Bank erosion	Decrease in bank stability will cause sedimentation and possible collapse of the river bank resulting in a loss or modification of both instream and riparian habitats. Increased erosion can be the result of natural vegetation removal, overgrazing or exotic vegetation encroachment.

Table 4.2 PES categories for watercourses (from Kleynhans, 1996).

Category	Description	Score (%)
A	Unmodified, natural.	90-100
B	Largely natural with few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged.	80-90
C	Moderately modified. A loss and change of natural habitat and biota have occurred but the basic ecosystem functions are still predominantly unchanged.	60-79
D	Largely modified. A large loss of natural habitat, biota and basic ecosystem functions has occurred.	40-59
E	The loss of natural habitat, biota and basic ecosystem functions is extensive.	20-39
F	Modifications have reached a critical level and the lotic system has been modified completely with an almost complete loss of natural habitat and biota. In the worst instances the basic ecosystem functions have been destroyed and the changes are irreversible.	0

4.2.1.2 Ecological Importance and Sensitivity

The DWS-recommended method for the determination of the Ecological Importance and Sensitivity of a particular ecosystem considers the following ecological aspects of watercourses, in general (DWAF, 1999):

- Rare and endangered instream and riparian biota;
- Unique instream and riparian biota;
- Intolerant instream and riparian biota;
- Species richness, both riparian and instream;
- Diversity of habitat types or features;
- Refuge value of habitat types;
- Sensitivity of habitat to flow changes;
- Sensitivity to water quality changes;
- Migration route/corridor for instream and riparian biota, and
- Presence of Protected Areas and conservation areas.

Each criterion is scored between 1 and 5, and the medians of these scores are calculated to derive the EIS category (Table 4.3).

Table 4.3 Ecological importance and sensitivity categories for rivers.

Ecological Importance and Sensitivity Categories	General Description
Very high (score >3 and ≤4)	Reaches or rivers that are considered to be unique on a national or even international level based on unique biodiversity (habitat diversity, species diversity, unique species, rare and endangered species). These rivers (in terms of biota and habitat) are usually very sensitive to channel / bed modifications and have no or only a small capacity for use.
High (score >2 and ≤3)	Reaches or rivers that are considered to be unique on a national scale due to biodiversity (habitat diversity, species diversity, unique species, rare and endangered species). These rivers (in terms of biota and habitat) may be sensitive to channel / bed modifications but in some cases, may have a substantial capacity for use.
Moderate (score >1 and ≤2)	Reaches or rivers that are considered to be unique on a provincial or local scale due to biodiversity (habitat diversity, species diversity, unique species, rare and endangered species). These rivers (in terms of biota and habitat) are usually not very sensitive to channel / bed modifications and often have a substantial capacity for use.
Low/marginal (score >0 and ≤1)	Reaches or rivers that are not unique at any scale. These rivers (in terms of biota and habitat) are generally not very sensitive to channel / bed modifications and usually have a substantial capacity for use.

4.2.2 Results

Stream 1 is in good condition, apart from the impacts associated with removal of indigenous vegetation in the catchment (for agriculture) and the presence of the farm dam adjacent to the site. The upper portion of Stream 1 above the farm dam lies in an A category for PES, while the lower section below the dam is in a C category (Table 4.4).

Stream 1 is of high EIS. Although no primary data were collected from the stream, the quality of the habitat is such that the stream will support populations of unique species that are sensitive to changes in water quantity and quality. The stream is an important refuge for species, and provides essential ecological corridors in a highly transformed, cultivated landscape.

Table 4.4 Results of the assessment of Present Ecological State for Stream 1 flowing past the Tented Camp, Boschendal Estate.

Criterion	Score	
	Stream 1 above the farm dam	Stream 1 below the dam
Water abstraction	0	10
Inundation	0	0
Water quality modification	5	8
Flow modification - floods	0	10
Flow modification – low flows	5	15
Bed modification	5	8
Channel modification	0	5
Exotic or invasive macrophytes	0	0
Exotic fauna	Not assessed	Not assessed
Solid waste disposal	5	5
Indigenous vegetation removal	8	8
Exotic vegetation encroachment	5	5
Bank erosion	2	5
PES - Riparian	**89 (B)**	**73 (C)**
PES – Instream	**92 (A)**	**76 (C)**
PES – Overall	**90 (A)**	**74 (C)**

Table 4.5 Results of the assessment of Ecological Importance and Sensitivity for Stream 1 adjacent to the Tented Camp on Boschendal Estate.

EIS component	Score and Category	
	Stream 1 above the farm dam	Stream 1 below the dam
Rare and/or endangered species	0	0
Populations of unique species	2	2
Populations of intolerant species	2	2
Species/taxon richness	3	3
Diversity of aquatic habitat types or features	3	3
Refuge value of habitat type	3	3
Sensitivity to changes in hydrology	3	3
Sensitivity to changes in water quality	4	4
Migration route/corridor for instream and riparian biota	3	3
Proximity to National parks, wilderness areas, Nature Reserves, Natural Heritage sites, Natural areas	3	3
Overall	**3 (High)**	**3 (High)**

A summary of the assessments is provided in Table 4.6.

Table 4.6 Summary descriptions of the reaches of Stream 1 assessed for the EIA. Also included are the PES and EIS categories for the two reaches.

Water-courses[1]	Watercourse type (geomorphological zone)	Comments	Photograph	PES Category	Ecological Sensitivity & Importance Category
Upper Stream 1 (above the farm dam at the Tented Camp site)	Mountain stream with associated riparian area	Stream flows down the slopes of the Simonsberg mountains, with a dense riparian growth of indigenous trees and shrubs with a few alien trees, such as pines. Water quality is good; and flow seasonal to ephemeral.	 **Riparian area of the upper reaches of Stream 1**	**A**	**High**
Upper Stream 1 (below the farm dam)	Upper foothill stream with associated riparian area	Stream flows below the farm dam for some distance and then is diverted to flow around agricultural fields.	 **Riparian area in Stream 1 below the farm dam**	**C**	**High**

[1] Watercourses refers to rivers or streams.

5 Legislation and guidelines governing the conservation and management of rivers and wetlands

5.1 National Environmental Management Act (Act 107 as amended by Act 62 of 2008)

The National Environmental Management Act of 2008 (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.

Section 24 of NEMA requires that the potential impact on the environment, socio-economic conditions and cultural heritage of activities that require authorisation or permission by law, must be considered, investigated and assessed prior to implementation, and reported to the relevant regulatory authority.

For development outside the urban edge, many development activities within 32m of a watercourse, measured from the edge of the watercourse (taken to be the edge of the active channel), trigger the need for an environmental authorisation. This may be a basic assessment or a full environmental impact assessment, depending on the specifications of the activity.

5.2 Environmental Impact Assessment regulations issued in terms of NEMA (originally promulgated as Regulation 385, 2006, with new legislation adopted in December 2014)

These regulations identify activities deemed to have a potentially detrimental effect on natural ecosystems, including aquatic ecosystems, and outline the requirements and timeframe for approval of development applications. Different sorts of activities are listed as environmental triggers that determine different levels of impact assessment and planning required. The regulations detail the procedure to be followed for a basic or full environmental impact assessment.

5.3 Conservation of Agricultural Resources Act (Act 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).

5.4 Biodiversity Act

To provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act of **1998;** the protection of species and ecosystems that warrant

national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute.

5.5 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.

5.6 National Water Act (1998)

The main regulatory requirements with regards to aquatic features relates to the National Water Act No. 36 of 1998 (NWA). The NWA regulates 11 water uses that require authorisation, as follows:

a. Taking water from a water resource;

b. Storing water;

c. Impeding or diverting the flow of water in a watercourse;

d. Engaging in a stream flow reduction activity;

e. Engaging in a controlled activity identified and declared as such in terms of the Act;

f. Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;

g. Disposing of waste in a manner which may detrimentally impact on a water resource;

h. Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;

i. Altering the bed, banks, course or characteristics of a watercourse;

j. Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and

k. Using water for recreational purposes.

The construction of river crossings and the laying of pipes over a watercourse or wetland can lead to the changes in flow in (Section 21 (c)) or alterations to the bed and banks/characteristics of (Section 21 (i)) the affected watercourse, and so a water use authorisation must be obtained for these specific activities. Should stormwater be discharged into seeps or streams, this is generally authorised (but requires registration) up to 2000 m^3 per day (Section 21 (f)). Volumes higher than this will be subject to a full water use licence application.

DWA have issued a number of **General Authorisations** (GA) in terms of Section 39 of the National Water Act. A water use may be generally authorised if it falls within a specific threshold or area. The GA of the 26th August 2016 (Government Notice 509 of 2016) provides the limits and conditions of Section 21 (c) and (i) water uses that may be generally authorised, and defines the regulated zone within which the GA applies. The draft GA of April 2012 (Government Notice 288 of 2012) covers the conditions for taking (Section 21 (a)) and storing (Section 21 (b)) water. This GA states:

"A person who owns or lawfully occupies a property or piece of communal land may, in terms of this authorisation, on the property or piece of communal land occupied store water not containing waste up to the maximum volume given in Table 1: Surface water abstraction and storage volumes in Appendix A for the catchment in which the stored water is taken" … (2000 m^3 for catchment G10)… "subject to the following specific conditions and the general conditions in this notice.

Specific conditions for storing of water:

- Water stored in terms of this authorisation may only be stored off-channel.
- Retaining structures for the storing of water in terms of this authorisation that are constructed after this authorisation comes into effect must have outlet works that enable the full storage volume to be released within 30 days.
- Up to the maximum volume of water given for the resource in Table 1: Surface Water Abstraction Rates and Storage Volumes in Appendix A may be stored in terms of this authorisation for use on one property or per person in communal land.

General conditions of this GA include:

- Water stored must be used efficiently, and the water user must investigate and use all reasonable water conservation measures.
- The storage of more than 10 000 m^3 on one property must be registered with DWS.

5.7 Western Cape Provincial Spatial Development Framework (March, 2014)

Policies regarding the protection of biodiversity and ecosystem services in the Western Cape are:

- The Western Cape's Critical Biodiversity Area (CBA) mapping, which CapeNature are currently updating and refining, together with the draft priority climate change adaption corridors, comprise the spatial extent of the Western Cape's biodiversity network. This must inform spatial planning and land use management decisions throughout the province.
- Using the latest available CBA mapping as a primary informant, regional, district and municipal SDFs must delineate Spatial Planning Categories (SPCs) that reflect suitable land use activities in the different CBA categories.
- To complement CapeNature's protected area expansion strategy and their Stewardship programme, SDFs should highlight priority areas outside the protected area network that are critical for the achievement of the province's conservation targets.

Policies regarding the management, repair and optimisation of inland water resources are:

- Given current water deficits, which will be accentuated by climate change, a 'water wise' planning and design approach in the W Cape's built environment is to be mainstreamed.
- Rehabilitation of degraded water systems is a complex inter-disciplinary intervention requiring built environment upgrading (i.e. infrastructure and the built fabric), improved farming practises, as well as the involvement of diverse stakeholders.
- Introduce and retrofit appropriate levels of water and sanitation systems technologies in informal settlements and formal neighbourhoods with backyard shacks as a priority.
- An overarching approach to water demand management is to be adopted – firstly efficiencies must be maximised, storage capacity sustainably optimised and ground water extraction sustainably optimised, with the last resort option of desalination being explored, if necessary.
- Protection and rehabilitation of river systems and high yielding groundwater recharge areas, particularly in areas of intensive land use (i.e. agricultural use, industry, mining and settlement interactions) should be prioritised.

- Regional Plans to be developed for Water Management Areas to ensure clear linkages and interdependencies between the natural resource base (including water resources) and the socio-economic development of the region are understood and addressed.
- Agricultural water demand management programmes to be developed with an emphasis on the Breede Valley and Oliphants / Doorn agricultural areas. Industrial water demand management programmes to be developed with an emphasis on Saldanha, Southern Cape and Cape Town. Settlement water demand management programmes to be developed with an emphasis on the Cape Town functional region.
- Government facilities (inclusive of education, health and public works facilities) to lead in implementing effective and efficient water demand management programmes.
- Continue with programmes (such as Working for Water) which reduce the presence of alien vegetation along river systems.

5.8 Western Cape Biodiversity Spatial Plan (2017)

The Western Cape Biodiversity Spatial Plan (WCBSP) is the product of a systematic biodiversity planning assessment that delineates Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) which require safeguarding to ensure the continued existence and functioning of species and ecosystems, including the delivery of ecosystem services, across terrestrial and freshwater realms. These spatial priorities are used to inform sustainable development in the Western Cape Province. This product replaces all previous systematic biodiversity planning products and sector plans with updated layers and features.

5.9 Stellenbosch Municipality Spatial Development Framework

The principles contained in the Stellenbosch SPF that are pertinent to this study include:

- All rivers above a minimum size shall be protected by river conservation zones of 10-30m on either side of the bank, depending on the width and maturity of the river (as determined by an aquatic ecologist or land surveyor). These zones should be returned to their natural riparian status for passive recreational use only, and no urban development or intensive agriculture shall be permitted within them.
- No foundations of permanent buildings shall be located within the 1:100 year flood lines (as determined by a hydrological engineer).
- Peak water demand should be accommodated with supplementary storage and recycling (e.g. rainwater tanks, grey water recycling) of water so that the municipality can focus on satisfying base demand and meeting the needs of the poor.
- Urban water demand management programs should be implemented to ensure that urban water demand does not undermine agricultural needs, including:
    - Rainwater harvesting should be mandatory on all new urban developments, and retrofitting of rainwater harvesting should be encouraged on all existing developments (where heritage constraints allow for this).
    - Grey water recycling should be promoted on all residential, commercial and industrial units with gardens.
- Water conservation measures should be adopted, for example minimising unaccounted for water through leak repair and pressure adjustment, installing water meters, educating consumers about water saving, promoting water saving devices and promoting water-wise gardening.
- Technologies that facilitate the efficient use of irrigation water should be encouraged.

- Conservation areas should continue to enjoy the highest possible level of protection in order to ensure water quality and quantity at least in the upper reaches of the river system.
- The eradication of alien vegetation from all areas should be supported.
- Sensitive biodiversity areas should be mapped, and clear and appropriate guidelines introduced to conserve them.
- Crest lines should be kept free of buildings and intensive agriculture to protect biodiversity.
- Ridge lines should be used for properly managed walking trails to increase recreational potential, tourism and income.
- Outside of formal conservation areas, land owners should be encouraged to conserve vegetation classified by SANBI as Endangered or Critically Endangered (particularly along ridge lines) and to link to existing conservancies (e.g. through the CapeNature Stewardship Program). These land uses should be classified in the Core SPC.

6 Constraints to development

There are two considerations to bear in mind when determining development constraints – (1) the regulatory zone around inland aquatic ecosystems (watercourses and wetlands) within which environmental or water use authorisations are triggered, and (2) the protection of the inland aquatic ecosystems themselves through the establishment of ecological buffers or development setbacks, as details above in Section 6.2.

6.1 Regulatory zone

There are two regulatory zones to take into account:

- A 32m-wide regulatory zone (measured from the edge of the banks of a watercourse or the outer boundary of a wetland) within which an environmental authorisation (according to NEMA) is required;
- A regulatory zone that extends 500m from the outer boundary of a **wetland**, and 100m from the edge of the active channel or to the outer boundary of the riparian area of a **watercourse**, within which a Section 21 (c) or (i) water use (according to the National Water Act) may apply.

The 32m-wide regulatory zone is illustrated for the Tented Camp site in Figure 6.1. The development footprint encroaches into the NEMA regulatory zone along the boundary closest to the dam. Three of the tent decks, a fat trap, landscaping beds and gabions, roads and the bike path are located within the NEMA regulatory zone. A small proportion of the Tented Camp site also lies within the NWA regulatory zone, measured as the edge of the riparian area, as shown in Figure 6.1.

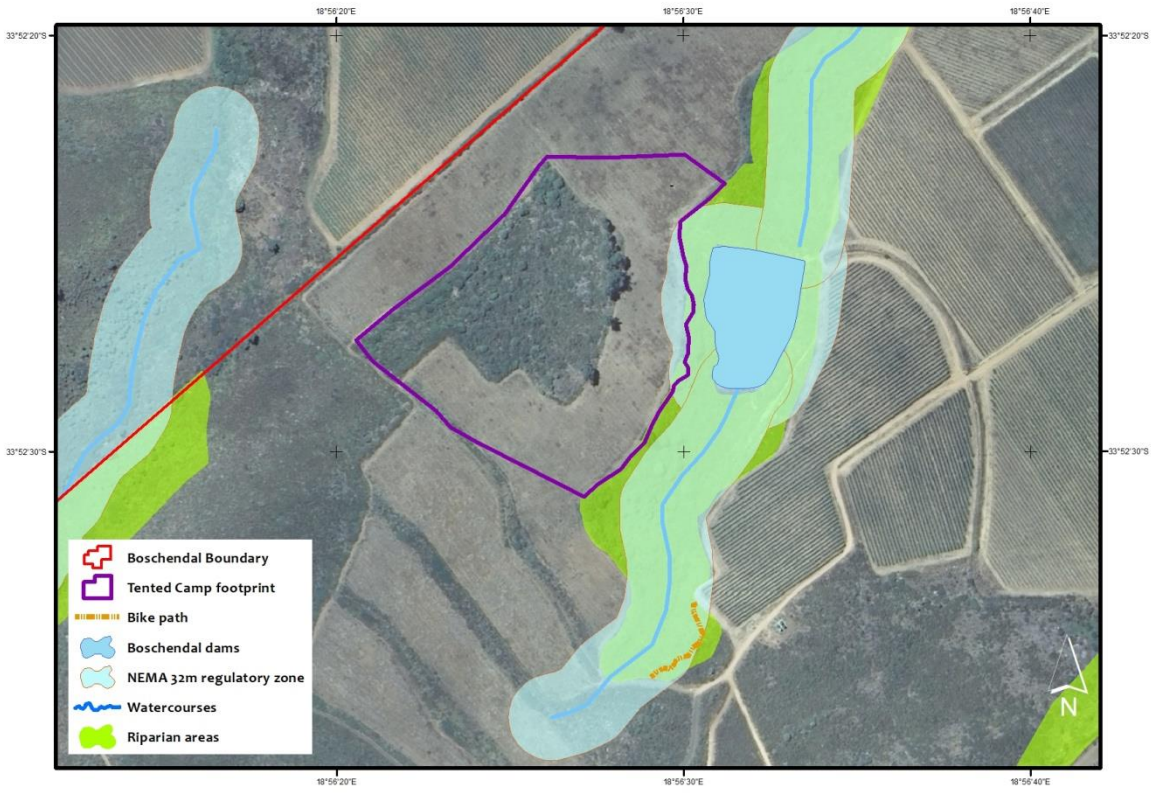

Figure 6.1 Tented Camp site showing the 32m regulatory zone specified in NEMA. The development footprint encroaches into the regulatory zone.

6.2 Development setbacks (ecological buffers)

In determining a development footprint that will have the least impact on an inland aquatic ecosystem, it is essential to establish the recommended development setback, or ecological buffer for each ecosystem. It is important to note that in order to protect the water resource, the development setback or buffer should be used instead of the blanket 32m or 100m setback requirements of the NEMA/National Water Act. The buffer for Stream 1 was determined using the site-based protocol for buffer determination of MacFarlane and Bredin (2016). In the 2019 Boschendal Estate Constraints Analysis, the buffer width tool was used to determine

The assessment is based on the PES and EIS of the watercourse (see Section 4.2), and the assumed quality of the buffer during both phases of the project. It was assumed that the current vegetation would be representative of the buffers for both construction and operational phases, as it is unlikely that the vegetation will change from the current state. The density of vegetation plays a major role in determining the effectiveness of a buffer – a well-vegetated buffer, with a high basal cover (such as grass or sedges) is the most effective buffer, due to the ability of the plants and their roots to trap sediments, toxins and other pollutants before they reach the wetland or watercourse.

The recommended buffer for **Stream 1 (above the dam) is 42m for the Construction Phase and 42m for the Operational Phase,** reducing to **36m for the Construction Phase and 33m for Operational Phase below the dam.** These buffers, measured from the edge of the active channel (effectively from the mid-line of the channel, as the channels are a maximum of 3m in width) are shown in Figure 6.2.

The protocol for the determination of buffers for watercourses states that the buffer must include the delineated riparian area (see Section 1.2), thus the final setback line for both sites follows the outer boundary of either the ecological buffer, or the riparian area, whichever is the widest (MacFarlane and Bredin, 2016). These lines can be seen in Figure 6.3.

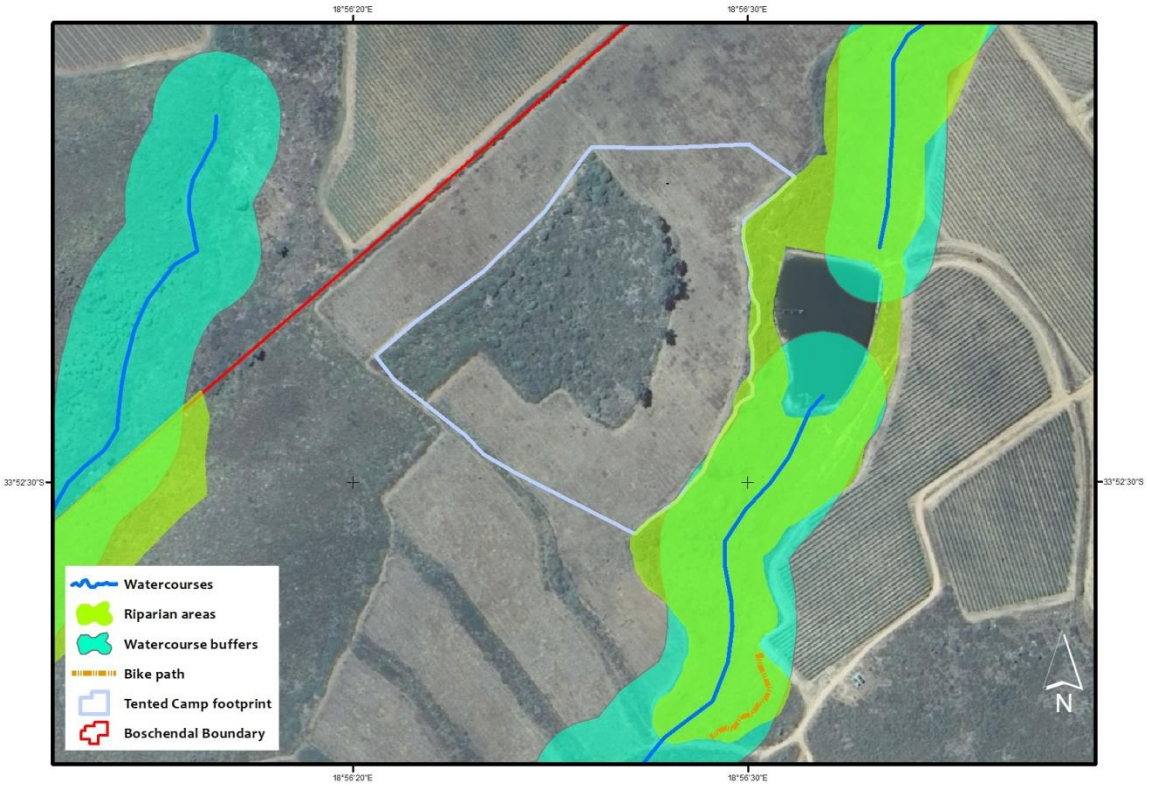

Figure 6.2 **Watercourses, riparian areas, and watercourse buffers delineated for the Boschendal Tented Camp site.**

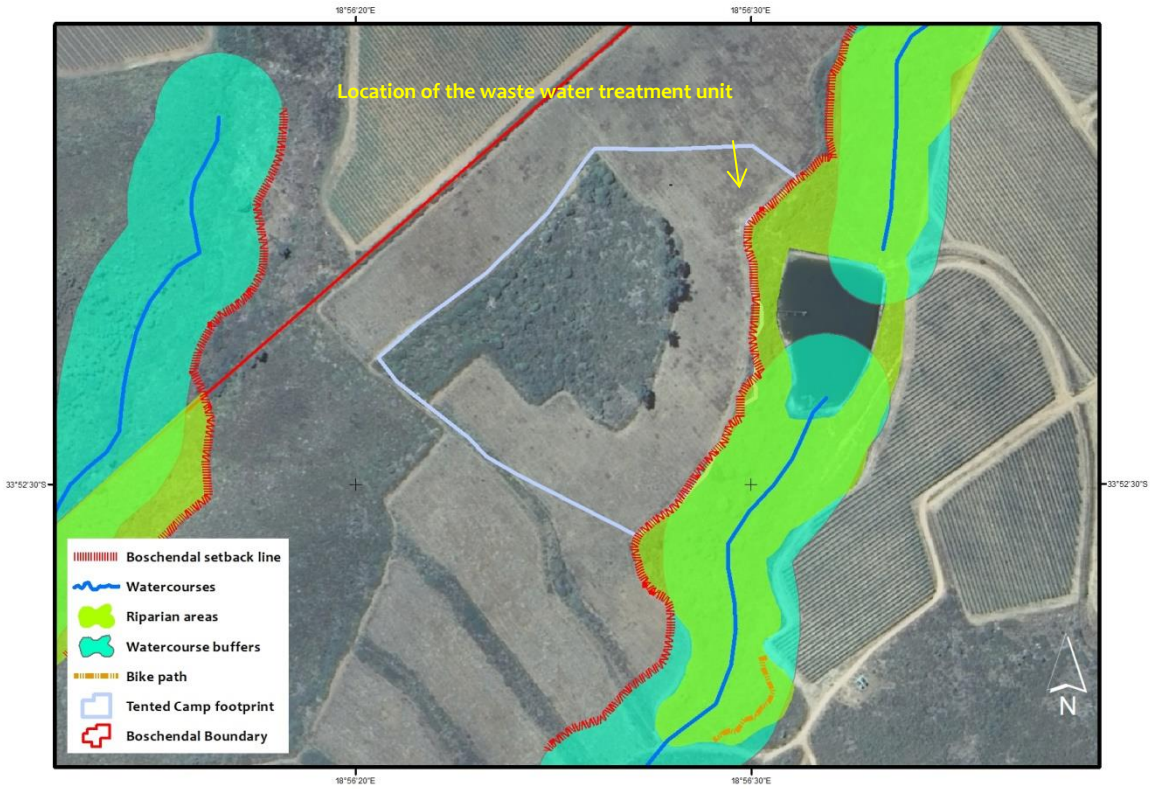

Figure 6.3 **Ecologically-based setback lines (red dashed lines) for the Tented Camp site.**

7 Environmental Impact Assessment

7.1 Description of the development

The Tented Camp development is considered to be a temporary development, as the structures and services will be dismantled in the future. The tents are placed on pre-cast concrete blocks that have been placed on top of the ground surface, for easy removal. All services are buried in shallow trenches and covered with rock and loose material, and will also be removed.

Services to and on the site include:

- Potable water from the farm reticulation system;
- Fire water from the farm system;
- Foul sewer reticulation to a set of Bio-Disks;
- Stormwater-surface discharge;
- Telecommunications;
- Electrical supply from the current Boschendal overhead reticulation system.

Only one layout was assessed – the existing layout – which was compared against the no development option. The assessment included impacts associated with construction and removal / demolition of the Camp, and the Operational Phase.

7.1.1 Potable water

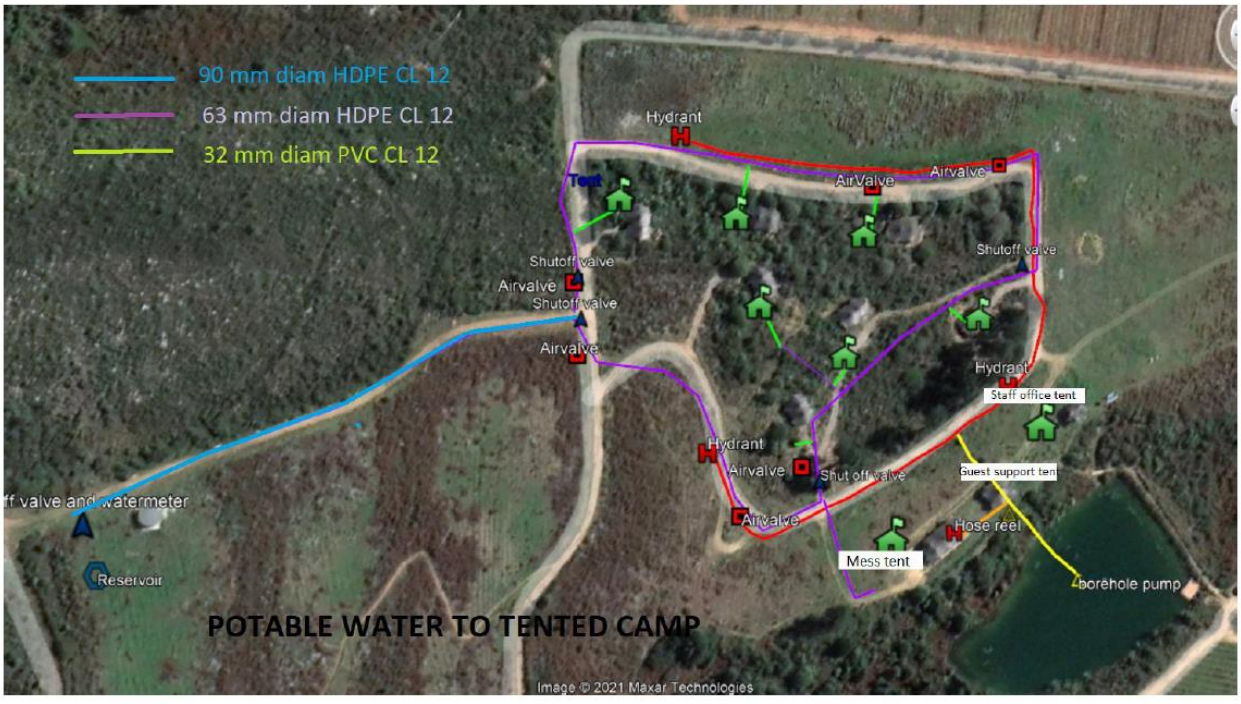

Figure 7.1 Potable water layout for the Tented Camp site.

Potable water is supplied from a reservoir some distance uphill of the site (at 413 mAMSL). A gravity supply line runs from the reservoir to the site, and then splits into the internal network (Figure 7.1). The reservoir and supply line were constructed for the development. Water is supplied to the reservoir from a natural spring close by, that provides a consistent supply of water throughout the year. An in-line aggregate filtration system and water purification system has been installed to improve water quality. A new in-line

ultra-violet water purification system will be installed prior to commissioning of the tented camp to ensure that regulated potable water standards are achieved.

A system of fire hydrants has been set up on the site, supplied by water pumped from the dam alongside the site.

7.1.2 Sewage system

There are three independent foul sewer disposal systems. All accommodation units including the mess tent are connected to a water-borne piped system that discharges into a Kingspan Bio-Disk sewage disposal unit. Each unit is connected to a 110mm diameter uPVC sewer main that flows under gravity flow to the Kingspan Bio-disk unit. The Bio-disk system treats sewage to General Limits,

The BioDisc domestic sewage treatment plant is based on a Rotational Biological Contactor. This allows for waste water to go through two stages of treatment, followed by two stages of settlement. Water is rotated and moved through the system with an electric motor. The chemical constituents of the effluent are shown in Table 7.1. While most of the constituents in the effluent are at low levels, the nitrates are higher than the levels required for General Limits, as contained in Schedule 2 of Government Notice 665 of 2013. The receiving environment, i.e. Stream 1, flows into the Berg River below its confluence with the Dwars River, so General Limits are acceptable, however, the nitrates are a concern.

It is recommended that the treated effluent be discharged to a soakaway below each treatment Unit. This will allow for additional treatment of the effluent before it is allowed to seep into the soil and, finally, the watercourse. The soakaway should be located outside of the ecological buffer around the riparian area. It is not recommended that the effluent be discharged directly into the watercourse, riparian area or the dam.

Figure 7.2 Sewer reticulation system at the Tented Camp site.

Figure 7.3 **Above ground component of the BioDisc domestic sewage treatment plant (BA model), located at the Tented Camp site.**

Table 7.1 **Chemical parameters of the treated effluent discharged to ground or a watercourse from the BioDisc treatment unit.**

Parameter	BioDisc effluent levels	General Limits (GN 665, September 2013)
pH	7.74	5.5 – 9.5
Conductivity	48.8 mS/m	70 mS/m above background receiving water, to a maximum of 150 mS/m
Nitrate as N	24 mg/litre	15 mg/litre
Phosphate	< 0.02 mg/litre	< 10 mg/litre
Ammonia as N	3.8 mg/litre	< 6 mg/litre
Suspended Solids	15 mg/litre	< 25 mg/litre
Chemical Oxygen Demand	59 mg/litre	75 mg/litre

7.1.3 Stormwater

There is no formal stormwater system for the Tented Camp site, and runoff from the tents, roads and hardened surface is to the ground, where it will filter into the soil.

7.2 Methods

The following impact assessment criteria were used to describe and assess the probable impacts associated with the Tented Camp development:

	Description
Impact	A description of the impact and/or risk to the water resource
Status of impact	Negative, positive or neutral
Extent of impact	Extent can be localised within the site boundary (**low**), widespread impact beyond the site boundary (**medium**), or widespread far beyond the site boundary and/or of regional or national importance (**high**).
Duration of impact	Impacts can be short-term and quickly reversible, i.e. 0 to 5 years (**low**), medium-term, i.e. 5 – 15 years, and reversible over time (**medium**) or long-term, causing permanent impact (**high**).
Probability of occurrence	Probability can be infrequent, or of low likelihood, with no known risk or vulnerability to natural or induced hazards (**low**), frequent, or possible, with low to medium risk (**medium**), or definite/highly likely (regardless of intervention measures), with a high risk or vulnerability to natural or induced hazards (**high**),
Intensity of the impact	Impact can cause minor change in species/habitat/ diversity or resource, no or very little quality deterioration (**low negative**), or partial loss of habitat/biodiversity/resource or slight alteration (**medium negative**), or loss of habitat/diversity or resource, severe alteration or disturbance of important processes (**high negative**). Positive impacts can range from minor improvement or restoration (**low positive**), to moderate improvement (**medium positive**) or substantial improvement (**high positive**).
Degree to which the impact may cause irreplaceable loss of resources	Project will destroy unique resources that cannot be replaced (High irreplaceability of resources) or the affected resource is easy to replace/rehabilitate.
Degree to which the impact can be reversed	Impacts are reversible at the end of the project life; or impacts are permanent and non-reversible.
Cumulative impact prior to mitigation	Impact resulting from the addition of impacts resulting from proposed development to the existing environmental state of the proposed site (existing and future resources' state, and/or impacts of other developments in the area). Can include direct and indirect impacts, as well as impacts ranging in various duration or geographical extent.
Significance rating of impact prior to mitigation	Product of duration, extent and intensity (see Table 7.2)
Degree to which the impact can be mitigated	Extent to which an impact can be mitigated on site.
Proposed mitigation	Mitigation measures proposed to reduce negative impacts, and enhance positive impacts.
Cumulative impact post mitigation	Cumulative impacts taking into account mitigation proposed above.
Significance rating of impact after mitigation	Product of duration, extent and intensity (see Table 7.2)

Table 7.2 Impact significance rating matrix, using impact duration, intensity and extent to assess significance.

Intensity = Low				
Duration	High			
	Medium			
	Low			
Intensity = Medium				
Duration	High			
	Medium			
	Low			
Intensity = High				
Duration	High			
	Medium			
	Low			
		Low	Medium	High
		Extent		

7.3 Description of probable impacts and mitigation measures

The following sections describe the impacts that are expected to affect the biodiversity and/or ecosystem functioning of Stream 1.

7.3.1 Construction (and demolition) phase

The following section describes the likely impacts associated with the construction and removal (or demolition) of the Tented Camp site.

Activity and *Impact*	**Mitigation measures**
Storage of building or demolition materials (sand, soil, bricks etc) in sensitive areas – this would *damage the soil structure, and would destroy or shade out plants growing in and around these ecosystems*. Dump areas frequently lead to the *compaction of soils*, which can influence re-growth of plants after construction.	• Ensure that all building and demolition materials and rubble are stored at least 50m away from the edge of the riparian area of Stream 1, **as demarcated prior to the activity.** Storage areas should be bunded adequately to prevent contaminated runoff from entering the watercourse. • Materials should be stored in piles that do not exceed 1.5m in height and should be protected from the wind (such as using shade-cloth), to prevent spread of fine materials across the site. • All natural areas that are to remain untransformed but that are impacted by the dumping of materials must be ripped and re-planted after construction is complete, to the satisfaction of the Environmental Control Officer (ECO).
Leakage of fuels, oils, etc. from construction machinery – this	• No mixing of concrete may occur close to (less than

Activity and *Impact*	Mitigation measures
would lead to *pollution of the watercourse or riparian area*.	50m from the riparian area) the stream. • Machinery prone to oil or fuel leakage must be located at least 50m away from the edge of the riparian area, and the area adequately bunded in order to contain leakages. • Water pumps and cement mixers shall have drip trays to contain oil and fuel leaks – these must be cleaned regularly. • Suitable toilet and wash facilities must be provided to avoid the use of sensitive areas for these activities. These service areas must be maintained, and toilets emptied on at least a weekly basis.
Foot and vehicular traffic across the site, leading to *destruction or deterioration of aquatic habitat.* Access to the stream during construction or demolition will lead to *damage of soils, substrate (in the stream) and vegetatio*n. Regular use of a particular area for pathways will lead to the *compaction of soils*.	• Pathways and access roads for construction or demolition must avoid the stream and its riparian area. • The edge of the riparian area must be clearly demarcated and fenced off (using temporary fencing and danger tape) before any work or site preparation begins. These are no-go areas during the construction/demolition phase. • All impacted natural areas must be ripped and re-planted after the activity, to the satisfaction of the ECO.
Presence of construction/demolition teams and their machinery on site – this may lead to *noise and light pollution* in the area, which will *disturb aquatic and terrestrial fauna and flora*.	• If lights are used, these must be directed away from all sensitive areas. • The boundary of the riparian area must be clearly demarcated and fenced off (using temporary fencing and danger tape) before any work or site preparation begins. These are no-go areas during the construction/demolition phase.
Top soil or sand brought onto the site, for filling and landscaping can lead to the *introduction of alien or invasive seedbanks*.	• Top soil and sand brought onto the site should be inspected for seedlings throughout construction. Seedlings must be removed regularly. • Constant monitoring of the construction/demolition site by the Site Engineer and ECO must occur, and all alien plant species removed from or destroyed on the site.
Disturbance of soils and vegetation as a result of removal of tents and infrastructure This may lead to a loss of biodiversity and invasion by IAPs 9In disturbed soils), and possibly erosion of bare areas.	• All impacted areas on the Tented Camp site and areas impacted by the associated infrastructure must be rehabilitated once the Camp has been removed. • A rehabilitation plan must be compiled with input from a terrestrial and freshwater ecologist.

7.3.2 Operational phase

The activities (underlined), impacts (in italics) and mitigation measures associated with the operational phase are detailed in the table below.

Activity and *Impact*	Mitigation measures
Stormwater discharge into natural areas – water quality impacts A *decrease in water quality* can follow from discharge of residential *stormwater runoff* into natural areas. Residential	• New hardened surfaces (impermeable) must be limited to the developable area outside the stream's riparian area (i.e. outside the ecological buffer). • Pathways through the stream's riparian area must

Activity and *Impact*	Mitigation measures
stormwater is unlikely to be heavily polluted on the Tented Camp site, but can contain oil and petrol from vehicles, and of nutrients such as nitrates and phosphates from soaps, cleaning agents or fertilizers. These nutrients can lead to the proliferation of algae in aquatic ecosystems, which can be problematic and unsightly. This impact is likely to impact both the site area and any downstream areas should this polluted water leave the property.	be permeable. • No fertilizer may be used on the site. • Soaps and cleaning agents must be environmentally friendly brands. • All hardened areas within the site should be associated (where possible) with vegetated filter strips (broad, sloped vegetated areas that accept shallow runoff from hardened surfaces), bioswales (landscaped areas that are designed to remove silt and a number of pollutants from runoff, through ensuring that water flows slowly along these gently sloping (<6% slope) features, often planted with grass or other plant species, mulch or riprap), and / or bio-retention systems (vegetated areas where runoff is filtered through a filter media layer, e.g. sand, as it percolates downwards), all of which are designed to reduce the quantity of runoff leaving a hardened surface and entering the stormwater system.
<u>Stormwater discharge into natural areas – water quantity impacts</u> Any hardened surfaces on the Tented camp site will lead to *changes in water inputs and flow patterns*, as there will be an *increase in the quantity* of stormwater runoff exiting the developed footprint as opposed to filtering into the ground. Flow patterns will also be impacted, as *flood peaks will be increased in volume as well as frequency*. Discharge of stormwater into the seasonal stream may lead to a *loss of habitat quality*, as the stream will be inundated for longer and will *lose its seasonal character*.	• Effort should be made to minimise the hardening of surfaces across the whole site. Natural areas, gardens and road verges are areas where water can filter into the ground. • New hardened surfaces (impermeable) must be limited to the developable area outside the ecological buffers. • Stormwater should not be conveyed directly (e.g. by pipe or drain) into the stream but must flow along unlined swales, permeable areas, and bioswales. • Parking areas should preferably be constructed using permeable materials to allow for infiltration of water. • As a principle, hardened areas should be associated (where possible) with vegetated filter strips (broad, sloped vegetated areas that accept shallow runoff from hardened surfaces), bioswales (landscaped areas that are designed to remove silt and a number of pollutants from runoff, through ensuring that water flows slowly along these gently sloping (<6% slope) features, often planted with grass or other plant species, mulch or riprap), and / or bio-retention systems (vegetated areas where runoff is filtered through a filter media layer, e.g. sand, as it percolates downwards), all of which are designed to reduce the quantity of runoff leaving a hardened surface and entering the stormwater system.
<u>On-site treatment and/or storage of waste water.</u> The risks associated with this approach are: *contamination of soils, groundwater and the stream* from leaks or overflow from pipelines, and the BioDisc domestic sewage treatment plant; or contamination from discharge of treated effluent directly into the watercourse, or use of treated waste water for irrigation. The parameter of concern is **nitrates**, which would be discharged from the Unit at higher concentration than is acceptable for discharge to the watercourse (General Limit).	• Waste water conveyance, storage or treatment infrastructure must be placed outside of the delineated ecological buffers. • All sewage storage facilities must be regularly checked for leaks and overflow. • Nitrate levels must be monitored regularly (every 2-3 months) and the recycle stages adapted to ensure that levels are within General Limits. • The area immediately around the treatment Units should be protected with a berm, which would catch surface water flowing out of any of the

Activity and *Impact*	Mitigation measures
	components. • Treated waste water should be directed to a soakaway downslope of each Unit, and not discharged to the stream, or used for irrigation on the site.
Proximity of tents and human activity to the stream. This may lead to local *disturbance of fauna and flora*, through noise, light, trampling, etc. Fauna may move away from the site.	• Lighting should face away from the stream. • Visitors should be discouraged from walking on the bed and banks of the stream, and into the wetter areas, through construction of walkways and benches, guiding visitors to use specific pathways and areas. • Bicycle paths through the riparian area around the stream must be limited, and no new paths constructed. • All pathways must be regularly checked for signs of erosion, and stabilised or re-routed should this occur.
Clearing of vegetation and disturbance of soils for maintenance/landscaping/gardening *Clearing of indigenous vegetation* would lead to a loss of plant and animal diversity. *Alien or invasive seeds and seedlings may be transported onto site* during ongoing landscaping/gardening. Alien vegetation is well adapted to establishing on previously disturbed soils and road verges. This may lead to a further loss of habitat quality, and increase in water uptake through transpiration.	• No additional clearing of indigenous vegetation (i.e. post construction) should be permitted. • Eco-logs should be placed in areas that are bare of vegetation or that are being rehabilitated, in order to trap sediment, water and seeds. • Landscaping requiring ongoing maintenance around the tents must be kept to a minimum, especially within the ecological buffers. • No kikuyu grass is allowed anywhere on site. • The spread of alien plant species into all natural areas must be prevented and monitored. • Road verges must be monitored for alien species, especially grasses.

7.3.3 Cumulative impacts

The cumulative impacts of most concern in this area are:

- Loss of open space, through catchment hardening;
- Loss or fragmentation of riverine or wetland habitat, as a result of encroachment into ecosystems and/or their ecological buffers;
- Deterioration in water quality, from discharge of stormwater or treated waste water into natural areas and ecosystems.

The following activities could impact negatively on the resource quality of the watercourses on Boschendal Estate, and downstream:

- Discharge of treated waste water from package units, and untreated stormwater runoff into the riparian areas, wetlands or watercourses;
- Clearing of vegetation for preparation of construction sites, and for landscaping, and for operational maintenance of infrastructure;
- Maintenance of gravel roads, tracks and boardwalks;
- Proximity of developments to sensitive areas, resulting in the disturbance of fauna and flora through noise and light pollution, and trampling / cycling.

7.4 Assessment of impacts

7.4.1 Construction (and demolition) phase

Although the Tented Camp site has already been constructed, the following impacts are assumed to have been likely to occur. This section also deals with the impacts associated with removal of the camp. There are no construction or demolition impacts associated with the No-go alternative.

	Tented Camp
Potential impact and risk	Storage of building or demolition materials (sand, soil, bricks etc) in or close to sensitive areas – this would damage the soil structure, and would destroy or shade out plants growing in and around these ecosystems. Dump areas frequently lead to the compaction of soils, which can influence re-growth of plants.
Status of impact	Negative
Extent of impact	Site (low)
Duration of impact	Short-term
Consequence of impact or risk	This would lead to deterioration in ecological condition, or possibly permanent loss of natural habitat.
Probability of occurrence	Improbable
Intensity of the impact	Medium negative
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss
Degree to which the impact can be reversed	Fully reversible
Cumulative impact prior to mitigation	Low
Significance rating of impact prior to mitigation	Low negative
Degree to which the impact can be avoided	High
Degree to which the impact can be managed	High
Degree to which the impact can be mitigated	High
Proposed mitigation:	Store materials at least 50 m away from any sensitive areas in bunded areas. Protect piles (must be less than 1.5m high) of soil and other fine material, such as using shade-cloth. Rehabilitate sensitive areas that are impacted by this activity.
Cumulative impact post mitigation	No impact
Significance rating of impact after mitigation	No impact

	Tented Camp
Potential impact and risk	Leakage or spillage of fuels, oils, etc. from construction / demolition machinery – this would lead to pollution of the stream.
Status of impact	Negative
Extent of impact	Downstream (medium)
Duration of impact	Short-term
Consequence of impact or risk	This would lead to deterioration in ecological condition.
Probability of occurrence	Probable
Intensity of the impact	Medium negative
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss
Degree to which the impact can be reversed	Partly reversible

	Tented Camp
Cumulative impact prior to mitigation	Medium negative
Significance rating of impact prior to mitigation	Medium negative
Degree to which the impact can be avoided	High
Degree to which the impact can be managed	High
Degree to which the impact can be mitigated	High
Proposed mitigation	No mixing of concrete may occur close to (less than 50m from the riparian area) the stream. Machinery prone to oil or fuel leakage must be located at least 50m away from the edge of the riparian area, and the area adequately bunded in order to contain leakages. Water pumps and cement mixers shall have drip trays to contain oil and fuel leaks – these must be cleaned regularly. Suitable toilet and wash facilities must be provided to avoid the use of sensitive areas for these activities. These service areas must be maintained, and toilets emptied on at least a weekly basis.
Cumulative impact post mitigation	Low negative
Significance rating of impact after mitigation	Low negative

	Tented Camp
Potential impact and risk	Foot and vehicular traffic across the site, leading to destruction or deterioration of freshwater habitat.
Status of impact	Negative
Extent of impact	Site (low)
Duration of impact	Short -term
Consequence of impact or risk	This would lead to deterioration in ecological condition or possible loss of wetland or river habitat.
Probability of occurrence	Improbable
Intensity of the impact	Low
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss
Degree to which the impact can be reversed	Fully reversible
Cumulative impact prior to mitigation	Low negative
Significance rating of impact prior to mitigation	Low negative
Degree to which the impact can be avoided	High
Degree to which the impact can be managed	High
Degree to which the impact can be mitigated	High
Proposed mitigation	Pathways and access roads for construction or demolition must avoid the stream and its riparian area. The edge of the riparian area must be clearly demarcated and fenced off (using temporary fencing and danger tape) before any work or site preparation begins. These are no-go areas during the construction/demolition phase. All impacted natural areas must be ripped and re-planted after the activity, to the satisfaction of the ECO.
Cumulative impact post mitigation	No impact
Significance rating of impact after mitigation	No impact

	Tented Camp
Potential impact and risk	Presence of construction / demolition teams and their machinery on site –

	Tented Camp
	this may lead to noise and light pollution in the area, which will disturb aquatic and terrestrial fauna and flora.
Status of impact	Negative
Extent of impact	Site (low)
Duration of impact	Short -term
Consequence of impact or risk	This would lead to the deterioration in condition of aquatic habitat and the consequent movement of flora and fauna away from the site.
Probability of occurrence	Probable
Intensity of the impact	Medium
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss
Degree to which the impact can be reversed	Partly reversible
Cumulative impact prior to mitigation	Medium negative
Significance rating of impact prior to mitigation	Low negative
Degree to which the impact can be avoided	Medium
Degree to which the impact can be managed	Medium
Degree to which the impact can be mitigated	Medium
Proposed mitigation	If lights are used, these must be directed away from all sensitive areas. The boundary of the riparian area must be clearly demarcated and fenced off (using temporary fencing and danger tape) before any work or site preparation begins. These are no-go areas during the construction/demolition phase.
Cumulative impact post mitigation	Low negative
Significance rating of impact after mitigation	Low negative

	Tented Camp
Potential impact and risk	Top soil or sand brought onto the site, for filling and landscaping can lead to the introduction of alien or invasive seedbanks.
Status of impact	Negative
Extent of impact	Whole Estate and downstream (medium)
Duration of impact	Medium-term
Consequence of impact or risk	This would lead to the deterioration in condition of aquatic habitat and loss of water through higher transpiration rates of IAPs, compared to most fynbos species.
Probability of occurrence	Probable
Intensity of the impact	Medium
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss
Degree to which the impact can be reversed	Fully reversible
Cumulative impact prior to mitigation	Medium negative
Significance rating of impact prior to mitigation	Medium negative
Degree to which the impact can be avoided	Medium
Degree to which the impact can be managed	High
Degree to which the impact can be mitigated	High
Proposed mitigation	Top soil and sand brought onto the site should be inspected for seedlings throughout construction. Seedlings must be removed regularly. Constant

	Tented Camp
	monitoring of the construction/demolition site by the Site Engineer and ECO must occur, and all alien plant species removed from or destroyed on the site.
Cumulative impact post mitigation	Low negative
Significance rating of impact after mitigation	Low negative (possibly even low positive, if IAPs are consistently removed from the site)

	Tented Camp
Potential impact and risk	Disturbance of soils and vegetation as a result of removal of tents and infrastructure
Status of impact	Negative
Extent of impact	Site
Duration of impact	Short- to medium-term
Consequence of impact or risk	Loss of biodiversity and invasion by IAPs, and possibly erosion of bare areas.
Probability of occurrence	Definite
Intensity of the impact	Medium
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss
Degree to which the impact can be reversed	Medium to high
Cumulative impact prior to mitigation	Medium negative
Significance rating of impact prior to mitigation	Medium negative
Degree to which the impact can be avoided	Low
Degree to which the impact can be managed	High
Degree to which the impact can be mitigated	High
Proposed mitigation	All impacted areas on the Tented Camp site and areas impacted by the associated infrastructure must be rehabilitated once the Camp has been removed. **A rehabilitation plan must be compiled with input from a terrestrial and freshwater ecologist**.
Cumulative impact post mitigation	No impact
Significance rating of impact after mitigation	No impact, to low positive significance (depending on the success of rehabilitation)

7.4.2 Operational phase

	Tented Camp	No go
Potential impact and risk	Stormwater discharge into natural areas – water quality impacts.	
Status of impact	Negative	Negative
Extent of impact	Site and downstream (medium)	Site and downstream (medium)
Duration of impact	Long-term	Long-term
Consequence of impact or risk	May lead to pollution of soil, rivers and groundwater.	
Probability of occurrence	Probable	Highly improbable
Intensity of the impact	Low	Low

	Tented Camp	No go
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss	Marginal loss
Degree to which the impact can be reversed	Partly reversible	Partly reversible
Cumulative impact prior to mitigation	Medium negative	No impact
Significance rating of impact prior to mitigation	Medium negative	No impact
Degree to which the impact can be avoided	Medium to high	n/a
Degree to which the impact can be managed	High	n/a
Degree to which the impact can be mitigated	High	n/a
Proposed mitigation	New hardened surfaces (impermeable) must be limited to the developable area outside the stream's riparian area (i.e. outside the ecological buffer). Pathways through the stream's riparian area must be permeable. No fertilizer may be used on the site. Soaps and cleaning agents must be environmentally friendly brands. Runoff from hardened surfaces must be allowed to filter into the soil.	n/a
Cumulative impact post mitigation	Low negative	No impact
Significance rating of impact after mitigation	Low negative	No impact

	Tented Camp	No go
Potential impact and risk	Stormwater discharge into natural areas – water quantity impacts.	
Status of impact	Negative	Negative
Extent of impact	Site and downstream (medium)	Site and downstream (medium)
Duration of impact	Long-term	Long-term
Consequence of impact or risk	May lead to change in hydrological patterns in the watercourse and groundwater.	
Probability of occurrence	Probable	Highly improbable
Intensity of the impact	Low	Low
Degree to which the impact may cause irreplaceable loss of resources	Marginal loss	Marginal loss
Degree to which the impact can be reversed	Partly reversible	Partly reversible
Cumulative impact	Medium negative	No impact

	Tented Camp	No go
prior to mitigation		
Significance rating of impact prior to mitigation	Medium negative	No impact
Degree to which the impact can be avoided	Medium to high	n/a
Degree to which the impact can be managed	High	n/a
Degree to which the impact can be mitigated	High	n/a
Proposed mitigation	Effort should be made to minimise the hardening of surfaces across the whole site. Natural areas, gardens and road verges are areas where water can filter into the ground. New hardened surfaces (impermeable) must be limited to the developable area outside the ecological buffers. Stormwater should not be conveyed directly (e.g. by pipe or drain) into the stream but must flow along unlined swales, permeable areas, and bioswales. Parking areas should preferably be constructed using permeable materials to allow for infiltration of water.	n/a
Cumulative impact post mitigation	Low negative	No impact
Significance rating of impact after mitigation	Low negative	No impact

	Tented Camp	No go
Potential impact and risk	On-site treatment and/or storage of waste water – impacts on water quality	
Status of impact	Negative	n/a
Extent of impact	Site and downstream (medium)	n/a
Duration of impact	Long-term	n/a
Consequence of impact or risk	May lead to contamination of soils, groundwater and aquatic ecosystems.	
Probability of occurrence	Probable	n/a
Intensity of the impact	Medium	n/a
Degree to which the impact may cause irreplaceable loss of resources	Significant loss	n/a
Degree to which the impact can be reversed	Partly reversible	n/a
Cumulative impact prior to mitigation	Medium negative	n/a
Significance rating of impact prior to mitigation	Medium negative	n/a
Degree to which the impact can be avoided	Medium to high	n/a
Degree to which the impact can be	High	n/a

	Tented Camp	No go
managed		
Degree to which the impact can be mitigated	Medium	n/a
Proposed mitigation	Waste water conveyance, storage or treatment infrastructure must be placed outside of the delineated ecological buffers. All sewage storage facilities must be regularly checked for leaks and overflow. Nitrate levels must be monitored regularly (every 2- 3 months) and the recycle stages adapted to ensure that levels are within General Limits.The area immediately around the treatment Units should be protected with a berm, which would catch surface water flowing out of any of the components. Treated waste water should be directed to a soakaway downslope of each Unit, and not discharged to the stream, or used for irrigation on the site.	n/a
Cumulative impact post mitigation	Low negative	No impact
Significance rating of impact after mitigation	Low negative	No impact

	Tented Camp	No go
Potential impact and risk	Proximity of tents and human activity to the stream.	Proximity of bike paths to the stream.
Status of impact	Negative	Negative
Extent of impact	Site (low)	Site (low)
Duration of impact	Long-term	Long-term
Consequence of impact or risk	This may lead to local disturbance of fauna and flora, through noise, light, trampling, etc. Fauna may move away from the site.	
Probability of occurrence	Probable	Probable
Intensity of the impact	Low	Low
Degree to which the impact may cause irreplaceable loss of resources	Significant loss	Significant loss
Degree to which the impact can be reversed	Fully reversible	Fully reversible
Cumulative impact prior to mitigation	Medium negative	Low negative
Significance rating of impact prior to mitigation	Medium negative	Low negative
Degree to which the impact can be avoided	Medium to high	High
Degree to which the impact can be managed	High	High
Degree to which the impact can be mitigated	High	High
Proposed mitigation	Lighting should face away from the stream. Visitors should be discouraged from walking on the bed and banks of the stream, and into the wetter areas, through construction of	Bicycle paths through the riparian area around the stream must be limited, and no new paths

	Tented Camp	No go
	walkways and benches, guiding visitors to use specific pathways and areas. Bicycle paths through the riparian area around the stream must be limited, and no new paths constructed. All pathways must be regularly checked for signs of erosion, and stabilised or re-routed should this occur.	constructed. All pathways must be regularly checked for signs of erosion, and stabilised or re-routed should this occur.
Cumulative impact post mitigation	Low negative	No impact
Significance rating of impact after mitigation	Low negative	No impact

	Tented Camp	No go
Potential impact and risk	Clearing of vegetation and disturbance of soils for maintenance/landscaping/gardening and disturbance of soils for landscaping/gardening	
Status of impact	Negative	n/a
Extent of impact	Site and downstream (medium)	n/a
Duration of impact	Long-term	n/a
Consequence of impact or risk	Loss of biodiversity. Alien or invasive seeds and seedlings may be transported onto site during ongoing landscaping/gardening. This may lead to a loss of habitat quality, and increase in water uptake through transpiration.	
Probability of occurrence	Probable	n/a
Intensity of the impact	Medium	n/a
Degree to which the impact may cause irreplaceable loss of resources	Significant loss	n/a
Degree to which the impact can be reversed	Fully reversible	n/a
Cumulative impact prior to mitigation	Medium negative	n/a
Significance rating of impact prior to mitigation	Medium negative	n/a
Degree to which the impact can be avoided	Medium to high	n/a
Degree to which the impact can be managed	High	n/a
Degree to which the impact can be mitigated	High	n/a
Proposed mitigation	Clearing of indigenous vegetation should not be permitted. Eco-logs should be placed in areas that are bare of vegetation or that are being rehabilitated, in order to trap sediment, water and seeds. Landscaping requiring ongoing maintenance around the tents must be kept to a minimum, especially within the ecological buffers. No kikuyu grass is allowed anywhere on site. The spread of alien plant species into all natural areas must be prevented and monitored. Road verges must be monitored for alien species, especially grasses.	n/a
Cumulative impact post mitigation	Low negative	n/a
Significance rating of impact after mitigation	Low negative	n/a

8 Water use authorisation

8.1 Water uses

The construction and operation of the Tented Camp and the associated infrastructure may have an impact on the bed and banks of and flow in Stream 1, thus triggering non-consumptive water uses in terms of Section 21 of the National Water Act (NWA, 1998). Such water uses apply within the NWA regulatory zone, as discussed in Section 6.1.

Non-consumptive water uses include:

a. Taking water from a water resource;

b. Storing water;

c. Impeding or diverting the flow of water in a watercourse;

d. Engaging in a stream flow reduction activity;

e. Engaging in a controlled activity identified and declared as such in terms of the Act;

f. Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;

g. Disposing of waste in a manner which may detrimentally impact on a water resource;

h. Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;

i. Altering the bed, banks, course or characteristics of a watercourse;

j. Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and

k. Using water for recreational purposes.

The process to be followed to obtain authorisation for these categories of water use is different for each water use, and relates to the **risk** associated with the water use. The General Authorisation (GA) in terms of Section 39 of the Water Act (1998) provided in Notice 509 of 2016 (GN 40229 of 26th August 2016) provides guidance and the conditions of authorisation regarding impeding and diverting the flow in a watercourse (Section 21 (c)), or altering the bed, banks, course and characteristics of a watercourse (Section 21 (i)). The recent amendment of the Section 21 (c) and (i) GA introduced a risk assessment matrix that allows for the determination of the level of risk associated with any given activity. Low risk water uses are **generally authorised**, requiring registration of the water use only, while activities with a moderate to high level of risk to the water resource require a full water use licence application.

8.2 Risk assessment matrix

The risk assessment matrix introduced in August 2016 adopts an approach similar to the EIA regulations, where each impact is assessed in terms of severity, likelihood and consequence. The matrix requires the assessment of each activity associated with the construction and operation of any development project in terms of the impacts expected to affect resource quality characteristics (flow regime, water quality, geomorphology, and habitat/biota) of watercourses and wetlands. Each impact is scored in terms of the

severity of its effect on each of the resource quality characteristics, and the scores are then averaged to give a total for severity. Each impact is then scored in terms of its:

- **Consequence**, which is the product of the severity of the impact, the spatial scale or extent, and the duration of the impact; and
- **Likelihood**, which is the sum of the frequency of the activity, frequency of the impact, existence of legislation governing the activity and ecosystem; and the *ease of detection* of the impact.

The significance of the impact is calculated as the product of its consequence and likelihood. The final score is used to assign a risk rating to the impact (see Table 8.1), **assuming implementation of effective mitigation measures as outlined in the Appendix**.

Table 8.1 Rating Classes for the Risk Assessment.

Rating	Class	Management Description
1 – 55	(L) Low Risk	Acceptable as is or consider requirement for mitigation. Impact to watercourses and resource quality small and easily mitigated.
56 – 169	M) Moderate Risk	Risk and impact on watercourses are notably and require mitigation measures on a higher level, which costs more and require specialist input. Licence required.
170 – 300	(H) High Risk	Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale and lowering of the Reserve. Licence required.

8.3 Results of risk assessment

The full risk assessment matrix is provided in the Appendix, along with the mitigation measures required to reduce the risks to the levels assessed. All risks can be reduced to low, **assuming all recommended mitigation measures are implemented**.

9 CONCLUSIONS

The Boschendal Estate comprises a network of watercourses and wetlands, ranging from pristine systems, to canalised drainage lines. The closer these ecosystems are to the unimpacted mountain slopes, the more pristine their condition. All of these ecosystems are important to the biota inhabiting this area, as they provide fresh water, habitat, food, nesting sites and protection to aquatic and semi-aquatic animals and plants. In addition, these ecosystems provide unique opportunities for developers of the Estate to combine natural, healthy areas with tourism facilities.

The Tented Camp site is located adjacent to a seasonal stream, named "Stream 1" in an earlier study (Snaddon, 2019). Stream 1 flows into the Werda River and then, ultimately, the Berg River, in quaternary catchment G10C. The sub-quaternary sub-catchment in which the Tented Camp site lies is not a freshwater priority area, while the riparian area around Stream 1 has been identified as an Ecological Support Area. Stream 1 itself was assessed as being in pristine condition above the farm dam adjacent to the site, deteriorating to moderate condition below the dam. In terms of ecological importance and sensitivity, the quality of the habitat is such that the stream will support populations of unique species that are sensitive to changes in water quantity and quality. The stream is an important refuge for species, and provides essential ecological corridors in a highly transformed, cultivated landscape.

The Tented Camp development is considered to be a temporary development, as the structures and services will be dismantled in the near future. The tents are placed on pre-cast concrete blocks that have been placed on top of the ground surface, for easy removal. All services are buried in shallow trenches and covered with rock and loose material, and will also be removed.

Services to and on the site include:

- Potable water from the farm reticulation system;
- Fire water from the farm system;
- Foul sewer reticulation to a set of Bio-Disks;
- Stormwater-surface discharge;
- Telecommunications;
- Electrical supply from the current Boschendal overhead reticulation system.

Only one layout was assessed – the existing layout – which was compared against the no development option. The assessment included impacts associated with construction and removal / demolition of the Camp, and the operational phase.

Impacts relating to the construction and eventual removal of the Tented Camp infrastructure were all assessed as being, at worst, of low negative significance, if the mitigation measures recommended in this report are implemented. Due to the fact that most of the infrastructure has been put in place, it was possible to visit the site and assess whether site construction has had an unexpectedly high impact on Stream 1 and its riparian area. It was noted on a site visit on 23 September 2021 that there are few residual impacts post-construction. It is important that the mitigation measures recommended for the demolition / removal phase are implemented, in order to maintain this low level of negative impact on the site.

The removal of the Camp must be guided by a rehabilitation plan for the site, compiled with input from a terrestrial and freshwater ecologist. All impacted areas on the site, and areas impacted by infrastructure, must be rehabilitated – at the very least, ripped and re-vegetated – in order to ensure that the site is not invaded by pioneer IAPs, with possible erosion of bare areas.

With regards to the operational phase, the impacts of concern are the discharge of treated waste from the BioDisc Treatment Units, and the possible introduction of invasive alien plants (IAPs) into disturbed areas of

the site through landscaping, gardening or clearing of vegetation during maintenance activities. The effluent discharged from the BioDisc Treatment Units are expected to be of acceptable quality (i.e. within General Limits), with the exception of nitrate levels. Nitrate levels must be regularly monitored (every 2 – 3 months) and the recycling stages adapted to ensure that the nitrate levels are within acceptable limits. In order to avoid any negative impacts on Stream 1, it is recommended that soakaways be installed downslope of each Unit, to encourage local filtration of treated effluent into the soil rather than allowing it to flow into the stream.

No new cycle paths should be located in the riparian area of Stream 1. Bare areas around the site should be stabilised with eco-logs, and re-vegetated with appropriate plant species.

Assuming that all mitigation measures are implemented, all operational phase impacts are, at most, of low negative significance, and the development is acceptable from a freshwater ecological perspective. The development poses only a low risk to Stream 1 and thus, the water use authorisation for the development should be generally authorised.

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Appendix: Risk assessment matrix for Stream 1 adjacent to the Tented Camp site

RISK MATRIX (Based on DWS 2015 publication: Section 21 c and I water use Risk Assessment Protocol)

NAME and REGISTRATION No of SACNASP Professional member: …Kate Snaddon…….. Reg no. …… 400225/06……

Risk to be scored for construction and operational phases of the project. MUST BE COMPLETED BY SACNASP PROFESSIONAL MEMBER REGISTERED IN AN APPROPRIATE FIELD OF EXPERTISE.

No.	Phases	Activity	Aspect	Impact	Severity																PES AND EIS OF WATERCOURSE
					Flow Regime	Physico & Chemical (Water Quality)	Habitat (Geomorph + Vegetation)	Biota	Severity	Spatial scale	Duration	Consequence	Frequency of activity	Frequency of impact	Legal Issues	Detection	Likelihood	Significance	Risk Rating	Confidence level	Control Measures	
1	Construction	Construction activities in or close to the watercourse and riparian area	Storage or dumping of building / landscaping materials in close proximity to the	Compaction of soils; movement of building materials (sand, rubble, etc) into the riparian area	1	1	1	1	1	1	2	4	2	1	5	1	9	**36**	L	80	Ensure that materials are stored at least 50m away from the edge of the riparian area	PES is **Category A**; EIS is **high**.
			Leakage of fuels, oils, etc. from construction machinery.	Pollution of sensitive areas, deterioration in water quality	0	1	1	1	0.75	1	2	3.75	1	1	1	2	5	**18.75**	L	80	Ensure that machinery is bunded, and located at least 50m away from the riparian area.	
			Pedestrian access onto and around the construction site	Trampling of sensitive habitat; noise and light pollution; introduction and spread of alien invasive species	1	0	1	0	0.5	1	2	3.5	2	1	5	2	10	**35**	L	80	Demarcate the ecological buffer and ensure that construction activities remain outside of this area. The construction site must be monitored for the spread of IAPs.	
				Pollution of sensitive areas from human waste, deterioration in water quality	0	1	0	1	0.5	1	2	3.5	4	2	1	3	10	**35**	L	80	Ensure that toilets are provided and used by construction workers. If waste is found, it must be removed immediately and disposed of.	
2	Operational	Stormwater management	Discharge of stormwater runoff into riparian area and watercourse	Altered hydrology and water quality	1	1	0	1	0.75	2	3	5.75	2	1	1	3	7	**40.25**	L	50	A stable berm should be constructed, directing all stormwater runoff that runs towards the river, away from the riparian area and watercourse. Due to the lack of hardened surfaces across the site, it is unlikely that volumes will be substantial. Stormwater runoff should be allowed to flow as diffuse flow over the vegetation lying downslope of the tents, and well away from the waste water treatment unit.	
		Proximity of development to sensitive areas	Disturbance (noise, light) of fauna and flora	Loss of biodiversity	0	0	1	1	0.5	1	3	4.5	4	1	1	4	10	**45**	L	50	Ensure that lighting is directed away from the river, and that access into the riverine corridor is limited to existing pathways and tracks.	
		Clearing of vegetation (site/road maintenance, bike tracks, etc)	Damage or removal of vegetation	Loss of biodiversity; compaction of soils; loss of covering vegetation	0	0	1	1	0.5	1	3	4.5	2	1	5	3	11	**49.5**	L	50	Clearing of indigenous vegetation shouold not be permitted. Eco-logs should be placed in areas that are bare of vegetation or that are being rehabilitated, in order to trap sediment, water and seeds. The bike track in the riparian vegetation should be removed and rehabilitated.	
		Waste water management	Discharge of treated waste water into the riparian area or watercourse, or groundwater	Pollution of sensitive areas, deterioration in water quality	1	1	0	1	0.75	2	3	5.75	4	1	1	3	9	**51.75**	L	50	All waste water infrastructure must be placed outside of the delineated ecological buffers. All sewage storage facilities must be regularly checked for leaks and overflow. Nitrate levels must be monitored regularly (every 2- 3 months) and the recycle stages adapted to ensure that levels are within General Limits. The area immediately around the treatment Units should be protected with a berm, which would catch surface water flowing out of any of the components. Treated waste water should be directed to a soakaway downslope of each Unit, and not discharged to the stream, or used for irrigation on the site.	

APPENDIX H (ii)

Ecological Impact Assessment

BOSCHENDAL TENTED CAMP S24G

ECOLOGICAL REPORT

Prepared for:

FE 5 (PTY) Ltd
Tented Camp S24G
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7680

Prepared by:

Biodiversity Africa

30 Chudleigh Road
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September 2021

Details of Company

Biodiversity Africa	Biodiversity Africa is situated in Cape Town and specialises in terrestrial botanical and faunal impact assessments.
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Authors

Tarryn Martin (Botanical Specialist) (*Pri. Sci. Nat* 008745)

Tarryn has over ten years of experience working as a botanist, nine of which are in the environmental sector. She has worked as a specialist and project manager on projects within South Africa, Mozambique, Lesotho, Zambia, Tanzania, Cameroon, Swaziland and Malawi. The majority of these projects required lender finance and consequently met both in-country and lender requirements.

Tarryn has extensive experience writing botanical impact assessments, critical habitat assessments, biodiversity management plans, biodiversity monitoring plans and Environmental Impact Assessments to International Standards, especially to those of the International Finance Corporation (IFC). Her experience includes working on large mining projects such as the Kenmare Heavy Minerals Mine, where she monitored forest health, undertook botanical impact assessments for their expansion projects and designed biodiversity management and monitoring plans. She has also project managed Environmental Impact Assessments for graphite mines in northern Mozambique and has a good understanding of the Mozambique Environmental legislation and processes.

Tarryn holds a BSc (Botany and Zoology), a BSc (Hons) in African Vertebrate Biodiversity and an MSc with distinction in Botany from Rhodes University. Tarryn's Master's thesis examined the impact of fire on the recovery of C3 and C4 Panicoid and non-Panicoid grasses within the context of climate change for which she won the Junior Captain Scott-Medal (Plant Science) for producing the top MSc of 2010 from the South African Academy of Science and Art as well as an Award for Outstanding Academic Achievement in Range and Forage Science from the Grassland Society of Southern Africa.

Tarryn is a professional member of the South African Council for Natural Scientific Professionals (since 2014).

Amber Jackson (Faunal Specialist) (*Cand. Nat. Sci)*

Amber has over ten years' experience in environmental consulting and has managed projects across various sectors including mining, agriculture, forestry, renewable energy, housing, coastal and wetland recreational infrastructure. Most of these projects required lender finance and therefore met both in-country, lender and sector specific requirements.

Amber completed the IFC lead and Swiss funded programme in Environmental and Social Risk Management course in 2018. The purpose of the course was to upskill Sub-Saharan African

environmental consultants to increase the uptake of E&S standards by Financial Institutions.

Amber specialises in terrestrial vertebrate faunal assessments. She has conducted large scale faunal impact assessments that are to international lender's standards in Mozambique, Tanzania, Lesotho and Malawi. In South Africa her faunal impact assessments comply with the protocols for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity and follows the SANBI Species Environmental Assessment Guideline. Her specialist input goes beyond impact assessments and includes faunal opportunities and constraints assessments, Critical Habitat Assessments, Biodiversity related Management Plans and Biodiversity Monitoring Programmes.

Amber holds a BSc (Zoology and Ecology, Environment & Conservation) and BSc (Hons) in Ecology, Environment & Conservation from WITS University and an MPhil in Environmental Management from University of Cape Town. She was awarded the Denzil and Dorethy Carr Prize for her plant collection in 2006. Amber's honours focused on the landscape effects on Herpetofauna in Kruger National Park and her Master's thesis focused on the management of social and natural aspects of environmental systems with a dissertation in food security that investigated the complex food system of informal and formal distribution markets.

Declaration of Independence

Tarryn Martin (Botanical Specialist)

- I, Tarryn Martin, declare that, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amended Environmental Impact Assessment Regulations, 2017;
- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this report are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

…….. ……

SIGNED DATE

Amber Jackson (Faunal Specialist)

- I, Amber Jackson, declare that, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Amended Environmental Impact Assessment Regulations, 2017;
- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
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- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this report are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

…….. ……

SIGNED DATE

Non-Technical Summary

Introduction

A tented camp has been developed on the upper slopes of the Boschendal Estate, distanced from the main upmarket tourist accommodation nodes to provide a low impact, less formal accommodation offering.

The tented camp was constructed within an area of natural vegetation without the required Environmental Authorisation. As such, an S24G application has been submitted to the authorities for the infrastructure that has been built.

Approach

A desktop assessment was undertaken prior to the site visit to determine the vegetation types present, identify species of conservation concern that might occur on site and identify the threat and conservation status of the project site.

Following this, a field survey was conducted during the late flowering season on the 10 September 2021. The purpose of the survey was to assess the site-specific ecological state of the project area by recording the species present (both indigenous and alien invasive species), identifying sensitive ecosystems such as rocky outcrops, riparian areas or areas with species of conservation concern, and identifying the current landuse of the site.
The findings from this site visit were supplemented with data from a previous baseline assessment and constraints study undertaken by Helme (2019).

Vegetation and Floristics

The project site occurs within the Fynbos Biome which occupies most of the Cape Fold Belt as well as the lowlands that occur between the mountains and the Atlantic Ocean in the west and south. According to the National Vegetation Map (2018) the project site occurs within Boland Granite Fynbos which is listed as as endangered with a conservation target of 30%. Originally this vegetation type covered an estimated 524 ha but at least half has been transformed for vineyards, olive groves and plantations. Despite this, the NBA (2018) lists this vegetation type as well protected.

The field survey confirmed that a patch of Boland Granite Fynbos occurs within the tented camp footprint. The north-western portion of this patch (where tents 4, 6 and 7 are located) is characterised as near intact with species such as *Cliffortia ruscifolia, Hermannia hyssopifolia, Leucadendron salicifolium, Osteospermum moniliferum, Searsia angustifolia* and *Dicerothamnus rhinocerotis* present. The eastern portion of this patch is more degraded and has a higher number of alien invasive species. On the eastern edge of this patch is a stand of large pine trees.

There are also a large number of alien/weedy species within impacted patch of Boland Granite Fynbos, specifically the degraded patch. These include species such as *Acacia longifolia, Pinus cf. pinaster, Verbena bonariensis, Echium plantagineum, Phytolacca octandra, Solanum mauritanium and Pittosporum undulatum.*

One species of conservation concern (*Hermannia rugosa* listed as VU) was confirmed to occur within the impacted project area and one species (*Protea burchelli* listed as VU) was recorded immediately to the west of the site and is therefore likely to occur within the site.

Fauna

The Boschendal Tented Camp site intersects the distribution range of 19 amphibian species of which 12 are endemic and four are Near-Threatened. The only amphibian that may have occurred on site during the time of development is the Cape Rain Frog (*Breviceps gibbosus*) previously listed as vulnerable but recently been updated to near-threatened. This species favours Renosterveld fynbos heathland and is also found in disturbed habitats in burrows in well-drained soil. It is unclear what means was used to clear vegetation and soil i.e. machinery or by hand, and what was done if this species was found on site. However, it appears as though vegetation clearing was kept to a minimum for the development and only a small portion (15%) of the impacted Boland Granite Fynbos patch was affected.

The Western Cape Province hosts 155 reptile species of which 22 are endemic and 21 are either threatened of near-threatened. Approximately 53 of these reptile species have a distribution range that includes the Boschendal tented camp area.

Reptiles that inhabited the site immediately prior to construction of the tented camp likely would have moved out of the area due to the disturbance. The tented camp would create minimal and intermittent operational disturbance to reptiles and the remaining habitat likely hosts reptiles that have either returned to the area, or are new inhabitants.

The Western Cape hosts approximately 172 mammal species of which 24 are threatened and 13 are near threatened. One vulnerable, six near threatened, three endemic and five near endemic mammal species have a distribution which includes the tented camp area. However, no zebra occur at the tented camp area. No antelope and feline species were expected to use the tented camp area permanently and only if utilised would be for intermittent foraging and/or cover. Small mammals, namely rodents, golden moles and hares are expected to use the area. These would have been disturbed during construction but would have returned once construction ceased. Evidence of moles (mole mounds) and hares (foraging) was observed along the roads in and around the tented camp.

The western Cape hosts 608 bird species (including offshore water birds) and the South African Bird Atlas Project records state 124 species have been recorded in the same pentad as the tented camp area. A previous study by CES (2019) recorded 62 bird species on the Boschendal estate including the Cape Sugarbird specific to the Fynbos vegetation near the tented camp. The western cape hosts 28 threatened and 19 near threatened bird species of which 10 threatened and 13 near-threatened birds have a distribution which includes the tented camp area.

The Black Harrier, Cape Rockjumper and Ground Woodpecker were recorded in the pentad on SABAP2 in 2019 and the study by CES (2019) recorded the Forest Buzzard and Blue Crane. The larger bird species (vultures, eagles) and waterbirds would not have been negatively influenced by the habitat removed for the tented camp.

Site Ecological Index

The Site Ecological Importance (SEI) was assessed for each vegetation type identified for the project site.

Although the near-intact Boland Granite Fynbos and degraded Boland Granite Fynbos has a high sensitivity due to its status of Endangered, the SEI specific to this project infrastructure, which has a small footprint and is of low impact, is rated as medium. However, if additional clearing occurs within this patch of vegetation, this score is likely to increase to high.

The intact patch of Boland Granite Fynbos to the west of the impacted site has an overall SEI of high.

The agricultural land surrounding the near-intact and degraded Boland Granite Fynbos is classified as transformed and has an overall SEI of very low.

Conclusions

Based on the data available in the NBA, it is estimated that approximately 299ha of natural vegetation remain within the Province. The patch of impacted Boland Granite Fynbos that the tented camp occurs within is 1.6ha or 0.54% of the total extent of remaining natural habitat within the Province. The total area of Boland Granite Fynbos impacted by the infrastructure associated with the tented camp (tent platforms, access roads, paths) is approximately 0.24ha or 0.08% of the total remaining extent of this vegetation type.

Impacts associated with this infrastructure were typically of moderate significance prior to mitigation with all but one being reduced to low sensitivity after mitigation measures are implemented.

Recommendations

It is recommended that the following conditions are included in the Final EMPr as well as the conditions of the Environmental Authorisation (EA), if granted:

- No further construction activities may occur until Environmental authorisation has been received and the required permits are in place;
- No further clearing within the impacted Boland Granite Fynbos patch may occur for additional roads or tents;
- No infrastructure must be placed in areas of high sensitivity.
- If any SCC are to be impacted, these must be relocated to nearest appropriate habitat;
- It is recommended that the 1.6ha patch that the project infrastructure is located within is restored to represent natural Boland Granite Fynbos and as such a restoration plan for the site should form part of the EMPr. This includes removal of aliens and re-introduction of representative species;
- Similarly, alien species should be removed from the area to the west of the impacted patch to ensure that these do not spread downhill and back into the area around the tented camp.
- Alien invasive plant clearing should be undertaken in line with an Alien Vegetation Management plan, which should be compiled as part of the EMPr and implemented with immediate effect;

- Only indigenous plant species typical of the local vegetation and approved by a botanist should be used for rehabilitation purposes.
- The impacted Boland Granite Fynbos vegetation patch is not pristine and has been subjected to edge effects and likely infestation of alien plant species for several years. Although further loss of an endangered vegetation type, even if degraded, should be avoided, the impact associated with the tented camp has generally been moderate to low given the small footprint of the project and the limited disturbance of soil, the considered clearing of the site by the contractors (which appears to have been limited to the infrastructure footprint) and the current condition of the vegetation on site.
- If the remaining patch of this vegetation is managed appropriately through the removal of alien invasive plant species and the restoration of the remaining patch (not impacted by the access roads and tent platforms) to its natural state this will improve diversity within the site and contribute towards the conservation of the remaining portion of this vegetation type within the impacted area. The specialist therefore recommends that impacted areas within this patch that are not required for the operation of the tented camp are restored using locally indigenous species representative of Boland Granite Fynbos.
- Further to this, once the tent platforms within the areas of indigenous vegetation have been decommissioned, the sites must be restored back to Boland Granite Fynbos using only locally indigenous species representative of the site.
- Based on the SEI and the identified impacts, the specialist has determined that these are acceptable provided the mitigation recommendations are implemented.

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Glossary of Terms

Alien Invasive Species refers to an exotic species that can spread rapidly and displace native species causing damage to the environment

Biodiversity is the term that is used to describe the variety of life on Earth and is defined as "*the variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems*" (Secretariat of the Convention on Biological Diversity, 2005).

Habitat Fragmentation occurs when large expanses of habitat are transformed into smaller patches of discontinuous habitat units isolated from each other by transformed habitats such as farmland.

Key Biodiversity Area are globally recognised sites that contain significant concentrations of biodiversity.

Natural Habitat refers to habitats composed of viable assemblages of plant and/or animal species of largely native origin and/or where human activity has not essentially modified an area's primary ecological function and species composition.

Protected Area is a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values**.** *(IUCN Definition 2008)*

Acronyms

CBA	Critical Biodiversity Area
CR	Critically Endangered
CCR	Core Cape Subregion
ECO	Environmental Control Officer
EDGE	Evolutionarily Distinct and Globally Endangered
EN	Endangered
EIA	Environmental Impact Assessment
EOO	Extent of Occupancy
GBIF	Global Biodiversity Information Facility
GCFR	Greater Cape Floristic Region
GIS	Geographical Information System
IBA	Important Birding Areas
IUCN	International Union for Conservation of Nature
KBA	Key Birding Areas
LC	Least Concern
NBSAP	National Biodiversity and Strategy Action Plan
NEMBA	National Environmental Management Biodiversity Act
PNCO	Provincial Nature Conservation Ordinance
SCC	Species of Conservation Concern
QDS	Quarter Degree Square
SA	South Africa
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
TOPS	Threatened and Protected Species
VU	Vulnerable

Specialist Check List

The contents of this specialist report complies with the legislated requirements as described in the Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity (GN R. 320 of 2020).

SPECIALIST REPORT REQUIREMENTS ACCORDING TO GN R. 320			SECTION OF REPORT
3.1	The Terrestrial Biodiversity Specialist Assessment Report must contain, as a minimum, the following information:		
	3.1.1	Contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	Page 2-4 Appendix 6
	3.1.2	A signed statement of independence by the specialist;	Page 3-4
	3.1.3	A statement of the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	Section 2.3
	3.1.4	A description of the methodology used to undertake the site verification and impact assessment and site inspection, including equipment and modelling used, where relevant;	Chapter 2
	3.1.5	A description of the assumptions made and any uncertainties or gaps in knowledge or data as well as a statement of the timing and intensity of site inspection observations;	Section 1.3
	3.1.6	A location of the areas not suitable for development, which are to be avoided during construction and operation (where relevant);	Section 8.2
	3.1.7	Additional environmental impacts expected from the proposed development;	Chapter 7
	3.1.8	Any direct, indirect and cumulative impacts of the proposed development;	Chapter 7
	3.1.9	The degree to which the impacts and risks can be mitigated;	Chapter 7
	3.1.10	The degree to which the impacts and risks can be reversed;	
	3.1.11	The degree to which the impacts and risks can cause loss of irreplaceable resources;	
	3.1.12	Proposed impact management actions and impact management outcomes proposed by the specialist for inclusion in the Environmental Management Programme (EMPr);	Section 8.2
	3.1.13	A motivation must be provided if there were development footprints identified as per paragraph 2.3.6 above that were identified as having a "low" terrestrial biodiversity sensitivity and that were not considered appropriate;	N/A
	3.1.14	A substantiated statement, based on the findings of the specialist assessment, regarding the acceptability, or not, of the proposed development, if it should receive approval or not; and	Section 8.3
	3.1.15	Any conditions to which this statement is subjected.	Section 8.2
3.2	The findings of the Terrestrial Biodiversity Specialist Assessment must be incorporated into the Basic Assessment Report or the Environmental Impact Assessment Report, including the mitigation and monitoring measures as identified, which must be incorporated into the EMPr where relevant.		✓
3.3	A signed copy of the assessment must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.		

1. INTRODUCTION

1.1. Project Location and Description

Boschendal Estate is situated in the Dwars River Valley north east of Stellenbosch, on either side of the town of Pniel. A large section of the property has been transformed and is used for agriculture which is currently under vineyards and orchards while the remaining portion is managed as a conservation area (Helme, 2019).

A tented camp has been developed on Portion 5 of Farm 1685 by FE5 Pty Ltd on the upper slopes of the Boschendal Estate, distanced from the main upmarket tourist accommodation nodes to provide a low impact, less formal accommodation offering (Figure 1.1).

The tented camp was constructed within an area of natural vegetation without the required Environmental Authorisation. As such, an S24G application has been submitted to the authorities for the infrastructure that has been built.

The tented camp is comprised of the following:

- Seven tents for accommodation of two people each serviced with their own bathrooms and limited self-catering facilities. The tents accommodate a maximum of 14 people on the site in total at any one time. Tents are located on decks of approximately 78 to 83m² each.
- A large mess tent where guests staying on site can congregate as a group if necessary. The tent deck is approximately 246m² in extent.
- A guest support tent with a communal kitchen facility and toilets. The tent deck is approximately 125m² in extent.
- A staff office tent. This is necessary to ensure at least one staff member can be available onsite while guests are staying. It has space for an office and storage. The tent deck is approximately 43m² in extent.

The tented accommodation units are tucked into a patch of indigenous vegetation so as to provide a combination of privacy and views of the Berg River Valley below. The communal / operations related tents are located at a lower level, within the open fallow lands close to the dam (Figure 1.2).

A generator and a transformer are located downslope and north of the staff office tent. The sewage treatment infrastructure is downslope and along the northern edge of the camp. Fire hydrants are located around the periphery of the camp. A reservoir above the site supplies water to the camp.

A gravel road that circulates around the site provides access to the respective units, and the communal / operations tents. Seven parking bays for the guests are provided on the upslope side of the accommodation, with the intention of limiting vehicular movement around the site. The parking is tucked informally off an existing road in groups of 2 and 3 bays.

Figure 1.1: Locality map showing the project site in relation to Pniel and Stellenbosch

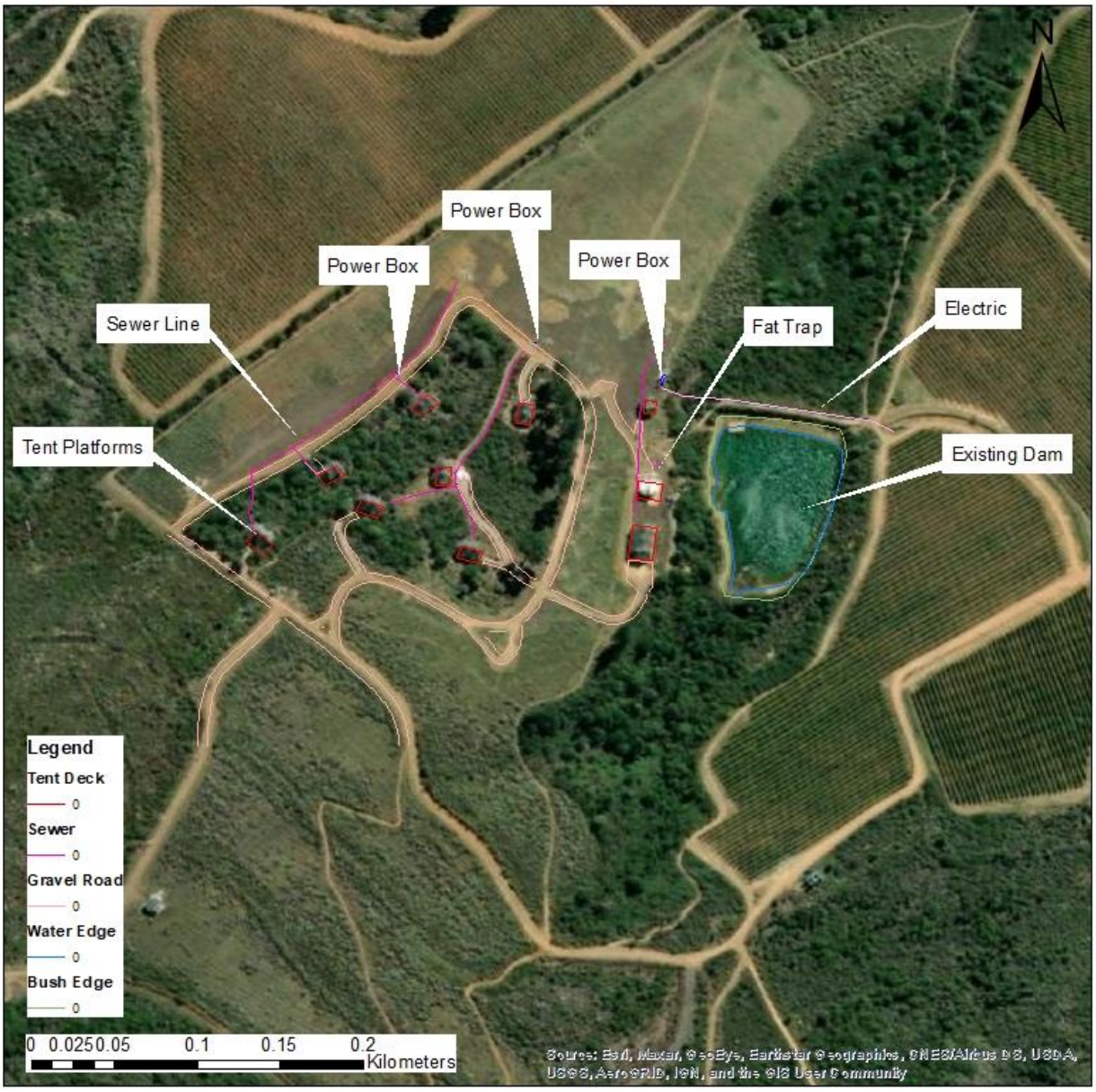

Figure 1.2: Infrastructure Map

1.2. Objectives

The objectives of the ecological assessment are as follows:

- Undertake a desktop assessment of the site to determine its sensitivity and species of conservation concern (SCC) that could be present within the site.
- Undertake a field survey, to record the following information:
    - Species present
    - Identification of species that are either protected (TOPS and PNCO) or considered threatened (CR, EN, VU) on the South African Red Data List

    - Assess the level of degradation/ecological status of the site (i.e. intact, near natural, transformed)
- Assess the sensitivity of each site using the sensitivity analysis outlined in the Species Guideline Document (2020)
- For areas of moderate and high sensitivity, assess the impact that the construction of the tented camp has had on the plant and faunal species.
- Where necessary, provide mitigation measures to reduce the impact of the infrastructure on the environment.
- Provide a specialist statement/opinion

1.3. Limitations and Assumptions

This report is based on current available information and, as a result, the following limitations and assumptions are implicit:

- The report is based on a project description received from the client.
- Species of Conservation Concern (SCC) are difficult to find and may be difficult to identify, thus species described in this report do not comprise an exhaustive list. It is almost certain that additional SCCs are present.
- Sampling could only be carried out at one stage in the annual or seasonal cycle. The survey was conducted in late spring when most plants were flowering. Some early flowering species, specifically geophytes may have gone undetected. However, the time available in the field, and information gathered during the survey was sufficient to provide enough information to determine the status of the affected area.

2. METHODOLOGY

2.1. Project Area

The “project area” or “impacted project site” is defined as the area that has been directly impacted by project infrastructure. This includes the patch of Boland Granite Fynbos where the seven tent platforms are located as well as the old agricultural land in which the Mess Tent (platform 8), Guest Support Tent (platform 9), Staff Office Tent (platform 10), electrical boxes and roads are located.

The “impacted patch of Boland Granite Fynbos” refers to the 1.6 ha patch of Boland Granite Fynbos that the seven accommodation tents are located in.

The project area of influence refers to the broader area around the project area that may be indirectly impacted by project activities.

2.2. Desktop Assessment

A desktop assessment was undertaken prior to the site visit to determine the vegetation types present, identify species of conservation concern that might occur on site and identify the threat and conservation status of the project site. Key resources were consulted including:

- The DFFE screening report for the site
- The South African Vegetation Map (Mucina and Rutherford, 2018);
- The Western Cape Biodiversity Spatial Plan (2017);
- The National Environmental Management: Biodiversity Act (NEMBA), 2004: List of Threatened Ecosystems (2011);
- National Biodiversity Management: Biodiversity Act (NEMBA) List of Threatened or Protected Species;
- The National Biodiversity Assessment (SANBI, 2018);
- The Plants of Southern Africa (POSA) database; and
- iNaturalist

A species list was compiled for the site and the likelihood of occurrence assessed for species listed as critically endangered, endangered and vulnerable (Section 4.3 and Appendix 1).

The known diversity of the vertebrate fauna in the project area was determined by a literature review. Species known from the region, or from adjacent regions whose preferred habitat(s) were known to occur within the study area, were also included. Literature sources included:

- Amphibians –Du Preez & Carruthers (2017), FrogMap (ADU, 2021)
- Reptiles – Branch (1998), ReptileMap (ADU, 2021),
- Birds – Chittenden (2009), SABAP2
- Mammals – Stuart & Stuart (2014), MammalMap (ADU, 2021).

To establish which of those species identified in the literature review are Species of Conservation Concern (SCC), the following sources were consulted:

- Atlas and Red List of Reptiles of South Africa, Lesotho and Swaziland (Bates *et al*., 2014)
- Atlas and Red List of Frogs of South Africa, Lesotho and Swaziland (Minter *et al*., 2004)
- Red Data book of Birds of South Africa, Lesotho and Swaziland (Taylor et al., 2015)
- Red List of Mammals of South Africa, Swaziland and Lesotho.
- CITES Appendix I and II

2.3. Field Survey

A field survey was undertaken during the late flowering season on the 10 September 2021. The purpose of the survey was to assess the site-specific ecological state of the project area by recording the species present (both indigenous and alien invasive species), identifying sensitive ecosystems such as rocky outcrops, riparian areas or areas with species of conservation concern, and identifying the current landuse of the site.

The findings from this site visit were supplemented with data from a previous baseline assessment and constraints study undertaken by Helme (2019).

The project site was walked and sample plots were analysed by determining the dominant species in each plot, as well as any alien invasive species and potential SCC occurring within the plots. Each sample plot was sampled until no new species were recorded. Vegetation communities were then described according to the dominant species recorded from each type, and these were mapped and assigned a sensitivity score.

Additionally, since the project site has already been disturbed with the construction of infrastructure, the surrounding vegetation was also sampled to gain an understanding of what might have been present previously. This was supplemented by analysing historical imagery to determine how the site has changed over time.

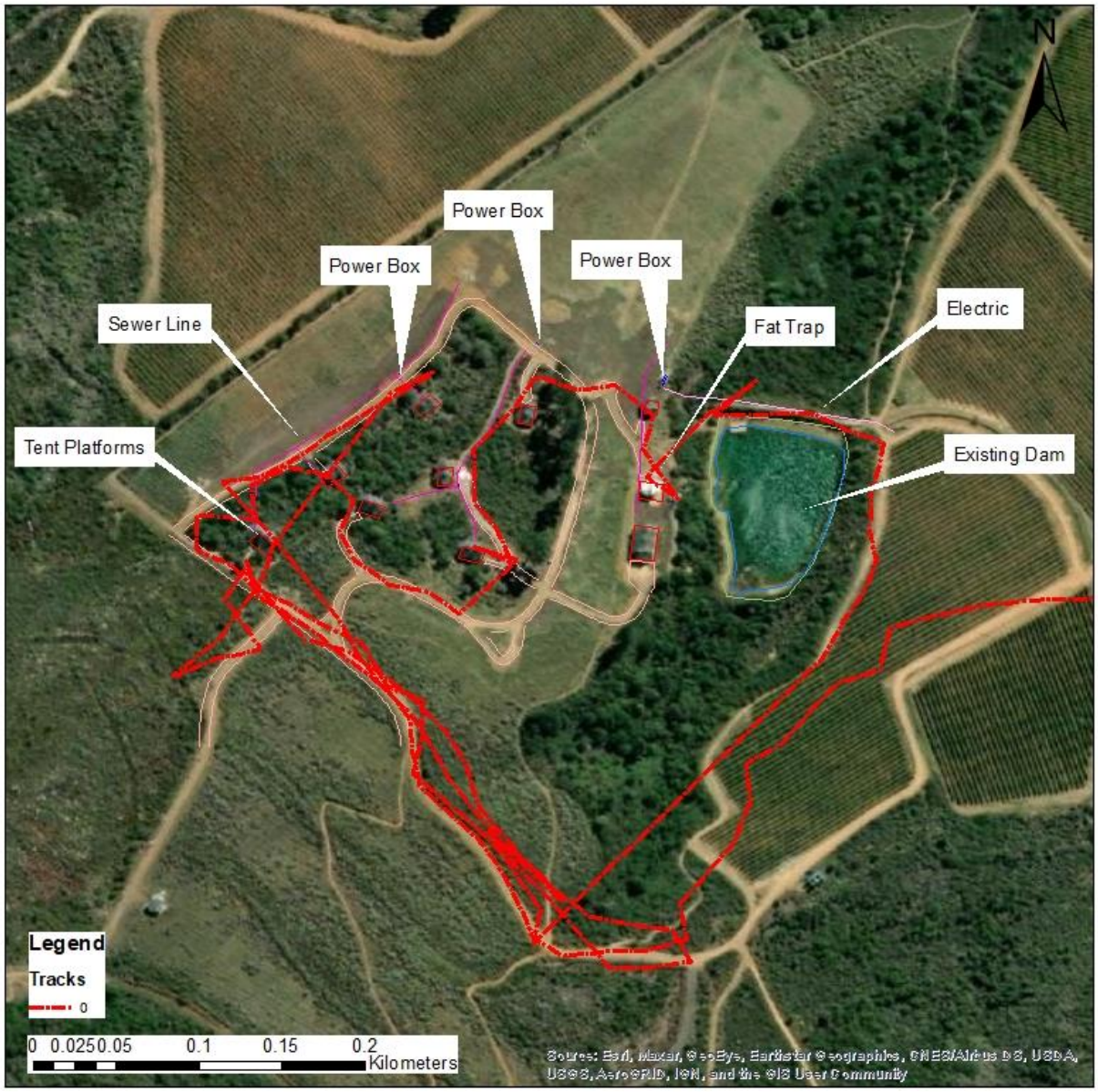

Figure 2.1: Map showing sample tracks within and adjacent to the project site.

2.4. Site Sensitivity Assessment

The Species Environmental Assessment guideline (SANBI, 2020) was applied to assess the Site Ecological Importance (SEI) of the project area. The habitats and the species of conservation concern in the project area were assessed based on their conservation importance, functional integrity and receptor resilience (Table 2.1). The combination of these resulted in a rating of SEI and interpretation of mitigation requirements based on the ratings.

The sensitivity map was developed using available spatial planning tools as well as by applying the SEI sensitivity based on the field survey.

Table 2-1: Criteria for establishing Site Ecological importance and description of criteria

Criteria	Description
Conservation Importance (CI)	*The importance of a site for supporting biodiversity features of conservation concern present e.g. populations of Threatened and Near-Threatened species (CR, EN, VU & NT), Rare, range-restricted species, globally significant populations of congregatory species, and areas of threatened ecosystem types, through predominantly natural processes.*
Functional Integrity (FI)	*A measure of the ecological condition of the impact receptor as determined by its remaining intact and functional area, its connectivity to other natural areas and the degree of current persistent ecological impacts.*
Biodiversity Importance (BI) is a function of Conservation Importance (CI) and the Functional Integrity (FI) of a receptor.	
Receptor Resilience (RR)	*The intrinsic capacity of the receptor to resist major damage from disturbance and/or to recover to its original state with limited or no human intervention.*
Site Ecological Importance (SEI) is a function of Biodiversity Importance (BI) and Receptor Resilience (RR)	

2.5. Description of impact analysis methodology used

2.5.1. Definitions of or criteria for environmental impact parameters

The significance of environmental impacts is a function of the environmental aspects that are present and to be impacted on, the probability of an impact occurring and the consequence of such an impact occurring before and after implementation of proposed mitigation measures.

The following variables were considered when assessing each impact:

- Extent (spatial scale)
- Duration
- Intensity (severity)
- Probability of occurrence
- Status of the impact i.e. whether it is positive or negative

The tables used to determine each variable for each impact have been included in Appendix 3.

3. BIOPHYSICAL DESCRIPTION

3.1. Climate

The project site is situated in the south-western part of the Core Cape Subregion (CCR) which experiences a strictly Mediterranean climate with rainfall occurring primarily in the winter months (Manning and Goldblatt, 2012). Pniel, the closest town to the project site, experiences its highest rainfall from May to September (worldweatheronline, 2021) while summers are typically warm and dry. January and February are the hottest months with average temperatures of 27°C while July and August are the coolest months with minimum average temperatures of 7°C. The steep slopes of the mountain ranges such as the Drakenstein and Simonsberg that occur within close proximity to the project site provide greater climatic variation resulting in a higher diversity of habitats and therefore species diversity (Manning and Goldblatt, 2012).

3.2. Topography

The project site is situated on the eastern slopes of the Simonsberg Mountain Range. The site is gently sloping towards the northeast with the elevation changing from 385 masl in the west to 355 masl in the east.

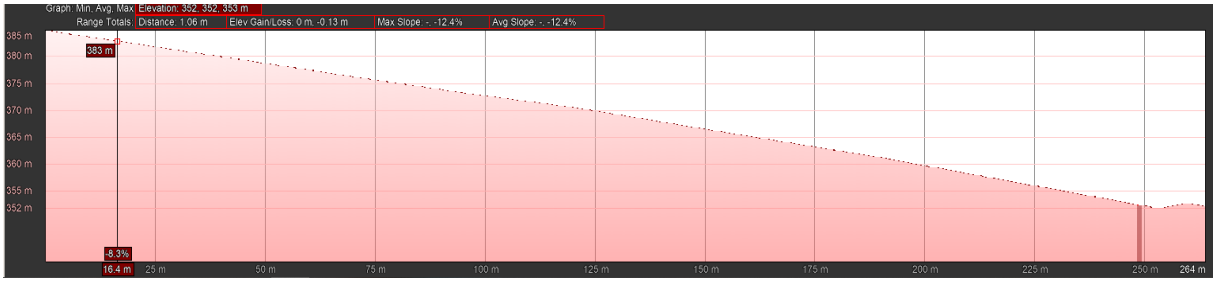

Figure 3.1: Elevation profile showing the change in slope from west to east

3.3. Geology and Soils

The project site is located within the Cape Granite Suite which is comprised of porphyritic, medium or fine grained granite and granodiorite (a coarse-grained plutonic rock containing quartz and plagioclase). It is also comprised of subordinate syenite (a coarse-grained grey igneous rock), gabbro (a dark, coarse-grained plutonic rock of crystalline texture), diorite (a speckled, coarse-grained igneous rock) and quartz porphyry (a type of igneous rock containing large quartz crystals) (CapeFarmMapper, 2021).

The underlying geology gives rise to apedal, freely drained red-yellow soils. Clay content varies between 15 and 35% with soil depths >750mm.

4. VEGETATION AND FLORISTICS

The project site occurs within the Fynbos Biome which occupies most of the Cape Fold Belt as well as the lowlands that occur between the mountains and the Atlantic Ocean in the west and south (Rebelo *et. al*. 2006). In the south it occurs between the mountains and the Indian Ocean. The project falls within the Core Cape Subregion (CCR) of the Greater Cape Floristic Region (GCFR) (Manning and Goldblatt, 2012). The CCR is unique in that within 90 760km^2 (less than 4% of the southern African Continent), there are 9,383 species of vascular plants, of which 9,251 are flowering species, and over 68% are endemic (i.e. don't occur anywhere else in the world). This region is floristically rich and comprises over 46% of the estimated 20% vascular plant species recorded from southern Africa.

According to the National Vegetation Map (2018), which was compiled to provide a greater level of detail for floristically based vegetation units in South Africa, the project site occurs within Boland Granite Fynbos (Figure 4.1).

4.1. Boland Granite Fynbos

Boland Granite Fynbos occurs in the Western Cape Province on the upper slopes of Paardeberg and Paarl Mountain as well as the lower slopes of the mountains spanning the Groenberg and Hawequasberge, Pniel, Franschhoek, Stellenbosch and Helderberg Municipality as well as in the Du Toitskloof and Wemmershoek Valleys.

This vegetation type occurs on moderately undulating hills and is characterised by fairly dense 1-2m tall shrubland comprised of scrub, asteraceous and proteoid fynbos with restioid and ericaceous fynbos dominating in wetter areas.

This vegetation type is listed as endangered with a conservation target of 30%. Originally this vegetation type covered an estimated 524 ha but at least half has been transformed for vineyards, olive groves and plantations. Despite this, the NBA (2018) lists this vegetation type as well protected.

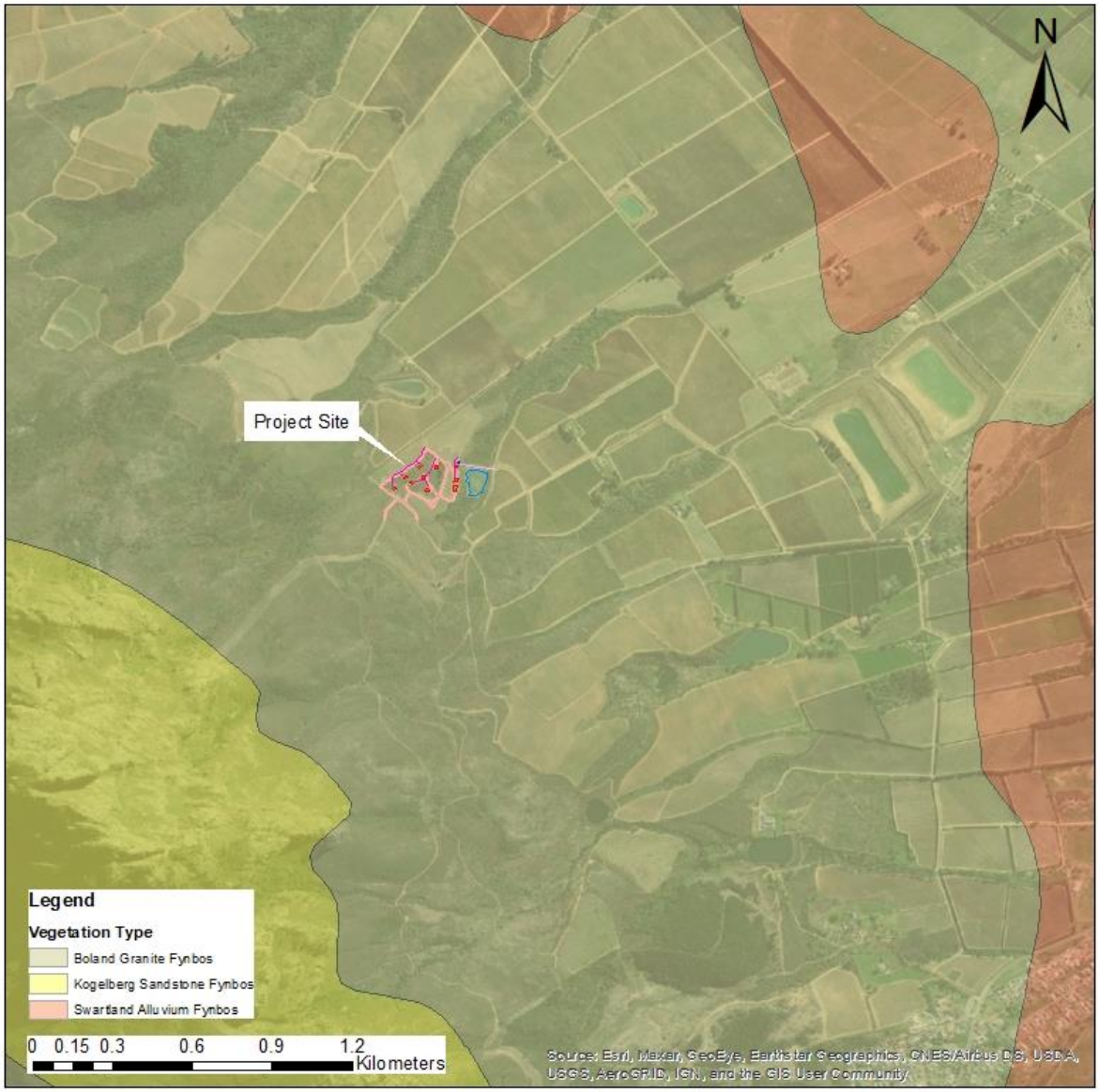

Figure 4.1: National Vegetation Map showing the project area as occurring within Boland Granite Fynbos

4.2. Vegetation types recorded on site

The vegetation within the project area of influence is comprised of

- Intact Boland Granite Fynbos to the west,
- Riparian vegetation to the east, and
- Transformed land (roads and agricultural land) to the north and south (Figure 4.2).

In the centre of the project area where the seven tent platforms are located, is a patch of Boland Granite Fynbos (referred to as the "impacted patch of Boland Granite Fynbos") (Figure 4.3). The north-western portion of this patch (where tents 4, 6 and 7 are located) is characterised as near intact with species such as *Cliffortia ruscifolia, Hermannia hyssopifolia, Leucadendron salicifolium, Osteospermum moniliferum, Searsia angustifolia* and *Dicerothamnus rhinocerotis* present. *Searsia angustifolia* (a small tree species) was also present within the patch. The eastern portion of this patch is more degraded and has a higher number of alien invasive species (Figure 4.5 and Figure 4.5). On the eastern edge of this patch is a stand of large pine trees (Figure 4.6). Refer to Figure 4.3 which shows the distribution of the vegetation in relation to the tent platforms.

There are also a large number of alien/weedy species within impacted patch of Boland Granite Fynbos, specifically the degraded patch. These include species such as *Acacia longifolia, Pinus cf. pinaster, Verbena bonariensis, Echium plantagineum, Phytolacca octandra, Solanum mauritanium and Pittosporum undulatum.* Refer to section 4.4 for further details on alien invasive species.

The Mess Tent (platform 8), Guest Support Tent (platform 9), Staff Office Tent (platform 10) and power boxes are all located in an area that was previously transformed. Based on historical imagery, this area was once an agricultural field used for crops. These areas are now covered in lupins, grasses and species such as *Echium plantagineum, Verbena bonariensis* and *Acacia longifolia.*

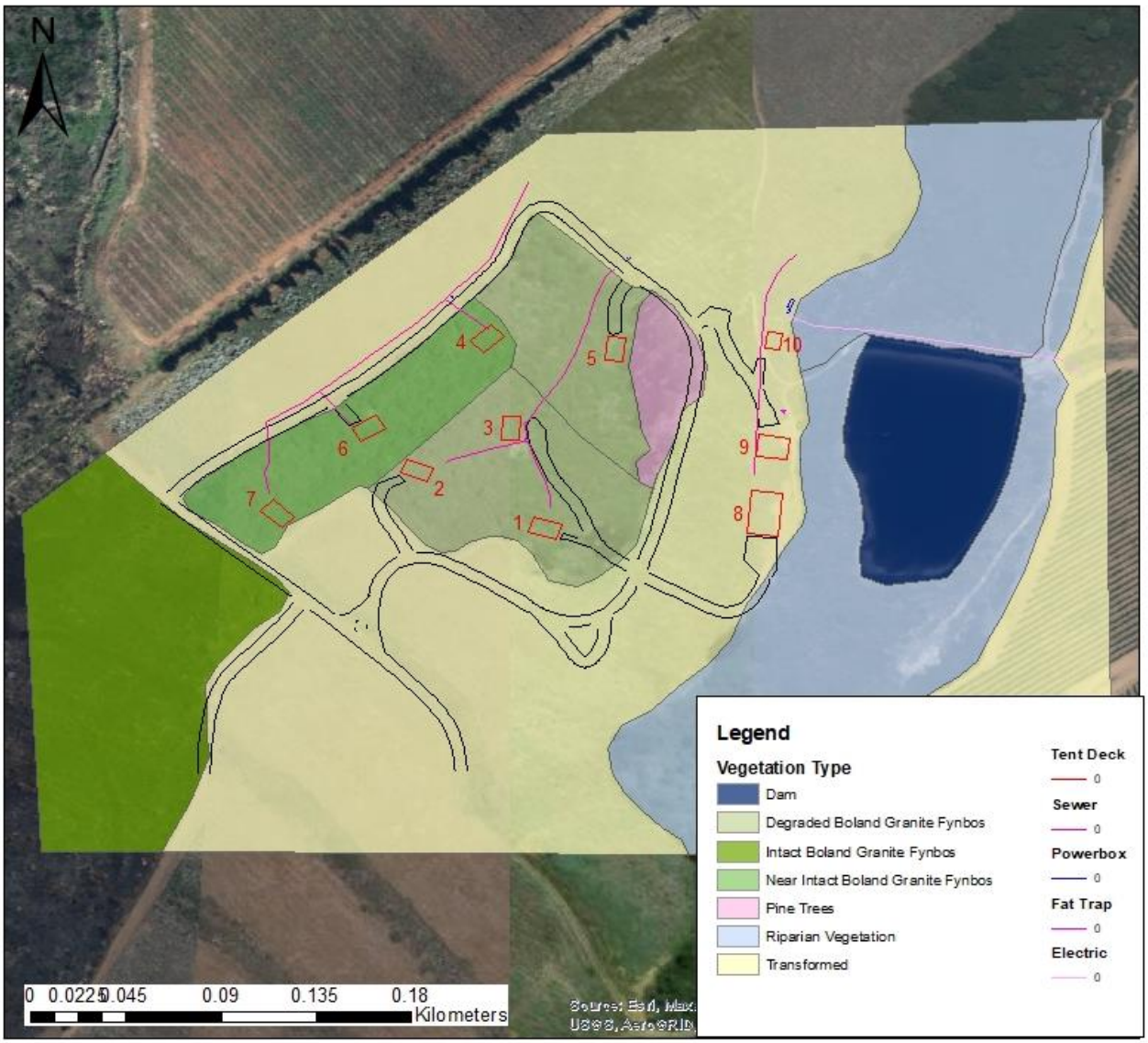

Figure 4.2: Vegetation map of the project area based on data collected from the field survey

Figure 4.3: Near intact Boland Granite Fynbos at tent 6

Figure 4.4: Degraded Boland Granite Fynbos

Figure 4.5: Degraded Boland Granite Fynbos

Figure 4.6: Degraded Boland Granite Fynbos in the foreground with the stand of pine trees in the background. The foreground is infested with alien species such as *Acacia longifolia* and *Pinus sp.*

Figure 4.7: Transformed area where the Mess Tent (platform 8), Guest Support Tent (platform 9) and Staff Office Tent (platform 10) are located

4.3. Floristics

Thirty-one species were recorded within the project area. Of these species, seven alien invasive and/or ruderal species (Section 4.5), two species of conservation concern (section 4.4.2) and 21 indigenous species were recorded. Appendix 1 provides a list of species recorded on site.

4.4. Species of Conservation Concern

4.4.1. Predicted Species of Conservation Concern

A list of species of conservation concern that could occur within the project site was compiled during the desktop study. This list draws on records from the POSA database, the DFFE screener and the baseline study undertaken by Helme (2019) and produced a list of 103 species of conservation concern that were either critically endangered (CR), endangered (EN) or vulnerable (VU) that could occur within the site. The likelihood of occurrence for each species was assessed by comparing the habitat preference of each species to the available habitat within the project area. Where there was a high likelihood of occurrence, the distribution of each species was also assessed. Of the 103 identified species, one was confirmed to occur on site, one was confirmed to occur directly adjacent to the site, thirteen have a high likelihood of occurrence, 23 have a medium likelihood of occurrence and 65 have a low likelihood of occurrence.

Given the number of species that were assessed, the assessment for those that were either confirmed or have a high likelihood of occurrence have been included in Table 4.1. The assessment for species with a medium or low likelihood of occurrence have been included in Appendix 1.

Table 4.1: List of Critically Endangered (CR), Endangered (EN) and Vulnerable (VU) species that have a high likelihood of occurrence on site or were confirmed to occur on site.

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
MALVACEAE	*Hermannia rugosa*	VU	Confirmed	This species was confirmed to occur within the impacted area.
Proteaceae	*Protea burchellii*	VU	Confirmed	This species habitat is variable although it is associated with richer soils (Rebelo *et al.,* 2009). Helme (2019) notes that this species is common within Boschendal Estate on the alluvium east of Dwars River. This species was within the intact fynbos to the west of the site. The likelihood of occurrence within the impacted project site is this high.
ERICACEAE	*Erica filiformis var. filiformis*	VU	High	Suitable habitat is present for this species and as such the likelihood of occurrence is high.
Proteaceae	*Leucadendron daphnoides*	EN	High	Although suitable habitat exists, this species was not recorded within the impacted area. However, it was recorded by Helme (2019) on the slopes of Simonsberg Mountain on Boschendal Estate.
Proteaceae	*Leucadendron lanigerum var. lanigerum*	EN	High	Although suitable habitat exists, this species was not recorded within the impacted area.
Proteaceae	*Leucospermum grandiflorum*	EN	High	Although suitable habitat exists, this species was not recorded within the impacted area. However, it was recorded by Helme (2019) on the slopes of Simonsberg on Boschendal Estate.
Proteaceae	*Leucospermum lineare*	VU	High	Although suitable habitat exists, this species was not recorded within the impacted area. However, it was recorded by Helme (2019) on the upper slopes of Simonsberg on Boschendal Estate.
Boraginaceae	*Lobostemon capitatus*	VU	High	This species occurs within the transition zone between fynbos and renosterveld and has a distribution that ranges from

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
				Porterville to Bredasdorp (Buys *et al.,* 2006). The likelihood of occurrence within the project area is therefore high.
GERANIACEAE	*Sensitive species 588*	EN	High	This species is associated with clay and granite slopes and flats in renosterveld (Raimondo *et al.,* 2007). Suitable habitat is available within the project are. The likelihood of occurrence is thus high.
Iridaceae	*Sensitive species 602*	EN	High	This species is associated with clay slopes in Renosterveld (Goldblatt *et al.*, 2007). Since this habitat is present the likelihood of occurrence is high.
ASTERACEAE	*Muraltia decipiens*	EN	High	This species was recorded by Helme (2019) on alluvium east of Dwars Rivier on Boschendal Estate. It is associated with clay flats and lower mountain slopes. The likelihood of occurrence within the general project area is high.
RHAMNACEAE	*Phylica strigulosa*	VU	High	This species is associated with renosterveld and occurs on stony clay and sandstone slopes at low elevations of 30-760 m (Helme, 2006). Since habitat is available and the site intersects with this species' distribution, the likelihood of occurrence is high.
Proteaceae	*Protea scorzonerifolia*	VU	High	This species is typically limited to granite and shale soils on upper mountain slopes although it has also been recorded on sandstone where there are traces of clay soils (Rebelo *et al.*, 2005). This species was recorded by Helme (2019) on Boschendal Estate within the alluvium east of Dwars River.
PROTEACEAE	*Serruria gracilis*	VU	High	This species is associated with granite fynbos and has a distribution range that intersects with the project site (Rebelo *et al.*, 2015). Although not recorded within the project site the likelihood of occurrence is high.
PROTEACEAE	*Serruria kraussii*	VU	High	This species is associated with granite and sandstone soils and occurs between Helderberg and Jonkershoek (Rebelo *et al.,* 2009). Although available habitat is present the author is unaware of any

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
				collection records on the eastern slopes of Simonsberg Mountain. The likelihood of occurrence has therefore been rated as medium for this species.

4.4.2. Confirmed Species of Conservation Concern

One species of conservation concern (*Hermannia rugosa* listed as VU) was confirmed to occur within the impacted project area and one species (*Protea burchelli* listed as VU) was recorded immediately to the west of the site and is therefore likely to occur within the site (Figure 4.8).

Figure 4.8: Confirmed Species of Conservation Concern on or directly adjacent to the project site. A) *Hermannia rugosa* and B) *Protea burchelli.*

4.4.3. Species requiring permits

Although a species may not be considered species of conservation concern due to their red list status, a number of species still require permits for their removal and/or destruction. Permits can be applied for through the permitting office at Cape Nature. Species recorded on site that require permits have been listed in Table 4.2.

Table 4.2: Species recorded on site requiring permits for their removal and/or destruction

Family	Species	Red List	PNCO
Ericaceae	*Erica plukenetii*	LC	Schedule 4
Hyacinthaceae	*Lachenalia lutea*	LC	Schedule 4
Hyacinthaceae	*Lachenallia orchidiodes*		Schedule 4
Iridaceae	*Chasmanthe floribunda*	LC	Schedule 4
Proteaceae	*Leucadendron salicifolium*	LC	Schedule 4
Proteaceae	*Protea cf burchelli*	VU	Schedule 4
Proteaceae	*Protea nitida*	LC	Schedule 4

4.5. **Alien Species**

Seven alien invasive species classified as Category 1b on the National Environmental Management: Biodiversity Act (2004) Alien Invasive Species Lists, 2020 were recorded within the project area (refer to Table 4.3 for a list of species and Figure 4.9 for images of six of the seven species). Of relevance to this site is that allowing the spread of a category 1b species is prohibited. An alien invasive management plan for the removal of this species will thus be required as part of the EMPr.

There is a stand of pine trees to the east of the project area that appears to have been present for several years. If these qualify as heritage trees their removal will be exempted. If they are not classified as heritage trees then these trees will need to be removed as part of the alien invasive management plan.

Table 4.3: Alien invasive species recorded within the project area that will require removal

Family	*Species*	Category
Fabaceae	*Acacia longifolia*	1b
Boraginaceae	*Echium plantagineum*	1b
Phytolaccaceae	*Phytolacca octandra*	1b
Pinaceae	*Pinus pinaster*	1b unless a heritage tree
Pittosporaceae	*Pittosporum undulatum*	1b
Solanaceae	*Solanum mauritianum*	1b
Verbenaceae	*Verbena bonariensis*	1b

Figure 4.9: Alien invasive species recorded within the project area. A) *Acacia longifolia,* B) *Verbena bonariensis,* C) *Solanum mauritianum,* D) *Phytolacca octandra,* E) *Echium plantagineum* and F) *Pittosporum undulatum*

5. FAUNA

5.1. Amphibians

The Western Cape hosts 62 amphibian species, of which 36 are endemic to the province, eight are threatened and seven are near-threatened (Turner & Villiers, 2017).

The Boschendal Tented Camp site intersects the distribution range of 19 amphibian species of which 12 are endemic and four are Near-Threatened (Table 5.1).

The only amphibian that may have occurred on site during the time of development is the Cape Rain Frog (*Breviceps gibbosus*) previously listed as vulnerable and its status has since been updated to near-threatened (IUCN SSC, 2017). This species favours Renosterveld fynbos heathland and is also found in disturbed habitats in burrows in well-drained soil (du Preez & Carruthers, 2017; IUCN SSC, 2017). It is unclear what means was used to clear vegetation and soil i.e. machinery or by hand, and what was done if this species was found on site. However, it appears as though vegetation clearing was kept to a minimum for the development and only a small portion (15%) of the impacted Boland Granite Fynbos patch was affected.

Table 5.1: Amphibian species with a distribution and includes the Tented Camp area. The highlighted species is the only one that might have occurred on site.

Common name	Scientific name	Treat Status		Endemic
		(IUCN, 2021)	(Minter *et al*., 2004)	
Cape River Frog	*Amietia fuscigula*	LC	LC	
Landroskop Moss Frog	*Arthroleptella landdrosia*	NT	NT	WC Endemic
Villiersdorp Moss Frog	*Arthroleptella villiersi*	LC	LC	WC Endemic
Strawberry Rain Frog	*Breviceps acutirostris*	LC	LC	WC Endemic
Cape Rain Frog	*Breviceps gibbosus*	NT	VU	WC Endemic
Cape Mountain Rain Frog	*Breviceps montanus*	LC	LC	WC Endemic
Sand Rain Frog	*Breviceps rosei*	LC	LC	WC Endemic
Boettger's Caco	*Cacosternum boettgeri*	LC	LC	
Cape Caco	*Cacosternum capense*	NT	VU	WC Endemic
Cape Ghost Frog	*Heleophryne purcelli*	LC	LC	WC Endemic
Arum Lily Frog	*Hyperolius horstockii*	LC	LC	WC Endemic
Painted Reed Frog	*Hyperolius marmoratus*	LC	LC	
Marsh Frog	*Poyntonia paludicola*	NT	NT	WC Endemic
Raucous Toad	*Sclerophrys capensis*	LC	LC	
Banded Stream Frog	*Strongylopus bonaespei*	LC	LC	WC Endemic
Clicking Stream Frog	*Strongylopus grayii*	LC	LC	
Cape Sand Frog	*Tomopterna delalandii*	LC	LC	
Cape Sand Toad	*Vandijkophrynus angusticeps*	LC	LC	WC Endemic
Common Platanna	*Xenopus laevis*	LC	LC	

5.2. Reptiles

The Western Cape Province hosts 155 reptile species of which 22 are endemic and 21 species are either threatened of near-threatened (Turner & Villiers, 2017). Approximately 53 of these reptile species have a distribution range that includes the Boschendal tented camp area (Appendix C).

The Southern Rock Agama (*Agama atra*) was observed during the field survey, four individuals were seen on the rocks that border the ring road around the tented camp (Figure 5.1). Six SCC have a distribution range which includes the Boschendal tented camp area (Table 5.2).

Reptiles that inhabited the site immediately prior to construction of the tented camp likely would have moved out of the area due to the disturbance. The tented camp would create minimal and intermittent operational disturbance to reptiles and the remaining habitat likely hosts reptiles that have either returned to the area, or are new inhabitants.

Figure 5.1: Southern Rock Agama (Agama atra) observed at the project area

Table 5.2: Reptile SCC

Common name	Scientific name	Red list category		Endemic
		National (Minter *et al*., 2004)	Global (IUCN, 2021)	
Geometric Tortoise	*Psammobates geometricus*	CE		X
Southern adder	*Bitis armata*	VU		X
Fork-marked Whip Snake	*Psammophis leightoni*	VU		X
Cape Dwarf Chameleon	*Bradypodion pumilum*	VU	NT	X
Robertson Dwarf Chameleon	*Bradypodion gutturale*	LC		X
Graceful Crag Lizard	*Hemicordylus capensis*	LC		X

5.3. Mammals

The Western Cape hosts approximately 172 mammal species of which 24 species are threatened and 13 species are near threatened. Eight species are endemic and ten species are near endemic (Birss, 2017).

One vulnerable, six near threatened, three endemic and five near endemic mammal species have a distribution which includes the tented camp area (table 5.3). No zebra occur at the tented camp area. No antelope and feline species were expected to use the tented camp area permanently and only if utilised would be for intermittent foraging and/or cover. Small mammals, namely rodents, golden moles and hares are expected to use the area. These would have been disturbed during construction but would have returned once construction ceased. Evidence of moles (mole mounds) and hares (foraging) was observed along the roads in and around the tented camp.

Figure 5.2: Signs of mammals in the tented camp area

Table 5.3: SCC with a distribution that includes the tented camp area

Common name	Species name	Conservation status /CITES)		Endemism
		National (Child et al., 2019)	Global (IUCN)	
Leopard	*Panther pardus*	VU	VU	-
White-tailed Rat	*Mystromys albicaudatus*	VU	VU	
Grey Rhebok	*Pelea capreolus*	NT	NT	-
Spectacled Dormouse	*Graphiurus ocularis*	NT	LC	-
Laminate Vlei Rat	*Otyomys laminnatus*	NT	NT	-
Serval	*Leptailurus serval*	NT	LC	-
Fynbos Golden Mole	*Amblysomus corriae*	NT	NT	-
African Clawless Otter	*Aonyx capensis*	NT	NT	-
Cape Spiny Mouse	*Acomys subspinosus*	LC	LC	WC Endemic
Cape Dune Mole Rat	*Bathyergus suillus*	LC	LC	WC Endemic
Cape Gerbil	*Gerbilliscus afra*	LC	LC	WC Endemic
Cape Golden Mole	*Chrysochloris asiatica*	LC	LC	Near endemic
Cape Grysbok	*Raphicerus melanotis*	LC	LC	Near endemic
Cape Mountain Zebra	*Equus zebra*	LC	VU	Near endemic
Cape Mole Rat	*Georychus capensis*	LC	LC	Near endemic
Verreaux's Mouse	*Myomyscus verreauxi*	LC	LC	Near endemic

5.4. Birds

The western Cape hosts 608 bird species (including offshore water birds) and the South African Bird Atlas Project records state 124 species have been recorded in the same pentad as the tented camp area. A previous study by CES (2019) recorded 62 bird species on the Boschendal estate including the Cape Sugarbird specific to the Fynbos vegetation near the tented camp. The western cape hosts 28 threatened and 19 near threatened bird species of which 10 threatened and 13 near-threatened birds have a distribution which includes the tented camp area.

The Black Harrier, Cape Rockjumper and Ground Woodpecker were recorded in the pentad on SABAP2 in 2019 and the study by CES (2019) recorded the Forest Buzzard and Blue Crane. The larger bird species (vultures, eagles) and waterbirds would not have been negatively influenced by the habitat removed for the tented camp.

Table 5.4: SCC with a distribution that includes the tented camp area

Common name	Scientific name	Red list category		SABAP2
		National (Minter, et al., 2014)	**Global** (IUCN)	
Bank Cormorant	*Phalacrocorax neglectus*	Endangered	Endangered	-
Black Harrier	*Circus maurus*	Endangered	Endangered	X
Cape Cormorant	*Phalacrocorax capensis*	Endangered	Endangered	-
Cape Vulture	*Gyps coprotheres*	Endangered	Endangered	-
Fynbos Buttonquail	*Turnix hottentottus*	Endangered	Endangered	
Black Bustard	*Eupodotis afra*	Vulnerable	Vulnerable	-
Blue Crane	*Anthropoides paradiseus*	Vulnerable	Vulnerable	X
Damara Tern	*Sternula balaenarum*	Vulnerable	Vulnerable	-
Maccoa Duck	*Oxyura maccoa*	Vulnerable	Vulnerable	-
Martial Eagle	*Polemaetus bellicosus*	Vulnerable	Endangered	-
Secretary Bird	*Sagittarius serpentarius*	Vulnerable	Endangered	-
Bar-tailed Godwit	*Limosa lapponica*	NT	NT	-
Cape Rockjumper	*Chaetops frenatus*	NT	NT	X
Chestnut-banded Plover	*Charadrius pallidus*	NT	NT	-
Crowned Cormorant	*Microcarbo coronatus*	NT	NT	-
Curlew Sandpiper	*Calidris ferruginea*	NT	NT	-
Denham's Bustard	*Neotis denhami*	NT	NT	-
Eurasian Curlew	*Numenius arquata*	NT	NT	-
Forest Buzzard	*Buteo trizonatus*	NT	NT	X
Ground Woodpecker	*Geocolaptes olivaceus*	NT	NT	X
Lesser Flamingo	*Phoeniconaias minor*	NT	NT	-
Protea Canary	*Crithagra leucoptera*	NT	NT	-
Red Knot	*Calidris canutus*	NT	NT	-
Sentinel Rock-Thrush	*Monticola explorator*	NT	NT	-

6. SENSITIVITY ASSESSMENT

6.1. Western Cape Biodiversity Spatial Plan

The Western Cape Biodiversity Spatial Plan (WCBSP, 2017) maps biodiversity priority areas, including Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) which require safeguarding to ensure the persistence of biodiversity and ecosystems functioning, through a systematic conservation planning process.

CBA's are defined as "areas of high biodiversity and ecological value and need to be kept in a natural or near-natural state, with no further loss of habitat or species" (WCBSP Handbook, 2017). The provided map distinguishes between CBA 1 areas, which are those that are likely to be in a natural condition, and CBA 2 areas, which are areas that are potentially degraded or represent secondary vegetation.

ESA's are "Areas that are not essential for meeting biodiversity targets, but that play an important role in supporting the functioning of Protected Areas (Pas) or CBAs and are often vital for delivering ecosystem services. They support landscape connectivity, encompass the ecological infrastructure from which ecosystem goods and services flow, and strengthen resilience to climate change." ESA's should be maintained in a functional and natural state although some habitat loss may be acceptable. As with the CBAs, a distinction is made between ESA 1 that are areas in a natural, near natural or moderately degraded condition and ESA 2 which are degraded and need to be restored.

According to the WCBSP (2017), the footprint of the tented camp falls within an ESA 1 area with a small portion along the eastern boundary falling within an ESA 2.

The desired management objectives of the affected biodiversity priority areas are tabulated below (Table 6.1).

Table 6-2: Biodiversity priority areas affected by the project infrastructure

Category	Sensitivity Features	Desired Management Objective	Recommendation
ESA 1	Terrestrial	Maintain in a functional, near-natural state. Some habitat loss is acceptable, provided the underlying biodiversity objectives and ecological functioning are not compromised.	The construction of the tent platforms and paths through the site appear to have been kept to a minimum and have had a relatively low impact on the ecological functioning of the patch of fynbos in which they have been built. It is advised that clearing is kept to an absolute minimum and that the alien invasive species that are present within the site are removed.
ESA 2	Terrestrial	Restore and/or manage to minimize impact on ecological infrastructure functioning; especially soil and water-related services.	Although the guest support tent and mess tent are located within an ESA2 area, the field survey indicates that this site has been transformed and used for agriculture for a number of years. This is supported by the historical satellite imagery available for the site. The impact of these structures on the ESA2 has therefore been minimal.

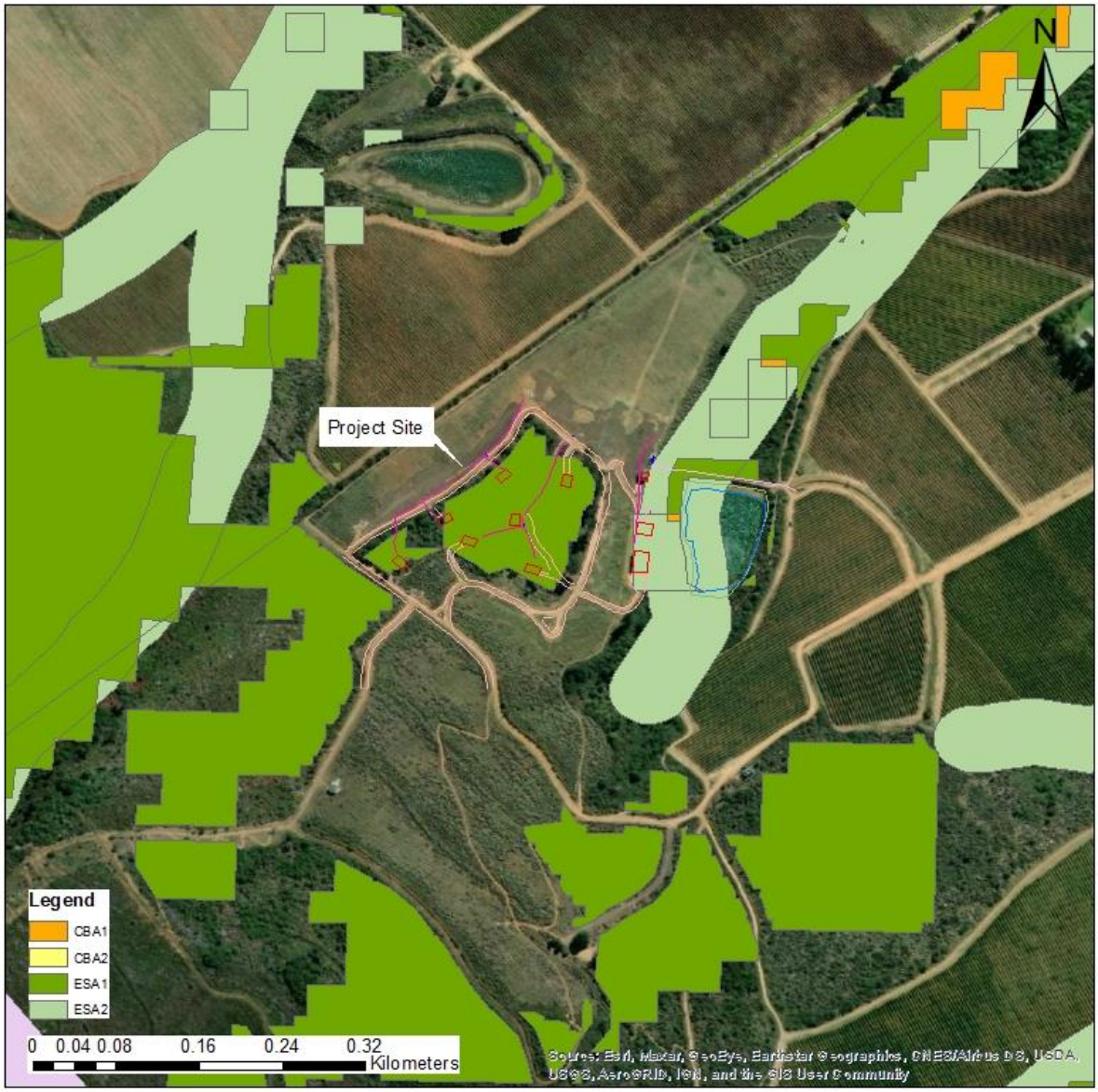

Figure 6.1: The project site in relation to identified CBAs and ESAs.

6.2. Ecosystem Threat Status

According to the Western Cape Biodiversity Spatial Plan (2017), the threat status of the ecosystem (Boland Granite Fynbos) present within the project area is listed as Vulnerable. However, the NBA (2018) lists this vegetation type (Boland Granite Fynbos) as Endangered.

6.3. Sensitivity Assessment

The Site Ecological Importance (SEI) was assessed for each vegetation type identified for the project site.

6.3.1. Near Intact and Degraded Boland Granite Fynbos

The near-intact Boland Granite Fynbos and degraded Boland Granite Fynbos was determined to have a high conservation importance (CI) due to the confirmed presence of *Hermannia rugosa* (VU Category B) species and the high likelihood that *Protea burchelli* is also present on site based on it being recorded in natural habitat to the west of the site. This vegetation type is listed as endangered and since 0.08% of the remaining extent has been impacted, the CI is listed as high rather than very high as <0.1% of this vegetation type has been lost. Although the impacted patch of Boland Granite Fynbos is small and three of its four sides have been exposed to disturbance for at least 20 years, there is good habitat connectivity on its western side to intact Degraded Boland Granite Fynbos allowing ecological processes to continue. It also has good rehabilitation potential. As such the Functional Integrity (FI) was determined to be high.

The Species Environmental Assessment Guideline (2020) defines resilience as *"the estimated recovery time required to restore an appreciable portion of functionality to the receptor"*. It goes on to say that resilience is linked to a particular disturbance or impact and can therefore vary depending on the type of disturbance. For example, the clearing of vegetation for a 5m wide road that is 1km in length will result in the clearance of 5000m^2 which is significantly more than the clearing of 250m^2 for three tent platforms. In this example, the resilience of the impacted vegetation type will be higher for the tent platforms than the road as the area that will be disturbed is smaller and therefore recovery is likely to be quicker.

Resilience has therefore been assessed in relation the project infrastructure which in this instance was the clearing of 250m^2 of vegetation for the building of three tent platforms.

The vegetation present within the area identified as near-intact and degraded Boland Granite Fynbos is likely to recover to its current state relatively quickly (5-10 years), restoring species composition and functionality of the site if topsoil is replaced on the disturbed sites and the alien invasive species are removed from the area. Species diversity is likely to increase if alien species are managed as seed dispersal from the intact Boland Granite Fynbos to the west is possible.

Although this vegetation type has a high sensitivity due to its status of Endangered, the SEI specific to this project infrastructure, which has a small footprint and is of low impact, is rated as medium. However, if additional clearing occurs within this patch of vegetation, this score is likely to increase to high.

6.3.2. Intact Boland Granite Fynbos

The intact patch of Boland Granite Fynbos to the west of the impacted site is highly likely to support the occurrence of CR, EN and VU plant species (Refer to table 4.1 for a list of species that have a high likelihood of occurrence) and as such has a CI of Very High. FI is rated as Very High due to this vegetation forming part of the indigenous vegetation found on the Simonsberg Mountain range.

As with the near intact Boland Granite Fynbos, Receptor Resilience for this type of infrastructure which is typically low impact is rated as high, especially if soil layers are not disturbed. Overall SEI for this vegetation type is high.

6.3.3. Transformed Land

The agricultural land surrounding the near-intact and degraded Boland Granite Fynbos is classified as transformed and thus has a very low CI and medium FI. Receptor resilience is considered very high as this area can easily be rehabilitated back to its current state. Overall SEI is very low.

The method used to assess site sensitivity has been described in Section 2.4 above. Table 6.1 provides a summary of how each tower was assessed and Figure 6.2 illustrates the sensitivity at each site.

Table 6.2: Evaluation of Site Ecological Importance (SEI) of habitat and SCC

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience	SEI
Near-intact and Degraded Boland Granite Fynbos	**High**	**High**	**High**	**MEDIUM**
	One confirmed vulnerable species listed under criterion B and one vulnerable species listed under criterion A were recorded within or directly adjacent to the project site. In addition, it is calculated that approximately 0.08% of this endangered vegetation type has been lost to project infrastructure.	The impacted patch of Boland Granite Fynbos is small (1.6 ha) and has experienced edge effects due to being surrounded by agricultural land on three of its four sides. However, there is good habitat connectivity on its western side to intact Degraded Boland Granite Fynbos allowing ecological processes to continue. The impacted Boland Granite Fynbos	Due to the small footprint of the project infrastructure within this vegetation type (15% of the patch was cleared for the tents and 0.08% of the remaining extent of this vegetation type), the vegetation present within the area identified as near-intact and degraded Boland Granite Fynbos is likely to recover to its current state relatively quickly (5-10 years). However, this is only if the alien invasive species are removed from the area. Species diversity is likely to increase if alien species are managed as seed dispersal into the project site from the neighbouring area to the west is possible and there has been limited impact to the topsoil	

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience	SEI
		also has good rehabilitation potential.	within the site other than where each tent is located. Although this vegetation type has a high sensitivity, the SEI specific to this project infrastructure, which has a small footprint and is of low impact, for near-intact Boland Granite Fynbos is Medium. However, if additional clearing occurs within this vegetation this score will increase to high.	
Intact Boland Granite Fynbos	**Very High**	**High**	**High**	**HIGH**
	The intact patch of Boland Granite Fynbos to the west of the impacted site is highly likely to support the occurrence of CR, EN and VU plant species (Refer to Table 4.1).	This vegetation occurs on the lower slopes of the Simonsberg Mountains. The vegetation on the mid to upper slopes is indigenous although there is infestation of alien invasive plant species. This area has good habitat connectivity with functional ecosystems and there are limited signs of disturbance.	For reasons discussed above, the resilience related to impacts associated with this project has been determined to be High.	
Transformed Land	**Very Low**	**Medium**	**Very High**	**VERY LOW**
	No natural habitat remaining and no confirmed and highly unlikely populations of SCC and/or range	Transformed agricultural land with low rehabilitation potential.	Habitat can be easily returned to its current state.	

Habitat / Species	Conservation Importance (CI)	Functional Integrity (FI)	Receptor Resilience	SEI
	restricted species.			

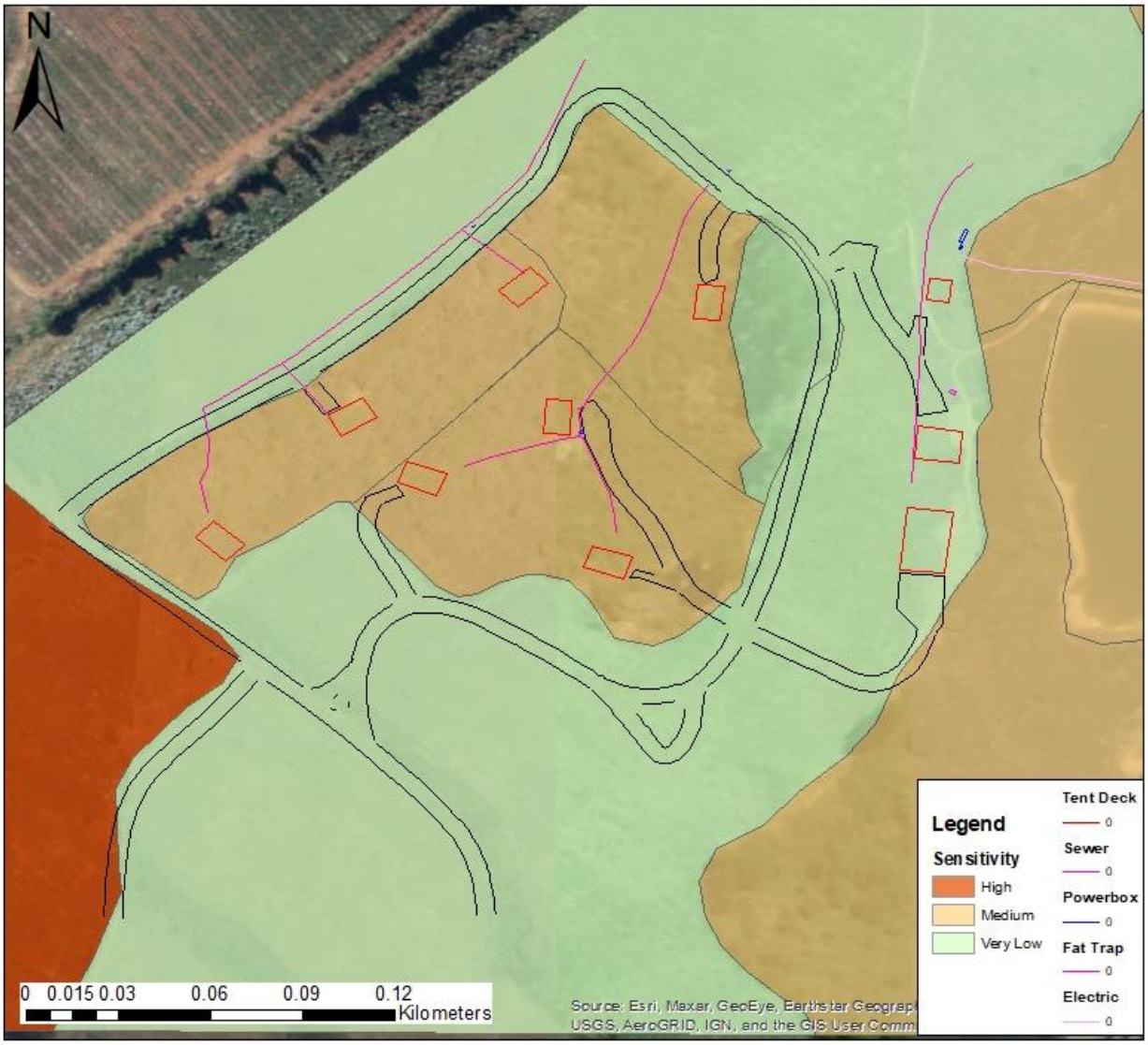

Figure 6.2: SEI map of the project area based on data collected from the field survey. Note that the SEI will change depending on the type of impact.

7. IMPACT ASSESSMENT

7.1. Construction and Operational Phase Impacts

Since construction of the site started without Environmental Authorisation and this ecological assessment was undertaken once clearing and construction had commenced, historic satellite imagery was consulted to assist with determining potential impacts (Figure 7.1). The imagery shows that the impacted patch of Boland Granite Fynbos has remained almost static since at least 2011 and the area to the immediate north, east and south has been used for agriculture for just as long. Edge effects on this patch of fynbos, which are likely to have contributed to the introduction of alien invasive species, have been present since before the development of the site in 2019.

Four impacts have been identified for the project. Three of these are of moderate significance prior to implementing mitigation measures and one is of low significance. However, if the suggested mitigation measures are implemented this can be reduced to one moderate impact and three low impacts.

Figure 7.1: Historical satellite imagery of the project site for 2011, 2014, 2018, 2019 (construction), 2020 and 2021.

Table 7.1: Construction and operational phase impacts

Impact 1:	Loss of extent near-intact Boland Granite Fynbos and degraded Boland Granite Fynbos
Nature of impact:	The clearing of vegetation for the construction of seven tent platforms (three in near-intact granite fynbos and four within degraded granite fynbos) and associated access paths has resulted in the permanent loss of 0.24 ha of vegetation. This accounts for 15% of the total impacted patch of natural vegetation and 0.08% of the total remaining extent of this vegetation type within the Western Cape Province.
Extent of impact:	Low
Duration of Impact:	High
Intensity (severity) of Impact:	Moderate Negative
Probability of occurrence:	High
Degree to which the impact can be reversed:	Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	There are no known similar developments within the immediate area and as such the cumulative impact is not applicable in this instance.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Moderate
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	It is noted that clearing of natural vegetation for the construction of the tent platforms and access paths has been kept to a minimum thus reducing the impact of the project footprint. No further clearing should occur within this vegetation type. Only species indigenous to the vegetation associated with Simonsberg Mountain should be planted within this vegetation type. It is recommended that the vegetation around the tent platforms is restored using species indigenous to Boland Granite Fynbos to increase diversity.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Although the diversity at the site can be improved based on the recommended mitigation measures, the loss of extent of this vegetation type, which is listed as Endangered, is permanent and cannot be mitigated unless the impacted areas are restored to their natural state. As such, this impact will remain Moderate even after mitigation.

	Moderate
No-Go Alternative	If the project did not go ahead, there would be no loss of vegetation within this patch and the impact under the no-go alternative would be negligible.
Impact 2:	**Loss of Plant Species of Conservation Concern**
Nature of impact:	There are two confirmed SCC (one within the site and one directly adjacent to the site) that were recorded during the field survey as well thirteen SCC that have a high likelihood of occurrence within or adjacent to the site. The clearing of vegetation within the impacted Boland Granite Fynbos has resulted in the loss of biodiversity and may have resulted in the loss of some SCC.
Extent of impact:	Low
Duration of Impact:	Medium
Intensity (severity) of Impact:	Moderate Negative
Probability of occurrence:	Moderate
Degree to which the impact can be reversed:	Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	There are no known similar developments within the immediate area and as such the cumulative impact is not applicable in this instance.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Moderate
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	It is noted that clearing of natural vegetation for the construction of the tent platforms and access paths has been kept to a minimum thus reducing the impact of the project footprint. No further clearing should occur within this vegetation type. Only species indigenous to the vegetation associated with Simonsberg Mountain should be planted within this vegetation type. It is recommended that *Protea burchelli* and *Hermannia rugosa* are replanted within the impacted patch of Boland Granite Fynbos.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Given that the footprint of the development is small (15% of the patch of Boland Granite Fynbos), if the recommended mitigation measures are implemented this impact can be reduced to low. Low
No-Go Alternative	If the project did not go ahead, there may be some loss of SCC within this patch due to the displacement of species by alien

	invasive plant species. The impact under the no-go alternative would be low.
Impact 3:	**Disruption of Ecosystem Function and Process**
Nature of impact:	Habitat fragmentation occurs when a large expanse or strip of habitat is transformed such that the natural landscape is cut into smaller patches that are isolated from each other resulting in a reduction in ecological functioning, species diversity and species richness. This impact occurs when areas are cleared resulting in reduced movement due to the absence of ecological corridors. The impacted patch of Boland Granite Fynbos has been exposed to some habitat fragmentation and edge effects prior to the construction of the project infrastructure as the area surrounding it has been previously used for agriculture. The clearing of an additional 15% of this patch will have further contributed to fragmentation. However, it should be noted that clearing for the construction of access roads and the tent platforms appears to have been kept to a minimum as the vegetation surrounding these areas is well established indicating minor impacts. Further to this, the platforms are raised off the ground allowing for free the movement of faunal species and dispersal of seeds. So, although some habitat fragmentation has occurred this has been minimised by the low-impact design of the tent platforms.
Extent of impact:	Low
Duration of Impact:	Low
Intensity (severity) of Impact:	Low Negative
Probability of occurrence:	Medium
Degree to which the impact can be reversed:	Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	Habitat fragmentation within this patch has already occurred prior to construction. The cumulative impact associated with the construction of infrastructure in relation to the existing impact is therefore low.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	High
Proposed mitigation:	No further clearing should occur within this vegetation type. Only species indigenous to the vegetation associated with Simonsberg Mountain should be planted within this vegetation type. Access roads should not be widened.

	Any future infrastructure required for this site must be located within the transformed area (fallow land).
Cumulative impact post mitigation:	Low
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
No-Go Alternative	If the project did not go ahead, there may be increased habitat fragmentation if the alien invasive plant species that are present were not managed. The impact under the no-go alternative would be low.
Impact 4:	**Infestation of Alien Plant Species**
Nature of impact:	There are seven alien invasive species present within the site. These are common in areas that have been recently disturbed such as along the access roads, paths and around the tent platforms. There is also evidence of alien invasive species tree species such as *Acacia longifolia* and *Pinus pinaster* within the patch. It is highly probable that this patch was already infested with alien species given the size of some of these and because areas adjacent to the site show evidence of infestation. Nevertheless, the construction of the infrastructure within this patch has exacerbated the level of infestation.
Extent of impact:	Low
Duration of Impact:	Low
Intensity (severity) of Impact:	High Negative
Probability of occurrence:	High
Degree to which the impact can be reversed:	Reversible
Degree to which the impact may cause irreplaceable loss of resources:	High
Cumulative impact prior to mitigation:	Medium
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Moderate
Degree to which the impact can be mitigated:	High
Proposed mitigation:	An alien invasive management plan must be included in the EMPr. With the exception of the large pine trees on the north eastern corner of the site which could be heritage trees (this needs to be confirmed) all category 1b species must be removed. The removal will need to be managed and maintained until these species have been eradicated. It is suggested that locally indigenous species specific to this vegetation type are planted in the gaps left by the removal of alien invasive plants. No exotic species should be planted within this patch of fynbos.

Cumulative impact post mitigation:	Medium
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	The removal and management of alien invasive species, especially in a small area of 1.6ha is easily manageable and as such this impact is easily mitigated. Low
No-Go Alternative	If the project did not go ahead, infestation of alien invasive plant species is likely to continue. The impact under the no-go alternative would be low neagtive.
Impact 5:	**Disturbance to terrestrial faunal species due to construction and operation of the tented camp**
Nature of impact:	Habitat clearing for the construction of the tent platforms and access paths would have created a disturbance to faunal species using the site for foraging, shelter and breeding.
Extent of impact:	Low
Duration of Impact:	Low
Intensity (severity) of Impact:	Moderate Negative
Probability of occurrence:	High
Degree to which the impact can be reversed:	Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	There are no known similar developments within the immediate area and as such the cumulative impact is not applicable in this instance.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	Habitat clearing for the construction of the tent platforms and access paths has been kept to a minimum thus reducing the impact of the project footprint. The tents have also been elevated to allow for faunal movement and external lighting kept to a minimum. It is unknown if clearing was done by machinery or by hand and if slow moving species were moved out of harm's way prior to clearing.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	The impact associated with habitat clearing and disturbance to faunal foraging, shelter and breeding sites has already occurred and no mitigation will reverse it.

	N/A
No-Go Alternative	If the project did not go ahead, there would be no loss of habitat or disturbance of faunal species within this patch and the impact under the no-go alternative would be negligible.

7.2. Decommissioning Phase Impacts

It is anticipated that the tented camp will be decommissioned after five years of use. Impacts associated with the decommissioning phase are similar to the construction phase and will include loss of vegetation, infestation of alien plant species and impacts associated on faunal populations as a consequence of increased noise from heavy machinery.

Impact 6:	**Loss of extent near-intact Boland Granite Fynbos and degraded Boland Granite Fynbos**
Nature of impact:	The decommissioning of the tented camp and removal of tent platforms and infrastructure will require laydown areas and will disrupt vegetation that has re-established around the areas that were disturbed during the construction phase. Given the nature of the tents and the platforms, it is anticipated that the removal of these can be done with limited impact to the surrounding vegetation.
Extent of impact:	Low
Duration of Impact:	Low
Intensity (severity) of Impact:	Low Negative
Probability of occurrence:	High
Degree to which the impact can be reversed:	Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	There are no known similar developments within the immediate area and as such the cumulative impact is not applicable in this instance.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	High
Proposed mitigation:	Remove the tents and platforms using the access path created to access each tent. The foundations must be left intact to reduce disturbance. Rehabilitate each tent site that occurs within previously indigenous vegetation. back to Boland Granite Fynbos using locally indigenous species representative of the site.
Cumulative impact post mitigation:	N/A

Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Impact 7:	**Infestation of Alien Plant Species**
Nature of impact:	There are seven alien invasive species present within the site. These are common in areas that have been recently disturbed such as along the access roads, paths and around the tent platforms. There is also evidence of alien invasive species tree species such as *Acacia longifolia* and *Pinus pinaster* within the patch. Disturbance associated with the decommissioning of the site can lead to further infestation of existing alien invasive species.
Extent of impact:	Low
Duration of Impact:	Low
Intensity (severity) of Impact:	High Negative
Probability of occurrence:	High
Degree to which the impact can be reversed:	Reversible
Degree to which the impact may cause irreplaceable loss of resources:	High
Cumulative impact prior to mitigation:	Medium
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Moderate
Degree to which the impact can be mitigated:	High
Proposed mitigation:	As per the recommendation above, an alien invasive management plan must be included in the EMPr and must be implemented for the duration of the project and up to at least five years after decommissioning phase or up until a botanist signs off that the site has been adequately rehabilitated and infestation of alien species is no longer a threat.
Cumulative impact post mitigation:	Medium
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Impact 5:	**Disturbance to terrestrial faunal species due to construction and operation of the tented camp**
Nature of impact:	Habitat clearing for the decommissioning of the tent platforms and access paths would have created a disturbance to faunal species using the site for foraging, shelter and breeding.
Extent of impact:	Low

Duration of Impact:	Low
Intensity (severity) of Impact:	Moderate Negative
Probability of occurrence:	High
Degree to which the impact can be reversed:	Reversible
Degree to which the impact may cause irreplaceable loss of resources:	Low
Cumulative impact prior to mitigation:	There are no known similar developments within the immediate area and as such the cumulative impact is not applicable in this instance.
Significance rating of impact prior to mitigation (Low, Medium, Medium-High, High, or Very-High)	Low
Degree to which the impact can be mitigated:	Medium
Proposed mitigation:	Areas that were previously natural habitat prior to construction must be rehabilitated back to their original state.
Cumulative impact post mitigation:	N/A
Significance rating of impact after mitigation (Low, Medium, Medium-High, High, or Very-High)	Low

8. CONCLUSIONS AND RECOMMENDATIONS

8.1. Conclusions

A tented camp was constructed within an area of natural vegetation listed as Endangered by the National Biodiversity Assessment (2018). This vegetation type typically has a high number of SCC and is considered well protected. Based on the data available in the NBA, it is estimated that approximately 299ha of natural vegetation remain within the Western Cape Province. The patch of impacted Boland Granite Fynbos that the tented camp occurs within is 1.6ha or 0.54% of the total extent of remaining natural habitat. The area impacted by the infrastructure associated with the tented camp (tent platforms, access roads, paths) is approximately 0.24ha or 0.08% of the total remaining extent.

Based on the field survey and the low impact associated with the nature of the tented camp, which has a small footprint and due to the raised platforms allows for certain ecological processes to continue uninterrupted, the SEI for the site was determined to be of moderate sensitivity. However, if any further clearing is to occur within this vegetation patch it is likely that the SEI will increase to high.

Impacts associated with this infrastructure were typically of moderate significance prior to mitigation with all but one being reduced to low sensitivity after mitigation measures are implemented.

8.2. Recommendations

It is recommended that the following conditions are included in the Final EMPr as well as the conditions of the Environmental Authorisation (EA), if granted:

- No further construction activities may occur until Environmental authorisation has been received and the required permits are in place;
- No further clearing within the impacted Boland Granite Fynbos patch may occur for additional roads or tents;
- No infrastructure must be placed in areas of high sensitivity.
- If any SCC are to be impacted, these must be relocated to nearest appropriate habitat;
- It is recommended that the 1.6ha patch that the project infrastructure is located within is restored to represent natural Boland Granite Fynbos and as such a restoration plan for the site should form part of the EMPr. This includes removal of aliens and re-introduction of representative species;
- Similarly, alien species should be removed from the area to the west of the impacted patch to ensure that these do not spread downhill and back into the area around the tented camp.
- Alien invasive plant clearing should be undertaken in line with an Alien Vegetation Management plan, which should be compiled as part of the EMPr and implemented with immediate effect;

- Only indigenous plant species typical of the local vegetation and approved by a botanist should be used for rehabilitation purposes.
- Once the tent platforms within the areas of indigenous vegetation have been decommissioned, the sites must be restored back to Boland Granite Fynbos using only locally indigenous species representative of the site.

8.3. Ecological Statement and Opinion of the Specialist

The impacted Boland Granite Fynbos vegetation patch is not pristine and has been subjected to edge effects and likely infestation of alien plant species for several years. Although further loss of an endangered vegetation type, even if degraded, should be avoided, the impact associated with the tented camp has generally been moderate to low given the small footprint of the project and the limited disturbance of soil, the considered clearing of the site by the contractors (which appears to have been limited to the infrastructure footprint) and the current condition of the vegetation on site.

If the remaining patch of this vegetation is managed appropriately through the removal of alien invasive plant species and the restoration of the remaining patch (not impacted by the access roads and tent platforms) to its natural state, this will improve diversity within the site and contribute towards the conservation of the remaining portion of this vegetation type within the impacted area. The specialist therefore recommends that disturbed areas not required for the tented camp, are restored using locally indigenous species representative of Boland Granite Fynbos. Further to this, once the tented camp has been decommissioned, the areas under the tent platforms and the access routes to each platform must be restored.

Based on the SEI and the identified impacts, the specialist has determined that these are acceptable provided the mitigation recommendations are implemented.

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APPENDIX 1: LIST OF SPECIES RECORDED ON SITE

Family	Species	Red List	PNCO status	Invasive Status
FABACEAE	*Acacia longifolia*	Weed	-	1b
RUTACEAE	*Adenandra marginata*	LC	-	-
FABACEAE	*Aspalathus ciliaris*	LC	-	-
IRIDACEAE	*Chasmanthe floribunda*	LC	Schedule 4	-
ROSACEAE	*Cliffortia polygonifolia*	LC	-	-
ROSACEAE	*Cliffortia ruscifolia*	LC	-	-
ASTERACEAE	*Dicerothamnus rhinocerotis*	LC	-	-
BORAGINACEAE	*Echium plantagineum*	weed	-	1b
ERICACEAE	*Erica plukenetii*	LC	Schedule 4	-
ASTERACEAE	*Helichrysum petiolare*	LC	-	-
MALVACEAE	*Hermannia hyssopifolia*	LC	-	-
MALVACEAE	*Hermannia rugosa*	VU	-	-
HYACINTHACEAE	*Lachenalia lutea*	LC	Schedule 4	-
HYACINTHACEAE	*Lachenallia orchidiodes*		Schedule 4	-
PROTEACEAE	*Leucadendron salicifolium*	LC	Schedule 4	-
FABACEAE	*Lupinus angustifolium*	weed	-	-
ASTERACEAE	*Metalasia densa*	LC	-	-
POLYGALACEAE	*Muraltia heisteria*	Lc	-	-
SCROPHULARIACEAE	*Oftia africana*	LC	-	-
ASTERACEAE	*Osteospermum moniliferum*	LC	-	-
GERANIACEAEA	*Pelargonium myrrhifolium cf. ssp myrrhifolium*	LC	-	-
PHYTOLACCACEAE	*Phytolacca octandra*	Weed	-	1b
	Pinus	Weed	-	1b unless a heritage tree
PITTOSPORACEAE	*Pittosporum undulatum*	Weed	-	1b
FABACEAE	*Podalyria myrtillifolia*	LC	-	-
PROTEACEAE	*Protea burchelli*	VU	Schedule 4	-
PROTEACEAE	*Protea nitida*	LC	Schedule 4	-
ANACARDIACEAE	*Searsia angustifolia*	LC	-	-
SOLANACEAE	*Solanum mauritianum*	Weed	-	1b
ASTERACEAE	*Stoebe plumosum*	LC	-	-
VERBENACEAE	*Verbena bonariensis*	Weed	-	1b

APPENDIX 2: SPECIES LIKLIHOOD OF OCCURRENCE

Table 1: List of Critically Endangered, Endangered and Vulnerable species that have a medium and low likelihood of occurrence within the project site.

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
APONOGETONACEAE	*Aponogeton angustifolius*	NT	Medium	This species is localised to seasonal streams and wetlands (Mitshali *et al.,* 2009). It might occur within the adjacent dam and wetland. However, if it does, it has not been impacted by project activities which have been limited to the terrestrial environment.
ASTERACEAE	*Arctotis angustifolia*	EN	Medium	This specie is typically associated with Lowland acid fynbos, below 100 m. Although found on Boschendal Estate (Helme, 2019) it was associated with alluvium east of the Dwars River. The likelihood of occurrence within the project site is medium due to the lack of alluvium within the site.
IRIDACEAE	*Aristea lugens*	EN	Medium	Over 90% of this species habitat has been lost and it is now found in agricultural and urban areas (Raimondo, 2006). This species occurs on Renosterveld in low granitic hills and there is therefore a medium likelihood of occurrence at the project site.
FABACEAE	*Aspalathus aculeata*	VU	Medium	This species prefers nutrient rich soils and is dependent on fires for regeneration. There are an estimated 36 small, severely fragmented subpopulations remaining. Approximately 80 to 90% of this species' habitat has been lost to agricultural and urban expansion and urban expansion. It is likely this species was once present on site but its likelihood of occurrence within the impacted Boland Granite Fynbos patch, which has been exposed to edge effects for over 20 years and shows infestation of alien invasive species, is medium. This species was not recorded by N. Helme (2019) within the Boschendal Estate.
FABACEAE	*Aspalathus araneosa*	VU	Medium	This species was formerly once quite common but now less than ten populations remain. It is likely that this species occurs within the intact Boland Granite Fynbos on the slopes of the mountain west of the impacted site but this likelihood drops to medium for the

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
				impacted patch itself as this area has been exposed to edge effects for a number of years and shows infestation of alien and ruderal species. This species was not recorded by N. Helme (2019) within the Boschendal Estate.
FABACEAE	*Aspalathus attenuata*	EN	Medium	This species is known from five locations and is threatened by the loss of habitat for cultivation of vineyards, wheat and deciduous fruit. It is possible that this species occurs within the intact Boland Granite Fynbos on the slopes of the mountain west of the impacted site but this likelihood drops to medium for the impacted patch itself as this area has been exposed to edge effects for a number of years and shows infestation of alien and ruderal species. This species was not recorded by N. Helme (2019) within the Boschendal Estate.
FABACEAE	*Aspalathus lebeckioides*	VU	Medium	This species is known from fewer than 10 locations and is threatened by the loss of habitat for the cultivation of vineyards, wheat and deciduous fruit and infestation of alien species. It is possible that this species occurs within the intact Boland Granite Fynbos on the slopes of the mountain west of the impacted site but this likelihood drops to medium for the impacted patch itself as this area has been exposed to edge effects for a number of years and shows infestation of alien and ruderal species. This species was not recorded by N. Helme (2019) within the Boschendal Estate.
FABACEAE	*Aspalathus muraltioides*	EN	Medium	This species is known from fewer than 7 locations and is threatened by the loss of habitat. It is possible that this species occurs within the intact Boland Granite Fynbos on the slopes of the mountain west of the impacted site but this likelihood drops to medium for the impacted patch itself as this area has been exposed to edge effects for a number of years and shows infestation of alien and ruderal species. It should also be noted that previous studies did not record this species within the Boschendal Estate (Helme, 2019).
ROSACEAE	*Cliffortia phillipsii*	VU	Medium	Fewer than five populations are known, two of which are extinct. It is possible that this species occurs within the intact

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
				Boland Granite Fynbos on the slopes of the mountain west of the impacted site but this likelihood drops to medium for the impacted patch itself as this area has been exposed to edge effects for a number of years and shows infestation of alien and ruderal species. It should also be noted that previous studies did not record this species within the Boschendal Estate (Helme, 2019).
IRIDACEAE	*Codonorhiza azurea*	EN	Medium	This species 13 to 15 populations of this species remain between Stellenbosch, Malmesbury and Saron. This species is locally extinct on the Cape Peninsula. It is possible that this species occurs within the intact Boland Granite Fynbos on the slopes of the mountain west of the impacted site but this likelihood drops to medium for the impacted patch itself as this area has been exposed to edge effects for a number of years and shows infestation of alien and ruderal species which are likely to have displaced it.
RUSCACEAE	*Sensitive species 364*	VU	Medium	This species occurs from the Cape Flats to Vanrhynsdorp but populations in the southern range of its extent are mostly extinct (Helme and Raimondo, 2007). The likelihood of occurrence within the general project area is Medium.
IRIDACEAE	Sensitive species 458	VU	Medium	This species is associated with clay flats and lower slopes. It has an EOO and is only know from eight locations (Raimondo and Goldblatt, 2006). The likelihood of occurrence within the impacted area is medium.
AIZOACEAE	*Lampranthus dilutus*	EN	Medium	The survey of the patch of degraded Boland Fynbos that has been impacted by the infrastructure did not appear to have a succulent component present. This fairly small patch of 1.6 ha has had farming activities surrounding it since at least the early 2000's but possibly as far back as the 1980's and has therefore been exposed to edge effects for some time. Further to this, a previous baseline survey undertaken by Helme (2019) did not record this species within the Boschendal Estate. The likelihood of occurrence of this species at the site is Medium.
AIZOACEAE	*Lampranthus peacockiae*	VU	Medium	The survey of the patch of degraded Boland Fynbos that has been impacted by the infrastructure did not appear to

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
				have a succulent component present. This fairly small patch of 1.6 ha has had farming activities surrounding it since at least the early 2000's but possibly as far back as the 1980's and has therefore been exposed to edge effects for some time. Further to this, a previous baseline survey undertaken by Helme (2019) did not record this species within the Boschendal Estate. The likelihood of occurrence of this species at the site is Medium.
PROTEACEAE	*Leucospermum gueinzii*	EN	Medium	This species is associated with granite-derived clay soils near streams and in kloofs, 300-1000 m. The likelihood of occurrence of this species within the impacted area is medium. However, it should be noted that this species was not recorded within the impacted area.
ASTERACEAE	*Muraltia macropetala*	VU	Medium	This species is associated with clay flats in renosterveld and Boland Granite Fynbos. However, this species was not recorded during the field survey nor was it recorded in the baseline survey for Boschendal undertaken by Helme (2019). The likelihood of occurrence is therefore Medium.
FABACEAE	*Otholobium rotundifolium*	VU	Medium	This species is associated with montane fynbos occurring on granite and shale slopes (Helme and Raimondo, 2005). Although habitat exists for this species within the project site, it was not recorded during the field survey nor in the baseline survey of Boschendal Estate undertaken in 2019 (Helme, 2019). The likelihood of occurrence within the site is therefore Medium.
GERANIACEAE	Sensitive species 676	VU	Medium	This species is associated with loamy alluvial sands, and clay flats and its distribution range coincides with the project area (Helme and von Satden, 2013). This species was recorded by Helme (2019) on alluvium east of Dwars River. Since this species is also associated with clay the likelihood of occurrence at the project site has been rated as medium.
GERANIACEAE	Sensitive species 690	VU	Medium	This species is associated with clay flats (Raimondo and Helme, 2007). The likelihood of occurrence of this species on the slope has therefore been rated as medium.

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
RHAMNACEAE	*Phylica thunbergiana*	EN	Medium	This species is associated with renosterveld, on lower clays slopes and flats (Raimondo and Helme, 2006). Although there are elements of Renosterveld present within the site, the project area is primarily comprised of fynbos. This species is also known from only 10 small, fragmented populations. The likelihood of occurrence of this within the project site is therefore listed as medium
RESTIONACEAE	*Restio duthieae*	VU	Medium	This species is associated with slight seepages on loamy soils derived from granites or coastal sand (Raimondo and Turner, 2007). Since no seeps were observed on site the likelihood of occurrence is medium.
IRIDACEAE	Sensitive species 766	EN	Medium	Although suitable habitat is present for this species, it is only known from five locations which include the lower slopes of Paarl Mountain, Breede River Valley and Du Toits Kloof. It is unlikely that this species occurs within the project site and the likelihood of occurrence is conservatively rated as medium.
FABACEAE	*Xiphotheca lanceolata*	VU	Medium	This species is associated with renosterveld-fynbos mosaic (van der Colff *et al.,* 2015). The likelihood of occurrence within the project site is medium.
ASTERACEAE	*Arctotis angustifolia*	CR	Low	Only two known and severely fragmented populations remain (Helme *et al.,* 2009). This species is unlikely to occur within the 1.6 ha impacted patch of Boland Granite Fynbos.
IRIDACEAE	Sensitive species 72	VU	Low	The likelihood of this species occurring within the project area is low as it is outside of its known distribution. This species is known to occur in the hills between Darling and Mamre as well as the Tulbagh Valley. There are some isolated records from Wellington, Klapmuts and Bottelary Hills.
IRIDACEAE	Sensitive species 78	EN	Low	This species is typically found between Malmesbury and Darling and is only know from four locations. The likelihood of it occurring within the project site which has been exposed to edge effects on three of its sides is low.
IRIDACEAE	Sensitive species 85	CR	Low	This species is associated with seasonally wet clay flats. The likelihood of

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
				occurrence within the project site is low as the required habitat is not available.
IRIDACEAE	Sensitive species 96	EN	Low	This species is associated with seasonally moist areas on clay flats and slopes within renosterveld and shale fynbos. The likelihood of occurrence within the project site is low as the required habitat is not available.
RESTIONACEAE	*Cannomois arenicola*	EN	Low	This species is associated with coastal lowlands occurring on well drained sandy plains. The likelihood of occurrence within the project site is low as the required habitat is not available.
PROTEACEAE	*Diastella buekii*	CR	Low	Three to four populations remain within the Berg River Valley between Franschhoek and Paarl. This species is associated with moist areas on alluvial sandy flats. This species is unlikely to occur within the impacted path of Boland Granite Fynbos as the preferred habitat is not available.
ORCHIDACEAE	Sensitive species 293	EN	Low	Although suitable habitat is available, this species is currently only known from two sub-populations. Since the project site is outside of this species known range, the likelihood of occurrence within the project area is low.
ORCHIDACEAE	Sensitive species 299	CR	Low	This species is currently restricted to the area between Wellington and Ceres (von Staden *et al.*, 2012). Since the project area occurs outside of the known distribution, the likelihood of occurrence is low.
AIZOACEAE	*Drosanthemum hispifolium*	VU	Low	This species occurs from Clanwilliam to Koeberg and is associated with flats in loamy soil. It is unlikely to occur within the impacted site as habitat is not available.
RESTIONACEAE	*Elegia squamosa*	EN	Low	This species has become very rare due to habitat loss. It is associated with seasonally damp clay flats and lower slopes with heavy soils. It is unlikely to occur within the impacted project site as no available habitat is present.
AIZOACEAE	*Erepsia patula*	VU	Low	Known from less than 10 locations between Wellington and Somerset West. There was no evidence of succulent species within or adjacent to the site and its likelihood of occurrence is this low.

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
AIZOACEAE	*Erepsia ramosa*	VU	Low	Once fairly common, populations of this species have declined. This species occurs from Piketberg to the Cape Flats. There was no evidence of succulent species within or adjacent to the site and its likelihood of occurrence is this low.
ERICACEAE	*Erica abietina subsp. perfoliosa*	VU	Low	This localised species has an EOO of 11km^2 within the Jonkershoek Valley. It is associated with moist, lower south to southwest facing granite slopes. The project area faces east and is dry Boland Granite Fynbos and is therefore unlikely to provide suitable habitat for this species.
ERICACEAE	*Erica aspalathoides*	VU	Low	This species is typically found on the upper summit slopes of mountains and associated with damp, peaty overhangs and rocky ledges. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
ERICACEAE	*Erica limosa*	VU	Low	This species is associated with peaty accumulate with quartzitic sands ins eeps and wetlands. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
IRIDACEAE	*Geissorhiza erosa*	EN	Low	This species is associated with damp clay flats. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
IRIDACEAE	*Geissorhiza humilis*	VU	Low	This species is associated with fynbos, in coarse, sandy soils. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
IRIDACEAE	*Gladiolus trichonemifolius*	VU	Low	This species is associated with wet sandy flats. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
ISOETACEAE	*Isoetes capensis*	EN	Low	This species occurs within seasonally flooded depressions and in pools on flats with sandy clay soils. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
IRIDACEAE	*Ixia erubescens*	EN	Low	This species is associated with seasonally damp, heavy clay or granitic alluvium.

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
				The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
IRIDACEAE	*Ixia rouxii*	CR	Low	Although this species used to occur from Porterville to Stellenbosch, only fragmented populations remain near Wellington and Wolseley. As such this species is unlikely to occur within the impacted area.
IRIDACEAE	*Ixia sarmentosa*	EN	Low	This species is associated with seasonally wet, lowland flats and slopes. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
HYACINTHACEAE	Sensitive species 526	EN	Low	This species is associated with seasonally moist, stony clay flats renosterveld (Von Satden *et al., 2019)*. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
HYACINTHACEAE	*Lachnaea uniflora*	VU	Low	This species is associated with sandy flats and sandy areas on lower mountain slopes (Helme *et al., 2006).* Although recorded by Helme (2019) on alluvium on Boschendal Estate, the project area does not provide suitable habitat for this species and its likelihood of occurrence is thus low.
HYACINTHACEAE	*Lachnaea capitata*	VU	Low	This species is associated with acid sand flats that are seasonally damp. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
AIZOACEAE	*Lampranthus filicaulis*	VU	Low	This species is associated with seasonally wet alluvial sands overlaying koffieklip. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
AIZOACEAE	*Lampranthus glaucus*	VU	Low	This species is associated with seasonally waterlogged acid sands. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
AIZOACEAE	*Lampranthus schlechteri*	CR	Low	This species is associated with sandy flats in Swartland Alluvium Fynbos (Klak *et al.*, 2012). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
AIZOACEAE	*Lampranthus sociorum*	EN	Low	The project area does not occur within the specie's distribution range.
PROTEACEAE	*Leucadendron argenteum*	EN	Low	This species is associated with moist, south-facing slopes. Since project site

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
				faces east it is unlikely that this species is or was present.
PROTEACEAE	*Leucadendron corymbosum*	VU	Low	This species is associated with wet clay soils in valley bottoms. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
PROTEACEAE	*Leucospermum hypophyllocarpodendron subsp. canaliculatum*	VU	Low	This species is associated with flats with deep sandy soils at elevations between 0 and 200m. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
BORAGINACEAE	*Lobostemon regulareflorus*		Low	This species is associated with moist, shaded kloofs. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
ASTERACEAE	*Metalasia capitata*	VU	Low	This species is associated with acid sand flats. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
IRIDACEAE	Sensitive species 599	VU	Low	This species is associated with seasonally wet flats in sandy soil or rocky alluvium (Goldblatt and Raimondo, 2006). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
IRIDACEAE	Sensitive species 640	VU	Low	This species is associated with seasonally damp depressions at elevations below 300m (Koopman and Raimondoa, 2008). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
ASTERACEAE	Sensitive species 666	VU	Low	This species is associated with shales and sandy flats (von Staden, 2018). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
OXALIDACEAE	Oxalis strigosa	EN	Low	This species is known from two localities between Tygerberg and Stellenbosch (Helme *et al.*, 2012). It's likelihood of occurrence within the project site is thus low.
GERANIACEAE	Sensitive species 697	EN	Low	This species is associated with grassy renosterveld (Raimondo and Helme, 2007). Since the vegetation present was predominantly fynbos with some renosterveld elements, the likelihood of occurrence of this species within the project area is low.
POACEAE	*Pentameris bachmannii*	EN	Low	This species is associated with seasonally waterlogged sands and shales on

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
				lowlands (Raimondo and Helme, 2007). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
FABACEAE	*Podalyria argentea*	EN	Low	This species is associated with wet, peaty soil (Schutte-Vlok, and Raimondo, 2012). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
FABACEAE	*Podalyria sericea*	VU	Low	This species is associated with granite outcrops on well-drained, humic, sandy loams (Schutte-Vlok, and Raimondo, 2012). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
PROTEACEAE	*Protea lacticolor*	VU	Low	This species is associated with high altitude shale bands on south and east facing slopes. It typically occurs along stream banks (Rebelo et al., 2019). Although the slope of the project site is east facing, the likelihood of occurrence of this species is low as the site is not adjacent to a river bank.
PROTEACEAE	*Protea rupicola*	EN	Low	This species is associated with high altitude summit ridges occurring in rocky cracks and crevices where it is protected from fire. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
FABACEAE	*Psoralea alata*	VU	Low	This species is associated with seasonally damp clay soils on lowland and flat areas (von Staden and Helme, 2012). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
FABACEAE	*Psoralea fascicularis*	EN	Low	This species is associated with moist areas of lowland fynbos that occur on granite and shale (Stirton *et.al.,* 2018). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
RESTIONACEAE	*Restio paludosus*	VU	Low	This species is associated with seasonally wet sands (Turner et al., 2007). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
RESTIONACEAE	*Restio papillosus*	VU	Low	This species is associated with coastal flats and slopes occurring on sand and clay soil (Turner, 2007). Given that the site is not located near the coast, the likelihood of occurrence is low.

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
RESTIONACEAE	*Restio pratensis*	EN	Low	This species is associated with seasonally waterlogged areas (Turner and Linder, 2007). Given that the site is typically dry due to its position on the slope, the likelihood of occurrence is low due to the lack of suitable habitat.
RESTIONACEAE	*Restio rigoratus*	EN	Low	This species is associated with seasonally waterlogged areas that typically overlay shale or ferricrete (Helme et al., 2014). Given that the site is typically dry due to its position on the slope, the likelihood of occurrence is low due to the lack of suitable habitat.
AIZOACEAE	*Ruschia geminiflora*	VU	Low	This species is associated with clay flats and alluvial sands, neither of which are present within the project site (Helme *et al.,* 2008). Additionally, there was no succulent component observed within the project area or surrounds during the field survey. As such the likelihood of occurrence is low.
AIZOACEAE	*Ruschia schollii*	EN	Low	This species is associated with lowland shale and granite derived soils (Helme and von Staden, 2006). Although habitat for this species is present, there was no succulent component observed within the project area or surrounds during the field survey. As such the likelihood of occurrence is low.
ORCHIDACEAE	Sensitive species 718	VU	Low	This species is associated with moist flats and slopes in coarse, often stony, sandstone-derived soils (von Staden, 2006). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
Iridaceae	Sensitive species 764	CR	Low	This species occurs within granite derived gritty clay and is typically associated with renosterveld (Dorse *et al.,* 2006). This species is only known from two locations, one near Stellenbosch and one near Bottelary Hills, and has a very small EOO 20km^2. The likelihood of occurrence at the impacted site is therefore low.
PROTEACEAE	*Serruria pinnata*	CR	Low	This species is associated with alluvial fynbos on the lowlands adjacent to renosterveld (Rebelow *et al., 2015).* There are fewer than 20 mature individuals remaining in three isolated populations. Given this specie's status it

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
				is unlikely to occur within the project area.
Proteaceae	*Serruria stellata*	VU	Low	This species is associated with high altitude sandy flats (Rebelo *et al.,* 2019). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
Aizoaceae	*Skiatophytum skiatophytoides*	VU	Low	This species is associated with lowland coastal fynbos (von Staden *et al.,* 2016). Since the project site is not near the coast, the likelihood of occurrence is low.
Aizoaceae	*Skiatophytum tripolium*	VU	Low	This species is associated with lowland coastal fynbos (von Staden *et al.,* 2016). Since the project site is not near the coast, the likelihood of occurrence is low.
ASPHODELACEAE	Sensitive species 744	VU	Low	This species is associated with damp, loamy sands and typically occurs on the lower mountain slopes and flats. The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
CYPERACEAE	Trianoptiles solitaria	EN	Low	This species is associated with damp depressions in acidic sand (von Witt et al., 2015). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
HAEMODORACEAE	Wachendorfia brachyandra	VU	Low	This species is associated with damp sandstone or granites (Raimondo et al., 2007). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
Iridaceae	Sensitive species 772	CR	Low	This species is associated with seasonally wet clay and loamy alluvial flats (Goldblatt et al., 2013). Although this species was recorded by Helme (2019) on alluvium east of Dwars River, the likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
FABACEAE	*Xiphotheca reflexa*	EN	Low	This species is associated with sandy plains (Victor *et al.,* 2005). The likelihood of occurrence at the impacted site is low due to the lack of suitable habitat.
AIZOACEAE	*Antimima aristulata*	VU	Low	There are fewer than 20 populations of this species remaining in severely fragmented habitats (Raimondo *et al.,* 2006).

Family	*Scientific Name*	Red List Status	Probability of occurrence on site	Comment
				The survey of the patch of degraded Boland Fynbos that has been impacted by the infrastructure did not appear to have a succulent component present. This fairly small patch has had farming activities around it since at least the early 2000's but possibly as far back as the 1980's and has therefore been exposed to edge effects for some time.

APPENDIX 3: IMPACT ASSESSMENT METHODOLOGY

EVALUATION METHODS FOR ENVIRONMENTAL IMPACTS

The evaluation method for determining significance of impacts is shown below.[1]

Note that an adjustment was made, which involved changing the consequence column to the significance column, due to the fact that probability should not necessarily determine significance, as, for example, catastrophic events would be highly significant, even though the probability of such an event occurring is low.

Definitions of or criteria for environmental impact parameters

The significance of environmental impacts is a function of the environmental aspects that are present and to be impacted on, the probability of an impact occurring and the consequence of such an impact occurring before and after implementation of proposed mitigation measures.

(a) Extent (spatial scale):

Ranking criteria

L	M	H
Impact is localized within site boundary	Widespread impact beyond site boundary; Local	Impact widespread far beyond site boundary; Regional/national

Take into consideration:
- Access to resources; amenity
- Threats to lifestyles, traditions and values
- Cumulative impacts, including possible changes to land uses at and around the site.

(b) Duration:

Ranking criteria

L	M	H
Quickly reversible, less than project life, short term (0-5 years)	Reversible over time; medium term to life of project (5-15 years)	Long term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources

Take into consideration:
- Cost – benefit economically and socially (e.g. long or short term costs/benefits)

(c) Intensity (severity):

Type of Criteria	Negative			Positive		
	H-	M-	L-	L+	M+	H+
Qualitative	Substantial deterioration, death, illness or injury, loss of habitat/diversity or resource, severe alteration or disturbance of important processes.	Moderate deterioration, discomfort, Partial loss of habitat/biodiversity/resource or slight or alteration	Minor deterioration, nuisance or irritation, minor change in species/habitat/ diversity or resource, no or very little quality deterioration.	Minor improvement, restoration, improved management	Moderate improvement, restoration, improved management, substitution	Substantial improvement, substitution
Quantitative	Measurable deterioration Recommended level will often be violated (e.g. pollution)	Measurable deterioration Recommended level will occasionally be violated	No measurable change; Recommended level will never be violated	No measurable change; Within or better than recommended level.	Measurable improvement	Measurable improvement
Community response	Vigorous	Widespread complaints	Sporadic complaints	No observed reaction	Some support	Favourable publicity

[1] (Adapted from T Hacking, AATS – Envirolink, 1998: An innovative approach to structuring environmental impact assessment reports. In: IAIA SA 1998 Conference Papers and Notes

Take into consideration:

- Cost – benefit economically and socially (e.g. high nett cost = substantial deterioration)
- Impacts on human-induced climate change
- Impacts on future management (e.g. easy/practical to manage with change or recommendation)

(d) Probability of occurrence:

Ranking criteria

L	M	H
Unlikely; low likelihood; Seldom No known risk or vulnerability to natural or induced hazards.	Possible, distinct possibility, frequent Low to medium risk or vulnerability to natural or induced hazards.	Definite (regardless of prevention measures), highly likely, continuous High risk or vulnerability to natural or induced hazards.

The specialist study must attempt to quantify the magnitude of impacts and outline the rationale used. Where appropriate, international standards are to be used as a measure of the level of impact.

(e) Status of the impact:

Describe whether the impact is positive, negative or neutral for each parameter. The ranking criteria are described in negative terms. Where positive impacts are identified, use the opposite, positive descriptions for criteria.

Based on a synthesis of the information contained in (a) to (e) above, the specialist will be required to assess the significance of potential impacts in terms of the following criteria:

(f) Significance: (Duration X Extent X Intensity)

Intensity = L				
Duration	**H**			
	M			Medium
	L	Low		
Intensity = M				
Duration	**H**			High
	M		Medium	
	L	Low		
Intensity = H				
Duration	**H**			
	M			High
	L	Medium		
		L	M	H
		Extent		

Positive impacts would be ranked in the same way as negative impacts, but result in high, medium or low positive consequence.

(g) Degree of confidence in predictions:

State the degree of confidence in the predictions, based on the availability of information and specialist knowledge.

APPENDIX 4: COMMENT ON HABITAT CONDITION

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing/harvesting regimes etc).
Natural	0%	N/A
Near Natural (includes areas with low to moderate level of alien invasive plants)	23%	The patch of Boland Granite Fynbos that has been impacted by the project is infested with alien invasive species. Based on the historical satellite imagery available for the site and the size of some of the established trees, this appears to have been infested prior to construction. However, the construction of the platforms and upgrading of the ring road have exacerbated this.
Degraded (includes areas heavily invaded by alien plants)	0%	N/A
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	77%	The transformed areas are currently fallow fields covered by ruderal species and Paterson's curse. Previously these areas were used to grow crops.

APPENDIX 5: PROOF OF SACNASP REGISTRATION AND HIGHEST QUALIFICATION

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Tarryn Barbara Lee Martin

Registration Number: 008745

is a registered scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following fields(s) of practice (Schedule 1 of the Act)

Environmental Science (Professional Natural Scientist)
Botanical Science (Professional Natural Scientist)

Effective **29 January 2014** Expires **31 March 2022**

Chairperson

Chief Executive Officer

To verify this certificate scan this code

RHODES UNIVERSITY

THIS IS TO CERTIFY THAT

TARRYN BARBARA LEE MARTIN

WAS THIS DAY AT A CONGREGATION OF THE UNIVERSITY
ADMITTED TO THE DEGREE OF

MASTER OF SCIENCE

IN

BOTANY

WITH DISTINCTION

VICE CHANCELLOR

DEAN OF THE FACULTY OF SCIENCE

REGISTRAR

GRAHAMSTOWN
10 APRIL 2010

SACNASP

South African Council for Natural Scientific Professions

herewith certifies that

Amber Leah Jackson

Registration number: 100125/12

is registered as a

Candidate Natural Scientist

in terms of section 20(3) of the Natural Scientific Professions Act, 2003
(Act 27 of 2003)
in the following field(s) of practice (Schedule I of the Act)

Environmental Science **15 August 2012**

15 August 2012
Pretoria

President

Executive Director

University of Cape Town • iYunivesithi yaseKapa • Universiteit van Kaapstad

we certify that

Amber Leah Jackson

was admitted to the degree of

Master of Philosophy

in Environmental Management

on 9 June 2011

Vice-Chancellor

Registrar

APPENDIX 6: CV

CONTACT DETAILS

Name	**Tarryn Martin**
Name of Company	**Biodiversity Africa**
Designation	Director
Profession	Botanical Specialist and Environmental Manager
E-mail	tarryn@biodiversityafrica.com
Office number	+27 (0)71 332 3994
Education	2010: Master of Science with distinction (Botany) 2004: Bachelor of Science (Hons) in African Terrestrial Vertebrate Biodiversity 2003: Bachelor of Science
Nationality	**South African**
Professional Body	**SACNASP**: South African Council for Natural Scientific Profession: Professional Natural Scientist (400018/14) **SAAB**: Member of the South African Association of Botanists **IAIASa**: Member of the International Association for Impact Assessments South Africa Member of Golden Key International Honour Society
Key areas of expertise	• Biodiversity Surveys and Impact Assessments • Environmental Impact Assessments • Critical Habitat Assessments • Biodiversity Management and Monitoring Plans

PROFILE

Tarryn has over ten years of experience working as a botanist, nine of which are in the environmental sector. She has worked as a specialist and project manager on projects within South Africa, Mozambique, Lesotho, Zambia, Tanzania, Cameroon and Malawi.

She has extensive experience writing botanical impact assessments, critical habitat assessments, biodiversity management plans, biodiversity monitoring plans and Environmental Impact Assessments to International Standards, especially to those of the International Finance Corporation (IFC). Her experience includes working on large mining projects such as the Kenmare Heavy Minerals Mine, where she monitored forest health, undertook botanical impact assessments for their expansion projects and designed biodiversity management and monitoring plans. She has also project managed Environmental Impact Assessments for graphite mines in northern Mozambique and has a good understanding of the Mozambique Environmental legislation and processes.

Tarryn holds a BSc (Botany and Zoology), a BSc (Hons) in African Vertebrate Biodiversity and an MSc with distinction in Botany from Rhodes University. Tarryn's Master's thesis examined the impact of fire on the recovery of C_3 and C_4 Panicoid and non-Panicoid grasses within the context of climate change for which she won the Junior Captain Scott-Medal (Plant Science) for producing the top MSc of 2010 from the South African Academy of Science and Art as well as an Award for Outstanding Academic Achievement in Range and Forage Science from the Grassland Society of Southern Africa. Tarryn is a professional member of the South African Council for Natural Scientific Professionals (since 2014).

EMPLOYMENT EXPERIENCE

Director and Botanical Specialist, Biodiversity Africa

July 2021 - present

- Botanical and ecological assessments for local and international EIAs in Southern Africa
- Identifying and mapping vegetation communities and sensitive areas
- Designing and implementing biodiversity management and monitoring plans
- Designing rehabilitation plans
- Designing alien management plans
- Critical Habitat Assessments
- Large ESIA studies
- Managing budgets

Principal Environmental Consultant, Branch Manager and Botanical Specialist, Coastal and Environmental Services

May 2012-June 2021

- Botanical and ecological assessments for local and international EIAs in Southern Africa
- Identifying and mapping vegetation communities and sensitive areas
- Designing and implementing biodiversity management and monitoring plans
- Designing rehabilitation and biodiversity offset plans
- Designing alien management plans
- Critical Habitat Assessments
- Large ESIA studies
- Managing budgets
- Cape Town branch manager
- Coordinating specialists and site visits

Accounts Manager, Green Route DMC

October 2011- January 2012

- Project and staff co-ordination
- Managing large budgets for incentive and conference groups travelling to southern Africa
- Creating tailor-made programs for clients

- Negotiating rates with vendors and assisting with the ground management of inbound groups to ensure client satisfaction.

Camp Administrator and Project Co-ordinator, Windsor Mountain International Summer Camp, USA

April 2011 - September 2012

- Co-ordinated staff and camper travel arrangements, main camp events and assisted with marketing the camp to prospective families.

Freelance Project Manager, Green Route DMC

November 2010 - April 2011

- Project and staff co-ordination
- Managing large budgets for incentive and conference groups travelling to southern Africa
- Creating tailor-made programs for clients
- Negotiating rates with vendors and assisting with the ground management of inbound groups to ensure client satisfaction.

Camp Counselor, Windsor Mountain Summer Camp, USA

June 2010 - October 2010

NERC Research Assistant, Botany Department, Rhodes University, Grahamstown in collaboration with Sheffield University, Sheffield, England

April 2009 - May 2010

- Set up and maintained experiments within a common garden plot experiment
- collected, collated and entered data
- Assisted with the analysis of the data and writing of journal articles

Head Demonstrator, Botany Department, Rhodes University

March 2007 - October 2008

Operations Assistant, Green Route DMC

September 2005 - February 2007

- Project and staff co-ordination
- Managing large budgets for incentive and conference groups travelling to southern Africa
- Creating tailor-made programs for clients
- Negotiating rates with vendors and assisting with the ground management of inbound groups to ensure client satisfaction

PUBLICATIONS

- Ripley, B.; Visser, V.; Christin, PA.; Archibald, S.; Martin, T and Osborne, C. Fire ecology of C_3 and C_4 grasses depends on evolutionary history and frequency of burning but not photosynthetic type. *Ecology.* 96 (10): 2679-2691. 2015
- Taylor, S.; Ripley, B.S.; Martin, T.; De Wet, L-A.; Woodward, F.I.; Osborne, C.P. Physiological advantages of C_4 grasses in the field: a comparative experiment demonstrating the importance of drought. *Global Change Biology*. 20 (6): 1992-2003. 2014
- Ripley, B; Donald, G; Osborne, C; Abraham, T and Martin, T. Experimental investigation of fire ecology in the C3 and C4 subspecies of *Alloteropsis semialata. Journal of Ecology.* 98 (5): 1196 - 1203. 2010
- South African Association of Botanists (SAAB) conference, Grahamstown. Title: Responses of C3 and C4 Panicoid and non-Panicoid grasses to fire. January 2010
- South African Association of Botanists (SAAB) conference, Drakensberg. Title: Photosynthetic and Evolutionary determinants of the response of selected C3 and C4 (NADP-ME) grasses to fire. January 2008

COURSES

- Rhodes University and CES, Grahamstown
- EIA Short Course 2012
- Fynbos identification course, Kirstenbosch, 2015.
- Photography Short Course, Cape Town School of Photography, 2015.
- Using Organized Reasoning to Improve Environmental Impact Assessment, 2018, International IAIA conference, Durban

CONSULTING EXPERIENCE

International Projects

- 2020 – 2021: Project manager for the 2Africa subsea cable ESIA in Mozambique.
- 2020 – 2021: Project manager for the Category B EIA for the Wihinana Graphite Mine, Cabo delgado, Mozambique
- 2020 – 2021: Project manager for the category B exploration ESIA for Sofala Heavy Minerals Mine, Inhambane, Mozambique
- 2020: Critical Habitat Assessment for a graphite mine in Cabo Delgado, Mozambique. This assessment was to IFC standards.
- 2020: Analysed the botanical dataset for Lurio Green Resources and provided comment on the findings and gaps.
- 2020: Biodiversity Management Plan and Monitoring Plan for mine at Pilivilli in Nampula Province, Mozambique. This assessment was to IFC standards.
- 2019: Botanical Assessment for a cocoa plantation, Tanzania. This assessment was to IFC standards.
- 2019: Critical Habitat Assessment, Biodiversity Management Plan and Ecosystem Services Assessment for JCM Solar Farm in Cameroon. This assessment was to IFC standards.
- 2019: Undertook the Kenmare Road and Infrastructure Botanical Baseline Survey and Impact Assessment for an infrastructure corridor that will link the existing mine at Moma to the new proposed mine at Pillivilli in Nampula Province, Mozambique. This assessment was to IFC standards.
- 2012 – Present: Kenmare Terrestrial Monitoring Program Project Manager and Specialist Survey, Nampula Province, Mozambique.

- 2018: Conducted a field survey and wrote a botanical report to IFC standards for the proposed Balama Graphite Mine Environmental and Social Impact Assessment (ESIA) in Cabo Delgado Province, Mozambique.
- 2018: Co-authored the critical habitat assessment chapter for the proposed Kenmare Pilivilli Heavy Minerals Mine.
- 2018: Authored the Conservation Efforts chapter for the Kenmare Pilivilli Heavy Minerals Mine.
- 2017-2018: Co-authored and analysed data for the Kenmare Bioregional Survey of *Icuria dunensis* (species trigger for critical habitat) in Nampula Province, Mozambique. This was for a mining project that needed to be IFC compliant.
- 2017: Conducted a field survey and wrote a botanical report to IFC standards for the proposed Ancuabe Graphite Mine Environmental and Social Impact Assessment (ESIA) in Cabo Delgado Province, Mozambique.
- 2017-2018: Managed the Suni Resources Montepuez Graphite Mine Environmental Impact Assessment. This included the management of ten specialists, the co-ordination of their field surveys, regular client liaison and the writing of the Environmental Impact Assessment Report which summarised the specialists findings, assessed the impacts of the proposed mine on the environment and provided mitigation measures to reduce the impact.
  I was also the lead botanist for this baseline survey and impact assessment and undertook the required field work and analysed the data and wrote the report.

- 2017: Undertook the botanical baseline survey and impact assessment for the proposed Kenmare Pilivili Heavy Mineral Mine in Nampula Province, Mozambique. This was to IFC Standards.
- 2017: Ecological Survey for the Megaruma Mining Limitada Ruby Mine Exploration License, Cabo Delgado, Mozambique.
- 2016: Undertook the botanical baseline survey and impact assessment, wrote an alien invasive management plan and co-authored the biodeiveristy monitoring plan for this farm. The project was located in Zambezia Province, Mozambique.
- 2015-2016: Conducted the Triton Minerals Nicanda Hills Graphite Mine Botanical Survey and Impact Assessment. Was also the project manager and specialist co-ordinator for this project. The project was located in Cabo Delgado Province, Mozambique.
- 2015: Was part of the team that undertook a Critical Habitat Assessment for the Nhangonzo Coastal Stream site at Inhassora in Mozambique that Sasol intend to establish drill pads at. This project needed to meet the IFC standards.
- 2014: Lurio Green Resources Wood Chip Mill and Medium Density Fibre-board Plant, Project Manager and Ecological Specialist, Nampula Province, Mozambique. 2014-2015.
- 2013-2014: LHDA Botanical Survey, Baseline and Impact assessment, Lesotho.
- 2014: Biotherm Solar Voltaic Ecological Assessment, Zambia.
- 2013-2014: Lurio Green Resources Plantation Botanical Assessment, Vegetation and Sensitivity Mapping, Specialist Co-ordination, Nampula Province, Mozambique.
- 2013: Syrah Resources Botanical Baseline Survey and Ecological Assessment., Cabo Delgado Mozambique.
- 2013-2014: Baobab Mining Ecological Baseline Survey and Impact Assessment, Tete, Mozambique.

South African Projects

- 2021 - Present: Project Manager for the Sturdee Energy Solar PV facility, Western Cape

- 2021: Ecological Assessment for the Sturdee Energy Solar PV facility, Western Cape
- 2021: Rehabilitation plan for a housing development (Hope Village)
- 2020: Ecological Assessment for the Eskom Juno-Gromis Powerline deviation, Western Cape
- 2020: Project Manager for the Basic Assessment for SANSA development at Matjiesfontein (Western Cape). Project received authorization in 2021.
- 2020: Ecological Assessment for construction of satellite antennae, Matjiesfontein, Western Cape
- 2019: Ecological Assessment for a wind farm EIA, Kleinzee, Northern Cape
- 2019: Ecological Assessment for two housing developments in Zeerust, North West Province
- 2019: Botanical Assessment in Retreat, Cape Town for the DRDLR land claim.
- 2019: Cape Agulhas Municipality Botanical Assessment for the expansion of industrial zone, Western Cape, South Africa, 2019.
- 2018: Ecological Assessment for the construction of a farm dam in Greyton, Western Cape.
- 2018: Conducted the Ecological Survey for a housing development in Noordhoek, Cape Town
- 2018: Conducted the field survey and developed an alien invasive management plan for the Swartland Municipality, Western Cape.
- 2017: Undertook the field survey and co-authored a coastal dune study that assesses the impacts associated with the proposed rezoning and subdivision of Farm Bookram No. 30 to develop a resort.
- 2017: Project managed and co-authored a risk assessment for the use of Marram Grass to stabilise dunes in the City of Cape Town.
- 2015-2016: iGas Saldanha to Ankerlig Biodiversity Assessment Project Manager, Saldanha.
- 2015: Innowind Ukomoleza Wind Energy Facility Alien Invasive Management Plan, Eastern Cape Province, South Africa.
- 2015: Savannah Nxuba Wind Energy Facility Powerline Ecological Assessment, ground truthing and permit applications, Eastern Cape South Africa.
- 2014: Cob Bay botanical groundtruthing assessment, Eastern Cape, South Africa.
- 2013-2016: Dassiesridge Wind Energy Facility Project Manager, Eastern Cape, South Africa.
- 2013: Harvestvale botanical groundtruthing assessment, Eastern Cape, South Africa.
- 2012: Tsitsikamma Wind Energy Facility Community Power Line Ecological Assessment, Eastern Cape, South Africa.
- 2012: Golden Valley Wind Energy Facility Power Line Ecological Assessment, Eastern Cape, South Africa.
- 2012: Middleton Wind Energy Facility Ecological Assessment and Project Management, Eastern Cape, South Africa.
- 2012: Mossel Bay Power Line Ecological Assessment, Western Cape, South Africa.
- 2012: Groundtruthing the turbine sites for the Waainek Wind Energy Facility, Eastern Cape, South Africa.
- 2012: Toliara Mineral Sands Rehabilitation and Offset Strategy Report, Madagascar.

CONTACT DETAILS

Name	**Amber Jackson**
Name of Company	**Biodiversity Africa**
Designation	Director
Profession	Faunal Specialist and Environmental Manager
E-mail	amber@biodiversityafrica.com
Office number	+27 (0)78 340 6295
Education	2011 M. Phil Environmental Management (University of Cape Town) 2008 BSc (Hons) Ecology, Environment and Conservation (University of the Witwatersrand) 2007 BSc 'Ecology, Environment and Conservation' and Zoology (WITS)
Nationality	**South African**
Professional Body	**SACNASP**: South African Council for Natural Scientific Profession (100125/12) **ZSSA**: Zoological Society of Southern Africa **HAA**: Herpetological Association of Southern Africa **IAIASa**: Member of the International Association for Impact Assessments South Africa
Key areas of expertise	• Biodiversity Surveys and Impact Assessments • Environmental Impact Assessments • Critical Habitat Assessments • Biodiversity Management and Monitoring Plans

PROFILE

Amber has over ten years' experience in environmental consulting and has managed projects across various sectors including mining, agriculture, forestry, renewable energy, housing, coastal and wetland recreational infrastructure. Most of these projects required lender finance and therefore met both in-country, lender and sector specific requirements.

Amber completed the IFC lead and Swiss funded programme in Environmental and Social Risk Management course in 2018. The purpose of the course was to upskill Sub-Saharan African environmental consultants to increase the uptake of E&S standards by Financial Institutions.

Amber specialises in terrestrial vertebrate faunal assessments. She has conducted large scale faunal impact assessments that are to international lender's standards in Mozambique, Tanzania, Lesotho and Malawi. In South Africa her faunal impact assessments comply with the protocols for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity and follows the SANBI Species Environmental Assessment Guideline. Her specialist input goes beyond impact assessments and includes faunal opportunities and constraints assessments, Critical Habitat Assessments, Biodiversity related Management Plans and Biodiversity Monitoring Programmes.

Amber holds a BSc (Zoology and Ecology, Environment & Conservation) and BSc (Hons) in Ecology, Environment & Conservation from WITS University and an MPhil in Environmental Management from University of Cape Town. Amber's honours focused on the landscape effects on Herpetofauna in Kruger National Park and her Master's thesis focused on the management of social and natural aspects of environmental systems with a dissertation in food security that investigated the complex food system of informal and formal distribution markets

EMPLOYMENT EXPERIENCE

Director and Faunal Specialist, Biodiversity Africa

July 2021 - present

- Faunal assessments for local and international EIAs in Southern Africa
- Identifying and mapping habitats and sensitive areas
- Designing and implementing biodiversity management and monitoring plans
- Critical Habitat Assessments
- Large ESIA studies
- Managing budgets

Principal Environmental Consultant and Faunal,

Coastal and Environmental Services

September 2011-June 2021

- Faunal and ecological assessments for local and international EIAs in Southern Africa
- Identifying and mapping habitat and sensitive areas
- Designing and implementing biodiversity management and monitoring plans
- Critical Habitat Assessments
- Large ESIA studies
- Coordinating specialists and site visits
- Faunal Impact Assessment
- Project Management, including budgets, deliverables and timelines.
- Environmental Impact Assessments and Basic Assessments project
- Environmental Control Officer
- Public/client/authority liaison
- Mentoring and training of junior staff

COURSES

- **Herpetological Association of Southern Africa Conference- Cape St Frances** September 2019
- **International Finance Corporation Environmental and Social Risk Management (ESRM) Program** January – November 2018
- **IAIA WC EMP Implementation Workshop** 27 February 2018
- **IAIAsa National Annual Conference** August 2017
  Goudini Spa, Rawsonville.
- **Biodiversity & Business Indaba, NBBN** April 2017
  Theme: Moving Forward Together (Partnerships & Collaborations)
- **Snake Awareness, Identification and Handling course, Cape Reptile Institute (CRI)** November 2016
- **Coaching Skills programme, Kim Coach** November 2016
- **Western Cape Biodiversity Information Event, IAIAsa** May 2016
  Theme: Biodiversity offsets & the launch of a Biodiversity Information Tool
- **Photography Short Course** 2015.
  Cape Town School of Photography,
- **Mainstreaming Biodiversity into Business: WHAT, WHY, WHEN and HOW** June 2014 Hosted by Dr Marie Parramon Gurney on behalf of the NBBN at the Rhodes Business School
- **IAIAsa National Annual Conference** September 2013
  Thaba'Nchu Sun, Bloemfontein
- **St Johns Life first aid course** July 2012

CONSULTING EXPERIENCE

International Projects

- 2018-Crooks Brothers Post EIA Work- Environmental and Social EMPr, Policies, E&S Management Plans and Monitoring Programmes
- 2018-Triton Ancuabe Graphite Mine (ESHIA), Mozambique. IFC Standards.
- 2016-Bankable Feasibility Study of Simandou Infrastructure Project – Port and Railway Summary of critical habitat, biodiversity offset plan and monitoring and evaluation plan.
- 2016-Lurio Green Resources Forestry Projects ESIA project upgrade to Lender standards including IFC, EIB, FSC and AfDB.
- 2014-Green Resources Woodchip and MDF plant (EPDA).
- 2014-Niassa Green Resources Forestry Projects ESIA to Lender standards including IFC, EIB, FSC and AfDB.
- 2020-Kenmare Faunal Biodiversity Management Plan, Mozambique.
- 2020-Kenmare Faunal Monitoring Pogramme (year 1)- Baseline, Mozambique.
- 2019-Kenmare addendum ESIA Faunal Impact Assessment, Mozambique.
- 2019-Kenmare infrastructure corridor ESIA Faunal Impact Assessment, Mozambique.
- 2019/20-Olam Cocoa Plantation Faunal Impact Assessment, Tanzania.
- 2019-JCM Solar Voltaic project Faunal desktop critical habitat assessment, Cameroon.
- 2018-Suni Resources Balama Graphite Mine Project Faunal Impact Assessment, Mozambique.
- 2017/18-Battery Minerals Montepuez Graphite Mine Project Faunal Impact Assessment, Mozambique.
- 2017-Triton Minerals Nicanda Hills Graphite Mine Project Faunal Impact Assessment, Mozambique.
- 2017-Sasol Biodiversity Assessment, Mozambique.
- 2014-Lesotho Highlands Water Project Faunal Impact Assessment, Lesotho.
- 2012-Malawi Monazite mine Projects (ESIA) EMP ecological management contribution
- Liberia Palm bay & Butow (ESIA)
- PGS Seismic Project (ESIA), Mozambique.

South African Projects

- 2018-Port St Johns Second Beach Coastal Infrastructure Project - E&S Risk Assessment
- 2015-Blouberg Development Initiative- E&S Risk Assessment
- 2019-Boulders Powerline BA Faunal desktop impact assessment, WC, SA.
- 2019-Ramotshere housing development BA Faunal desktop impact assessment, NW, SA.
- 2019-Cape Agulhas Municipality Industrial development faunal impact assessment, WC, SA.
- 2019-SANSA Solar PV BA Faunal desktop impact assessment, WC, SA.
- 2019-Wisson Coal to Urea Faunal desktop assessment, Mpumalanga.
- 2019-Assessment Boschendal Estate Faunal Opportunities and Constraints, WC, SA.
- 2019-Ganspan-Pan Wetland Reserve Recreational and Tourist Development Avifaunal Impact Assessment, NC, SA.
- 2018-City of Johannesburg Municipal Reserve Proclamation for Linksfield Ridge and Northcliff Hill Faunal Assessment, South Africa.
- 2017-Augrabies falls hydro-electric project Hydro-SA Faunal Impact Assessment.
- Port St Johns Second Beach Coastal Infrastructure Project (EIA), South Africa.
- Woodbridge Island Revetment checklist.
- Belmont Valley Golf Course and Makana Residential Estate (EIA)
- Belton Farm Eco Estate (BA).

- Ramotshere housing development (BA).
- G7 Brandvalley Wind Energy Project (EIA)
- G7 Rietkloof Wind Energy Project (EIA)
- G7 Brandvalley Powerlines (BA)
- G7 Rietkloof Powerlines (BA)
- Boschendal wine estate Hydro-electric schemes (BA, 24G and WULA)
- Mossel Bay Wind Energy Project (EIA)
- Mossel Bay Powerline (BA) 132kV interconnection
- Inyanda Farm Wind Energy (EIA)
- Middleton Wind Energy (EIA)
- Peddie Wind Energy (EIA)
- Cookhouse Wind Energy Project (EIA)
- Haverfontein Wind Energy Project (EIA)
- Plan 8 Wind Energy Project (EIA)
- Brakkefontein Wind Energy Project (EIA)
- Grassridge Wind Energy Project (EIA) (Coega)
- St Lucia Wind Energy Project (EIA)
- ACSA ECO CT (Lead ECO)
- Enel Paleisheuwel Solar farm (Lead ECO)
- NRA Caledon road upgrade ECO
- Solar Capital DeAar Solar farm annual audits
- Eskom Pinotage substation WUL offset compliance

APPENDIX H (iii)

Animal Species Compliance Statement

FE5 (Pty) Ltd Tented Camp: Terrestrial invertebrate assessment

2021-10-11

Prepared for:

Claudette Muller

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Contents

1 INTRODUCTION

1.1 Background

A tented camp has been developed on the upper slopes of the Boschendal Estate and comprises seven tents that can accommodate two people each, as well as a large mess tent, support tent with communal kitchen facilities & toilets and a staff tent. All tents are on decks and the total area under deck is 988 m^2. Additional small areas included in the development are a gravel road encircling the site, seven parking bays, as well as areas housing sewage treatment infrastructure, a generator and a transformer. The seven accommodation tents and associated parking bays are situated within a small patch of indigenous vegetation surrounded by fallow fields; all other infrastructure is within the surrounding fallow fields. The total area of indigenous vegetation transformed by the development is therefore only approximately 560 m^2 plus the area of the driveways and parking bays.

AfriBugs was appointed to assess the potential for impacts due to the construction of the tented camp on two invertebrate species (*Kedestes lenis lenis* and Sensitive species 7). Although these species were predicted by the Environmental Screening Tool as potentially occurring on the site, an initial evaluation of the habitat and distribution data for these species suggested that their occurrence is highly unlikely and that a thorough desktop appraisal should be carried out to ascertain whether or not a there is any chance of their occurrence and hence whether or not a detailed survey of the entire project area for these species would be appropriate.

1.2 Compliance with Species Environmental Assessment Protocol

The Screening Report for the FE5 (Pty) Ltd Tented Camp assigned an overall "Medium" Animal Species Theme Sensitivity to the site (see extract from the Screening Tool report in Appendix 1); and for both invertebrate species listed the site was assigned a medium sensitivity. This report presents an assessment relating to the potential for impacts on the two invertebrate species listed: *Kedestes lenis lenis* and Sensitive species 7. The "Medium" sensitivity rating, in combination with the presence of untransformed indigenous vegetation, would indicate that, following the Species Environmental Assessment Guideline (SANBI 2020), a full terrestrial species assessment including site visits by an invertebrate specialist should be carried out. However, I believe that the desktop assessment (supported by data from a botanical specialist site visit) presented here is sufficient to show that the probability of occurrence of either of the SCC listed is negligible and that no purpose would be served by a more detailed assessment including field surveys.

1.3 Specialist details

- Peter Hawkes (phone: +27 (0)72 133 8677; email: peter.hawkes@afribugs.com).
- Professional Natural Scientist in Zoological Science (SACNASP registration number: 400411/04).
- Experience: 27 years of consulting, primary expertise in terrestrial invertebrate fauna.
- *Curriculum vitae* attached (see Appendix 2).

1.4 Assumptions and limitations

- It is assumed that all third-party information used (e.g. GIS data and satellite imagery) is correct at the time of compilation of this report.

- The inspection of the vegetation of the site was carried out at a time that was not optimal for identification of grasses, so the absence of *Imperata cylindrica* cannot be conclusively determined; this however does not affect the overall conclusions drawn.

1.5 Statement of independence

I, Peter Hawkes, as the appointed invertebrate specialist, hereby declare/affirm the correctness of the information provided in this assessment, and that:

- I meet the general requirements to be independent and have no business, financial, personal or other interest in the proposed development and that no circumstances have occurred that may have compromised my objectivity; and
- I am aware that a false declaration is an offence in terms of regulation 48 of the EIA Regulations (2014).

Signature

10 October 2021
Date

2 METHODOLOGY

2.1 Environmental Screening Tool report

The Environmental screening tool report assessed the sites as of medium sensitivity for the following terrestrial invertebrate species:

- *Kedestes lenis lenis* (False Bay Unique Ranger)
- Sensitive species 7 (a butterfly, hereafter referred to as SSp7; in accordance with the provisions of the Species Environmental Assessment Guideline (SANBI 2020), the identity is not revealed)

Neither of these species is included in the IUCN Red List, but both have been evaluated against the IUCN Red List criteria and assessed as Critically Endangered (CR) in the latest Southern African Lepidoptera Conservation Assessment (Mecenero *et al*. 2020, Morton 2018, Selb 2018).

2.2 Scope of this report

The focus of this report is on determining the likelihood of impacts on *Kedestes lenis lenis* and SSp7.

2.3 Data sources

A literature review was carried out to identify known locality records and habitat requirements of the two invertebrate SSC predicted for the site by the EST. Information used in this evaluation was drawn largely from the following sources:

Literature sources:

Ball 2006, Edge 2011, Heath & Pringle 2007, Heath *et al.* 2008, Henning *et al*. 1997, 2009, Mecenero *et al*. 2013, 2020, Williams 2021, Woodhall 2005.

Online sources:

1. LepiMap [https://vmus.adu.org.za/]

   - Lepimap returned no records for Sensitive species 7
   - 12 records were found for *Kedestes lenis lenis*, all in QDS 3318DC, 3418AB or 3418BA, but none in 3318DD, where the FE5 (Pty) Ltd Tented Camp is situated, nor in QDS 3319CB where Worcester is located.

2. IUCN Red List [https://www.iucnredlist.org/]
   - No records were returned for *Kedestes lenis lenis* or SSp7.

3. SANBI Red List of South African Species
   - Morton, 2018. *Kedestes lenis lenis:* http://speciesstatus.sanbi.org/assessment/last-assessment/356/ Status listed as CR
   - Selb 2018. [SSp7] http://speciesstatus.sanbi.org/assessment/last-assessment/[XXX]/ Status listed as CR [species identity hidden]

4. Re-evaluation and GIS Mapping of the remaining Habitat Status of the Cape Flats *Kedestes* subspecies, by Andrew Taylor. https://zandvleitrust.org.za/archive/art-zvnr%20in%20and%20around%20the%20reserve-andrew%20project%202008.html

3 RESULTS AND DISCUSSION

3.1 Distribution of Kedestes lenis lenis

Currently *Kedestes lenis lenis* is known to occur at only four sites, all within the Cape Flats (see Figure 3-1). Mecenero *et al.* (2013) mentioned an historical population of *K. l. lenis* near Worcester, where "it has not been seen since the 1960s", but provided no supporting reference or other evidence for this record. Williams (2021) also listed "near Worcester" as a locality for this species, citing Mecenero (2013) and Edge (2021) also mentions Worcester. However, the Worcester record was not mentioned in Mecenero *et al.* (2020), Ball 2006, Henning *et al.* (1997), Henning *et al*. (2009), Taylor (2008) or Woodhall (2005), and I have not been able to find any clear evidence that the species has actually been recorded from this area. Several authors (e.g. Ball 2006, Henning *et al.* 1997 and Taylor 2008) indicate that the subspecies is narrowly endemic to the Cape Flats, which suggests that they either regarded the Worcester record as erroneous or were unaware of it.

The EOO of 62 km^2 listed by SANBI (2020) suggests that the Worcester record was disregarded in the latest Red List assessment (Morton 2018), which does not mention Worcester. It is unclear whether this omission of the record was due to error, a decision that the Worcester population no longer exists, or a decision that the Worcester area record was erroneous. If the Worcester record was valid, this would suggest that the historical extent of the subspecies was much larger than at present and would be indicative of an even more significant decline in population size and extent of occurrence than would be the case if the subspecies had only previously existed in the Cape Flats, where all current populations are found. In addition, if valid, the Worcester record could indicate a far higher probability of the species occurring at other sites, like Boschendal, that are both distant from and distinct from the current known localities. I have not been able to locate any more specific information on the Worcester record, which is simply indicated as being in the QDS 3319CB (Edge 2021). There is a substantial area of wetland habitat along the Breede River immediately to the south and south-west of Worcester that is perhaps most likely to be where the butterflies would have been found.

Current evidence thus suggests that *Kedestes lenis lenis* is (at least currently) restricted to Cape Flats Dune Strandveld in the Cape Flats region and that there is a low probability of its distribution extending as far east as Boschendal, which is 30 km east of the easternmost known locality, and in Boland Granite Fynbos (see section 3.3).

3.2 Distribution of Sensitive Species 7

SSp7 is known only from a single site, on the southern slopes of, and extending to the peak of, the Swartberg Mountain near Moreesberg (see Figure 3-1). It has been suggested (Selb 2018) that additional populations could occur within the Piketberg. Based on assessment of Google Earth imagery and vegetation maps, this species could potentially also occur on some mountains 20–40 km to the south and south-east (see Figure 3-1 and section 3.1), but this would be dependant on the presence of the host plant and associated ants as well. Given that SSp7 has not yet been recorded in any of these areas, the probability that it would occur at or near Boschendal, 96 km south of its type locality, seems very low.

3.1 Habitat requirements for Kedestes lenis lenis

The habitat of *Kedestes lenis lenis* is damp seeps, containing stands of *Imperata cylindrica* (L.) Raeuschel, commonly known as Cottonwool or Cogon grass, between dunes on the south-west

portion of the Cape Flats in Cape Town (Ball, 2006). The vegetation type within which all currently known populations exist is Cape Flats Dune Strandveld (SANBI, 2006-2018). The wetland area in which it seems most likely that a population near Worcester might exist is within Breede Alluvium Fynbos, although Edge (2021) suggests that the Worcester population was in Breede Shale Fynbos, closer to the mountains; the lack of certainty about the validity of this record means that it is of no use in determining possible suitability of a broader range of habitat types.

The larvae of *K. l. lenis* develop on *I. cylindrica*, which has an extremely wide distribution, being found naturally on all continents apart from the Americas and Antarctica. *Imperata cylindrica* is highly combustible, even when green, but re-grows rapidly after fire, allowing it to compete against less fire-adapted species. *Kedestes lenis lenis* is unfortunately highly vulnerable to fires as its larvae, like other *Kedestes* species (Woodhall, 2005) live within tubes well above the ground, formed by attaching leaves of the food plant together with silk. This vulnerability is likely a reason for their favouring wetter areas, where fire is less likely to spread. The adults, which represent the only life stage that could potentially avoid fires, fly only in November and December, so the subspecies is highly vulnerable for most of the year.

The most critical habitat element for *Kedestes lenis lenis* is thus the presence, and adequate abundance, of *Imperata cylindrica* in wetland or damp seep areas.

3.1 Habitat requirements for Sensitive Species 7

The single locality from which SSp7 is known is within Swartland Shale Renosterveld (SANBI 2006-2018). "Heuweltjies", characteristic of this vegetation type, are abundant over the entire Swartberg. The vegetation type is characterised by clay soils derived from the underlying shale; SSp7 occurs in an area of low scrubby vegetation with numerous *Mesembryanthemum* plants (Mecenero *et al*. 2020). The larvae feed on *Roepera* species and are associated with *Crematogaster peringueyi* ants (Heath & Pringle 2007, Heath *et al*., 2008). The southern slopes of the Swartberg are fairly steep, with an average gradient from base to peak of about 25–35%.

Apart from the currently known population on the slopes of the Swartberg near Moreesberg, the areas that seem most likely for additional populations of SSp7 to occur is to the north in the nearby Piketberg (which is also within Swartland Shale Renosterveld and with "heuweltjies" abundant over the less rocky portions), or to the southwest on the Kasteelberg adjacent to Riebeeck West and Riebeeck Kasteel (although itself comprising Hawequas Sandstone Fynbos, this mountain is surrounded by Swartland Shale Renosterveld and also has abundant "heuweltjies".

The most critical habitat elements for SSp7 are thus the presence, and adequate abundance, of *Roepera* spp. and *Crematogaster peringueyi*; it is not known whether slope and overall vegetation community composition are of significance.

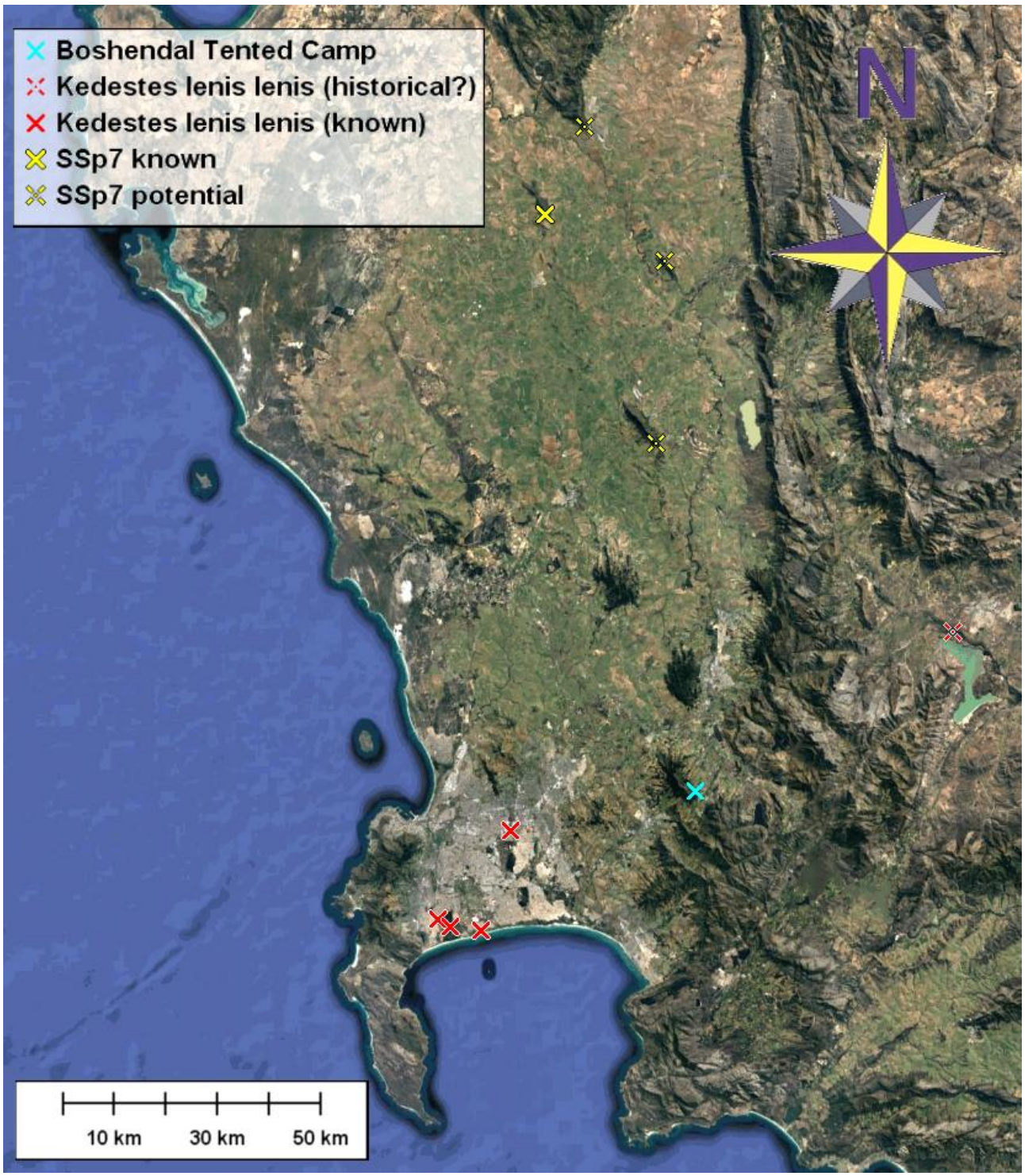

Figure 3-1: Portion of south-western Cape showing distributions of *Kedestes lenis lenis* and Sensitive Species 7 in relation to the FE5 (Pty) Ltd Tented Camp site. [Background image: Image Landsat / Copernicus © 2021 Google, Data SIO, NOAA, U.S. Navy, NGA, GEBCO, © 2021 AfriGis (Pty) Ltd.]

3.2 Site inspection

No site inspection has been carried out specifically for the assessment of the likelihood of *K. l. lenis* or SSp7 within the FE5 (Pty) Ltd Tented Camp, but during a visit by the botanical specialist (Tarryn Martin, Biodiversity Africa) special attention was paid to potential food plants of the butterfly SCC predicted for the site.

No *Roepera* species were observed, nor was any *Imperata cylindrica* identified. Although the season was not ideal for identifying grasses, the grasses observed were predominantly within previously disturbed areas such as the edges of the tracks/roads (see Figure 3-2). According to the botanist's assessment, *Imperata cylindrica* is unlikely to be present in the area where the tents are located as this is mostly fynbos; if this species does occur on the site it is more likely to be near the three support structures (mess, support and staff tents) which are all located in a fallow field area.

Figure 3-2: FE5 (Pty) Ltd Tented Camp (centre), almost entirely surrounded by active and fallow agricultural lands. [Image from Google Earth, © 2021 Maxar Technologies]

3.3 Habitat suitability for Kedestes lenis lenis

No evidence of the presence of the required food plant (*Imperata cylindrica*) for *Kedestes lenis lenis* was found within the FE5 (Pty) Ltd Tented Camp area. Although a very small chance does exist that this plant could occur on the site, or at least in the adjacent disturbed areas, the camp area does not include any wetland or damp seep areas, so even if *I. cylindrica* was present, the habitat would still be unsuitable. The probability that *K. l. lenis* could occur within the site is therefore negligible.

3.4 Habitat suitability for SSp7

Although Swartland Shale Renosterveld does extend southwards almost as far as the base of Sir Lowry's Pass, the vegetation of the Kogelberg is Kogelberg Sandstone Fynbos and of the surrounding regions (within which the FE5 (Pty) Ltd Tented Camp is situated), is Boland Granite Fynbos. "Heuweltjies" are absent from the Kogelberg and while this may not be of direct significance to SSp7, it is indicative of overall differences between this area and the habitat at the type locality of this butterfly.

The presence of the ant species (*Crematogaster peringueyi*) with which SSp7 is associated was not checked, but as this is a very common and widespread ant species and is quite likely to be present,

availability of the food plant in this case is by far the more important limiting factor. Since no evidence of the occurrence of the food plants (*Roepera* spp.) required for SSp7 was found, the probability of its occurrence on the site is negligible. Additionally, as discussed above, the site falls within a different vegetation type and also has differing topography (flat *vs*. steeply sloping) from that of the only known population of SSp7.

4 CONCLUSIONS AND RECOMMENDATIONS

Although the Environmental Screening Tool flagged the potential presence of two invertebrate SCC, *Kedestes lenis lenis* and SSp7, within the FE5 (Pty) Ltd Tented Camp, an analysis of distribution and habitat requirements demonstrates that the probability of occurrence of both species is negligible and thus no impacts on either species will occur as a result of the development.

4.1 Potential impacts and mitigation

No impacts on *Kedestes lenis lenis* or SSp7 are expected as a result of the FE5 (Pty) Ltd Tented Camp development. Impacts on other invertebrate species are expected to be very limited due to the small overall area of the development and the very small footprints of the transformed portions within this area. The only potentially significant impact on invertebrate populations is likely to be from externally visible lighting (see Eisenbeis, 2005; Rich & Longcore 2005), which can be minimised by implementing the following general recommendations as appropriate:

(a) Eliminate unnecessary lighting

Much external lighting installed worldwide is unneeded and, especially in the context of the type of clientele that the FE5 (Pty) Ltd Tented Camp is designed for, elimination/minimisation of external lighting would probably be seen as an additional attraction.

(b) Replace essential fittings with environmentally friendly options

Wherever possible all fluorescent (including compact fluorescent), high pressure sodium vapour, mercury vapour and metal halide fittings should be exchanged for low pressure sodium vapour or monochrome yellow/orange LED fittings. Alternatively filters should be fitted to eliminate all UV and blue components of the light emitted.

(c) Switch off lights not in use

(d) Install motion-detector control

Especially appropriate for security lighting, control of light sources by motion-detectors can substantially reduce impacts even of high-power white light sources. The main impacts of artificial lighting arise from continuous operation that results in long-term attraction of insects to the source. If a light source switches on in response to motion and switches off again after a few minutes, any insects attracted during this period will then be freed from the trap effect and move away, unless they have been trapped within the fixture itself within this period (but see (g)).

(e) Direct fixtures correctly

Omni-directional light fittings should be avoided and all directional fittings should be correctly oriented so that light is restricted to where it is needed, without unnecessary spill

into the surroundings. If external lighting of structures is essential (e.g. for security reasons), light sources should be directed inward toward the structure/building, so as to light up the structure and result in this becoming a large diffuse light source, rather than having bright point sources directed from the structure/building outward into the natural environment.

(f) Shield fixtures to limit spread

Non-directed, partially-directed or omnidirectional light sources should be shielded so that light is prevented from reaching the surrounding environment. Internal lighting should as far as possible be shielded by blinds/curtains.

(g) Seal fixtures to prevent insects becoming trapped / select fixtures that are already sealed.

Light fixtures comprising enclosures within which insects can become trapped after being attracted by the light should be rendered insect-proof by being properly sealed. Where complete sealing is not possible due to resulting heat build-up and danger of equipment failure or fire, the fixtures should be replaced, or sealed using metal gauze to allow airflow but prevent ingress by insects. Sealing fixtures may increase life-span of light sources by reducing heat build-up and reduce fire risk due to accumulation of dead insects within the fixtures.

(h) Investigate alternative monochrome LED options

In view of recent evidence that LPSV and monochrome LEDs with similar spectra may have significant adverse impacts on fireflies, while having limited effects on most other insects, research into alternative monochrome LED sources that avoid peak firefly sensitivity wavelengths should be encouraged.

4.2 Summary

- The probability that either *Kedestes lenis lenis* or SSp7 will be present within the FE5 (Pty) Ltd Tented Camp is negligible and no impact on these species is expected;
- The limited potential impacts on other invertebrate species could readily be managed by implementing the recommended measures aimed at limiting light pollution.

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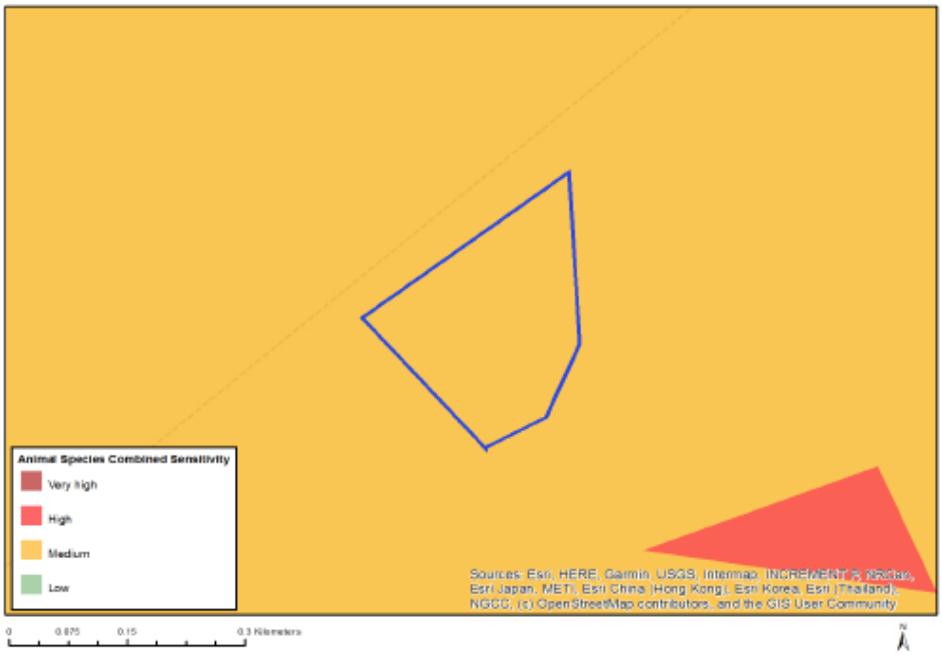
Personal Communications

Tarryn Martin Pr.Sci.Nat, Biodiversity Africa.

APPENDIX 1: EXTRACT FROM ENVIRONMENTAL SCREENING TOOL REPORT FOR THE FE5 (PTY) LTD TENTED CAMP

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Sensitive species 7
Medium	Insecta-Kedestes lenis lenis

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Disclaimer applies
23/03/2020

APPENDIX 2: MR. PETER HAWKES - ABBREVIATED CV

Name:	Peter Geoffrey Hawkes	**Nationality:**	South African
Profession:	Entomologist	**Specialization:**	Environmental impact assessment, environmental monitoring and biodiversity assessment
Positions held:	Director	AfriBugs CC	1999 – present
	Adjunct Professor	University of Venda	2017 – 2020
	Research Associate	University of Venda	2021 – present

Peter Hawkes is an entomologist and owner and director of AfriBugs CC, a company that specialises in invertebrate assessments for EIAs. He has over 26 years experience in environmental impact assessments in East and Southern Africa and has been involved in over 80 projects. He was extensively involved in the EIA and long-term monitoring of the Lower Kihansi Hydropower Project in Tanzania from 1994 to 2007, was the principle investigator for a CEPF-funded project on ant and beetle diversity in 15 sites in the Eastern Arc Mountains and Coastal Forests of Tanzania from 2005-2010, and also led the invertebrate component of the EIA for the Mkuju River Uranium Mine in south-western Tanzania. In Namibia AfriBugs has carried out surveys for the proposed Etango uranium and Otjikoto gold mines, in Mozambique for the proposed Baobab iron ore mine and in Zimbabwe for the Hwange Power Station. AfriBugs has carried out assessments for numerous projects in South Africa including assessment of the proposed Nwamitwa Dam and associated water reticulation infrastructure and assessments of proposed sites for Eskom's proposed Nuclear 1 power station. Under Peter's leadership AfriBugs has discovered representatives of well in excess of 100 undescribed invertebrate species, mainly of ants, and to date has been involved in the formal scientific description of ten of these. He participated as an instructor on the Ant Course held in Uganda in 2012 and for the 2016 Ant Course held in Gorongoza National Park, Mozambique, co-presented an ant identification course in Ghana in January 2019 and was invited to instruct on the (now postponed) Ant Course in Cameroon in 2020.

KEY EXPERIENCE

- Insect biodiversity assessment
- Environmental impact assessment
- Environmental monitoring
- Identification of ant specimens
- Ant taxonomic research
- Insectivore dietary analysis

Reviewed scientific papers for:

- African Entomology
- African Journal of Ecology (member of international reviewer panel)
- African Plant Protection
- Biodiversity Data Journal
- Ecological Research
- European Journal of Taxonomy
- Insectes Sociaux
- Journal of East African Natural History
- Journal of Natural History
- Malagasy Nature
- South African Journal of Science
- University of California Press
- Zookeys
- ZooTaxa

QUALIFICATIONS

1984: B.Sc. (Entomology & Biochemistry), Rhodes University
1985: B.Sc. (Hons) (Entomology), Rhodes University

COURSES COMPLETED

2011: Ant Course, Southwestern Research Station, Portal, Arizona, USA (California Academy of Sciences & Museum of Comparative Zoology).

PROFESSIONAL REGISTRATION AND MEMBERSHIP OF SOCIETIES

Professional Natural Scientist (Zoological Science), South African Council for Natural Scientific Professions, Registration number: 400411/04
Member of SA Chapter of International Association for Impact Assessment (IAIA-sa) (2002-)
Life Member of the Entomological Society of Southern Africa (1985-)

Life member of the Botanical Society of South Africa (1986-)

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1. Prof. Kim M. Howell	Department of Zoology and Marine Biology University of Dar es Salaam Dar es Salaam, Tanzania	Tel: +255 (0)22 241 0597 (H) Mobile: +255 (0)744 580 456 email: kmhowell@udsm.ac.tz
2. John H. Gerstle	Gerstle & Co LLC 920 Jasmine Circle Boulder, Colorado 80304, USA	Mobile: +1 (0) 720 470 5408 email: mailto: john.gerstle@alum.mit.edu
3. Dr Jon Lovett	Environment Department University of York York Y010 5DD, England	Tel: +44 (0) 1904 434063 Fax: +44 (0) 1904 432998 email: JL15@york.ac.uk
4. Prof. Robin M. Crewe	Director: Centre for the Advancement of Scholarship Social Insects Research Group (SIRG) University of Pretoria, Pretoria 0002, South Africa	Tel: +27 (0)12 420 4094 Fax: +27 (0)12 420 3696 Mobile: +27 (0)82 570 0844 e-mail: robin.crewe@up.ac.za

APPENDIX 3: SPECIALIST DETAILS & DECLARATION

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

	(For official use only)
File Reference Number:	
NEAS Reference Number:	DEA/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

PROJECT TITLE

Development of a Tented Camp on Founders Estate, Portion 1685/5, Boschendal, Franschhoek

Kindly note the following:

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.environment.gov.za/documents/forms.
3. A copy of this form containing original signatures must be appended to all Draft and Final Reports submitted to the department for consideration.
4. All documentation delivered to the physical address contained in this form must be delivered during the official Departmental Officer Hours which is visible on the Departmental gate.
5. All EIA related documents (includes application forms, reports or any EIA related submissions) that are faxed; emailed; delivered to Security or placed in the Departmental Tender Box will not be accepted, only hardcopy submissions are accepted.

Departmental Details

Postal address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Private Bag X447
Pretoria
0001

Physical address:
Department of Environmental Affairs
Attention: Chief Director: Integrated Environmental Authorisations
Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

P.G.H
G.K

Details of Specialist, Declaration and Undertaking Under Oath

Page 1 of 3

1. SPECIALIST INFORMATION

Specialist Company Name:	AfriBugs CCC			
B-BBEE	Contribution level (indicate 1 to 8 or non-compliant)	4	Percentage Procurement recognition	100%
Specialist name:	Peter Geoffrey Hawkes			
Specialist Qualifications:	B.Sc(Hons.) Entomology			
Professional affiliation/registration:	SACNASP (registration number: 400411/04)			
Physical address:	341 27th Avenue, Villieria, Pretoria, Gauteng, South Africa			
Postal address:	341 27th Avenue, Villieria, Pretoria, Gauteng, South Africa			
Postal code:	0186	Cell:	0721338677	
Telephone:	0123335748	Fax:	n/a	
E-mail:	peter.hawkes@afribugs.com			

2. DECLARATION BY THE SPECIALIST

I, Peter Geoffrey Hawkes, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

P.C. Hawkes

Signature of the Specialist

AfriBugs CC

Name of Company:

5 October 2021

Date

C.K
P.G.H.

Details of Specialist, Declaration and Undertaking Under Oath

3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Peter Geoffrey Hawkes, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

P.G. Hawkes

Signature of the Specialist

AfriBugs CC

Name of Company

5 October 2021

Date

7219900-8
CST
C. K Motaung.

Signature of the Commissioner of Oaths

2021/10/05

Date

SUID-AFRIKAANSE POLISIEDIENS
CLIENT SERVICE CENTRE
2021 -10- 05
PRETORIA MOOT
SOUTH AFRICAN POLICE SERVICE

Details of Specialist, Declaration and Undertaking Under Oath

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APPENDIX H (iv)

Agricultural Compliance Statement

Johann Lanz
Soil Scientist (Pr.Sci.Nat.)
Reg. no. 400268/12

Cell: 082 927 9018
e-mail: johann@johannlanz.co.za

1A Wolfe Street
Wynberg
7800
Cape Town
South Africa

Site sensitivity verification and Agricultural Compliance Statement for NEMA 24G application for FE5 (Pty) Ltd Tented Camp

1 Introduction

A retrospective Environmental Authorisation is being sought for the above development. In terms of the National Environmental Management Act (Act No 107 of 1998) (NEMA) and due to the potential agricultural sensitivity of the site, the application for environmental authorisation requires an agricultural assessment.

The location of the camp development on Boschendal Wine Estate is shown in figure 1.

Figure 1. *The footprint of the camp development (blue outline) on Boschendal Wine Estate.*

Johann Lanz was appointed as an independent agricultural specialist to conduct the agricultural assessment. The objective and focus of an agricultural assessment is to assess whether or not the development has had an unacceptable agricultural impact or not, and based on this, to make a recommendation on whether it should be approved or not.

The aim of the protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources is to preserve valuable agricultural land for agricultural production. Valuable land is considered to be predominantly scarce arable land that is suitable for the viable production of cultivated crops.

2 Site sensitivity verification

The screening tool classifies agricultural sensitivity according to only two independent criteria – the land capability rating and whether the land is cultivated or not. All cultivated land is classified as at least high sensitivity, based on the logic that if it is under cultivation, it is indeed suitable for cultivation, irrespective of its land capability rating.

The screening tool sensitivity categories in terms of land capability are based upon the Department of Agriculture's updated and refined, country-wide land capability mapping, released in 2016. Land capability is defined as the combination of soil, climate and terrain suitability factors for supporting rain fed agricultural production. It is an indication of what level and type of agricultural production can sustainably be achieved on any land. The higher land capability values (≥8 to 15) are likely to be suitable as arable land for the production of cultivated crops, while lower values are only likely to be suitable as non-arable, grazing land, or at the lowest extreme, not even suitable for grazing.

A map of the proposed development overlaid on the screening tool sensitivity is given in Figure 2. The depicted footprint of the camp in Figures 1 and 2 comprises the main body of the camp which is located in land that has never been utilised for agricultural production because of the limitations imposed by large boulders and very rocky soils. Two tents to the east are located in ex vineyard land. Vines were removed from all of the surrounding lands at this altitude before 2009 because these lands were not considered to be sufficiently suitable for quality wine production. This land is rated as high agricultural sensitivity by the screening tool because it is classified as cultivated land. It has not however been cultivated since 2014, and so should no longer be classified as cultivated.

The land capability rating of the site varies between 8 and 10. Values of 8 translate to a medium agricultural sensitivity, and values of 9 and 10 translate to a high agricultural sensitivity. However, the land capability data is modelled, small scale data that is not necessarily accurate over the detail of a small site, such as the one being assessed here.

The land capability rating of the site is disputed by this assessment. The small scale data does not capture the detail of the site, the majority of which has never been cultivated because it is

extremely limited by large boulders and very rocky soils (see Figure 3). Such soils do not justify a land capability rating of more than 7, which would translate to an agricultural sensitivity of medium.

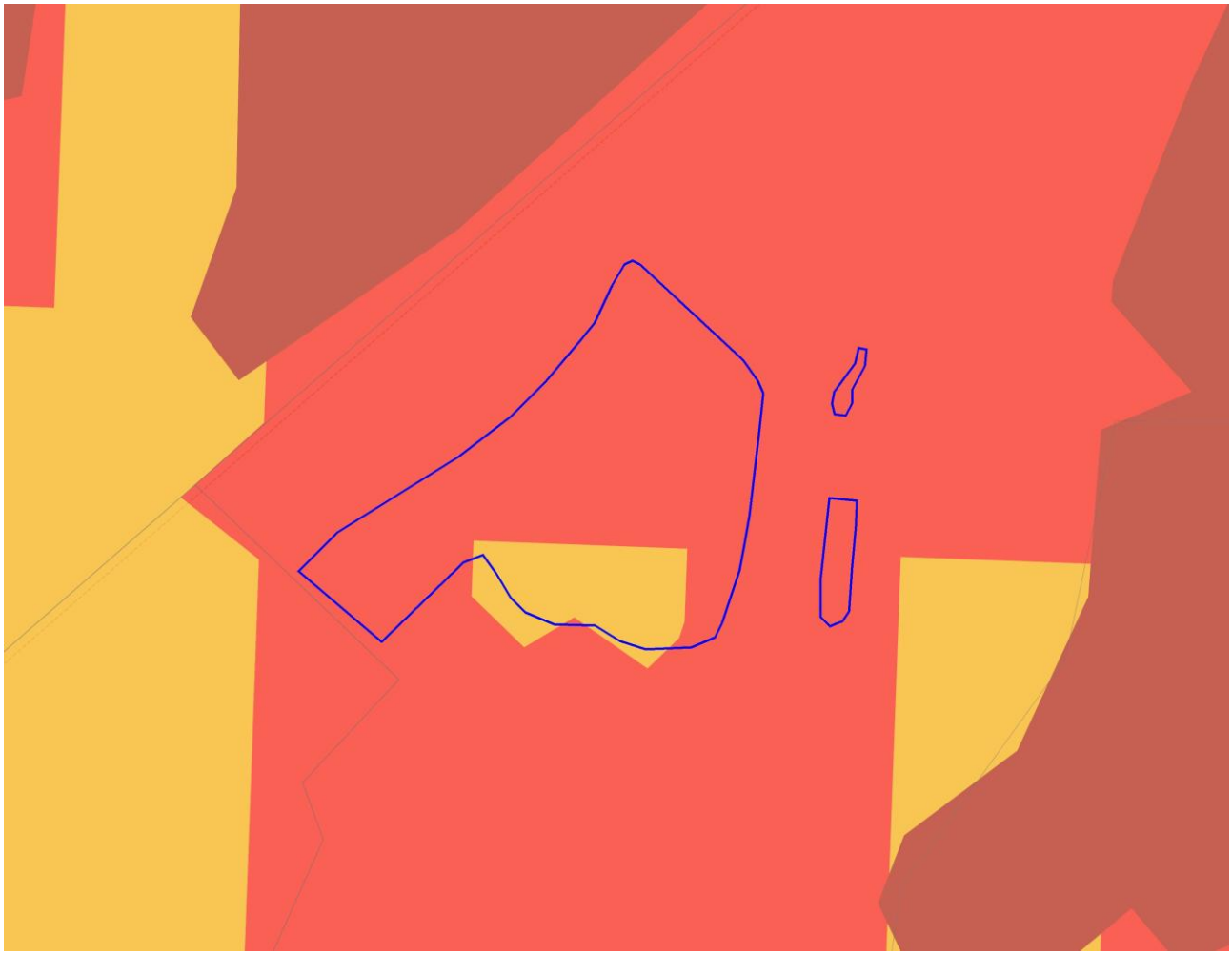

Figure 2. *The proposed development area (blue outline) overlaid on agricultural sensitivity as identified by the screening tool (yellow = medium; red = high; dark red = very high).*

This site sensitivity verification verifies the entire site as being of less than high agricultural sensitivity. The required level of agricultural assessment is therefore confirmed as an Agricultural Compliance Statement.

3 Agricultural Compliance Statement

As discussed above, most of the development impacts land that has no agricultural value and that does not therefore require conservation as agricultural production land. Theoretically, the two small footprints to the east are on land that could be considered suitable for supporting crop production. However it is important to note that the land is part of a high functioning wine estate that has absolutely no agricultural use for the impacted land, and it would not be used for agricultural production, whether the camp development was located there or not.

Because of this, the camp development does not have an unacceptable negative impact on the

agricultural production capability of the site. Therefore, from an agricultural impact point of view, it is recommended that the development be approved. The protocol requirement of confirmation that all reasonable measures have been taken through micro-siting to avoid or minimise fragmentation and disturbance of agricultural activities, is not relevant because no agricultural activities are impacted. There are no Environmental Management Programme inputs required for the protection of agricultural potential on the site.

Figure 3. *Photographs showing the bouldery land on which the camp is located.*

The conclusion of this assessment on the acceptability of the proposed development and the recommendation for its approval is not subject to any conditions. In completing this statement, no assumptions have been made and there are no uncertainties or gaps in knowledge or data that are relevant to it. No further agricultural assessment of any kind is required for this application.

The required relevant experience, proving the specialist's fitness for completing this assessment, is given in the curriculum vitae overleaf.

J. Lanz (Pr.Sci.Nat.)
10 October 2021

Johann Lanz
Curriculum Vitae

Education

M.Sc. (Environmental Geochemistry)	University of Cape Town	1996 - 1997
B.Sc. Agriculture (Soil Science, Chemistry)	University of Stellenbosch	1992 - 1995
BA (English, Environmental & Geographical Science)	University of Cape Town	1989 - 1991
Matric Exemption	Wynberg Boy's High School	1983

Professional work experience

I have been registered as a Professional Natural Scientist (Pri.Sci.Nat.) in the field of soil science since 2012 (registration number 400268/12) and am a member of the Soil Science Society of South Africa.

Soil & Agricultural Consulting **Self employed** **2002 - present**

In the past 5 years of running my soil and agricultural consulting business, I have completed more than 120 agricultural assessments (EIAs, SEAs, EMPRs) in all 9 provinces for renewable energy, mining, urban, and agricultural developments. My regular clients include: Aurecon; CSIR; SiVEST; Arcus; SRK; Environamics; Royal Haskoning DHV; Jeffares & Green; JG Afrika; Juwi; Mainstream; Redcap; G7; Mulilo; and Tiptrans. Recent agricultural clients for soil resource evaluations and mapping include Cederberg Wines; Western Cape Department of Agriculture; Vogelfontein Citrus; De Grendel Estate; Zewenwacht Wine Estate; and Goedgedacht Olives.

In 2018 I completed a ground-breaking case study that measured the agricultural impact of existing wind farms in the Eastern Cape.

Soil Science Consultant **Agricultural Consultors International (Tinie du Preez)** **1998 - 2001**

Responsible for providing all aspects of a soil science technical consulting service directly to clients in the wine, fruit and environmental industries all over South Africa, and in Chile, South America.

Contracting Soil Scientist **De Beers Namaqualand Mines** **July 1997 - Jan 1998**

Completed a contract to advise soil rehabilitation and re-vegetation of mined areas.

Publications

- Lanz, J. 2012. Soil health: sustaining Stellenbosch's roots. In: M Swilling, B Sebitosi & R Loots (eds). *Sustainable Stellenbosch: opening dialogues*. Stellenbosch: SunMedia.
- Lanz, J. 2010. Soil health indicators: physical and chemical. *South African Fruit Journal*, April / May 2010 issue.
- Lanz, J. 2009. Soil health constraints. *South African Fruit Journal*, August / September 2009 issue.
- Lanz, J. 2009. Soil carbon research. *AgriProbe*, Department of Agriculture.
- Lanz, J. 2005. Special Report: Soils and wine quality. *Wineland Magazine.*

I am a reviewing scientist for the *South African Journal of Plant and Soil*.

DECLARATION OF THE SPECIALIST

Note: Duplicate this section where there is more than one specialist.

I, **Johann Lanz**, as the appointed Specialist hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent:
  - other than fair remuneration for work performed/to be performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
  - am not independent, but another specialist that meets the general requirements set out in Regulation 13 have been appointed to review my work (Note: a declaration by the review specialist must be submitted);
- in terms of the remainder of the general requirements for a specialist, am fully aware of and meet all of the requirements and that failure to comply with any the requirements may result in disqualification;
- have disclosed/will disclose, to the applicant, the Department and interested and affected parties, all material information that have or may have the potential to influence the decision of the Department or the objectivity of any report, plan or document prepared or to be prepared as part of the application; and
- am aware that a false declaration is an offence in terms of regulation 48 of the 2014 NEMA EIA Regulations.

Signature of the specialist: 

Date: **10 October 2021**

Name of company: **Johann Lanz – soil scientist (sole proprietor)**

APPENDIX H (v)

Heritage Impact Assessment

HERITAGE IMPACT ASSESSMENT

TENTED CAMP, FOUNDERS' ESTATES NATIONAL HERITAGE SITE, BOSCHENDAL FARMLANDS, DWARS RIVER VALLEY, STELLENBOSCH

Prepared as part of a Section 24G NEMA process

PREPARED FOR FOUNDERS' ESTATE 5 (PTY) LTD

Prepared by Sarah Winter Heritage Consultant

SARAH WINTER
HERITAGE CONSULTANT

21 Upper Towers Road Muizenberg 7945
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In collaboration with Mike Scurr (Rennie Scurr Adendorff Architects) and Bernard Oberholzer (BOLA) for Founders' Estate

26 October 2021

RENNIE|SCURR|ADENDORFF
HERITAGE

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SECTION A: INTRODUCTION

This Heritage Impact Assessment (HIA) is for an unauthorised tented camp on the Boschendal Founders' Estates national heritage site (NHS) situated in the Dwars River Valley of the Stellenbosch Municipality of the Western Cape. The tented camp was constructed without a permit from the South African Heritage Resources Agency (SAHRA) as required in terms of Section 27 (18) of the National Heritage Resources Act (Act 25 of 1999; NHRA). SAHRA has requested an HIA to form part of the Environmental Impact Assessment (EIA) which is required under Section 24 (G) of the National Environmental Management Act (Act 107 of 1998; NEMA).

The property affected by the proposed development is registered as Portion 5 of Farm 1685, Boschendal, hereafter referred to as FE 5, and is owned by Founders Estate 5 (Pty) Ltd.

A.1. STUDY BRIEF

Sarah Winter working in association with Rennie Scurr Adendorff (RSA) and Bernard Oberholzer Landscape Architect (BOLA) are appointed by Founders Estate 5 (Pty) Ltd to undertake a HIA of the tented camp and associated infrastructure. The HIA will accompany a Section 24 (G) NEMA application and will enable SAHRA to decide what legal action is required in terms of the contravention of Section 27 (18) of NHRA.

The scope of the HIA includes the following:

1) The identification, assessment and mapping of heritage resources affected by the tented camp development.
2) The formulation of heritage indicators to assess the impact of the development.
3) The assessment of the impact of the development on heritage resources.
4) The outcome of consultation with interested and affected parties regarding the impact of the development on heritage resources. This includes consultation with registered local conservation bodies and the heritage section of the Stellenbosch Municipality.
5) The formulation of measures to mitigate adverse impacts on heritage resources.
6) The formulation of recommendations for actions by SAHRA to address the Section 27 NHRA contravention.

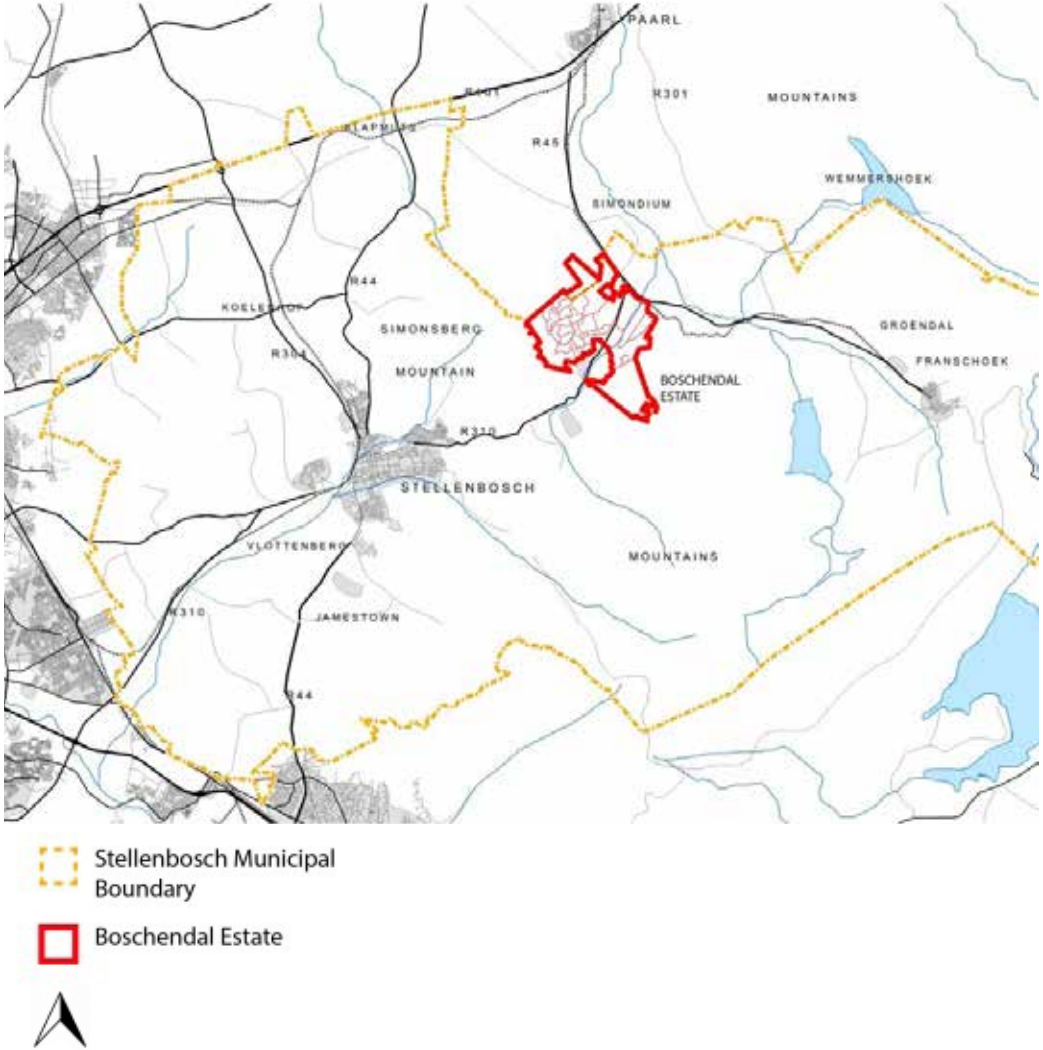


Figure 1: *Regional Location Plan of Boschendal Estate (Source NM Associates).*

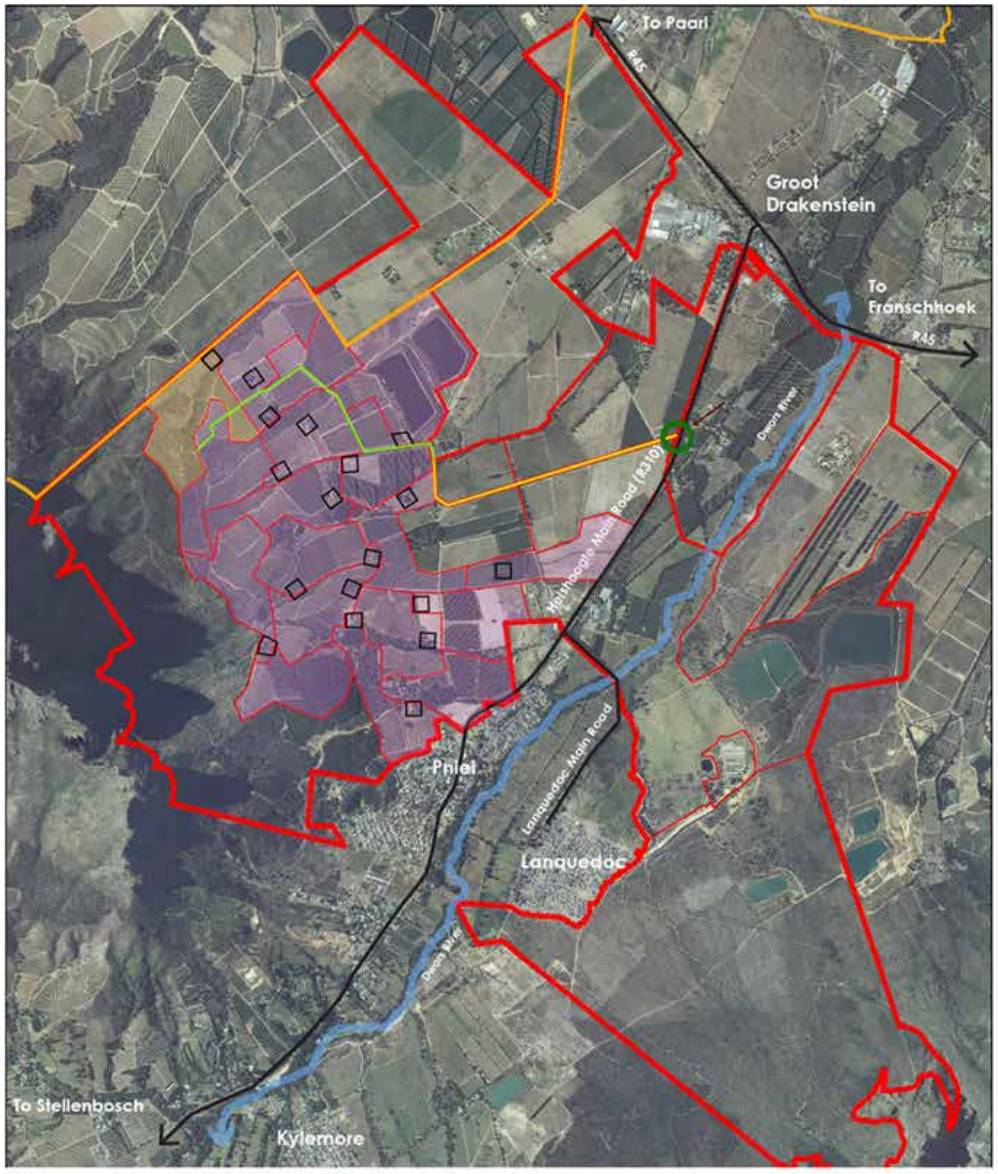


Figure 2: *Location of Farm 1685/5 within Boschendal Estate (Source: NMA 2021)*

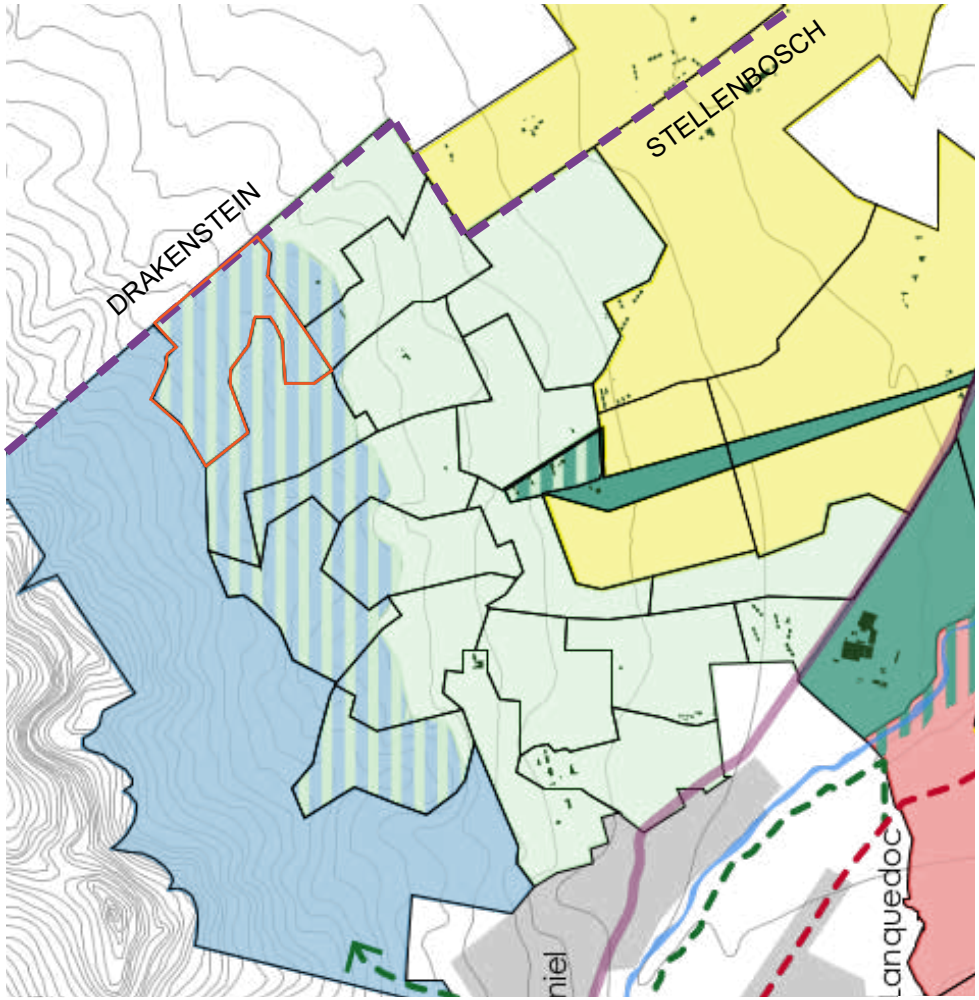


Figure 3: *Location of Portion 5 of Farm 1685 within Founders Estates (RSA, 2021)*

A.2 SITE DESCRIPTION

FE 5 is situated on the Founders' Estates NHS forming part of the larger Boschendal Estate. This estate measures approximately 1800ha in extent. Boschendal is situated between Stellenbosch and Paarl, in the Dwars River Valley between the Simonsberg and Drakenstein Mountains, north of Pniel and west of the R45. The majority of Boschendal falls under the jurisdiction of the Stellenbosch Municipality (NMA 2021).

FE 5 is located within the Stellenbosch Municipality, west of the Dwars River and the R310 within the Dwars River Valley. The Founders' Estates are accessed off the R310 at the Avenue 1685 access gate (refer to Figure 2). The property measures approximately 26.25 hectares in extent. Figure 3 depicts the appliction area of approximately 6ha. The property is zoned Agriculture and Rural Zone. Current uses on the property include fallow land, vineyards, a reservoir and the unauthorised tented camp (NMA 2021).

FE 5 is one of 19 land portions resulting from a consolidation, subdivision and registration of lease area application approved by the Stellenbosch Municipality in 2005 in terms of the then Land Use Planning Ordinance (LUPO) No. 15 of 1985 subject to conditions of approval . The application was approved by SAHRA in 2008 subject to further conditions which are unpacked in Section B (NMA 2021).

The approvals granted for 18 FE's permitted the utilisation of the properties for agricultural purposes on a 99-year leasehold basis and at the same time also permitted a development area of 8000m2 (referred to as the Excluded Area) on which the construction of new buildings is limited to one new farmstead per farm. In the case of FE 5, the 8000m2 Excluded Area is vacant and the tented camp has already been constructed on a portion of the property that forms part of the agricultural land unit that is the subject of the approved 99-year leasehold area (NMA 2021).

A.2.1 Site Characteristics

The tented camp, located on north-east facing slopes, lies above the vineyards, adjacent to a farm dam, on the upper slopes of the Boschendal Founders' Estates, with views over the Boschendal farmlands and Dwars River Valley. The site is located between the 340m and 355m contour. The site consists of a layer of stony colluvial material overlying a deeply weathered granite saprolite with a high clay content. The colluvium is derived from the sandstone slopes above.

The vegetation consists of a cluster of mature Monterey pines (Pinus radiata), indigenous thicket, including wild olive, surrounded by fallow fields. Mountain fynbos occurs on the slopes above the camp, and dense indigenous thicket along the drainage lines.

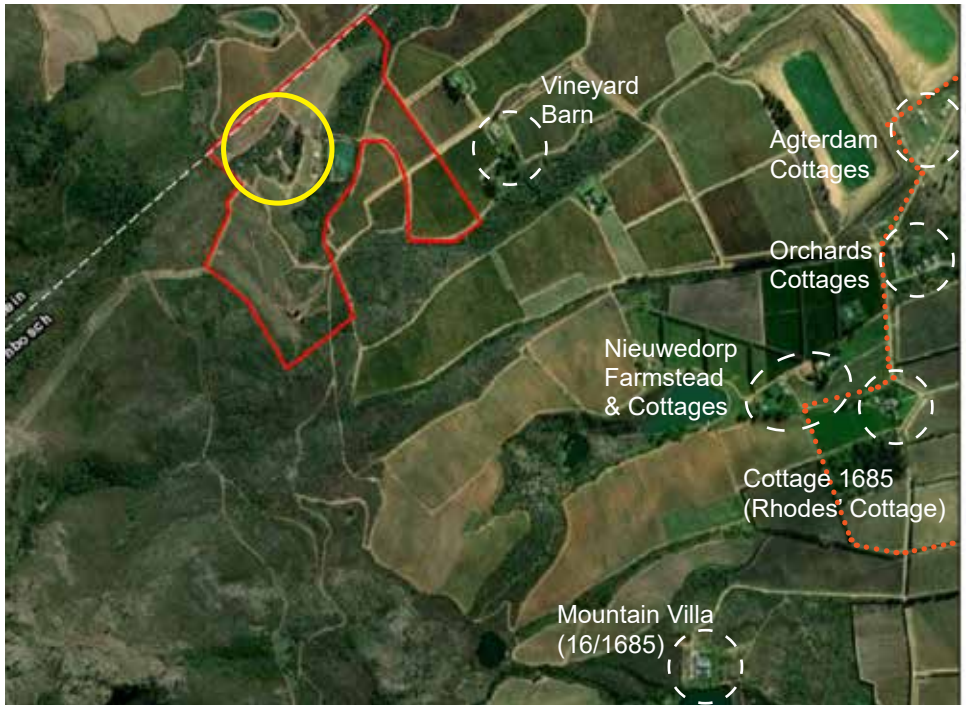


Figure 4: *Location of the tented camp within the Portion 5 of Farm 1685 (Source: Cape Farm Mapper).*

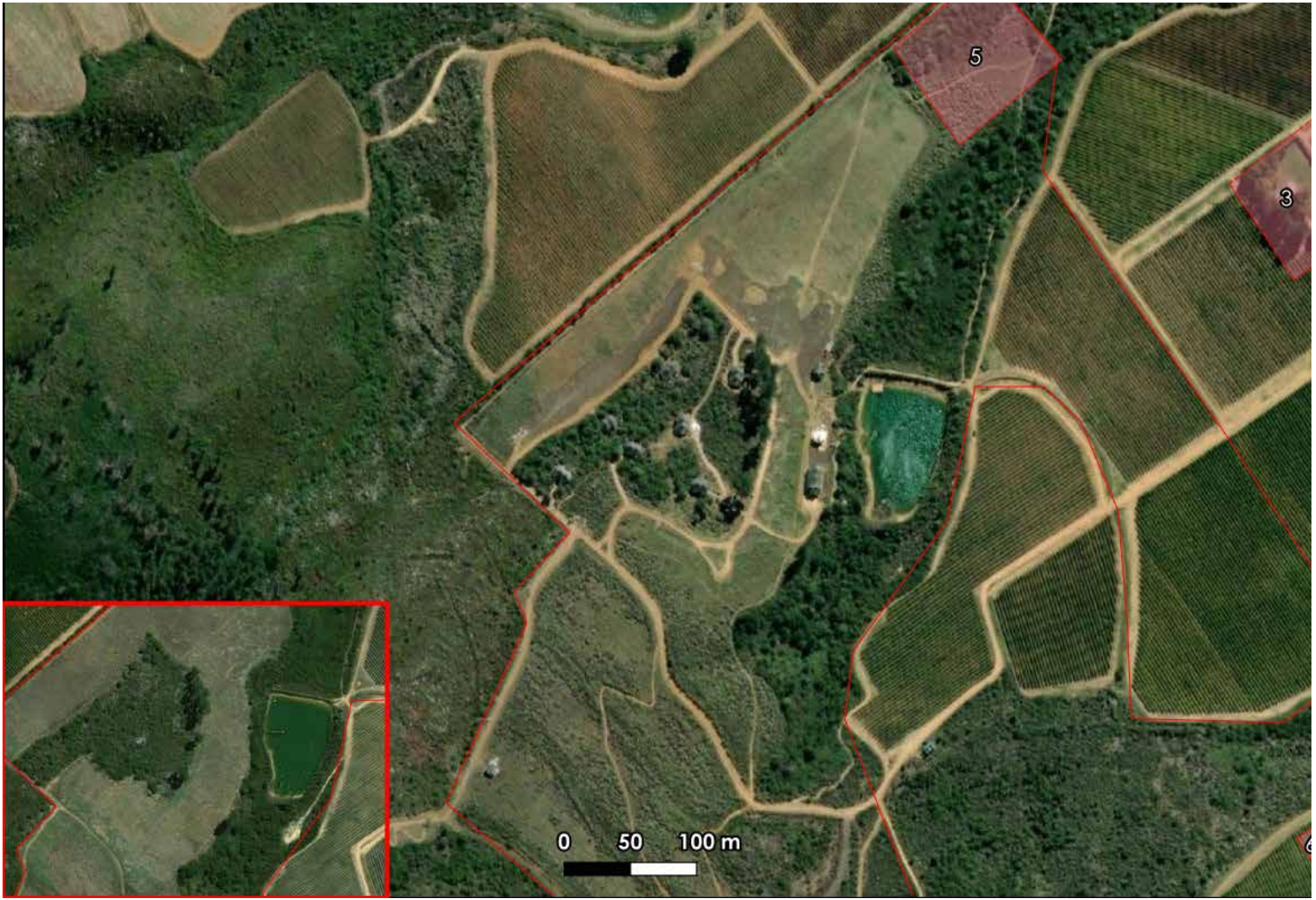


Figure 5: *Aerial image of site within Portion 5, and relative to Founders Estate excluded areas 3 and 5; inset shows site prior to development (RSA, 2021)*

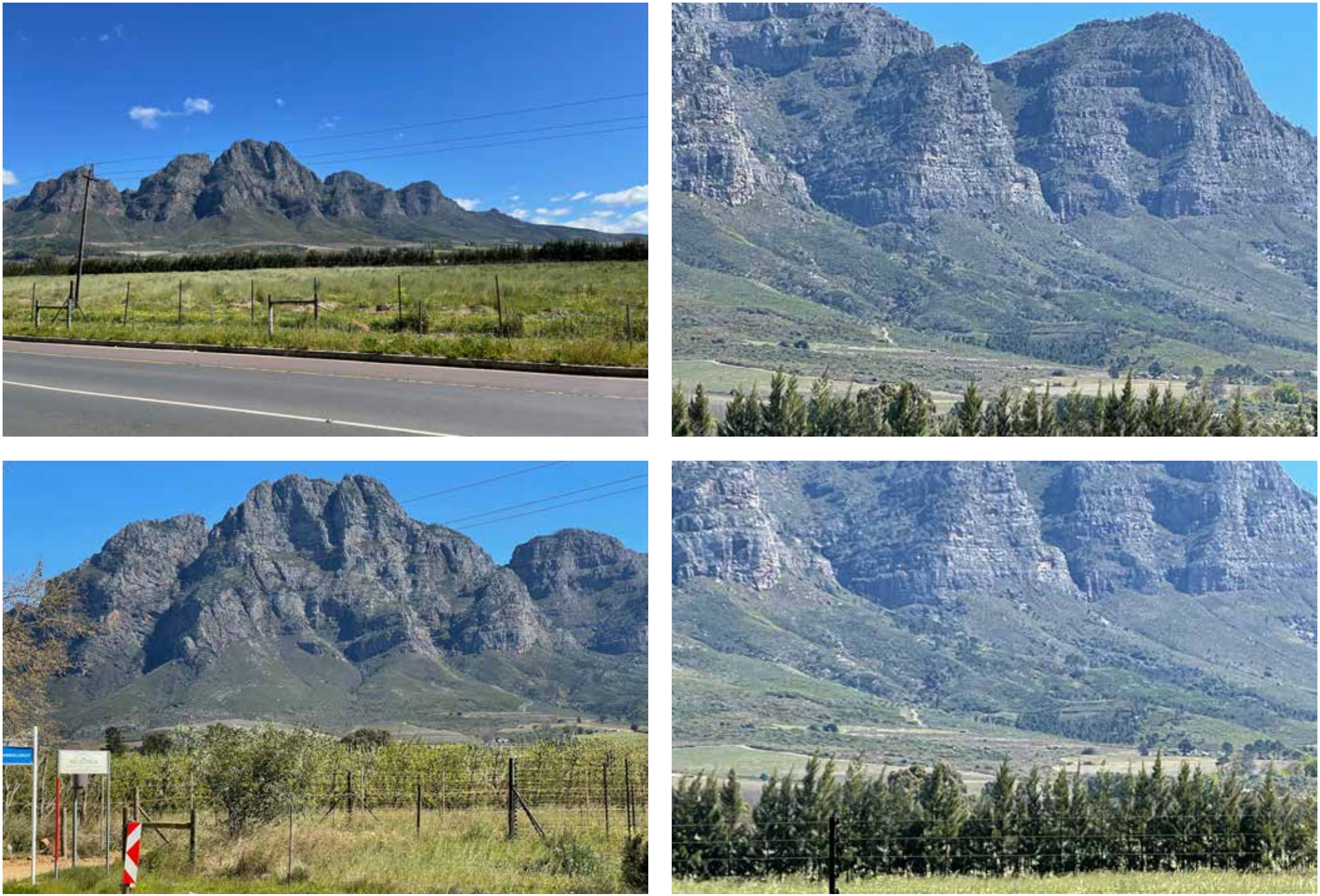


Figure 6: *The site context: access road, approach and views (images 2021).*

Figure 7: *Tented Camp placement in landscape (RSA 2021).*

Figure 8: *Tented Camps (RSA 2020, 2021).*

A.3 PROJECT DESCRIPTION

The following project description has been provided by the project planning consultants, Nisa Mammon & Associates Planners and Designers (NMA).

The tented camp has been developed on the upper slopes of the Founders' Estates distanced from the main upmarket tourist accommodation on Boschendal to provide a less formal accommodation offering closer to nature with direct access to the mountain slopes for recreational and leisure purposes.

The tented camp comprises the following:

- Seven tents for accommodation of two people each serviced with their own bathrooms and limited self-catering facilities. The tents accommodate a maximum of 14 people on the site in total at any one time. Tents are located on decks of approximately 78 to 83m² each.
- A large mess tent where guests staying on site can congregate as a group if necessary. The tent deck is approximately 246m² in extent.
- A guest support tent with a communal kitchen facility and toilets. The tent deck is approximately 125m² in extent.
- A staff office tent. This is necessary to ensure at least one staff member can be available onsite while guests are staying. It will have space for an office and storage. The tent deck is approximately 43m² in extent.

The total area under deck is 988m².

The tented accommodation units are tucked into a patch of indigenous vegetation so as to provide a combination of privacy and views of the Berg River Valley below. The communal / operations related tents are located at a lower level, within the open fallow lands close to the dam.

A generator and a transformer are located downslope and north of the staff office tent. The sewage treatment infrastructure is downslope and along the northern edge of the camp. Fire hydrants are located around the periphery of the camp. A reservoir above the site supplies water to the camp.

A gravel road that circulates around the site provides access to the respective units, and the communal / operations tents. Seven parking bays for the guests are provided on the upslope side of the accommodation, with the intention of limiting vehicular movement around the site. The parking is tucked informally off an existing road in groups of 2 and 3 bays.

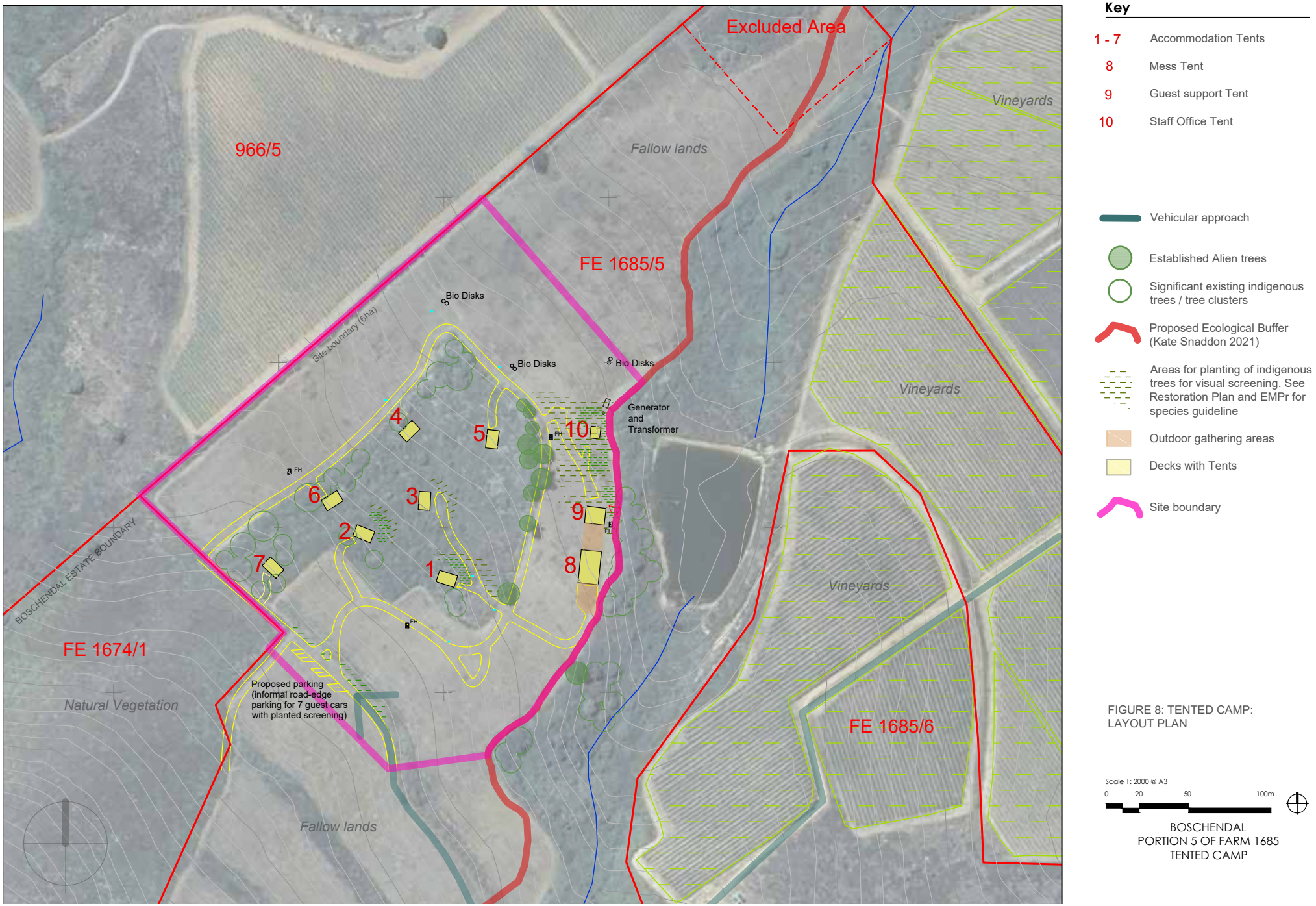


Figure 9: *Site Development Plan (Source: NMA 2021)*

A.4 STATUTORY FRAMEWORK

A.4.1 Section 27 of the NHRA

The site is located within the Founders Estate NHS and is therefore protected in terms of Section 27 of NHRA. The construction of the tented camp triggered the need for a permit of approval from SAHRA in terms of Section 27 (18) which stipulates that, "No person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site."

In terms of Section 2 (i) of the NHRA ''alter'' means "...any action affecting the structure, appearance or physical properties of a place or object, whether by way of structural or other works, by painting, plastering or other decoration or any other means."

In response to the unauthorised tented camp, SAHRA has requested a HIA to form part of the Environmental Impact Assessment (EIA) which is required under Section 24 (G) of the National Environmental Management Act (Act 107 of 1998; NEMA).

The provisions of the NHRA do not enable SAHRA to approve unauthorised work retrospectively. In terms of SAHRA's draft Built Environment Permitting Policy for National Heritage Sites (2021), it is assumed that SAHRA will first consider whether the authorised work has damaged heritage significance, and the reversibility and temporary nature thereof. Thereafter, SAHRA may decide on the following two options:

a) Consider the work to be a minor transgression and therefore decide to not pursue the matter further.
b) Consider the transgression to have significant heritage implications and therefore decide to pursue criminal charges and/or seek remedial action.

A.4.2 Other Relevant Legislation

Section 24(G) of NEMA

A NEMA Section 24(G) process must be followed to rectify the unlawful commencement of listed activities in terms of the existing constructed tented camp in terms of the NEMA EIA Regulations 2014 (as amended). The development triggers a number of listed activities, as confirmed by DEA&DP in a letter dated 17 September 2020 in response to a NEMA EIA Applicability Checklist.

Stellenbosch Municipal Zoning Scheme By-Law (SM ZSBL)

The 2005 LUPO approval for 18 Founders' Estates was subject to a number of conditions of approval that were, among others:

- Condition (iii) states that "the utilisation of the buildings to be erected on the 18 agricultural units, shall be within the parameters of the zoning of agricultural Zone 1 at all times." Note Agricultural Zone 1 is to be read as Agriculture and Rural Zone in terms of the Stellenbosch Municipality Zoning Scheme By-Law (SM ZSBL).
- Condition (viii) states that "the buildings on the Agricultural unit must be limited to one new farmstead per farm. The only other buildings permitted are those required for bona fide agricultural purposes for the farming unit as a whole."
- Condition (xx) states that "no extensions to the existing buildings or the construction of any new buildings may occur without prior approval of the Council, as well as SAHRA and / or Heritage Western Cape." (NM Associates 2021)

The tented camp is thus an unauthorised land use as it currently stands in terms of the approvals granted in 2005, and is being regularised in terms of a planning application prepared by NM & Associates.

Application is therefore being made for a Temporary Departure (5 years) in terms of section 15 (2) (c) (chapters III and IV) of the Stellenbosch Municipality Land Use Planning By-Law of 2015 (SM LUPBL), with a view to regularising an existing unauthorised tented camp to “utilise land for a purpose not permitted in terms of the primary rights of the zoning applicable to the land” (SM LUPBL, page 17) (NMA 2021).

In terms of section 246 (2) of the SM LUPBL, the Stellenbosch Municipality may designate an area as Urban or Rural Conservation Overlay zone. The portion of Boschendal Estate under the jurisdiction of the Stellenbosch Municipality falls within the Dwars River Valley Rural Conservation Area. However, the tented camp does not require special consent from the municipality, as they do not involve any of the activities listed under a) to f) of Section 246 (2) of the ZSBL. More, specifically they do not involve any new building or structure which is visible from a public road (emphasis added).

Stellenbosch Heritage Inventory (2018)

The Stellenbosch Heritage Inventory refers to the Founders’ Estates as an NHS located within Landscape Unit F07. Of relevance to this application are various Development Criteria for interventions in the landscape:

- The high mountains in the study area are landforms vital to its overall landscape character. They enclose the valleys and settlements of heritage significance. Prevent development on visually sensitive mountain slopes and ridgelines in order to preserve the continuity of the mountains as a backdrop.
- Limit cultivation and development on upper mountain slopes greater than 1:4 to protect scenic resources and water catchments, and to minimise visual scarring and erosion. Propose ‘no-go’ development areas above the 300-360m contour line in Pniel, and the 400m on Founders Estate’s side
- Retain view-lines and vistas focused on prominent natural features such as mountain peaks, as these are important place-making and orientating elements for experiencing the cultural landscape. They are not only important for landscape character, but also for water security, and biodiversity.
- It is recommended that visual permeability should be maintained towards mountains, valleys and across open, and cultivated fields.
    - (a) Discourage the use of solid walls around vineyards and agricultural areas in public view and along scenic routes.
    - (b) Views should be framed and enhanced by development wherever possible..

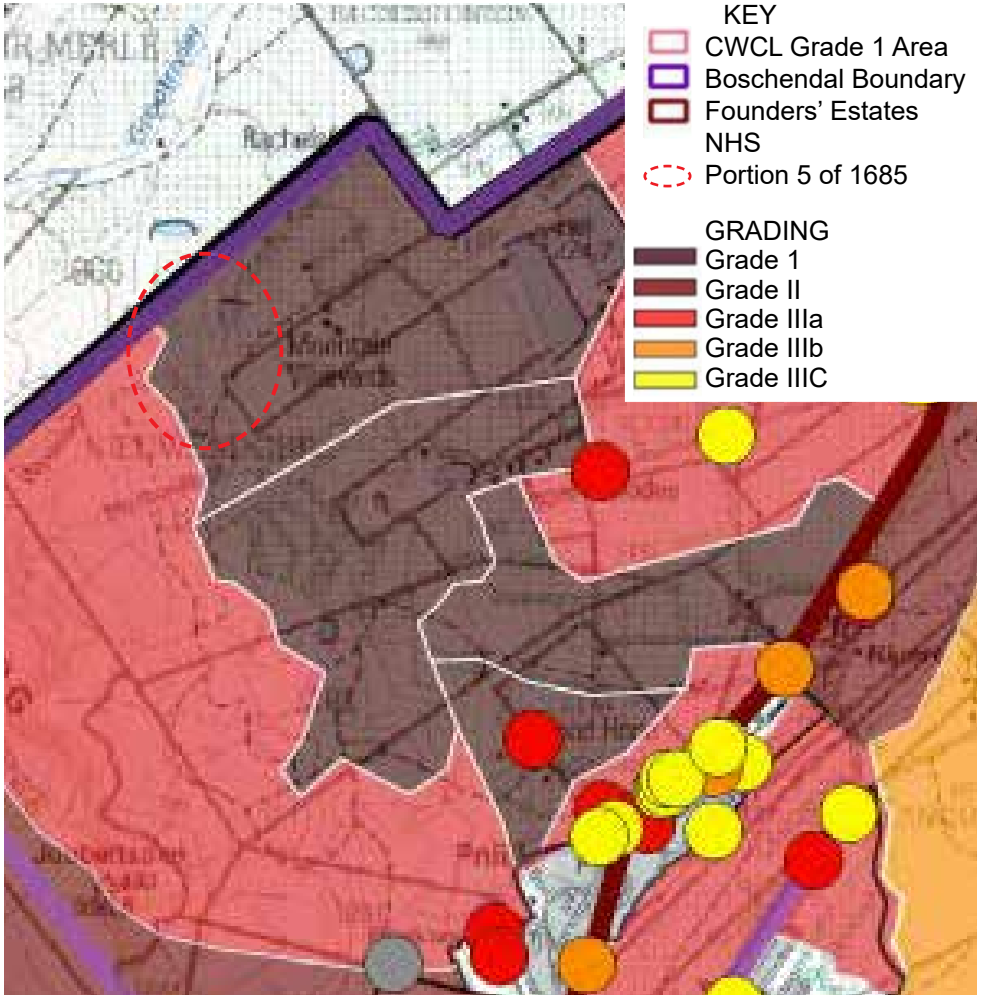


Figure 10: *Stellenbosch Municipal Heritage Inventory Grading Map for Boschendal after Todeschini et al., 2017 (Source: Cape Winelands Heritage Survey (2016) Appendix 7: Area F - Dwarsriver).*

A.5 STUDY METHODOLOGY

The wider study area has been the subject of numerous academic, private and local authority studies and analyses. These have included environmental and heritage studies of the Dwars River Valley and the settlements that combine to form Boschendal Estate. This report has drawn on that body of work, in particular, the 2006 HIA for the Founders' Estates development (Baumann, Winter et al 2006), the Boschendal Heritage Scoping Report (Baumann Winter et al, 2012), the comprehensive baseline study for the Boschendal Conceptual Framework (RSA 2019) as well as the recently completed Heritage Statement pertaining to Portion 11 of 1685 (Winter and RSA, 2021). Various archaeological reports have also been considered (Hart and Gribble, 2021; Hart and Webley, 2009; Kaplan, 2005).

Background to the Founders Estates is unpacked in further detail in Section B of the report in relation to the development parameters and guidelines which were established to protect the NHS status of the landscape.

The principle of any development on the upper slopes of the Founders' Estates requires a cautious approach given the high visual significance and sensitivity of the Simonsberg slopes. The zone above the 320m contour has consistently been identified as a no-go development area in various heritage and environmental studies from a visual and landscape character perspective. The principle of a 'tented camp' needs to be tested in terms of its siting well above the 320 m contour. However, consideration needs to be given to the nature-orientated tourism use of the tented camp at the interface of the Founder's Estates with the Simonsberg Nature Reserve, as well as the tread lightly, temporary and reversible nature of the intervention.

This HIA report has been prepared by Sarah Winter in collaboration with Mike Scurr and Katie Smuts of Rennie Scurr Adendorff Architects (RSA) to accompany the NEMA Section 24 G) rectification application. It includes the input of Bernard Oberholzer (BOLA) who prepared the Visual Impact Assessment (2006) for the Founders' Estates application together with Quinton Lawson (MLB Architects) and who also prepared the draft landscape plan and guidelines for Founders' Estates (2020). Quinton Lawson has prepared the viewshed analysis for the tented camp.

The assessment has been undertaken at various scales of analysis, namely the broader landscape, landscape domain and site scales. Section C of the report provides an historical overview of the Founders Estates landscape which contributes to an understanding of its heritage significance. Section D includes a statement of heritage significance. Section E identifies the heritage indicators against which the tented camp needs to be assessed. Section F systematically assesses the tented camp in terms of the heritage indicators. Section G includes the outcome of the consultation process. The conclusion and recommendations of the report are included in Sections F and G respectively.

The recommendations address what actions should be undertaken by SAHRA in terms of the authorised nature of the work and given that the provisions of NHRA do not enable SAHRA to approve unauthorised work.

A.6 STATEMENT OF INDEPENDENCE

Neither Sarah Winter as the heritage consultant, nor Mike Scurr and Katie Smuts of Rennie Scurr Adendorff Architects as the respective architectural heritage consultant and archaeologist, nor Bernard Oberholzer of BOLA as the visual specialist have any legal or personal ties to Boschendal or other professionals involved in this proposal, nor to any companies that may be involved in the process that is to follow. There is no financial gain tied to any positive outcome. Professional fees for the compilation of this document will be paid by FE (Pty) Ltd but are not linked to any desired outcome.

SECTION B: BACKGROUND TO THE FOUNDERS' ESTATES (FE5)

Boschendal (Pty) Ltd has acquired the rights to the subdivision and development of eighteen (18) so-called Founders' Estates. The Founders' Estates effectively comprise 18 different farms measuring between 21 and 44 hectares each with a defined area to accommodate a farmstead (Excluded Area of 0.8ha) and the remaining farm being included in an agricultural lease area where the agricultural land is managed as a single entity including no cadastral expression of individual farms.

The Founders' Estates application was approved by SAHRA in 2008 subject to a number of conditions. These conditions have been largely satisfied including Design Guidelines. The requirement for an Archaeological Historical Residues Management Plan (AHRMP), Conservation Management Plan (CMP) and Landscape Guidelines is in the process of being addressed and will be submitted to SAHRA in due course. The draft AHRMP and draft Landscape Guidelines have been prepared and are taken into account in this HIA report.

A key principle of the Founders' Estates subdivision application was to limit the effects of incremental development being scattered across the landscape and eroding its integrity and authenticity. While it restricts further subdivision of the land, it also restricts development to one homestead per subdivision subject to a number of development parameters relating to the siting, scale and form of building development. A second key principle of the Founder's Estates application was to protect the consolidated agricultural landholding within the concept of a single working farm. This was achieved through a 99-year agricultural lease area registered across the 18 subdivisions.

The size of FE 5 is 26.6 hectares. The tented camp is located outside of the 0.8 hectare developable area and comprises a site development area of approximately 6 hectares, i.e. 23% of the landholding. In certain respects, the tented camp appears to be at variance with key principles of the Founders' Estates. However, there are mitigating circumstances that would deem the nature of the intervention to be acceptable.

These are summarised below and unpacked further in Section F of the HIA report.

- Consideration should be given to the nature-based tourism use of the tented camp which is an appropriate use located at the interface of the Founder's Estates and the Simonsberg Nature Reserve.
- This should be considered in conjunction with the tread-lightly, low visual impact, temporary and reversible nature of the intervention.
- Lastly, the property owner of FE 5 has decided to withhold the right to develop a homestead on the Excluded Area until the Temporary Departure to regularise the tented camp from a land use and planning perspective has lapsed and the tented camp has been removed.

The Founders Estates Design and Landscape Guidelines do not specifically address the tented camp but a number of overall objectives and principles, and guidelines are applicable and are incorporated into the Heritage Indicators in Section E of the report.

B.1 FOUNDERS' ESTATES DESIGN GUIDELINES

The Founders' Estates Design Guidelines (2010) do not have specific relevance to the concept of a tented camp but a number of overall objectives and principles are applicable as set out in below. These have been incorporated into the Heritage Indicators in Section E of the report and adapted where necessary.

- The need for development to harmonise, complement and respond to the qualities of the broader landscape and also the unique features of each Founders' Estate.

- The principles of authenticity and integrity being applicable in terms of ensuring a positive response to all historical layers of the landscape as well as its role as a consolidated working farm as opposed to an ornamental, suburban or fragmented landscape.

- A positive response to the historical patterns in the landscape that have endured over time specifically the pattern of buildings in relation to topography, water and patterns of access; buildings did not occur randomly in the landscape but in response to a carefully considered and environmentally based set of structural principles.

- New development should be subordinate to the landscape in terms of scale, massing, design and movement patterns.

- The addition of a new contemporary layer in the landscape but not at the expense of existing layers of heritage significance.

- Structures should not compete or contrast sharply with the rural landscape qualities in terms of massing, scale, height and architectural treatment; no urban or suburban built form typologies.

- Structures should be visually recessive in the landscape; they should be nestled into rather than being superimposed onto the landscape.

- Foreign stylistic architectural expressions or imitation of Cape vernacular architecture is not permitted.

- Natural features such as mountain backdrops, significant vegetation, slopes and water courses should be carefully considered in the design and planning of improvements.

- Retain the landscape setting of heritage places including views towards and from a place, as well as historical and visual spatial relationships between places.

- Do not introduce built form or landscaping patterns which erode the agricultural character of the working farm by establishing a clear interface between the agricultural components of the working farm and the homestead domains.

- Maintain landscape features contributing to the aesthetic and historical character of the landscape, e.g. treed settings of homesteads, tree lined avenues, windbreaks, forests, indigenous thicket, orchards and vineyards.

- Protect the rural quality of farm roads with careful consideration to the appropriate nature of boundary treatments, entrances, signage and road engineering interventions (road width, surfacing and edge treatments).

Nieuwedorp's land was granted in five parts from 1689, chronologically to Arnoldus Basson, Jacobus van As, Erasmus van Lier, Willem Basson and Pierre Meyer. Willem was the son of Ansela of Bengal. Once enslaved to van Riebeeck, she was later manumitted and transitioned to burgher society. She was the mother of Anna de Koning (born in slavery) and Jacobus van As. In 1701 the farm was a consolidation of five properties owned by Jacobus van As, who, like his mother, had acquired significant property and wealth. After his death in 1713 his estate was sold – most of it to Jacob de Villiers, son of Jacques De Villiers, owner of Boschendal in 1724. The De Villiers family now owned half of the Valley and retained control through the 18th and 19th centuries (Titlestad 2008). The land was predominantly producing grapes for wine-making.

In 1886 the outbreak of phylloxera virtually destroyed all the Cape vineyards, leaving many farmers bankrupt and the Cape economy in ruin. Nieuwedorp was one of 26 farms in the Drakenstein Valley to be acquired by Cecil John Rhodes from 1897 and consolidated under Rhodes Fruit Farms (RFF). RFF was initially established as an experimental and training centre for the development of a Cape fruit industry and was soon to become the centre of a thriving export industry (Baumann & Winter 2006; Titlestad 2008).

Herbert Baker's extensive architectural intervention in the Valley began at Rhodes' request with the Champagne homestead was built in 1900 as a RFF manager's residence designed by the Baker and Masey firm (Titlestad 2008). Baker also designed a cottage for Rhodes that was constructed adjacent to the site of the original, ruined Nieuwedorp homestead (its exact location is unknown). The long barn with stable manger forming part of the current Nieuwedorp farmstead dates to the late 18th/early 19th century and is probably associated with the original Nieuwedorp homestead.

The early 20th century valley landscape was altered by a dramatic shift from wine to fruit farming. It was also associated with the introduction of corporate farming methods and new employment opportunities resulting from the growth and diversification of the fruit industry. This necessitated

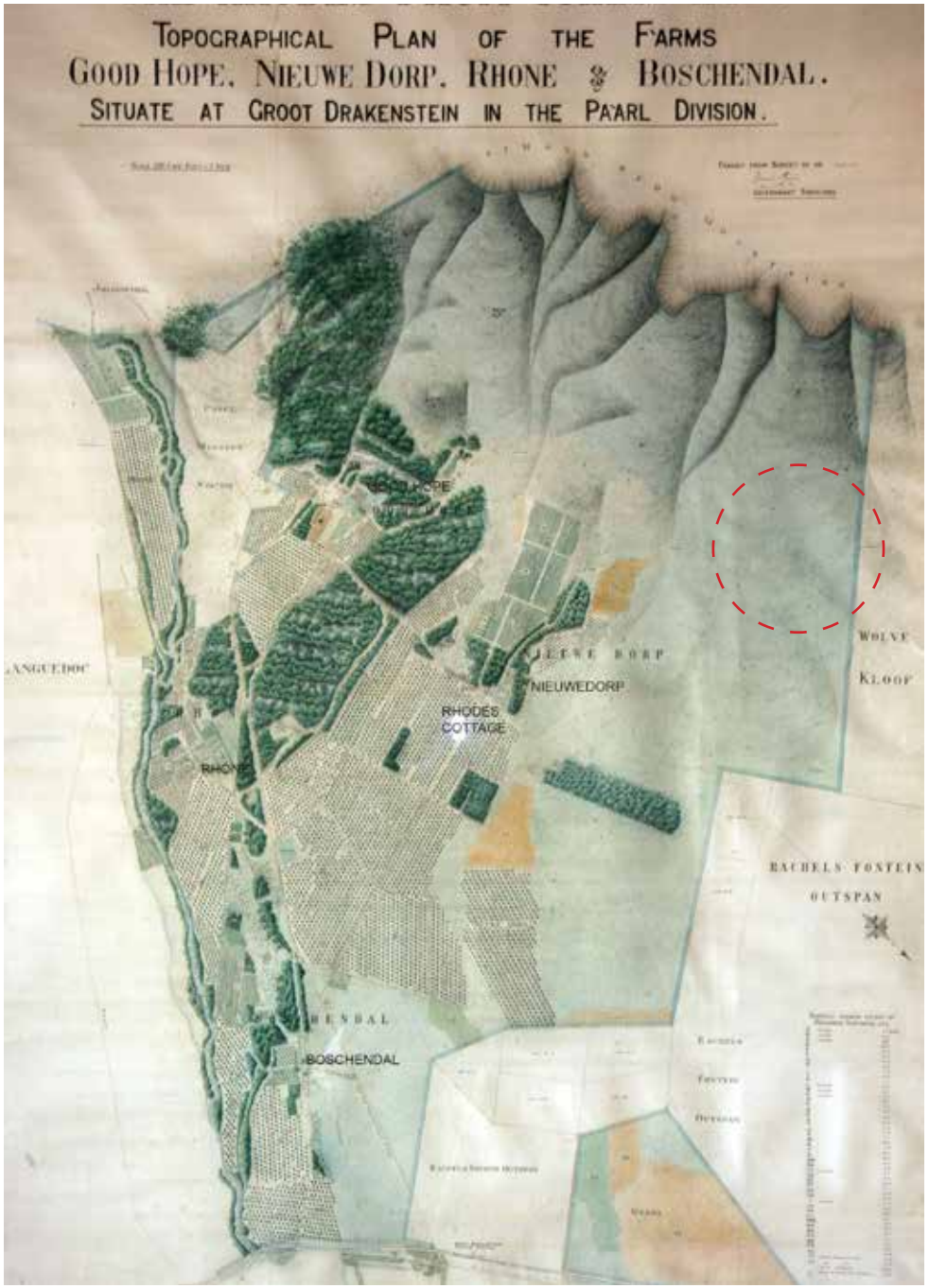


Figure 11: *Extract of 1923 Topographical Plan of a portion of Rhodes Fruit Farms Ltd (Source: Surveyor General, Boschendal Collection).*

the construction of additional farm managers' and workers' houses. The new homestead at Nieuwedorp, a farm manager's dwelling, was built in the 1920s and has similarities to Baker's design for Champagne.

De Beers took over RFF in 1925 and appointed an internal expert in the fruit industry, Alfred Appelyard, as Managing Director with the aim of consolidating and restructuring the business operation. In 1937 De Beers sold RFF to Abe Bailey and after his death in 1940 a syndicate of business interests acquired RFF and they owned and developed it for the next 28 years. Jack Manning was appointed Managing Director after the death of Appleyard in 1949. It was during the 1950s and 1960s that massive expansions and improvements were undertaken – new dams were constructed and irrigation doubled the productive agricultural area and increased yields by 700%, new workers cottages were constructed, transport was mechanized, refrigeration technology improved and the export markets boomed. By 1968 RFF employed hundreds of people and produced and packaged large scale export crops (Baumann & Winter 2006; Titlestad 2008). It was during this mid-20th century period (1938-1949) that the four Nieuwedorp cottages were constructed.

In 1969 Anglo American and de Beers purchased RFF, retaining it for the next 31 years. In the 1970s and 1980s a number of cottage clusters were constructed on the estate: typically semi-detached, box-like structures with low pitched roofs and little or no detail. It was during this period that the farm manager' houses on FE 7 and FE3, were built.

In 1998 Amfarms disposed of its landholdings in the Dwars River Valley, and in 2003 a consortium of investors (Boschendal Pty Ltd) purchased 2242 hectares of these landholdings. Boschendal (Pty) Ltd still owns the estate to the current day.

By the time the landholdings were sold, farm employees of Amfarms, once resident in cottage clusters on Boschendal, had been relocated to Lanquedoc, and numerous workers' cottages, including the Nieuwedorp group, have been unoccupied since (Baumann, Winter 2006, 2013, 2016).

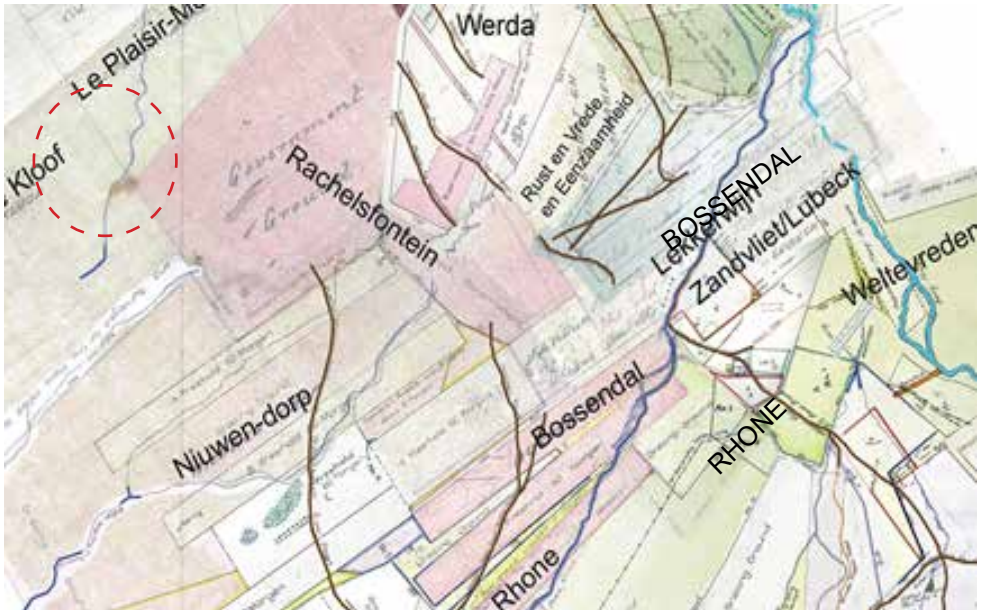
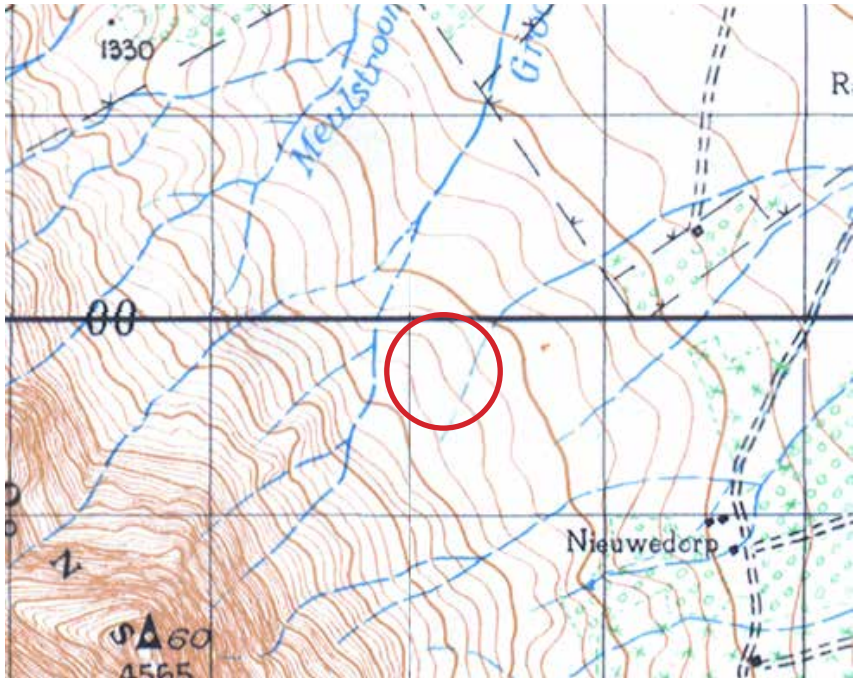
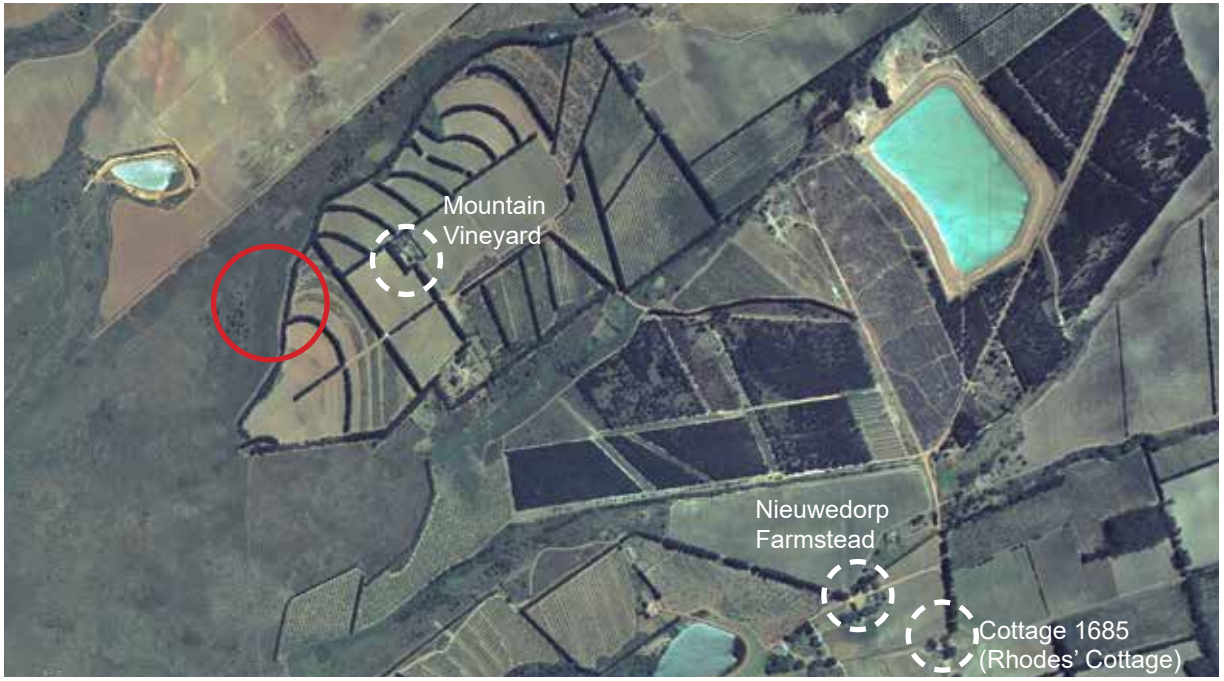


Figure 12: *Extract, compilation of early cadastral grants. (Source: Titlestad HIA 2006).*





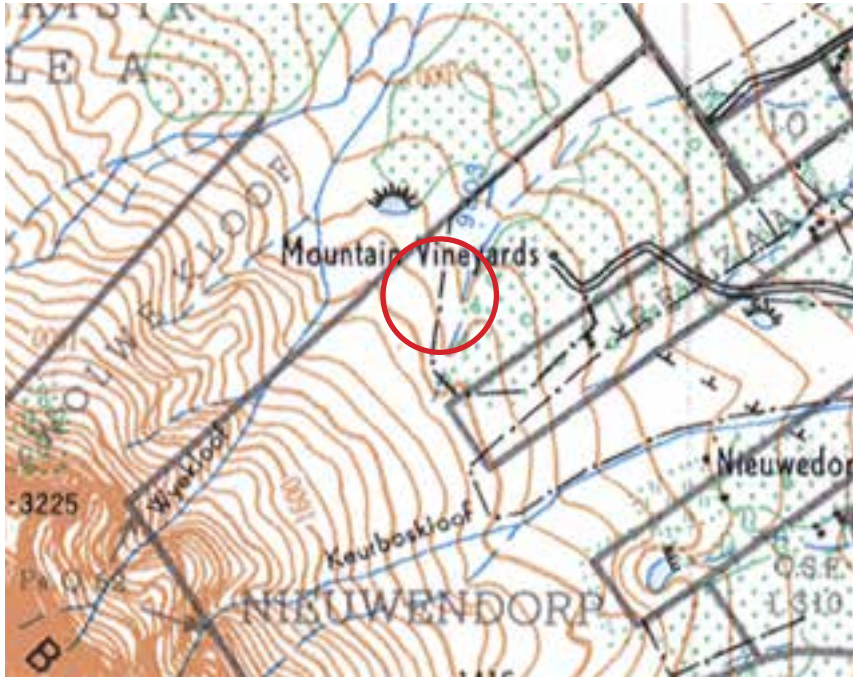


Figure 13: *1938 aerial (top) and 1972 aerial (below).*

Figure 14: *1935 Topo Map (above) and 1959 Topo Map (below).*

SECTION D:STATEMENT OF HERITAGE SIGNIFICANCE

The following statement of significance is at three scales including the Founders Estates NHS as a whole situated on the lower, middle and upper slopes of the Simonsberg, the landscape zone scale comprising the upper slopes of the Founders' Estates and the site scale comprising FE 5. A statement on the archaeologically significance and sensitivity of the site is included at the end of this section under Section D.4.

D1. FOUNDERS' ESTATES NATIONAL HERITAGE SITE

The significance of the Founders Estate, the portion of the Cape Winelands Cultural Landscape (CWCL) declared a National Heritage Site, is described as follows in the gazetted declaration:

> *The Boschendal Founders Estate, Dwarsrivier Valley, Cape Winelands Cultural Landscape is a product of the interaction between the natural landscape of great scenic beauty, the tireless labour of a slave population, biodiversity and human activities and responses over a long period which have created features and settlement patterns that are equally celebrated for their beauty, richness and diversity. The Dwarsrivier Valley, more than any of the other CWCL landscapes is a showcase of the genius of the slave infused society of the Cape, with the majority of the slave descendants still working the soil. This cultural landscape encompasses a great variety of significant heritage resources, developed out of the interaction between peoples of many cultures with each other and the place.(Government Gazette Notice 31884, 13-02-2009)*

Historical value:

- It reflects a pattern of early colonial settlement and expansion during the late 17th and 18th centuries with an emphasis on agricultural production concentrated in the well-watered fertile valleys.
- The role of the landscape as role as both a pioneering and continuous agricultural base since late 17th century, when rectangular plots were granted at the foot slopes of Simonsberg in relation to the Berg and Dwars Rivers.
- Although almost entirely cadastrally redefined, the enduring nature of this role is evident in the continuity of the Goede Hoop and Nieuwedorp farms from the 17th century.
- A temporal and thematic layering of the landscape in terms of:
    - Land ownership patterns (colonial dispossession, freehold, quitrent, feudal, family networks, institutional/corporate)
    - Patterns of labour (slavery, indentured labour, wage labour, migrant labour) and related shifts from a feudal to a corporate to a democratic order.
    - Patterns of built form (18th century origins of Goede Hoop farm werf, possible remains of 18th century Nieuwedorp farm werf and its later early 20th century expression, cottage clusters dating from the early 20th century onwards)
    - The planted landscape (windbreaks, tree lined routes, forests, field patterns).
- The role of Goede Hoop farm werf as an agricultural entity dating to late 17th century & evidence of layering relating to shifting social-economic trends over time (livestock farming, wine production, fruit farming, labour, family networks).
- Historical associational linkages across the landscape in terms of ownership patterns with most of the farms being owned by extended family networks for more than a century and then farmed as a single entity since 1897 under Rhodes Fruit Farms, later Amfarms until 2003.
- The contribution of Goede Hoop and Nieuwedorp to a collection of historical farmsteads (Boschendal, Rhone, Rhodes Cottage, Champagne).
- The role of the landscape in the history of the fruit industry with the establishment of Rhodes Fruit Farms and its association with important figures in the development of the export fruit industry at the turn of the 20th century.
- The presence of a major corporate institution (Rhodes Fruit Farms-Amfarms) spanning more than a century and its associated impacts on the landscape in terms of farming, infrastructure, built form, patterns of labour and institutional memory.

- The incorporation of an early industrial mining landscape, possibly one of the earliest colonial-period in mines in South Africa; representation of a mid-18th century VOC mining operation linked to global trade and other VOC prospecting efforts at the Cape; layering of use over time from intensive mining activities to a place of refuge/retreat & 'passive' forms of natural resource utilisation.

Social value:

- Enduring value of the upper slopes of the Simonsberg to local community as a landscape of memory, retreat/exploration and natural resource utilisation.

Aesthetic Value:

- The cohesive and iconic visual quality of a broad agricultural sweep framed by the Simonsberg and forming a spectacular backdrop to a collection of historical set pieces located on the lower slopes (Goede Hoop, Rhodes Cottage and Nieuwedorp).
- Views towards the landscape from the main movement network through the Dwars River Valley (R45 and R310).
- A coherent landscape structure in terms of an orthogonal field pattern reinforced by windbreaks and tree lined routes, a system of water courses feeding the Dwars and Berg Rivers and the movement network.
- The strong east-west axis terminating at Rhodes Cottage (Cottage 1685) at the base of Founder's Estates reinforced by the yellowwood avenue and linking the historical set piece with the Boschendal-Rhone Historic Core Precinct.
- The primary north-south movement route linking the historical set pieces of Goede Hoop, Rhodes Cottage, Nieuwedorp and eventually Excelsior
- near the R45.
- Positive response in the form of a range of historical built form typologies (farmsteads, managers' houses and farm cottages) that reveal a sense of fit in the landscape in terms of a response topographical conditions (following the contours, avoiding steep or visually exposed slopes, below the 320m contour), generally with limited footprint embedded in an agricultural landscape and located within a copse of trees.

Architectural value:

- The representative nature of the built form in terms of typology, hierarchy and historical layering.
- The intact and representative nature of Goede Hoop reflecting various stages in evolution of Cape farm werf tradition with strong evidence of historical layering and possessing a distinctive linear layout.
- The significance of Rhodes Cottage at the base of Founders Estates as a formal set piece in the landscape, its visual spatial linkages with Boschendal Rhone, its associations with the work of Herbert Baker and Rhodes Fruit Farms; an intact and representative example of the cottage typology with Arts and Crafts stylistic influences. (It should be noted that while Rhodes Cottage is not within the Founders Estates boundaries, they are visually spatially and historically connected).
- The significance of Nieuwedorp with visual-spatial and historical linkages with Rhodes Cottage and having architectural significance in its own right.

Archaeological Value:

- The primary area of archaeological significance in the Founders' Estates is the Silvermine Landscape which has national and international significance.
- Portion 5 is not considered archaeologically sensitive (Hart and Gribble, 2021).

D2. LANDSCAPE ZONE C

The Founders' Estates comprises three broad landscape zones as indicated in Figure 17 and Figure 18. The three zones are as follows:

A: the lower, more gentle slopes with their orchards, tree clumps (oaks, gums, poplars, olives), shelter belts and dispersed farmsteads or cottages.

B: the mid slopes of weathered granite type soils with vineyards, farmsteads (Goede Hoop and Nieuwedorp), farm dams and some tree clumps.

C: the upper, steeper mountain slopes with a mosaic of vineyards and indigenous scrub, or alien thickets, dissected by drainage ravines with existing and future homesteads generally located on or just above the 320m contour line.

These 3 zones have varying characteristics and degrees of visibility from the surroundings.

Historically, homesteads on the Estate generally tended to be located on the lower or mid slopes, were modest in scale and were screened by mature trees. The tented camp is located in Landscape Zone C which has a higher elevation, steeper slopes and more sparse vegetation, and therefore structures tend to be more visible in the landscape.

The heritage significance of Landscape Zone C is as follows:

- The high visual significance of the upper slopes of the Simonsberg contributing to its role as a distinctive backdrop to the Boschendal Estate and the Dwars River Valley.
- The intactness of the upper slopes being relatively uncluttered with development with a dominance of agriculture and ecological corridors contributing to the integrity of the landscape cross section.
- Its role in forming an interface with the Simonsberg Nature Reserve with ecologically corridors linking agricultural and wilderness landscape zones.

D3. PORTION 5 OF 1685

FE 5 has heritage value in terms of its landscape qualities being located on the upper slopes of the Simonsberg at the interface with the Simonsberg Nature Reserve. It has high visibility from surroundings with localised ridgelines to the north and south of the tented camp shielding the visibility of the site from immediately surroundings especially from the western portion of the Founders Estates NHS.

From a combined cultural and natural landscape respective, the site comprises areas of ecological sensitivity including the riverine corridor and associated dam and areas of high botanical sensitivity as indicated on Figure 19. The vegetation includes a patch of indigenous thicket, including wild olive. Mountain fynbos occurs on the slopes above the camp, and dense indigenous thicket along the drainage lines. The vegetation also consists of a cluster of mature Monterey pines (Pinus radiata) which provide some visual screening.

D.4 ARCHAEOLOGY

In terms of archaeological remains, pre-Colonial, early historic, and early C20th (Rhodes Fruit Farms) remains are all found within the Boschendal landscape (refer to Figure 15 indicating the areas of archaeological significance and sensitivity within the Founders' Estates.

Pre-Colonial finds are predominantly Early Stone Age artefacts, found in isolated, ex-situ contexts, with occasional Middle or Later Stone Age finds of ephemeral scatters, or isolated artefacts (Kaplan, 2005). Most finds are stone tools, while organic remains are rare. Generally, these finds have been disturbed from their original context due to the extensive history of agricultural activities. Reflecting the nature of this disturbance, Stone Age materials are fairly frequently found heaped in field margins and boundaries, having been cleared from ploughed fields.

Early colonial period archaeological remains predominantly relate to the historic werfs and areas utilised by the early farm dwellers. Such finds include structural remains, ceramics and faunal remains and are either found distributed in the werf landscape, or concentrated in middens associated with historic structures (Hart and Webley, 2009). Areas further from the core werfs tend to contain less material cultural remains, and areas far removed from known settlement areas are unlikely to contain anything more than occasional material if anything at all.

The intensive utilisation of the Dwars River Valley in early C20th under Rhodes Fruit Farms came with extensive investment of infrastructure in the form of leiwater canals and sluite, as well as other landscape features designed to assist with irrigation and other agricultural activities (Hart and Webley 2009). These features often persist as features in the landscape, such as the stone lined irrigation canals identified on lower lying fields.

There are several areas of archaeological sensitivity within the Founders' Estates, including the early industrial landscape of the Silvermine Complex, Goedehoop Farmstead and Nieuwedorp Farmstead (ACO, 2021). However, while Stone Age material might have been located on the site, this is unlikely to have been of high significance, in situ, or densely concentrated, impacts to such archaeological materials are therefore of low significance. Given the remoteness of the location from historic werfs or settlements, no early colonial archaeology is likely to have occurred on the site, and impacts are considered to be unlikely. As the area does not fall on the lower slopes where C20th agriculture was more intensive, features associated with this period are similarly unlikely.

In light of the extent of previous archaeological survey and assessment of the Founder's Estate (Hart and Gribble, 2021; Hart and Webley, 2009; Kaplan, 2005), confidence in these conclusions is high, and supported by the findings of the recently compiled AHRMP which indicates that no monitoring is required for Founders' Estate 5.

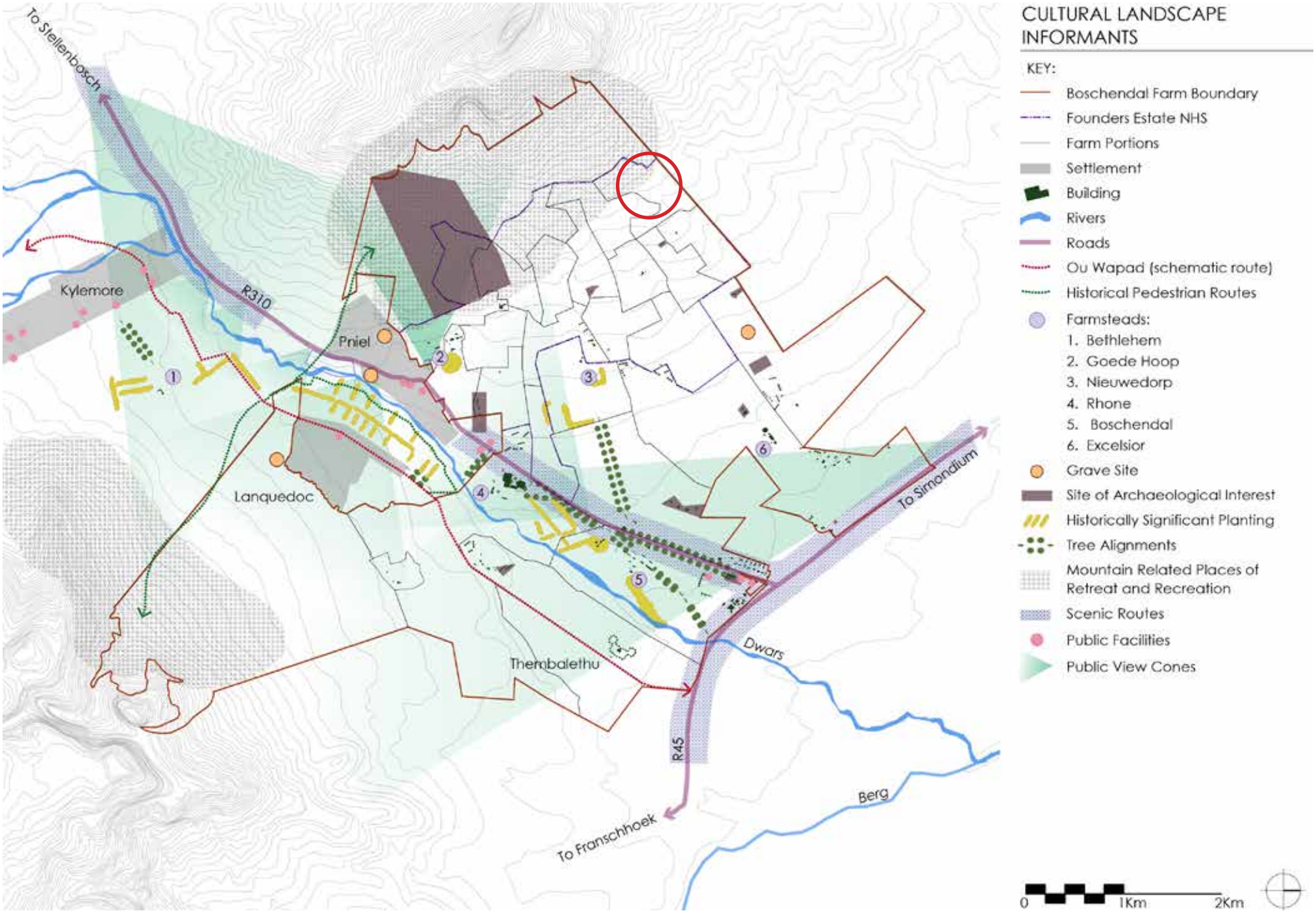


Figure 15: *Cultural landscape informants, location of Tented Camp indicated in red (Source: RSA 2019).*

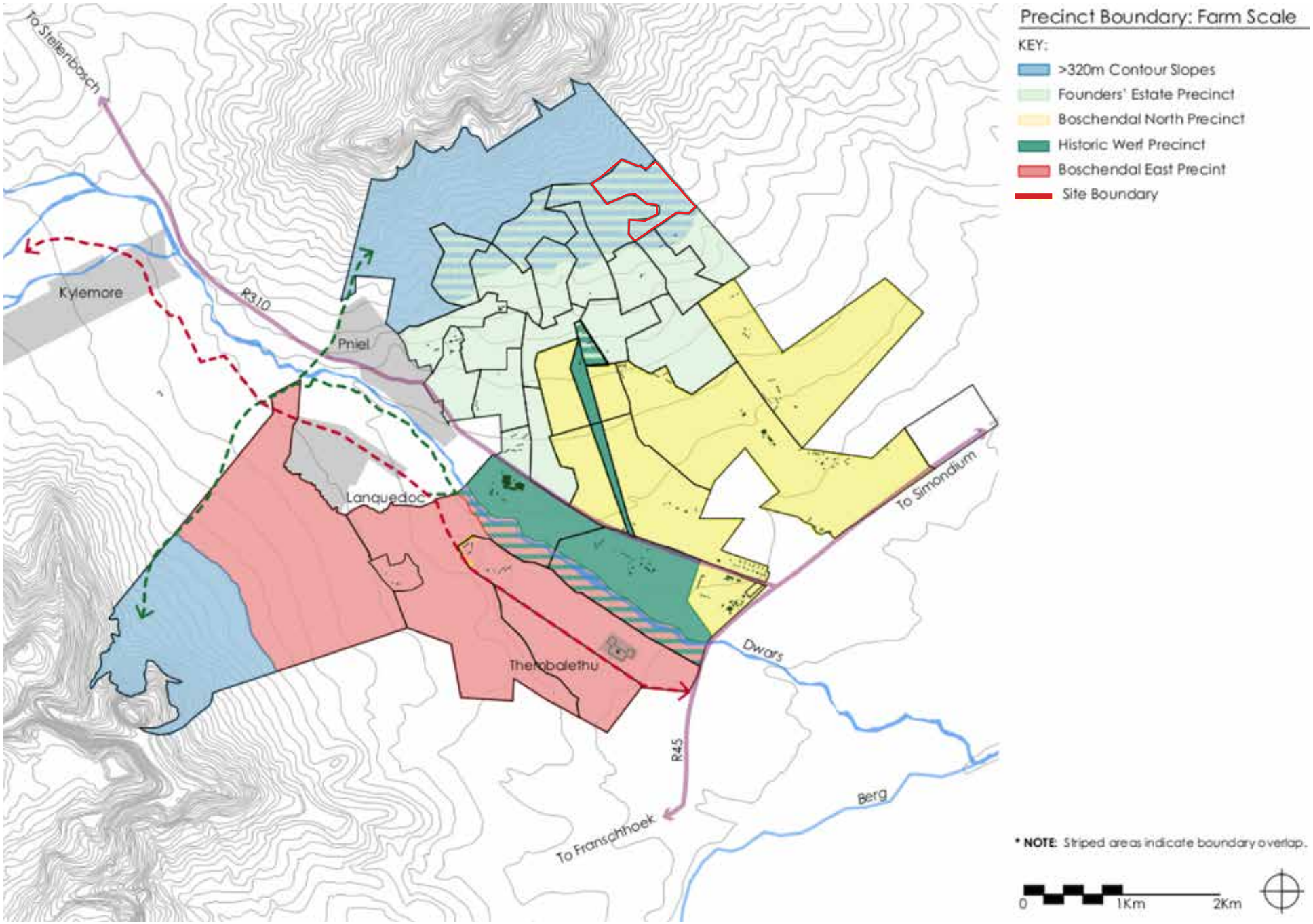


Figure 16: *Boschendal farm precinct map (Source RSA 2019).*

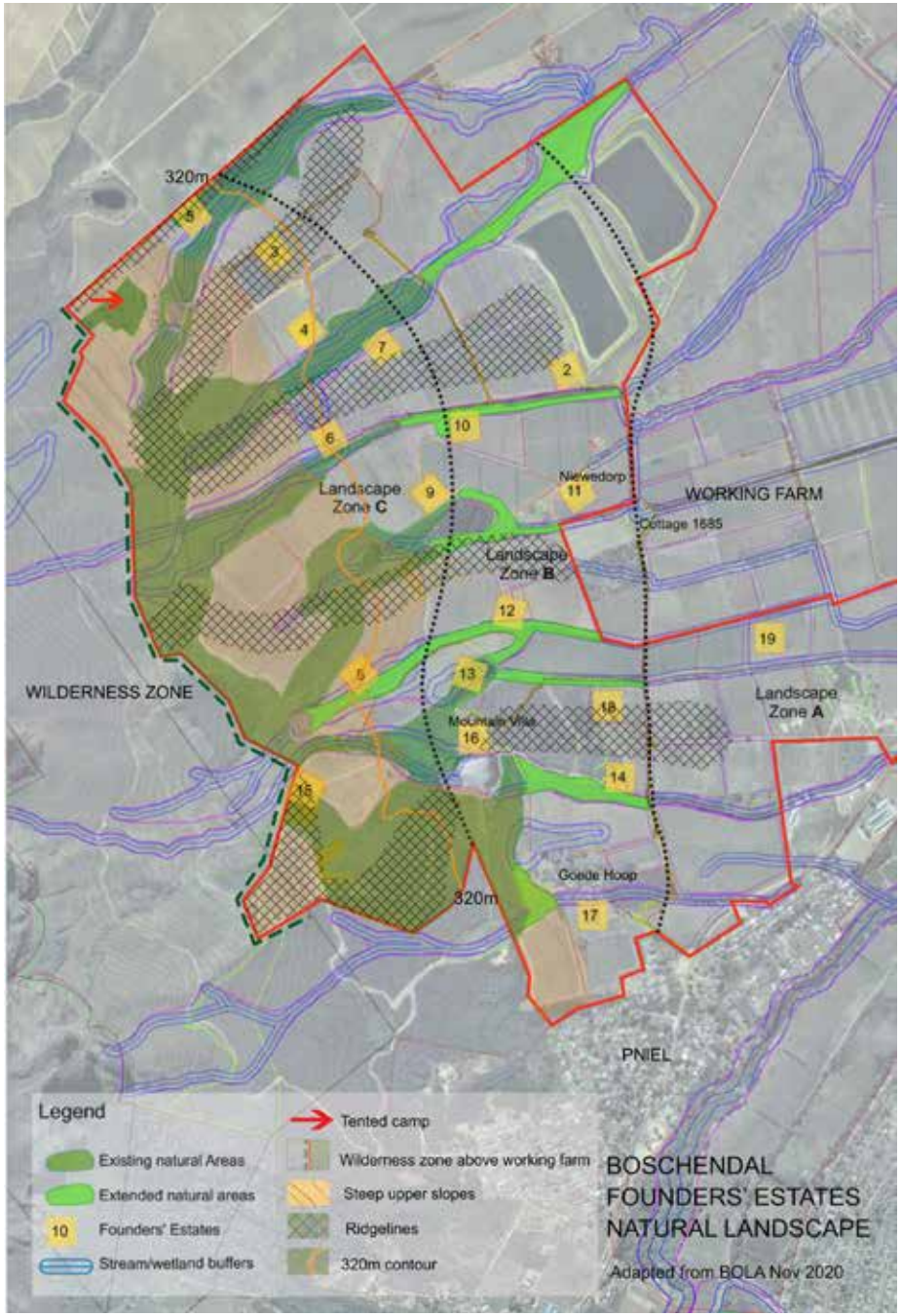


Figure 17: *Natural landscape constraints and informants (Winter, 2021).*

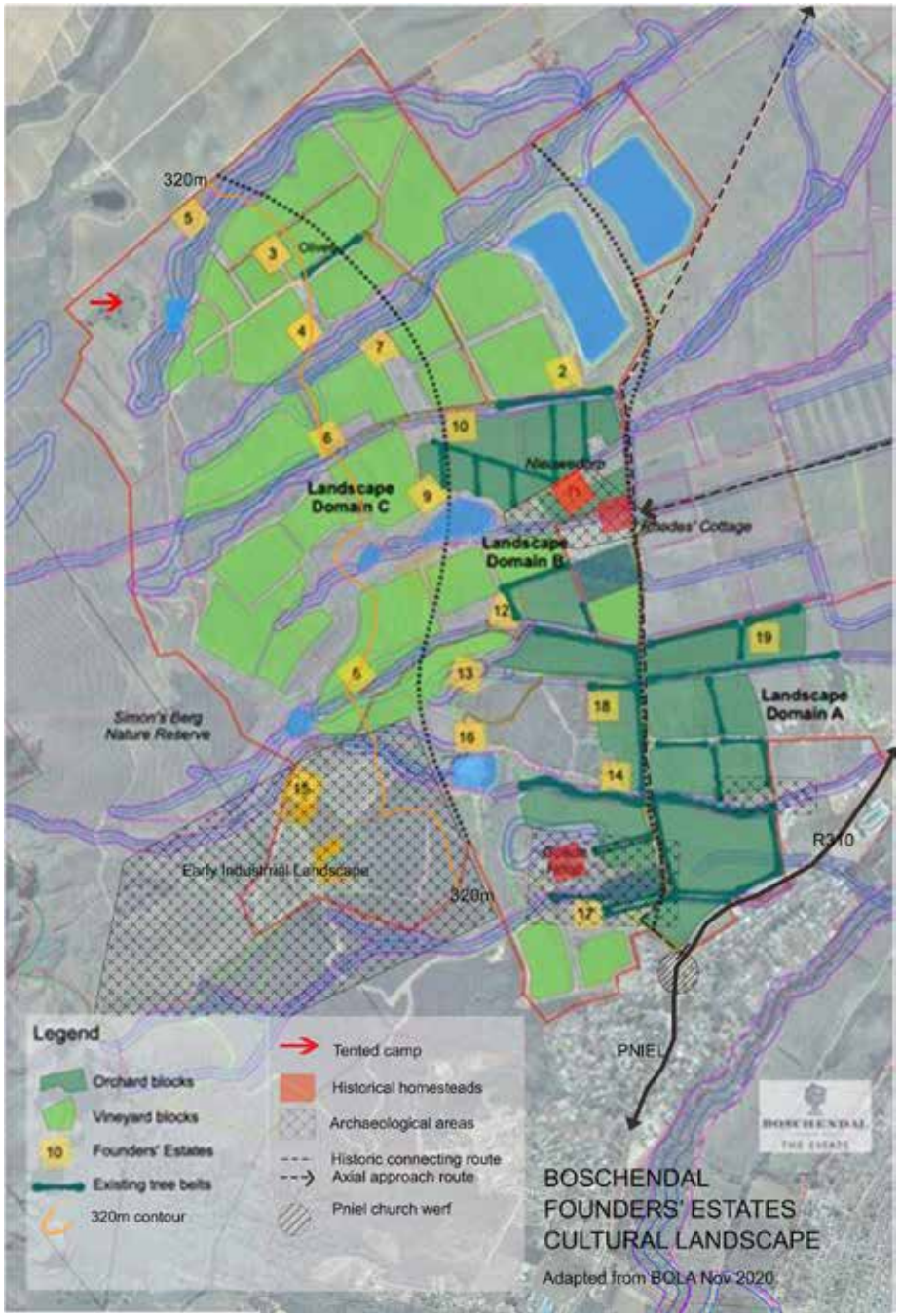


Figure 18: *Cultural landscape constraints and informants (Winter, 2021).*

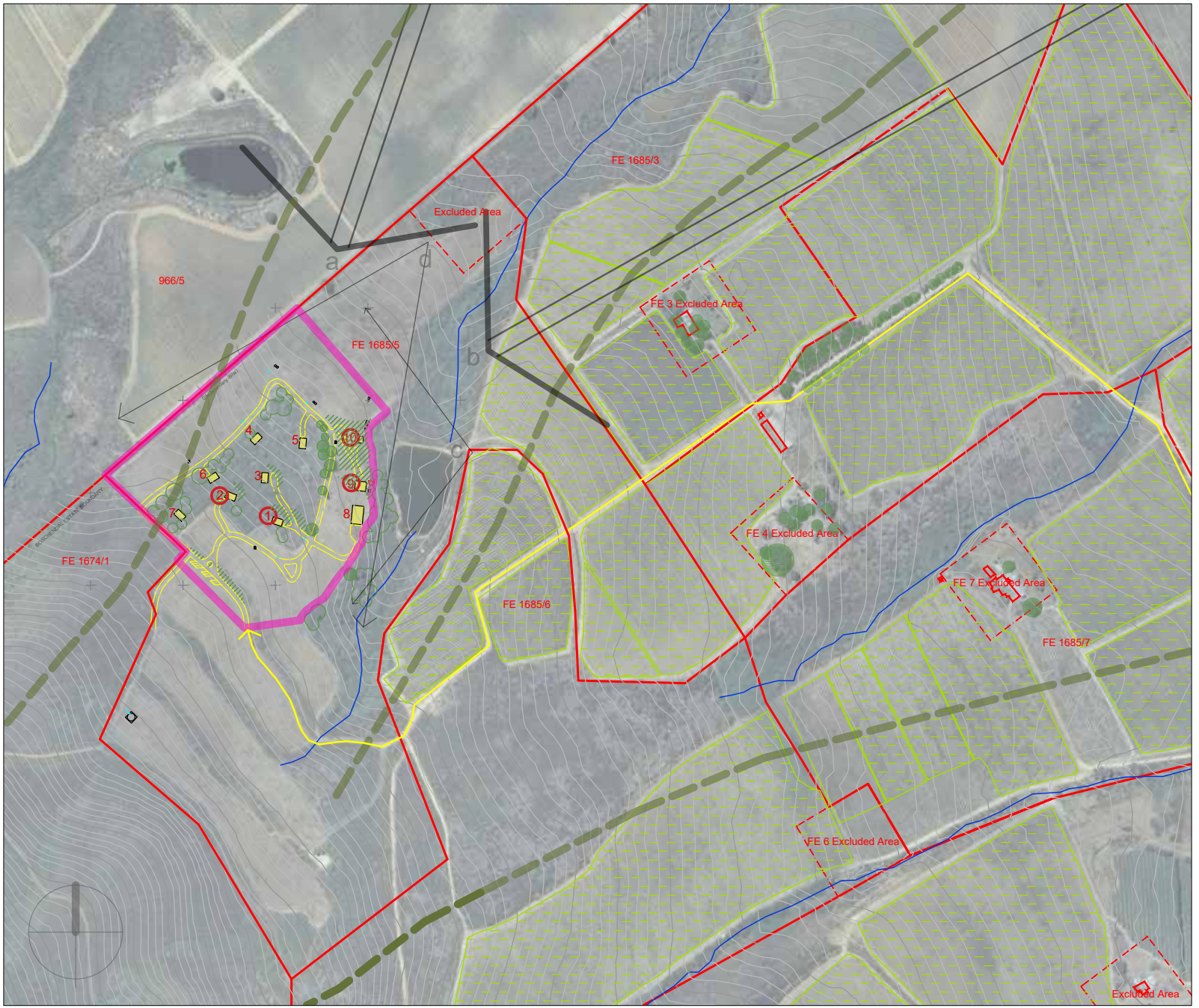


FIGURE 6: VISUAL ISSUES

Figure 19: *Site constraints and informants (NMA, 2021).*

SECTION E:HERITAGE INDICATORS

The following heritage indicators are addressed at the three scales; the broader landscape of the Founders Estates NHS as a whole, the landscape zone scale comprising the upper slopes of the Founders' Estates (Landscape Zone C) and the site scale comprising FE 5.

The heritage indicators are drawn from the various previous studies for Boschendal Estate and Founders' Estates. Specifically, the following refer:

- RSA, 2019. Baseline Study: Heritage Inputs into Boschendal Farm Conceptual Framework.
- Todeschini, F. and Jansen, L. 2018. Draft Revised Heritage Inventory of the Tangible Heritage Resources in the Stellenbosch Municipality
- Todeschini, F., Jansen, L., Franklin, M., Abrahamse, C., Malan, A. and Lavin, J. 2018. Draft Conservation Management Plan for the Tangible Heritage Resources in the Stellenbosch Municipality: Phase 4 Report.
- Baumann, N., Winter, S., Dewar, D. and Louw, P. 2012. Boschendal Heritage Impact Scoping Report: an in-principle review of the case and the identification of composite heritage indicators
- Boschendal Estates Design Guidelines (Founders' Estate) approved by SAHRA 2010.
- Winter, S. and Baumann, N. 2006. Heritage Impact Assessment of Founders' Estates, Boschendal.

The Baseline Study (RSA 2019) noted:
When framing possible development on the farm within a system of balance, it becomes apparent that it is beyond the scope of a high level assessment such as this to set absolute limits on developments, or to determine carrying capacities. Rather, this study sets out to show that future development needs to address to a series of issues, as posed in the informing principles presented here. Any proposed development would then need to be evaluated on a case by case basis through consideration of how it addresses those issues, and responds to those challenges. This evaluation should be undertaken through the vehicle of a full farm SDP or individual HIAs.

It falls therefore to this Heritage Report to assess any implications for the tented camp in terms of the broader narrative.

Two overarching principles underpin the heritage indicators and are incorporated into the Boschendal Heritage Impact Scoping Report (Baumann et al, 2021):

The first of these is the exceptionally high significance of the landscape which demands that a cautious view must be taken to any development application, to ensure that the character and quality of the area as a totality is not compromised. The second is the necessary recognition that the natural landscape is an essential part of the heritage of the area and the cultural landscape is a central dimension of the natural environment. Therefore they cannot be approached as separate processes (Dewar and Louw, 2007).

Baumann et al. (2012) adopted an approach to regional settlement pattern driven by a concern with authenticity. In terms of settlement, the following key principles were seen as being central to authenticity:

- maintaining the dominance of wilderness and the working agricultural landscape;
- maintaining and enhancing continuities (of green space and of movement);
- respecting the valley section – no development on ridge-lines, steep slopes or public view-cones; and building on the agricultural superblock.
- the overall approach is one of consolidation and integration, not scatter.

From a natural landscape perspective, there is a need for the on-going rehabilitation and overall improvement of the functioning of the landscape as an ecosystem, including the protection of natural vegetation, habitats, drainage courses and wetlands, as well as the phased removal of invasive alien vegetation.

The high mountains of the Cape Winelands Cultural Landscape are landforms vital to its overall landscape character. They enclose the valleys and settlements of heritage significance. As previously stated in this report, the principle of any development on the upper slopes of the Founders'

Estates requires a cautious approach given the high visual significance and sensitivity of the Simonsberg slopes. The principle of a 'tented camp' needs to be tested in terms of its siting well above the 320 m contour. The zone above the 320m contour has been identified as a no-go development area in various heritage and environmental studies from a visual and landscape character perspective. Notwithstanding SAHRA's approval of FE 15 well above the 320m contour line, this principle of this zone as a no-go zone still applies to future development on Founders' Estates. However, consideration needs to be given to the nature-orientated tourism use of the tented camp at the interface of the Founder's Estates with the Simonsberg Nature Reserve, as well as the tread lightly, low visual impact, temporary and reversible nature of the intervention.

The tented camp needs to be tested against two principles associated with the establishment of the Founders Estates, namely:

- The establishment of a consolidated agricultural landholding.
- The restriction on development to one farmstead per farm unit subject to a number of parameters and guidelines.

The 2006 HIA for Founders Estates' and subsequent heritage studies did not contemplate the use of the upper slopes for nature-based tourism facilities as the focus was on the subdivision application, the development parameters for the homesteads across the 18 subdivisions and the continuing agricultural base of the landscape. The role of the upper slopes of the Simonsberg above the Founder's Estate as a place of refuge and retreat related to its wilderness landscape qualities was identified as well its local tourism opportunities. This theme has relevance in terms of this application and is incorporated into the heritage indicators below.

The exceptional heritage value of the landscape and high architectural quality of historical set pieces embedded within this landscape requires that new development be subject to rigorous design with attention to architectural language, technology, materials, execution and landscaping. While the particular nature of a tented camp does not warrant the same attention to design issues as required in terms of conventional building development, it does need to be tested in terms of certain heritage related design criteria.

E.1 BROADER LANDSCAPE SCALE

General landscape indicators

1. Positive response to the natural and cultural landscape qualities of the broader landscape and also the unique features of each Founders' Estate.

Natural landscape indicators

1. Prevent development on visually sensitive mountain slopes and ridgelines in order to preserve the continuity and integrity of the mountains as a backdrop. Limit cultivation and development on upper slopes greater than 1:4 to protect scenic resources and water catchments, and to minimise visual scarring and erosion. Ridge-lines, land steeper than 1:4 and elevated slopes, i.e. above the 320m contour line are identified as no-go areas.
2. No building on good agricultural soils in order to protect agricultural production and contribution to food security, as well as the productive agricultural landscape character.
3. Avoid areas within the 100 year floodplain, wetlands, areas prone to flooding and riverine corridors as well as areas of biodiversity value.
4. No not disturb rare and endangered indigenous fauna/flora mainly occurring on the upper slopes of Simonsberg as well as migratory paths of fauna. Removal of invasive alien vegetation.
5. Retain the role of the upper slopes of the Simonsberg above the Founders Estates as a place of refuge and retreat with very limited development focused on nature orientated tourism activities related to the Simonsberg Nature Reserve, e.g. hiking, cycling.
6. Limit the footprint and form of nature orientated tourism facilities to ensure a tread lightly approach to the landscape; they must be visually discrete and embedded in the wilderness landscape domain related to the Simonsberg Nature Reserve.

Cultural landscape informants

1. Respect the valley section in maintaining a balance between wilderness, agricultural and settlement domains with the built form being concentrated on the lower-mid slopes and valley floor and avoiding the steeper upper slopes related to the wilderness domain.

2. Positive response to the role of landscape as a consolidated working farm as opposed to an ornamental, suburban or fragmented landscape.
3. Integrate new development with the inherent logic of existing settlement patterns and route structure; do not repeat or reinforce settlement patterns at odds with this pattern and structure; do not place new structures randomly across the landscape but in response to environmentally based structural principles (water, soils, topography, access).
4. Retain view-lines and vistas focused on prominent natural features such as mountain peaks, as these are important place-making and orientating elements for experiencing the cultural landscape. They are not only important for landscape character, but also for water security, and biodiversity.
5. Retain the landscape setting of the historic set pieces by avoiding prominent views towards and from them or disrupting visual-spatial relationships between elements.
6. The addition of a new contemporary layer in the landscape but not at the expense of existing layers of heritage significance especially in terms of historical patterns of development.
7. New development should be embedded in the landscape and not compete or contrast in terms of height, scale, massing, materials and architecture; no urban or suburban built form and landscape typologies; applicable particularly to the upper slopes where development should be subordinate to the landscape.
8. Positive response to the exceptional heritage value of the landscape and high architectural quality of historical set pieces by ensuring that new development is of a high quality design in terms of architecture, technology, materials, execution and landscaping.
9. Maintain landscape features contributing to the ecological, aesthetic and historical character of the landscape, e.g. treed settings of homesteads, tree lined avenues, windbreaks, forests, indigenous thicket, orchards and vineyards.
10. An emphasis on a low-key 'soft' engineering and landscaping approach to infrastructure, particularly roads, stormwater, parking, signage and lighting. Make use of existing farm roads as far as possible. Protect the rural quality of farm roads in terms of road width, surfacing and edge treatments.
11. Avoid areas of high archaeological value, especially associated with the Silvermine Landscape.

E.2 LANDSCAPE ZONE C

1. Limit development within this zone of high visual sensitivity, especially above the 320m contour. Notwithstanding the siting of FE 15 on the 360m contour, additional development above the 320m contour should not be permitted.
2. Apply stricter controls on development above the 265 m contour, i.e. smaller development footprints smaller building envelopes (i.e. single storey), recessive architecture,
3. Development above the 265m contour should be visually recessive in the landscape; buildings are to be wrapped and embedded in nature and agriculture; new structures should be nestled into rather than being superimposed on the landscape, e.g. use of fragmented forms, muted earth colours, natural materials such as stone and timber are encouraged, follow contours.
4. Retain the role of the upper slopes of the Simonsberg above the Founders Estates as a place of refuge and retreat with development focused on nature orientated tourism activities related to the Simonsberg Nature Reserve, e.g. hiking, cycling.
5. Limit the footprint and form of nature orientated tourism facilities to ensure a tread lightly approach to the landscape, are visually discrete and embedded in the wilderness landscape domain related to the Simonsberg Nature Reserve.
6. Excessive cut and fill excavations are to be avoided when creating building platforms; structures are to be stepped to accommodate the slope conditions and follow contours.
7. Access roads should utilise existing farm roads and tracks wherever possible. No new roads should be constructed. The upgrading of roads should retain their rural character in terms of road width, surfacing and edge treatments.
8. Parking should be obscured from view as far as possible, and visually fragmented by appropriate landscaping and planting.

E.3 PORTION 5 OF 1685

1. Positive response to the micro-conditions of the site, i.e. ridgelines, sightlines, water course, dam, indigenous thicket and interface with the Simonsberg Nature Reserve.
2. Positive response to the role of the site within landscape of exceptional heritage value where new development should be subject to a rigorous design review process.
3. Positive response to the carrying capacity of the site to accommodate new development from a combined heritage, visual and environmental perspective with consideration of cumulative impacts.
4. Roads and parking to be carefully considered in terms of visual scarring and ensuring minimal visual intrusion.
5. Signage and lighting to be low-key and not visually intrusive.

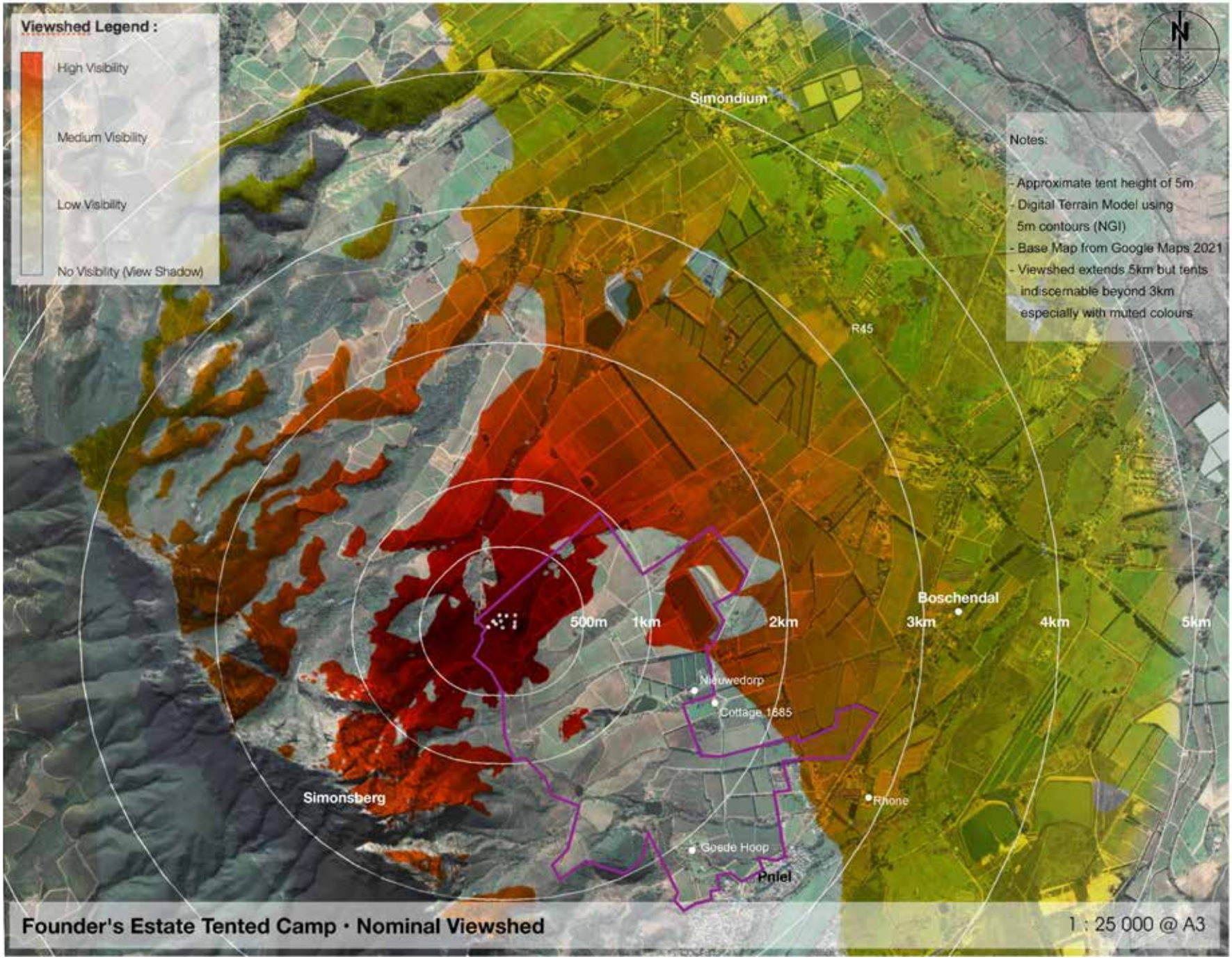


Figure 20: *Viewshed Analysis (Source: Quinton Lawson, 2021).*

SECTION F: ASSESSMENT OF HERITAGE IMPACTS

A key principle of the Founders' Estates subdivision application was to limit the effects of incremental development being scattered across the landscape and eroding its integrity and authenticity. It sought to restrict development to one homestead per subdivision subject to a number of development parameters relating to the siting, scale and form of building development. A second key principle of the Founder's Estates application was to protect the consolidated agricultural landholding within the concept of a working farm. This was achieved through a 99-year agricultural lease area registered across the 18 subdivisions excluding the 0.8 hectare defined area for one homestead per subdivision.

The tented camp does not impact the principle of a consolidated agricultural landholding for following reasons:

- It does not change the underlying planning status of the Founder's Estates as a consolidated agricultural landholding.
- The primary rights of the property as Agricultural and Rural Zone are not being changed.
- The 99 year agricultural leasehold registered over the landholding remains in place.
- Temporary Departure is relatively short term, i.e. 5 years.

However, it is considered to be variance with the principle of restricting development to one homestead per subdivision. The tented camp is located outside of the 0.8 hectare Excluded Area for FE 5 and comprises an application area of approximately 6 hectares, i.e. 23% of the farm portion. However, there are mitigating circumstances that would deem the nature of the intervention to be acceptable.

- Consideration should be given to the nature orientated tourism use of the tented camp which is an appropriate use located at the interface of the Founder's Estates and the Simonsberg Nature Reserve.
- This should be considered in conjunction with the tread-lightly, low visual impact, temporary and reversible nature of the intervention.
- Lastly, the property owner of FE 5 has agreed to withhold the right to develop a homestead on the Excluded Area until the Temporary Departure to regularise the tented camp from a land use and planning perspective has lapsed and the tented camp has been removed.

View shed analysis:

A view shed analysis was undertaken of the tented camp as indicated in Figure 20. The major findings of this view shed are the following:

- A zone of high visibility is confined to 500m of the tented camp affecting FE 5, FE 3 and FE6 in the north-west portion of Founders' Estates.
- The tents are not visible from most of the Founders' Estates.
- The tents are not visible from Goede Hoop, Cottage 1685 and Nieuwedorp.
- The tents are indiscernible beyond 3km especially with their muted colours. Rhone and Boschendal are located close to 3km from the tented camp within a zone of low visibility. The R45 and the R310 are also located within a zone of low visibility.
- The yellow wood avenue located on axis with Cottage 1685 and linking the historic core within the Founders' Estates is located within a zone of low-medium visibility.
- The north-south linking route at the base of the Founders Estates will not be impacted by the tented camp.

Visual considerations:

A number of visual concerns need to be addressed including the treatment of roads and parking, the rehabilitation of the exposed embankment and platform created for the larger tent structures, signage and lighting, and landscaping.

Design considerations:

The design of the tented camp has not been carefully considered in terms of the siting of some tented structures, technology, materials, execution and landscaping. This impacts micro-site conditions which are mitigated to an acceptable level by the temporary nature of the tented camp facility.

LANDSCAPE STRATEGIES TO ADDRESS VISUAL IMPACT, FOR DISCUSSION. TO BE READ IN CONJUNCTION WITH FIGURE ATTACHED.

18 AUGUST 2021

2021 AERIAL VIEW / REFERENCE MAP

View from across the dam showing visibility of Tent Structure 1 and 2, 9 and 10.

Figure 21: *Visible tent locations to be considered for planting mitigation (NMA, 2021)*

HERITAGE INDICATOR	CONVERGENCE OF PROPOSALS & INDICATORS	COMMENT
General landscape indicators		
1. Positive response to the natural and cultural landscape qualities of the broader landscape and also the unique features of each Founders' Estate.	Positive	The tented camp is located on the steep upper slopes well above the 320m contour line which is at variance with the heritage indicators. However, consideration is given to a number of mitigation circumstances: • The nature orientated tourism use of the tented camp at the interface of the Founder's Estates and the Simonsberg Nature Reserve. • The tread lightly, low visual impact, temporary and reversible nature of the intervention. A number of visual considerations need to be addressed at the broader landscape and site scales including the treatment of roads and parking, the rehabilitation of the exposed embankment and platform created for the larger tent structures, signage and lighting, and planting mitigation. These are unpacked in Section F.3 below. The tented camp is not at variance with the principle of the Founders Estates to establish a single consolidate landholding. However, it is considered to be at variance with the principle of limiting development to one homestead per farm unit. A key mitigation is to withhold the right to develop a homestead on the Excluded Area of FE 5 until the Temporary Departure to regularise the tented camp from a land use and planning perspective has lapsed and the tented camp has been removed.

Natural landscape indicators		
1. Prevent development on visually sensitive mountain slopes and ridgelines in order to preserve the continuity and integrity of the mountains as a backdrop. Limit cultivation and development on upper slopes greater than 1:4 to protect scenic resources and water catchments, and to minimise visual scarring and erosion. Ridge-lines, land steeper than 1:4 and elevated slopes, i.e. above the 320m contour line are identified as no-go areas.	Positive	The tented camp is located on the steep upper slopes well above the 320m contour line which is at variance with the heritage indicators. However, consideration is given to a number of mitigation circumstances: • The nature orientated tourism use of the tented camp at the interface of the Founder's Estates and the Simonsberg Nature Reserve. • The tread lightly, low visual impact, temporary and reversible nature of the intervention. A number of visual considerations need to be addressed at the broader landscape and site scales including the treatment of roads and parking, the rehabilitation of the exposed embankment and platform created for the larger tent structures, signage and lighting, and planting mitigation. These are unpacked in Section F.3 below.
2. No building on good agricultural soils in order to protect agricultural production and contribution to food security, as well as the productive agricultural landscape character.	Positive	The tented camp is located on the upper periphery of the working farm on uncultivated land comprising indigenous thicket of botanical value and fallow land and thus cannot be regarded as eroding its productive rural landscape qualities. The temporary and reversible nature of the tented camp does not compromise the agricultural soil potential of the land. It is also arguable whether cultivation on these steep upper slopes is desirable from a combined natural and cultural landscape perspective.
3. Avoid areas within the 100 year floodplain, wetlands, areas prone to flooding and riverine corridors as well as areas of biodiversity value.	Positive	Subject to specialist input of a fresh water ecologist as part of the NEMA process.
4. No not disturb rare and endangered indigenous fauna/flora mainly occurring on the upper slopes of Simonsberg as well as migratory paths of fauna. Removal of invasive alien vegetation.	Positive	Subject to specialist input of an ecologist as part of the NEMA process. The site of the tented camp includes a patch of indigenous thicket including wild olive trees. Mountain fynbos occurs on the slopes above the camp, and dense indigenous thicket along the drainage lines.

5. Retain the role of the upper slopes of the Simonsberg above the Founders Estates as a place of refuge and retreat with very limited development focused on nature orientated tourism activities related to the Simonsberg Nature Reserve, e.g. hiking, cycling.	Positive	The nature based tourism use of the tented camp responds to the transitional nature of the landscape at the interface between agricultural and wilderness landscape domains, and the role of the upper slopes of the Simonsberg above the Founders' Estates as a place of refuge and retreat related to the Simonsberg Nature Reserve.
6. Limit the footprint and form of nature orientated tourism facilities to ensure a tread lightly approach to the landscape; they must be visually discrete and embedded in the wilderness landscape domain related to the Simonsberg Nature Reserve.	Positive	The tented camp constitutes a very small footprint of the Founders Estates, i.e. 1.5%. It is located on the upper periphery of the working farm within an indigenous thicket of vegetation related to the wilderness landscape qualities of Farm 1674/1 and the Simonsberg Nature Reserve.
Cultural landscape informants		
1. Respect the valley section in maintaining a balance between wilderness, agricultural and settlement domains with the built form being concentrated on the lower-mid slopes and valley floor and avoiding the steeper upper slopes related to the wilderness domain.	Positive	The tented camp is located within a transitional zone between agricultural and wilderness domains. The tread-lightly, low visual impact and temporary nature and form of the structures does not detract from the relationship between the valley section and settlement patterns; it relates to the wilderness landscape above the Founders' Estates.
2. Positive response to the role of landscape as a consolidated working farm as opposed to an ornamental, suburban or fragmented landscape.	Positive	The siting of the tented camp on the periphery of the working farm limits a sense of the fragmentation of the agricultural landscape; the utilitarian, tread-lightly, temporary nature and form of the structures and their predominant siting within an indigenous thicket relates to the wilderness landscape above the Founders' Estates, an cannot be construed as detracting from the consolidated working farm nature of the landholding. The Temporary Departure for the tented camp does not change the underlying planning status of the Founder's Estates as a consolidated agricultural landholding for the following reasons: • The primary rights of the property as Agricultural and Rural Zone are not being changed. • The 99 year agricultural leasehold registered over the landholding remains in place. • Temporary Departure is relatively short term, i.e. 5 years.

3. Integrate new development with the inherent logic of existing settlement patterns and route structure; do not repeat or reinforce settlement patterns at odds with this pattern and structure; do not place new structures randomly across the landscape but in response to environmentally based structural principles (water, soils, topography, access).	Positive	The precedent established by FE 15 located well above the 320m contour line should not be used to motivate further development in this elevated location. The tented camp should be considered on its own in terms of comprising a tread-lightly, low visual impact, temporary and nature orientated tourism facility in response to the wilderness landscape qualities at the interface with the Simonsberg Nature Reserve. It is accessed by existing farm road network. It is sited adjacent to an existing farm dam avoiding visually sensitive ridgelines and largely tucked within an indigenous thicket and cluster of pine trees. As discussed previously, the principle of the establishment of the Founders' Estates was to limit development to one homestead per farm unit. A Temporary Departure for the Tented Camp affecting 6 hectares or 23 % of the landholding comprising FE 5, is considered to be at variance with this principle. A key mitigation is to withhold the right to develop a homestead on the Excluded Area of FE 5 until the Temporary Departure as lapsed and the tented camp has been removed.
4. Retain view-lines and vistas focused on prominent natural features such as mountain peaks, as these are important place-making and orientating elements for experiencing the cultural landscape. They are not only important for landscape character, but also for water security, and biodiversity.	Positive	As per the viewshed analysis, the R310 and R45 are located within a zone of low visibility of the tented camp. Therefore, the tented structures will not impact the experiential qualities of the main movement routes through the Valley in terms of the visual prominence of the Simonsberg slopes. While the tents will be visible from the yellow wood avenue located on axis with Cottage 1685 and linking the historic core within the Founders' Estates, this avenue is located within a zone of low-medium visibility. Furthermore, it will not impact the direct line of sight along this avenue towards the backdrop of the Simonsberg. The north-south linkage route at the base of the Founders Estates will not be impacted by the tented camp.
5. Retain the landscape setting of the historic set pieces by avoiding prominent views towards and from them or disrupting visual-spatial relationships between elements.	Positive	The tented camp does not impact the landscape setting of the three historical set pieces associated with Founders Estates, i.e. Goede Hoop, Cottage 1685 and Nieuwedorp.

6. The addition of a new contemporary layer in the landscape but not at the expense of existing layers of heritage significance especially in terms of historical patterns of development.	Positive	The tented camp is at variance with the historical settlement pattern located on the mid and lower slopes of the Simonsberg. Its location well above the 320m contour is an anomaly in terms of settlement patterns associated with the creation of the Founders' Estates. However, this is mitigated by the tread-lightly, low visual impact and temporary nature and form of development, its role as a nature orientated tourism facility responding to the inherent wilderness landscape qualities at the interface with the Simonsberg Nature Reserve.
7. New development should be embedded in the landscape and not compete or contrast in terms of height, scale, massing, materials and architecture; no urban or suburban built form and landscape typologies; applicable particularly to the upper slopes where development should be subordinate to the landscape.	Positive	At a broader landscape scale the tent structures are visually recessive in terms of their modest scale, low pitched canopies, muted colours and vegetation. At the site scale, some of the structures are visually intrusive as discussed in Section F.3 below.
8. Positive response to the exceptional heritage value of the landscape and high architectural quality of historical set pieces by ensuring that new development is of a high quality design in terms of architecture, technology, materials, execution and landscaping.	Positive	While particular nature of a tented camp may not warrant the same attention to design issues as required in terms of building development, the design of the tented structures at variance with the exceptional aesthetic and architectural value of the cultural landscape in terms of tent architecture, technology, materials, execution and landscaping. This predominately impacts negatively at a site scale as discussed in Section F.3 below.
9. Maintain landscape features contributing to the ecological, aesthetic and historical character of the landscape, e.g. treed settings of homesteads, tree lined avenues, windbreaks, forests, indigenous thicket, orchards and vineyards.	Positive	The tented camp does not involve the removal of any landscape features of heritage value. It is located within a cluster of mature Monterey pines (Pinus radiata) and indigenous thicket including wild olive trees providing visual screening. Landscaping recommendations are addressed in Section F3 below.
10. An emphasis on a low-key 'soft' engineering and landscaping approach to infrastructure, particularly roads, stormwater, parking, signage and lighting. Make use of existing farm roads as far as possible. Protect the rural quality of farm roads in terms of road width, surfacing and edge treatments.	Positive	The access to the camp is via existing unpaved farm roads that largely serve the vineyards and existing farmsteads. Access to the individual tent sites and camp facilities is via narrow vehicular tracks that form a loop around the camp. No new roads or road upgrading is proposed. The primary visual concerns related to infrastructure are parking and lighting. These are addressed in Section F.3 below.
11. Avoid areas of high archaeological value, especially associated with the Silvermine Landscape.	Positive	The tented camp is located some distance from the Silvermine Landscape. It is not within an area of archaeological sensitivity.

HERITAGE INDICATOR	CONVERGENCE OF PROPOSALS AND INDICATORS	COMMENT
1. Limit development within this zone of high visual sensitivity, especially above the 320m contour. Notwithstanding the siting of FE 15 on the 360m contour, additional development above the 320m contour should not be permitted.	Positive	The tented camp is located between the 360m and 380m contour. It is considered acceptable in this location due its tread lightly, low visual impact and temporary nature of development, and how it relates to the wilderness landscape qualities of the Simonsberg Nature Reserve
2. Apply stricter controls on development above the 265 m contour, i.e. smaller development footprints smaller building envelopes (i.e. single storey), recessive architecture,	Positive	The concept of the tented camp is very different from conventional building development in terms of its tread lightly, low visual impact and temporary nature. The tented camp occupies a small footprint on the periphery of the upper slopes of the Founders Estates. As discussed previously, the principle of the establishment of the Founders' Estates was to limit development to one homestead per farm unit. A Temporary Departure for the Tented Camp affecting 6 hectares or 23 % of the landholding comprising FE 5, is considered to be at variance with this principle. A key mitigation is to withhold the right to develop a homestead on the Excluded Area of FE 5 until the Temporary Departure as lapsed and the tented camp has been removed.
3. Development above the 265m contour should be visually recessive in the landscape; buildings are to be wrapped and embedded in nature and agriculture; new structures should be nestled into rather than being superimposed on the landscape, e.g. use of fragmented forms, muted earth colours, natural materials such as stone and timber are encouraged, follow contours.	Positive	The concept of the tented camp is very different from conventional building development in terms of being temporary, low-slung and fragmented, the use of muted colours that blend into the natural background, as well as the scale and form which easily tucks into landscape. As per the viewshed analysis, a zone of high visibility is confined to within 500m of the tented camp affecting FE 5, FE 3 and FE6 in the upper north-west portion of Founders' Estates. Lights at night could be an issue because of their visibility to the rest of the Founders' Estates. Recommendations for lighting are discussed in Section F.3 below.

		At the site scale, some of the structures are visually intrusive as discussed in Section F.3 below.
4. Retain the role of the upper slopes of the Simonsberg above the Founders Estates as a place of refuge and retreat with development focused on nature orientated tourism activities related to the Simonsberg Nature Reserve, e.g. hiking, cycling.	Positive	The upper slopes of the Founder's Estates are characterised by a mosaic of natural areas and agriculture which serves as a transitional zone between the working farm and the wilderness landscape above the Founders Estates. The principle of a tented camp in this zone is compatible with nature orientated tourism activities but more attention should have been given to its design and execution in response to exceptional quality of the landscape.
5. Limit the footprint and form of nature orientated tourism facilities to ensure a tread lightly approach to the landscape, are visually discrete and embedded in the wilderness landscape domain related to the Simonsberg Nature Reserve.	Positive	The concept of a tented camp is compatible with a tread-lightly visually discrete nature of development. The tented structures are visually recessive in terms of their modest scale, low pitched canopies, muted colours and existing vegetation. More attention should have been given to its design and execution in response to exceptional quality of the landscape. At the site scale, a few of the structures are visually intrusive as discussed in Section F.3 below.
6. Excessive cut and fill excavations are to be avoided when creating building platforms; structures are to be stepped to accommodate the slope conditions and follow contours.	Positive	The tented camp is generally in accordance with this indicator. The camp mess and kitchen tent facilities are the largest structures, located on a levelled, excavated platform. The excavation has exposed the granite saprolite, which, because of its high clay content, is difficult to stabilise or vegetate. Mitigation measures are addressed in Section F.3 below.
7. Access roads should utilise existing farm roads and tracks wherever possible. No new roads should be constructed. The upgrading of roads should retain their rural character in terms of road width, surfacing and edge treatments.	Positive	The tented camp is generally in accordance with this indicator making use of existing farm roads that serve the vineyards and existing farmsteads. Access to the individual tent sites and camp facilities is via narrow vehicular tracks that form a loop around the camp. No new roads or road upgrading is proposed. The primary visual concerns related to infrastructure is parking.
8. Parking should be obscured from view as far as possible, and visually fragmented by appropriate landscaping and planting.	Positive	The primary visual concerns related to infrastructure are parking and lighting. These are addressed in Section F.3 below.

HERITAGE INDICATOR	CONVERGENCE OF PROPOSALS AND INDICATORS	COMMENT
1. Positive response to the micro-conditions of the site, i.e. ridgelines, sightlines, water course, dam, indigenous thicket and interface with the Simonsberg Nature Reserve.	Positive	The tented camp has responded to the micro-site conditions in terms of avoiding ridgelines and predominantly tucked into the indigenous thicket. However, a few of the structures do impact sight lines, i.e. 1, 2, 9 and 10 and require mitigation. The levelled, excavated platform for the camp mess and kitchen facilities also requires mitigation. **Landscaping:** Some of the tented accommodation has become visually screened over time by largely natural vegetation, while other tents remain visually exposed. Given the relatively short time frame for the camp, no major landscape intervention is envisaged. The following is recommended in terms of the landscaping mitigation: • No gardenesque planting layouts or exotic plant material should be permitted. • All invasive exotic vegetation, such as pine seedlings, Port Jackson and bugweed, should be cleared from the farm portion relating to the camp on an ongoing basis. This will also help to reduce fuel load in terms of fire hazard.The mature Monterey pines, which are spreading seedlings on the mountain slopes, should ideally be removed on a phased basis over the next 5 years, as the indigenous vegetation takes over. • Suitable fast-growing indigenous trees should be planted adjacent to the more visually exposed tents. Potential tree species are indicated in the table below.

		Camp facilities: The camp mess and kitchen tent facilities are the largest structures, located on a levelled, excavated platform. The excavation has exposed the granite saprolite, which, because of its high clay content, is difficult to stabilise or vegetate. The following mitigation measures are recommended: • Further clearing or excavations that expose the saprolite should be avoided. • Existing exposed embankments could be revegetated if a low dry-packed stone wall or gabion is constructed at the foot of the embankment, and back-filled with any available colluvial soil from the site. • The clayey ground surface around the mess and kitchen, which becomes sticky in winter and hard in summer, could be covered with a geofabric and stone chips to create a more trafficable and visually pleasing surface.
2. Positive response to the role of the site within landscape of exceptional heritage value where new development should be subject to a rigorous design review process.	Negative	The design of the tented structures has not been well-considered in terms of the siting of some of the structures, tent architecture, technology, materials, execution and landscaping. This negatively impacts the landscape qualities of the site. This impact mitigated by the temporary nature of the facility.
3. Positive response to the carrying capacity of the site to accommodate new development from a combined heritage, visual and environmental perspective with consideration of cumulative impacts.	Negative	The size of FE 5 is 26.6 hectares. The tented camp is located outside of the 0.8 hectare Excluded Area and comprises a site development area of approximately 6 hectares, i.e. 23% of the landholding. This together with the positioning of the tented camp directly above the FE 5 homestead will have cumulative impact on the principle of Founders' Estates, i.e. one homestead per farm unit. A key mitigation is to withhold the right to develop a homestead on the Excluded Area of FE 5 until the Temporary Departure as lapsed and the tented camp has been removed.

4. Roads and parking to be carefully considered in terms of visual scarring and ensuring minimal visual intrusion.	Positive	**Roads and parking:** As the camp is seen as relatively short term (5 years), no upgrading of the access roads is envisaged, except for minor maintenance and stormwater management to prevent erosion. The following is recommended: • Further roads, tracks or cleared areas should be avoided, if possible, to minimise visual scars in the landscape. • Where sections of access roads / tracks are no longer required, these should be revegetated, or narrowed down to single-track paths. • Excavations for parking or turn-arounds should be avoided, especially where the underlying saprolite will be exposed. • Even small parking areas tend to be visually intrusive, and therefore cars should instead be parked in groups of not more than 2 or 3 alongside the access roads in unobtrusive positions as identified on the site plan. • Imported material or paving for roads and parking should be avoided, except for stone chips and mulch.
5. Signage and lighting to be low-key and not visually intrusive.	Positive	**Signage and lighting:** The existing signage on site is low-key and not visually intrusive. This is helped by using a dark background on the signboards. Way-finding signage to the camp appears to be lacking. Lights at night could be an issue because of their visibility to the rest of the Founders' Estates: The following is recommended in terms of mitigation: • Signage should be kept to a minimum, be no higher than 1,2m and have dark backgrounds as per existing signage. • No advertising signage, flags or banners should be permitted to avoid visual intrusion on the surroundings. • Outdoor lighting should be kept to a minimum, and consist of low-level bulkhead or bollard type lighting with reflectors that cast the light downwards, and where the light source is not visible. • The existing lights fixed to the outside of the tents should be fitted with reflectors, or replaced with bulkhead lights as described above.

SPECIES NAME*	COMMON NAME	COMMENTS
Apodytes dimidiate	White pear	Useful for screening
Brabejum stallatifolium	Wild almond	Grows along water courses on the Founders' Estate. Bushy, spreading habit. Useful for visual screening.
Cassine peragua	Bastard saffron	Small shrubby tree of mountain slopes and water courses. Fruit attracts birds.
Metrosideros angustifolia	Lance-leaf myrtle	Small bushy evergreen tree mainly found along water courses. Useful for visual screening.
Olea europaea subsp. africana	Wild olive	Common evergreen tree adapted to woodland and stony or sandy hillslopes. Useful for visual screening, windbreaks and bank stabilisation.
Olea capensis	Ironwood	Small to medium bushy tree occurring in scrub or evergreen forest.
Olinia ventosa	Hard pear	Medium-size tree occurring in evergreen forest or scrub and rocky hillslopes. Fruit attracts birds. Fairly fast growth.
Salix mucronata	Cape willow	Small to medium bushy tree. Occurs mainly along stream banks. Useful for visual screening and bank stabilisation.
Tarchonanthus camphoratus	Camphor bush	Small bushy tree occurring in a variety of habitats. Useful for erosion control.
Virgilia oroboides	Keurboom	Small, bushy pioneer tree with fragrant pea-like flowers. Makes fast growth, but is short-lived.

* Note per specialist ecological report: Due to the Boland Granite Fynbos occurring in the area being listed as Endangered, avoid species that are not indigenous to this vegetation type, spreading into it and becoming a problem. For this reason, avoid species that easily self-seed. These species should only be transplanted in the areas that are considered transformed. Only indigenous species to the area should be used for the restoration of the patch of Boland Granite Fynbos.

The planting programme will need to align with the Restoration Plan in the Environmental Management Plan (EMP) that is recommended in the Ecological Report.

SECTION G:OUTCOME OF THE CONSULTATION PROCESS

The application process will feed into the NEMA requirements for public participation in terms of advertising and notification of Interested and Affected Parties. Furthermore, the HIA is to be submitted to the following local registered heritage conservation bodies for comment:

- Pniel Heritage and Cultural Trust
- Franschhoek Heritage and Ratepayers Association
- Stellenbosch Interest Group
- Stellenbosch Heritage Foundation
- Drakenstein Heritage Foundation

Given the location of the site within the Dwars River Valley Rural Conservation Area in terms of the SM ZSBL, the Heritage Statement will also be submitted to the Stellenbosch Municipality Heritage Section of the Department of Spatial Planning, Heritage and Environment for comment.

SECTION H.CONCLUSIONS

In response to the unauthorised tented camp in terms of Section 27 (18) of the NHRA, SAHRA has requested a HIA to form part of a NEMA Section 24 (G) process.

The provisions of the NHRA do not enable SAHRA to approve unauthorised work retrospectively. In terms of SAHRA's draft Built Environment Permitting Policy for National Heritage Sites (2021), it is assumed that SAHRA will first consider whether the authorised work has damaged heritage significance, and the reversibility and temporary nature thereof. Thereafter, SAHRA may decide on the following two options:

- Consider the work to be a minor transgression and thus decide to not pursue the matter further.
- Consider the transgression to have significant heritage implications and thus decide to pursue legal action and/or seek remedial action.

The outcome of this assessment is that the unauthorised work has not caused irreversible damage to heritage significance predominantly due to the tread – lightly, low visual impact and temporary nature of the tented camp. However, the unauthorised work does have heritage implications which need to be addressed in terms of remedial action/mitigation measures which are outlined in the recommendations. A primary consideration is that the property owner of FE 5 has agreed to withhold the right to develop a homestead on the Excluded Area until the Temporary Departure to regularise the tented camp from a land use and planning perspective has lapsed and the tented camp has been removed.

SECTION I: RECOMMENDATIONS

It is recommended that SAHRA decide on the following in terms of the unauthorised work:

1. No action be taken in terms of Section 51(1) d of the NHRA given the tread-lightly, low visual impact and temporary nature of the tented camp and that heritage significance has not been irreversibly damaged.
2. The decision to not pursue legal action be subject to a number of conditions as outlined below:

a. The life-span of the tented camp be temporary as specified by the Temporary Departure application (5 years) in terms of section 15 (2) (c) of the SM LUPBL.

b. No expansion of the tented camp may be undertaken without a permit from SAHRA in terms of Section 27 (18) of the NHRA.

c. A homestead on the Excluded Area of FE 5 not be constructed until the Temporary Departure to regularise the tented camp from a land use and planning perspective has lapsed and the tented camp has been removed.

d. A number of visual mitigation measures be implemented as set out below.

Roads and parking:

- Further roads, tracks or cleared areas should be avoided, if possible, to minimise visual scars in the landscape.
- Where sections of access roads / tracks are no longer required, these should be revegetated, or narrowed down to single-track paths.
- Excavations for parking or turn-arounds should be avoided, especially where the underlying saprolite will be exposed.
- Even small parking areas tend to be visually intrusive, and therefore cars should instead be parked in groups of not more than 2 or 3 alongside the access roads in unobtrusive positions as identified on the site plan.
- Imported material or paving for roads and parking should be avoided, except for stone chips and mulch.

Camp facilities:

- Further clearing or excavations that expose the saprolite should be avoided.
- Existing exposed embankments could be revegetated if a low dry-packed stone wall or gabion is constructed at the foot of the embankment, and back-filled with any available colluvial soil from the site.
- The clayey ground surface around the mess and kitchen, which becomes sticky in winter and hard in summer, could be covered with a geofabric and stone chips to create a more trafficable and visually pleasing surface.

Signage and lighting:

- Signage should be kept to a minimum, be no higher than 1,2m and have dark backgrounds as per existing signage.
- No advertising signage, flags or banners should be permitted to avoid visual intrusion on the surroundings.
- Outdoor lighting should be kept to a minimum, and consist of low-level bulkhead or bollard type lighting with reflectors that cast the light downwards, and where the light source is not visible.
- The existing lights fixed to the outside of the tents should be fitted with reflectors, or replaced with bulkhead lights as described above.

Landscaping:

- No gardenesque planting layouts or exotic plant material should be permitted.
- All invasive exotic vegetation, such as pine seedlings, Port Jackson and bugweed, should be cleared from the farm portion relating to the camp on an ongoing basis. This will also help to reduce fuel load in terms of fire hazard.
- The mature Monterey pines, which are spreading seedlings on the mountain slopes, should ideally be removed on a phased basis over the next 5 years, as the indigenous vegetation takes over.
- Suitable fast-growing indigenous trees should be planted adjacent to the more visually exposed tents.
- The planting programme will need to align with the Restoration Plan in the Environmental Management Plan (EMP) that is recommended in the Ecological Report.

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ANNEXURES

TO

HERITAGE STATEMENT

TENTED CAMP, FOUNDERS' ESTATES NATIONAL HERITAGE SITE, BOSCHENDAL FARMLANDS, DWARS RIVER VALLEY, STELLENBOSCH

OFFICE COPY

Friedlaender, Burger & Volkmann - Land Surveyors

Beacon Description

All beacons are 16mm iron pegs

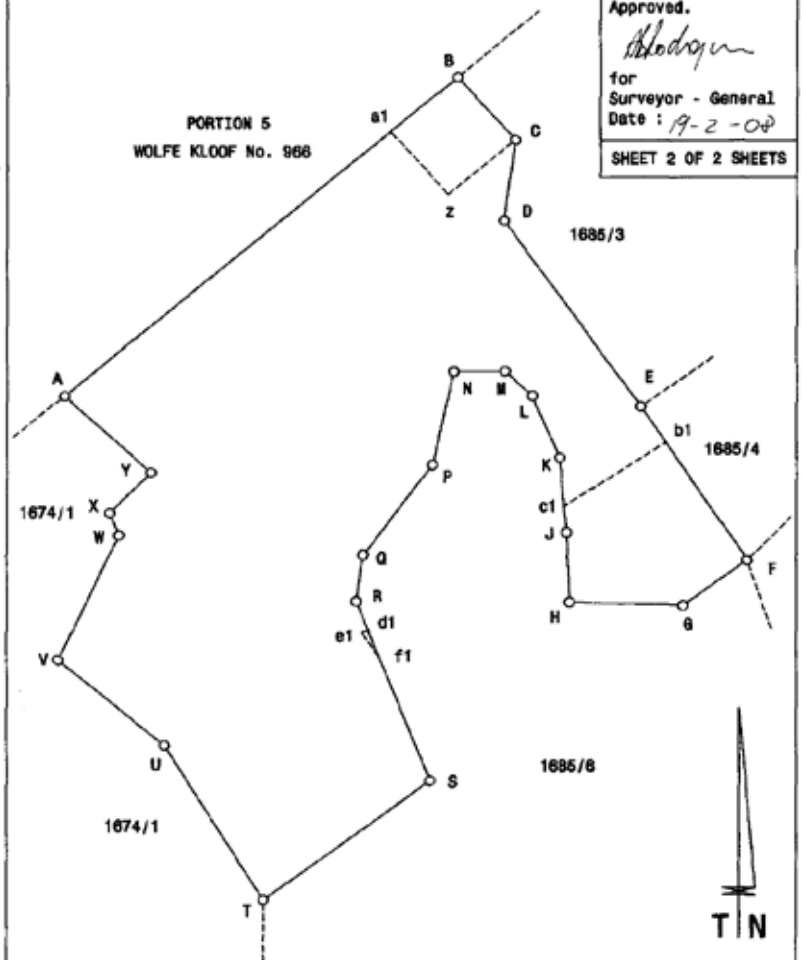
S.G. No. 7524/2007

Approved.

for Surveyor - General

Date : 19-2-08

SHEET 2 OF 2 SHEETS



PORTION 5 OF THE FARM NO. 1685 BOSCHENDAL

Administrative District of Paarl

Surveyed in Aug. 2000 - Jun. 2003,
Oct. - Nov. 2006 & Oct. 2007
by me

PLS 0080 D P Burger Pr Land Surveyor

SCALE 1 : 5000

FARM 1685/5 PAARL

S

APPROVED IN TERMS OF SECT. 4 OF ACT 70/1970
REF 3988L
DATE 2005-06-01

APPROVED IN TERMS OF SECT. 25 OF ORD. 15/1985
REF Farm 1674/2; Paarl
DATE 2005-12-23

OFFICE COPY

Friedlaender, Burger & Volkmann - Land Surveyors

	SIDES Metres	ANGLES OF DIRECTION		CO-ORDINATES Y System WG 19°	X
		Constants :		0,00	0,00
AB	526,00	229 00 00	A	+ 5684,05	+ 3749680,71
BC	89,83	319 07 20	B	+ 5287,07	+ 3749335,63
CD	88,12	7 25 00	C	+ 5228,27	+ 3749403,55
DE	243,96	325 06 50	D	+ 5239,65	+ 3749490,93
EF	197,83	326 55 00	E	+ 5100,12	+ 3749691,05
FG	81,56	52 53 50	F	+ 4992,13	+ 3749856,81
GH	115,35	91 29 10	G	+ 5057,18	+ 3749906,01
HJ	75,48	177 32 20	H	+ 5172,49	+ 3749903,02
JK	81,20	175 08 50	J	+ 5175,73	+ 3749827,61
KL	72,90	157 15 30	K	+ 5182,60	+ 3749746,70
LM	38,03	133 15 10	L	+ 5210,78	+ 3749679,47
MN	51,98	89 52 00	M	+ 5238,48	+ 3749653,41
NP	103,63	11 55 00	N	+ 5290,46	+ 3749653,53
PQ	119,94	35 56 30	P	+ 5311,86	+ 3749754,93
QR	51,23	7 41 40	Q	+ 5382,26	+ 3749852,04
RS	207,79	338 47 30	R	+ 5389,12	+ 3749902,81
ST	212,62	52 27 50	S	+ 5313,95	+ 3750096,53
TU	195,11	149 02 00	T	+ 5482,55	+ 3750226,07
UV	141,16	130 43 30	U	+ 5582,94	+ 3750058,77
VW	148,19	204 13 10	V	+ 5689,92	+ 3749966,67
WX	25,70	159 38 20	W	+ 5629,13	+ 3749831,52
XY	60,23	223 12 10	X	+ 5638,07	+ 3749807,43
YA	120,27	133 31 10	Y	+ 5596,84	+ 3749763,53
	497	PNIEL	△	+ 3832,38	+ 3751650,78
	498	RHODESDAM	△	+ 4138,34	+ 3749355,50

S.G. No. 7524/2007

Approved.

for Surveyor - General

Date : 19-2-08

SHEET 1 OF 2 SHEETS

Note:

The figure AaBzCDEFGHJKLMNPQRSTUVWXY represents a leasehold area vide Diagram No. ~~7518/2007~~ D/T 3515/2008

The figure ABCDEFGHJKLMNPQRSTUVWXY represents 26,2549 hectares of land, being

PORTION 5 OF THE FARM NO. 1685 BOSCHENDAL

Situate in the Stellenbosch Municipality
Administrative District of Paarl
Surveyed in Aug. 2000 - Jun. 2003,
Oct. - Nov. 2006 & Oct. 2007 by me

Province of Western Cape

PLS 0080 D P Burger Pr Land Surveyor

This diagram is annexed to	The original diagram is	File No. Parl.1685
No. T73858/2008	No. 7518/2007	S.R. No. 3226/2007
Dated		Comp. BH-8800 (3767)
i.f.o.	Annexed to	BH-8088 (3779)
	Filed as Plan No. 7518/2007	
Registrar of Deeds		LPI C0550000

FARM 1685/5 PAARL

S

APPENDIX H (vi)

Services Report

CONSULTING **ENGINEERS**

EST 1991

CIVIL ENGINEERING SERVICES REPORT

PROJECT:
TENTED CAMP
FOUNDERS ESTATE 5
BOSCHENDAL ESTATE

PROJECT NUMBER: S6999/2021

DATE: 28 October 2021

PREPARED BY:	CHECKED BY:
M HURWORTH	M HURWORTH

M HURWORTH & ASSOCIATES cc
43 Goldbourne Road, Kenilworth, Cape Town
021 762 6290
admin@mha-engineers.co.za

EMPOWERMENT THROUGH ENGINEERING
M A HURWORTH Pr. Eng. 900251 BSc (Civ Eng)
REG. NO. CK 1991/017472/23
A member of SAICE, CESA and SAISC

TABLE OF CONTENTS

1 TERMS OF REFERENCE

MHA Consulting Engineers have been commissioned to undertake an investigation of existing services and to report on the services connections to the existing Tented Camp on Founders Estate 5 , Boschendal Estate.

The existing Tented Camp was unlawfully constructed and is currently serviced from the Boschendal Estate internal bulk reticulation infra-structure.

2 BACKGROUND

The services report is to support an application for a Temporary Departure for a portion of

Portion 5 of Farm 1685, Paarl at Boschendal to regularise an existing Tented Camp.

The property affected is registered as Portion 5 of the Farm 1685 , Boschendal Estate , and is owned by Founders Estate 5 (Pty) Ltd, known as FE 5.

The current Tented Camp is considered a “Temporary site” , as it will be dismantled and removed when the area defined for development of a farmstead in terms of the Founders' Estates LUPO approvals of 2005 is developed .

The foundations for the top structures are not buried foundations. They are pre-cast concrete blocks filled with concrete placed on top of the ground , onto which the light-weight structures are fixed.

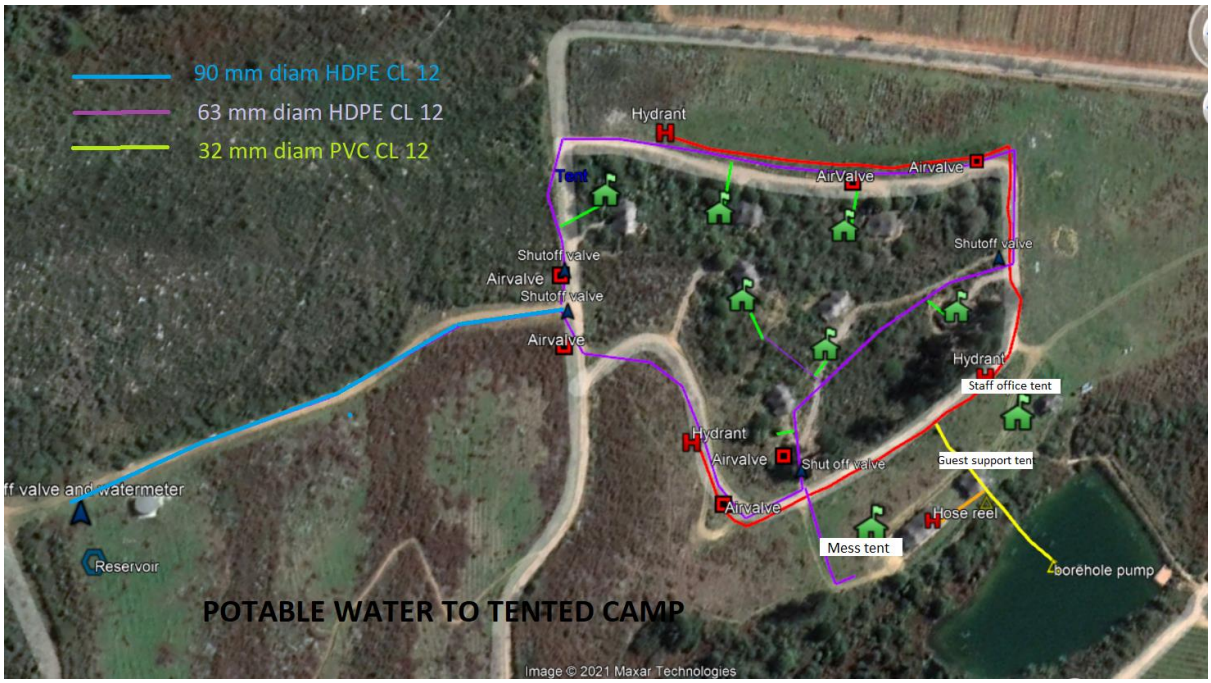
Services are buried in shallow trenches and covered with rock and loose material. This will enable un-intrusive removal of these services when the site is dismantled.

Services include:

1. Potable water from the farm reticulation system .
2. Fire water from the farm system
3. Foul sewer reticulation to a set of Bio-Disks as an interim system until the Boschendal estate bulk water-borne sewer reticulation system is installed. The new Farmstead units will then be connected to the new system.
4. Stormwater-surface discharge.
5. Telecommunications.
6. Electrical from the current Boschendal overhead reticulation system.

3 TENTED CAMP SERVICES

3.1 POTABLE WATER



The image above is a schematic layout of the current potable water system.

The potable water is fed from a water storage reservoir as indicated. The reservoir and water supply line were constructed to service the tented camp.

The reservoir is supplied from the existing farm natural water reserve. There is a constant supply of natural spring water in very close proximity to the reservoir that keeps the reservoir water levels constant.The reservoir has an elevation of 413m AMSL.

The reservoir supplies water under gravity flow to the tented camp via a 90mm diam HDPE class 12 water main. A constant pressure under gravity head of 4.3 bar to 5,0 bar is achieved.

An in-line aggregate filtration system and water purification system has been installed to improve water quality. A new in-line ultra-violet water purification system will be installed prior to commissioning of the tented camp to ensure that regulated potable water standards are achieved.

The reservoir supply is connected to a 63mm diam HDPE CL12 water ringmain that is the secondary supply to the tented camp units.

Each accommodation unit is then connected to the ringmain with a 32mm diam PVC unit connection.

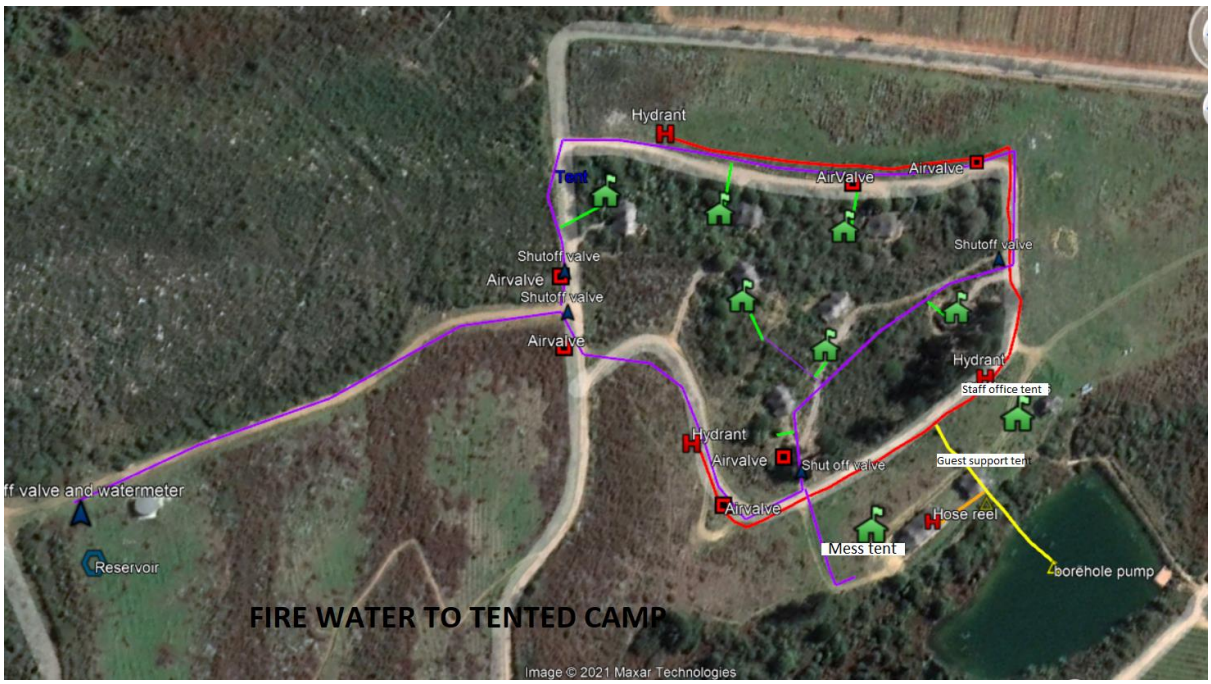
32mm PVC water connection to each unit with lever action isolating valve

Anticipated potable water consumption :

1. Accomodation unit 150l/day average x 8 units 1200l/day
2. Kitchen unit 250 l/day average x 1 unit 250l/day

This is a very low consumption which is expected as these are not permanently occupied.

3.2 FIRE WATER



The tented camp has a hydrant main as indicated on the image above.

This is not a closed ring-main system. This is an open loop system.

The ringmain is supplied from a high pressure submersible borehole pump currently drawing water from the farm dam.

This water is un-filtered (filtration is not required).

The water pressure is unknown at this stage . The system will be checked to ensure that at least a constant 4 Bar pressure and the required flow is achieved at each fire hydrant standpipe.

Typical hydrant standpipe .

There are 4 strategically placed around the units

3.3 FOUL SEWER

There are three independent foul sewer disposal systems.

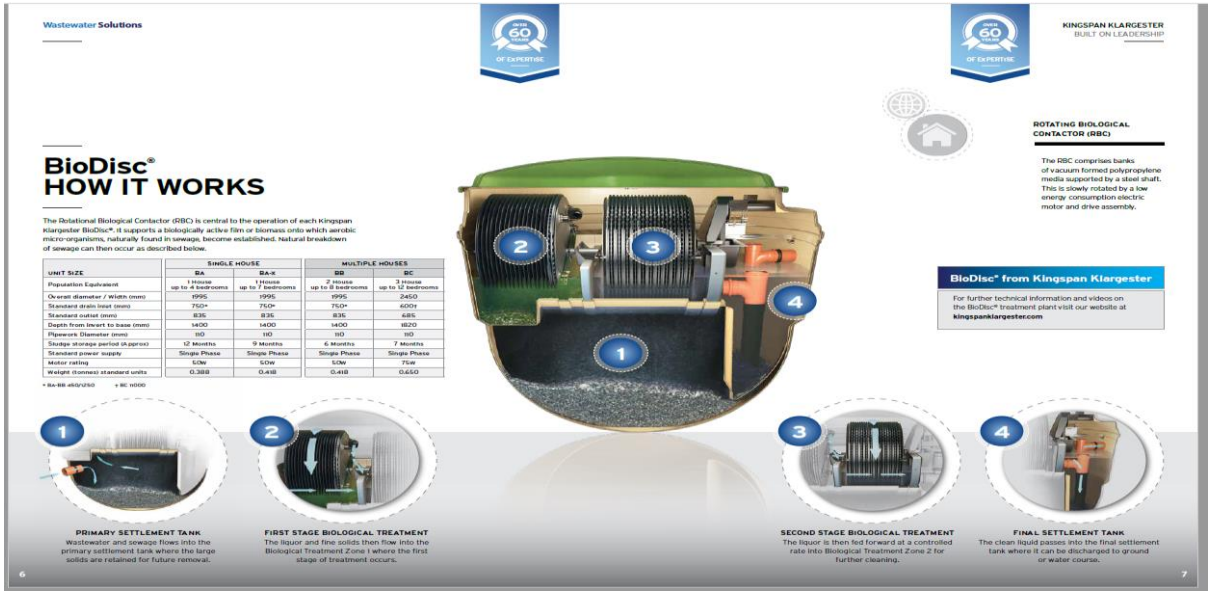
All accommodation units including the mess tent are connected to a water-borne piped system that discharges into a Kingspan Bio-Disk sewerage disposal unit.

Each unit is connected to a 110mm diam uPVC sewer main that flows under gravity flow to the Kingspan Bio-disk unit.

The three systems are indicated in the image above.

Individual units connected to sewer mains

The Kingspan Bio-disk system is an Internationally accepted sewerage treatment system. The system used for the tented camp treats the raw effluent via its patented system to liquid discharge quality of “General Limits”.



The anticipated treated water discharge volumes would be 75% of the anticipated water consumption.

0,75 x 1450 l/day = 1088 l/day

The treated water discharge currently flows into the natural landscape through a “soak-away” system (graded rock and stone trench) and guaranteed by Bio-Disc to have achieved standards of “General Limits” as published by the National Water Act (see below) . Sampling is done regularly and the system recycle process is adjusted to ensure compliance , particularly with respect to the Nitrate levels.

DEPARTMENT OF WATER AFFAIRS – GENERAL AND SPECIAL AUTHORISATION

Discharge limits and conditions set out in the National Water Act, Government Gazette No. 20526, 8 October 1999

Wastewater limit values applicable to discharge of wastewater into a water resource

SUBSTANCE/PARAMETER	GENERAL LIMIT	SPECIAL LIMIT
Faecal Coliforms (per 100 ml)	1 000	0
Chemical Oxygen Demand (mg/l)	75*	30*
pH	5,5-9,5	5,5-7,5
Ammonia (ionised and un-ionised) as Nitrogen (mg/l)	3	2
Nitrate/Nitrite as Nitrogen (mg/l)	15	1,5
Chlorine as Free Chlorine (mg/l)	0,25	0
Suspended Solids (mg/l)	25	10
Electrical Conductivity (mS/m)	70 mS/m above intake to a maximum of 150 mS/m	50 mS/m above background receiving water, to a maximum of 100 mS/m
Ortho-Phosphate as phosphorous (mg/l)	10	1 (median) and 2,5 (maximum)
Fluoride (mg/l)	1	1
Soap, oil or grease (mg/l)	2,5	0
Dissolved Arsenic (mg/l)	0,02	0,01
Dissolved Cadmium (mg/l)	0,005	0,001
Dissolved Chromium (VI) (mg/l)	0,05	0,02
Dissolved Copper (mg/l)	0,01	0,002
Dissolved Cyanide (mg/l)	0,02	0,01
Dissolved Iron (mg/l)	0,3	0,3
Dissolved Lead (mg/l)	0,01	0,006
Dissolved Manganese (mg/l)	0,1	0,1
Mercury and its compounds (mg/l)	0,005	0,001
Dissolved Selenium (mg/l)	0,02	0,02
Dissolved Zinc (mg/l)	0,1	0,04
Boron (mg/l)	1	0,5

- **After removal of algae**

The solid waste is collected by the Boschendal estate management on a regular basis , which at this stage is a quarterly cycle and disposed of at a Municipal discharge site.

Current dio-disc system in the landscape

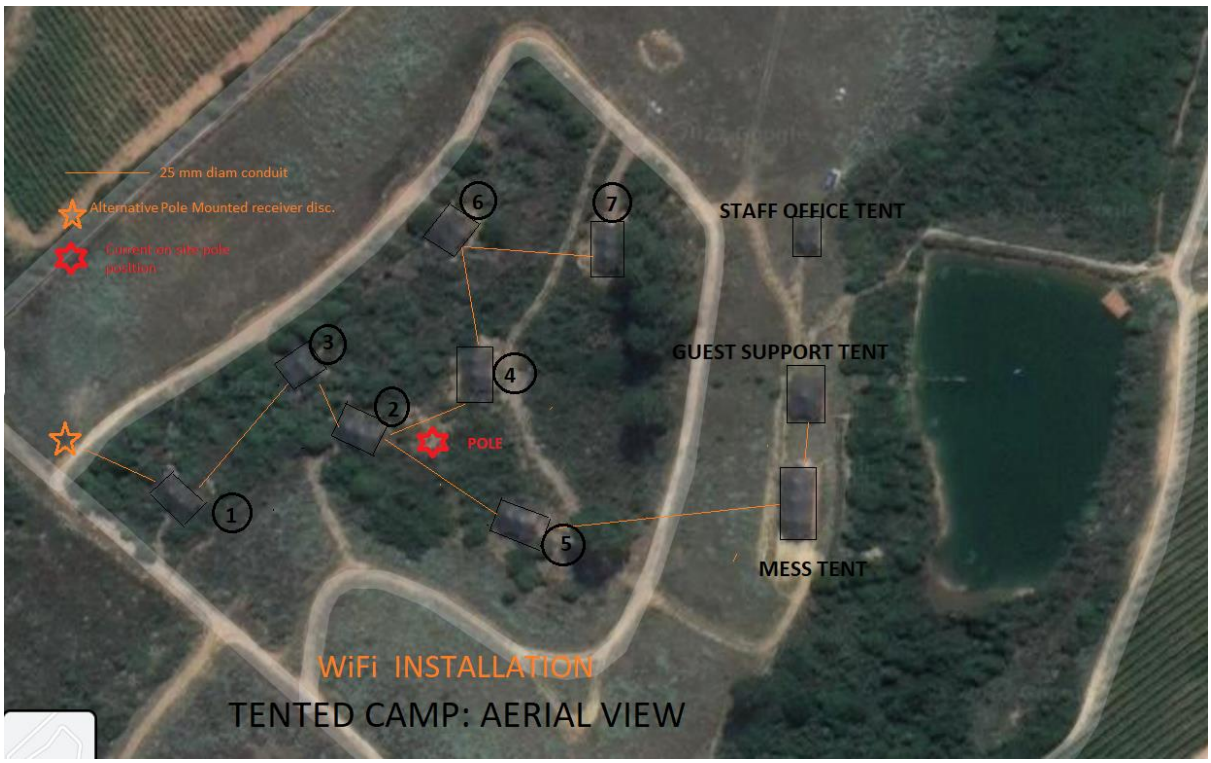
3.4 STORMWATER

There is no formal Stormwater disposal system.

The free-form tented structures discharge stormwater onto the ground and this flows naturally into the landscape.

General rainfall flows naturally into the landscape.

3.5 TELECOMMUNICATIONS



WiFi has been provided as per the attached image above.

The installation includes:

- A pole mounted receiver antennae disc (see image)

- Reticulated 25mm black conduit as shown above. This conduit will be buried at the “road” crossings at a shallow depth of 500mm and will be loose laid through the vegetation connecting the various tents.
- The conduit will contain the ethernet cables. There are no power cables in these conduits.

This system will be removed when the tented camp is dismantled and removed.

3.6 ROADS

The road network is informal and as shown on the image above.

There has only been vegetation removal in the road reserve areas and the roads follow the natural terrain and contours.

Light passenger vehicles that do not have high clearance and 4x4 capabilities will not be able to use these roads.

The idea is that all guests park at the end of the accessible road and are then ferried to their accommodation units by a single vehicle provided by the service provider.

The tents are linked by as series of informal footpaths for guest access.

Typical ring road

3.7 ELECTRICAL

The tented camp has fully functional electrical reticulation system in place. The layout is as shown on the diagram below. The essential details of the system is described as follows:

3.7.1 MAIN ELECTRICAL SUPPLY POINT

The main supply is connected from an existing Farm overhead line feeding an existing 315kVA Transformer. That transformer supplies a kiosk alongside it – Kiosk “A”

A 150A 380V 3-phase supply is fed from Kiosk “A” to an adjacent 380V / 3,3kV step-up transformer which then feeds via an underground cable at 3,3kV to the Tented Village Main Supply Point.

3.7.2 TENTED VILLAGE MAIN SUPPLY POINT

The main supply point at the Tented Village contains a 3,3kV / 380V step-down transformer which supplies a feed into a kiosk – Kiosk “B” that is connected to the changeover panel of the Standby Generator. Kiosk “B” is the main feeder to the Tented Village and contains supplies to: Staff Accommodation, Mess tent, Fire Pump Panel and a feeder to Kiosk “C”.

KIOSK “C”

Kiosk “C” contains supplies to: Tent 5, BioDisc Panel 1, BioDisc Panel 2 and a feeder to Kiosk “D”

KIOSK “D”

Kiosk “D” contains supplies to: Tent 1, Tent 2, Tent 3 and a supply to Kiosk “E”

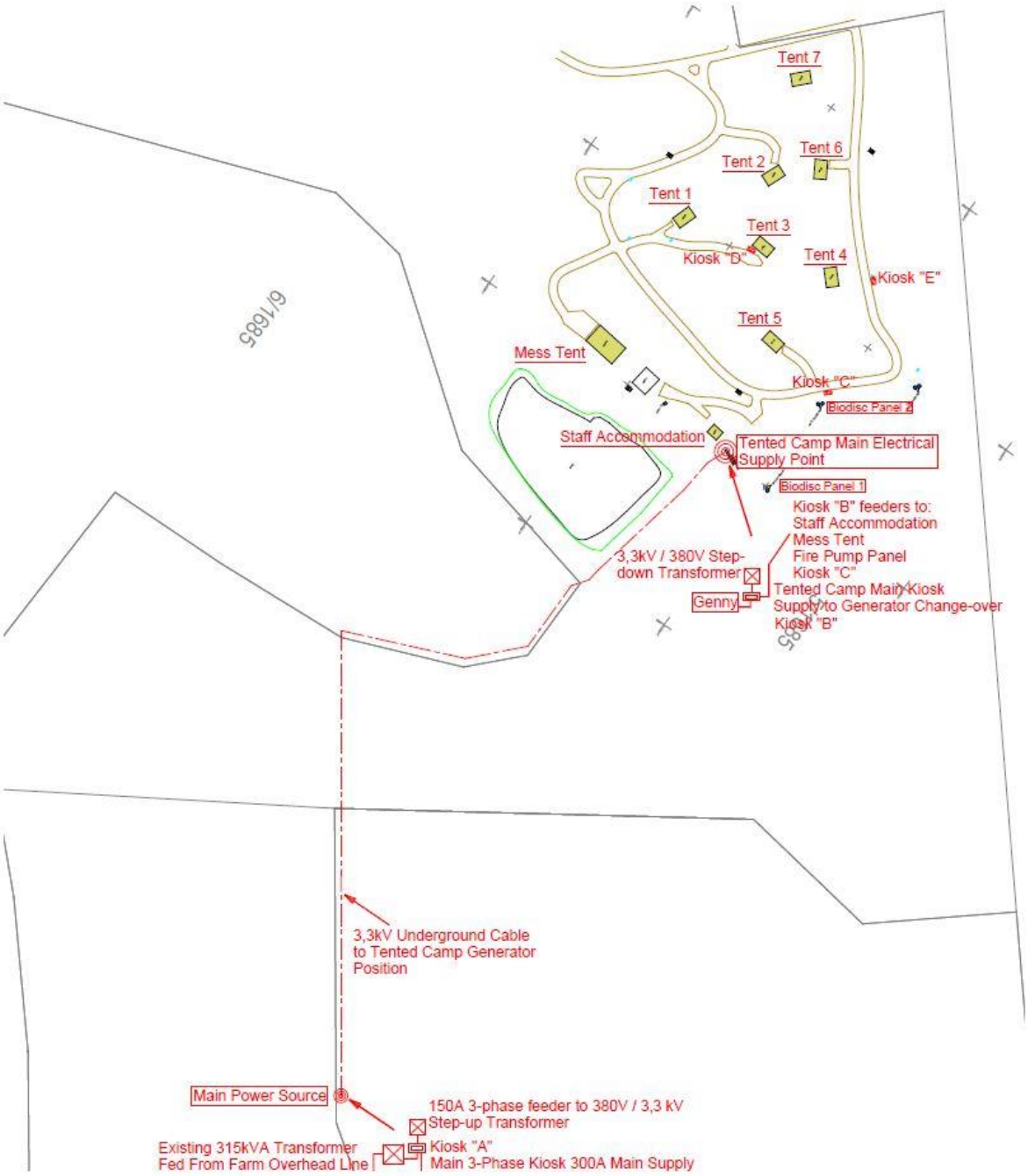
KIOSK “E”

Kiosk “E” contains supplies to: Tent 4, Tent 6 and Tent 7.

The existing Electrical Reticulation system is considered of satisfactory size to cater for the ongoing use of the Tented Village. We would recommend that a full inspection is carried out to ensure continuing compliance with SANS 10142 regulations and that a Certificate of Compliance is supplied if one does not already exist.

Further it is recommended that the generator is tested and a full maintenance program is instituted to ensure ongoing faultless service so that the fire main pumped system is not compromised.

3.7.3 ELECTRICAL RETICULATION DIAGRAM



4 RECOMMENDATIONS

AS the current tented camp is considered “temporary” until Founders Estate 5 is developed, we would recommend that the current services provided be maintained and serviced.

All services should be tested and checked to ensure integrity and full functionality.

These system must be regularly checked and flushed .

These services are adequate for the immediate and future requirements of the tented camp.

5 CONCLUSION

The services as indicated will have minimal affect on the surrounding environment as well as a minimal affect on the bulk service infra-structure of Boschendal Estate.

The consumption of water is minimal and the foul sewer discharge can be comfortably accommodated.

M HURWORTH & ASSOCIATES CC

maHurworth Pr Eng 900251

M A HURWORTH **Pr Eng**

APPENDIX I

Environmental Management Programme

FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME

THE DEVELOPMENT, OPERATION AND DECOMMISSIONING OF A TENTED CAMP ON FOUNDERS ESTATE 5, FARM 1685/5, PAARL (FE5)

D:EA&DP Application Reference Number: 14/2/4/2/1/E4/5/0003/22.
DWS WULA Reference Number : WU22772

June 2022

Compiled by
Chand Environmental Consultants
P O Box 238, Plumstead, Cape Town, 7801

Environmental Consultants • Public & Stakeholder Engagement Specialists

NOTE

This is the Final EMPr submitted to the Department for decision-making. Minor additions/points of clarity in response to comments made on the report during public review have been underlined for ease of reference.

This Final EMPr must be updated to:

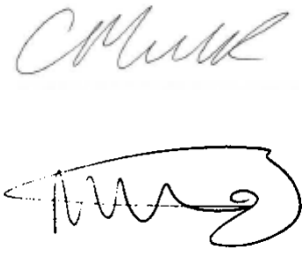
- Incorporate conditions and specifications imposed by the Department of Environmental Affairs and Development Planning if Environmental Authorisation is granted;
- Incorporate any conditions and specifications imposed by the Department of Water and Sanitation as part of the water use authorisation process;
- Incorporate environmental conditions and specifications imposed by the Local Authorities as part of the Town Planning exercise, if applicable;
- Incorporate conditions and specifications imposed by the South African Heritage Resource Agency, if applicable; and
- Reflect the final Rehabilitation Plan for the decommissioning of the facility.

Such updates will occur without the need for a formal approval process and will be undertaken by a qualified Environmental Assessment Professional.

This EMPr must be incorporated into all tender and contract documentation.

DOCUMENT CONTROL SHEET

AUTHORS:	Claudette Muller and Michelle Lee representing Chand Environmental Consultants
DETAILS / EXPERTISE OF THE AUTHORS:	Claudette Muller MPhil Environment, Society & Sustainability (UCT) BSc Hons Environmental Science (Rhodes University) Claudette Muller is a candidate Environmental Assessment Practitioner (EAP) and environmental consultant at Chand Environmental Consultants with three and a half years' experience. She has an interdisciplinary MPhil degree in sustainability and environmental management from UCT. She has compiled numerous Environmental Management Programmes and Plans and has conducted several construction phase environmental audits and has provided environmental monitoring and control services during the construction of small, medium and large-scale infrastructure projects. She has also undertaken operational audits. Michelle Lee BSc. Biological Sciences (UCT) BSc. Hons Marine Sciences (UCT) MSc. Marine Sciences (UCT) – Ongoing Michelle Lee is a junior environmental consultant at Chand Environmental Consultants. She has a BSc degree in Biological Sciences, majoring in Applied biology (distinction), Evolution and Ecology and Marine Biology (distinction) from the University of Cape Town and BSc (Hons) degree in Marine Science from the University of Cape Town. Additionally, Michelle is currently completing a MSc degree, focusing on Electronic Monitoring within the South African demersal fishing industry, at the University of Cape Town. Her extensive academic and research history in natural science give her key insights in the fields of ecology, biodiversity-use-and-trade, climate change and the South African resource sector. This diverse background has cultivated an integrated and holistic approach to solving resource-use challenges situated at the social, economic, environmental nexus, particularly in the South African context. She provides essential project support to senior consultants, assisting with environmental assessments, report writing and management of specialists and has led the auditing, monitoring and compliance of several developments and construction sites within the Western Cape region.

SIGNATURE OF AUTHOR:	

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Appendix 1: Method Statement template

Appendix 2: Curriculum Vitae –Claudette Muller and Michelle Lee

ACRONYMS

For the purposes of this document the following acronyms shall apply:

AHRMP	Archaeological Historical Residues Management Plan
CMP	Conservation Management Plan
DEA&DP	Department of Environmental Affairs and Development Planning
DWS	National Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
EO	Environmental Officer
ESA	Ecological Support Areas
FE5	Founders Estate 5
GA	General Authorisation
HIA	Heritage Impact Assessment
HWC	Heritage Western Cape
LC	Least Concern
LED	Light Emitting Diode
NEMA	National Environmental Management Act
NMT	Non-Motorised Transport
MSDS	Material Safety Data Sheets

NHRA	National Heritage Resources Act
NHS	National Heritage Site
SACNASP	South African Council for Natural Scientific Professions
SAPS	South African Police Service
SAHRA	South African Heritage Resources Act
SCC	Species of Conservation Concern
SM LUPBL	Stellenbosch Municipality Land Use Planning By-law
SM ZSBL	Stellenbosch Municipality Zoning Scheme By-law

DEFINITIONS

For the purposes of this document the following definitions shall apply:

Affected Environment:
Those parts of the socio-economic and biophysical environment impacted on by the development

Batch plant:
Site for the large-scale mixing and production of concrete or plaster, and associated equipment and materials.

Bund:
Enclosure under / around a storage facility to contain any spillage.

Building and demolition waste/" builders' rubble":
Waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition, which include: (a) discarded concrete, bricks, tiles and ceramics, (b) discarded wood, glass and plastic, (c) discarded metals, (d) discarded soil, stones and dredging spoil, (e) other discarded building and demolition wastes" (DEA&DP, 2018)

Contractor:
The principal persons /company undertaking the construction of the development.

- The main contractor as engaged by the developer;
- Selected subcontractors; and
- Any other contractor from time to time engaged by the developer directly in connection with the construction part of the works.

Contaminated water:
Means water contaminated by the contractor's activities, e.g. concrete water and runoff from plant/personnel wash areas.

Construction camp:
Means the area designated for all temporary site offices, storage sheds and areas, parking areas, maintenance workshops, staff welfare facilities, accommodation, etc.

Construction Environmental Management Programme (EMPr):
The construction phase Environmental Management Programme, containing the environmental specifications for civil and building works, also forming part of the civils and building contract documentation.

Engineer:
A person representing the developer on site and who is responsible for the technical and contractual implementation of the works to be undertaken. This is usually the engineer, but may be any other person, such as an architect or project manager, authorised by the developer to fulfil this role.

Environment:
Means the surroundings within which humans exist and that are made up of the land, water and atmosphere of the earth:

- micro-organisms, plant and animal life;
- any part or combination of the above and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Education Programme:
An environmental education course for the contractor's management staff and labour force, which informs them of the requirements of the EMPr. The ECO will present and co-ordinate courses.

Environmental Control Officer (ECO):
The individual or company appointed by the developer to ensure the implementation of the EMPr and suitable environmental management practices on site for the duration of the construction phase of the project.

Environmental Impact Assessment (EIA):
A process of collecting, analysing, interpreting and communicating data as it pertains to possible impacts (positive and negative) upon the environment due to a development.

Environmental Officer (EO):
The person appointed by the Contractor to ensure implementation of the EMPr on site.

General waste:
Means waste that does not pose an immediate hazard or threat to health or to the environment, and includes:

a) domestic waste;
b) building and demolition waste;
c) business waste;
d) inert waste; or
e) any waste classified as non-hazardous waste in terms of the regulations made under section 69 (of the National Environmental Management: Waste Act (Act No. 59 of 2008) (NEM: WA)), and includes non-hazardous substances, materials or objects within the business, domestic, inert, building and demolition wastes as outlined in schedule 3 (of the NEM:WA) (NEM:WA, 2008).

Hazardous waste:
Means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles as outlined in schedule 3 of the NEM:WA (NEM:WA, 2008) (DEA&DP, 2018).

Heritage Western Cape (HWC):
The statutory provincial body responsible for heritage resource management, in the Western Cape.

Method Statement:

A written submission by the contractor to the engineer and ECO in response to the specifications or a request by the engineer, setting out the plant, materials, labour and method the contractor proposes using to carry out an activity, identified by the relevant specification or the engineer when requesting the Method Statement, in such detail that the engineer is enabled to assess whether the contractor's proposal is in accordance with the specifications and/or will produce results in accordance with the specifications.

The Method Statement shall cover applicable details with regard to:

- construction procedures,
- materials and plant to be used,
- getting the plant to and from site,
- how the plant/ material will be moved while on site,
- how and where material will be stored,
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur,
- timing and location of activities,
- compliance/ non-compliance with the specifications,
- any other information deemed necessary by the engineer.

Mitigation:
The implementation of practical measures to reduce adverse impacts

No Go Areas:
Areas identified as being environmentally sensitive in some manner and delineated on plan, and on the site with pegs or fencing and which are out of bounds to unauthorised persons. Authorisation must be obtained prior to entry.

Potentially hazardous substance:
Is a substance which can have a deleterious effect on the environment.

Reasonable:
Means, unless the context indicates otherwise, reasonable in the opinion of the engineer after he has consulted with a person, not an employee of the Employer, suitably experienced in "environmental implementation plans" and "environmental management plans" (both as defined in the National Environmental Management Act (No. 107 of1998)).

Site:
The boundary and extent of development works and infrastructure, including any areas off the main site on which works are to be carried out in order to allow the development to proceed successfully.

Solid waste:
Means all solid waste, including construction debris, chemical waste, excess cement/ concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

Specification:
A technical description of the standards of materials and workmanship that the contractor is to use in the works to be executed, the performance of the works when completed and the manner in which payment is to be made.

Top material:
This refers to any surface material in the construction area, whether it is soil, fine material or stones including vegetation.

Topsoil:
Means the top 100mm of soil and may include vegetation and rocks.

Waste management hierarchy:
A model that aims to prevent, reduce and manage waste through encouraging waste avoidance first and then the reduction, reuse, recycling and disposal of waste and is presented in the form of a pyramid. If the hierarchy is implemented it will assist in the reduction of greenhouse gas emissions, reduce potential pollutants, save energy, conserve resources, create jobs and stimulate the development of green technologies (DEA&DP, 2018).

Works:
The construction operations and all related and incidental works, such as site works, earthworks, installation of services, rehabilitation etc., in connection with the execution and carrying to completion of the development.

Table 1 Checklist for Report Contents against the Requirements of Appendix 4 of GN No. 326 of 7 April 2017

NO.	REQUIREMENTS:	INCLUDED IN REPORT:	SECTION REFERENCE
a	Details of the EAP who prepared the report, including the expertise of the EAP, including a curriculum vitae.	✓	Document Control Sheet
b	A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	✓	Section 1.2
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 2 Figure 6 Figure 10 & Figure 5
d (i)	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- Planning and design;	✓	Section 20
(ii)	Pre-construction activities	✓	Section 20
(iii)	Construction activities;	✓	Section 20
(iv)	Rehabilitation of the environment after construction and where applicable post closure; and	✓	Section 3.1.3 71
(v)	Where relevant, operation activities.	✓	Section 4
(f) (i)	A description of proposed impact management actions, identifying the manner in which the impact management outcomes	✓	Table 4 & Table 5

	contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to- 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	N/A	
(iv)	Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	N/A	
g	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f)	✓	Section 2.32.3
h	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	✓	Section 2.2
i	An indication of the persons who will be responsible for the implementation of the impact management actions;	✓	Section 2.2
j	The time period within which the impact management actions contemplated in paragraph (f) must be implemented;	✓	Section 2.3
k	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	✓	2.3
l	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	✓	2.3
m (i)	An environmental awareness plan describing the manner in which- The applicant intends to inform his or her employees of any environmental risk which may result from their work; and	✓	2.4
(ii)	Risks must be dealt with in order to avoid pollution or the degradation of the environment; and	✓	2.4 & Table 4
n	Any specific information that may be required by the competent authority.	N/A	

1. INTRODUCTION

1.1 BACKGROUND & SITE LOCATION

In 2019, a Tented Camp was built on Founders Estate 5 (FE5) which is located on Portion 5 of Farm 1685/5, Paarl. The activity was undertaken without Environmental Authorisation in terms the National Environmental Management Act (Act No. 107 of 1998) (NEMA) and associated EIA Regulations, 2014 (as amended). An application in terms of Section 24G of the NEMA has been made in order to regularise the Tented Camp through retrospective approval.

Details on the site are summarised below:

Property location(s):	The property (Founders Estate 5) is located on Boshendal Estate within the Stellenbosch Municipality, west of the Dwars River and the R310 within the Dwars River Valley. The Founders Estates are accessed off the R310 at the Avenue 1685 access gate.
Farm/Erf name(s) & number(s) including portion(s)	Potion 5 of Farm 1685, Paarl
Property size(s) (m²)	Approximately 26.26 ha
Development footprint size(s) (m²)	Approximately 6 ha is the area designated for the Tented Camp. The total physical footprint of the development is ±13,825.49 m²
SG21 Digit code(s)	C05500000000168500005

Refer to Figure 1 for the Locality Map.

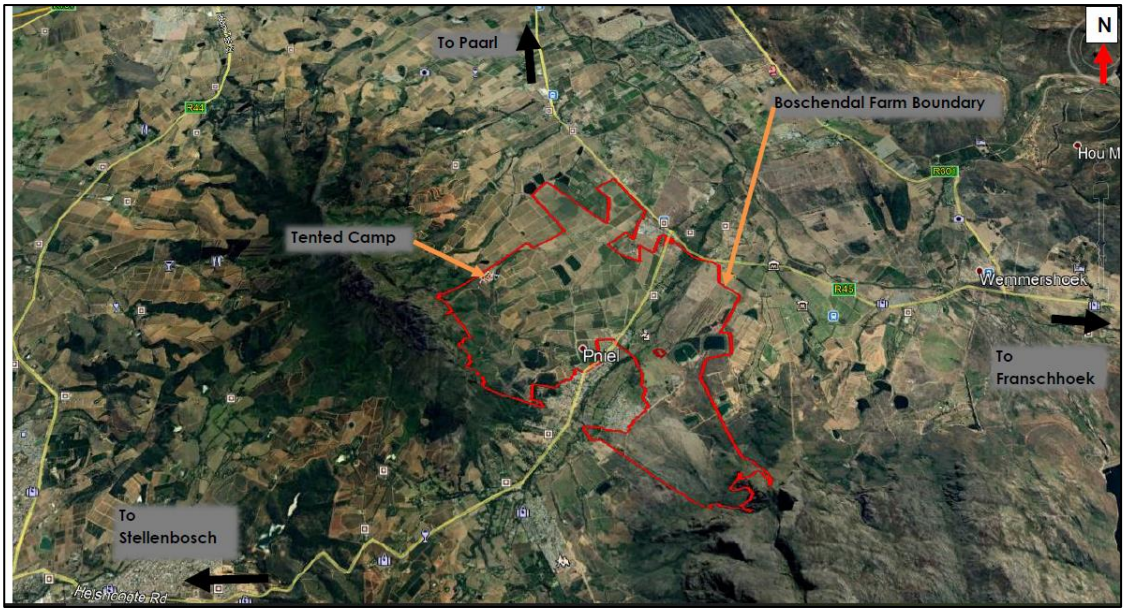


Figure 1: Locality Map

1.2 PROJECT SCOPE

The Tented Camp comprises the following (refer to Figure 2 for the site plan)

- Seven tents for accommodation of two people each serviced with their own bathrooms and limited self-catering facilities. The tents can accommodate a maximum of 14 people on the site in total. Tents are located on decks of approximately 78 to 83 m² each.
- A large mess tent where guests staying on site can congregate as a group if necessary. The tent deck is approximately 246 m² in extent.
- A guest support tent with a communal kitchen facility and toilets. The tent deck is approximately 125 m² in extent.
- A staff office tent. This is necessary to ensure at least one staff member can be available onsite while guests are staying. It has space for an office and storage. The tent deck is approximately 43 m² in extent.

Each tent structure comprises a wooden deck/ platform which rests on a steel frame supported by steel legs that are individually cemented into the ground for support. There are no buried foundations. They foundations are pre-cast concrete blocks filled with concrete placed on top of the ground, onto which the light-weight top structures are fixed. The top structures comprise of compressed wood walling covered by canvas with a stretch "gazebo-type" roof which pin to the ground around the platform (i.e., the roof tips extend beyond the platform footprint). The total area under deck is 988 m².

The seven accommodation tents are tucked into a patch of vegetation which comprises a combination of alien and indigenous species. The communal / operations related tents are located at a lower level, within the open fallow lands close to the in-channel dam.

A gravel road that circulates around the site provides access to the respective units, and the communal / operations tents. The roads have been compacted, bordered by local rocks and covered with either chips or gravel, or left uncovered. Seven parking bays for the guests will be provided on the upslope side of the accommodation, with the intention of limiting vehicular movement around the site. Parking bays will be designated informally off an existing road in groups of 2 and 3 bays.

A generator and a transformer are located downslope and north of the staff office tent. The sewage treatment infrastructure, six small bio septic tanks, is located downslope and along the northern edge of the camp. Fire hydrants are located around the periphery of the camp. A 116 m³ reservoir above the site supplies water to the camp.

All development activities have been completed apart from the designation of the five road edge parking bays at the site entrance (refer to Figure 2). There will be no new surface to demarcate the parking bays except for some gravel/bark chips. These bays will be located in an already 'transformed' zone as identified and mapped by a botanical specialist and would thus be acceptable from a botanical impact perspective (T Martin pers. comms, October 2021).

The Tented Camp is a temporary tourist facility which will be decommissioned after five years of operation, following which the site will be rehabilitated.

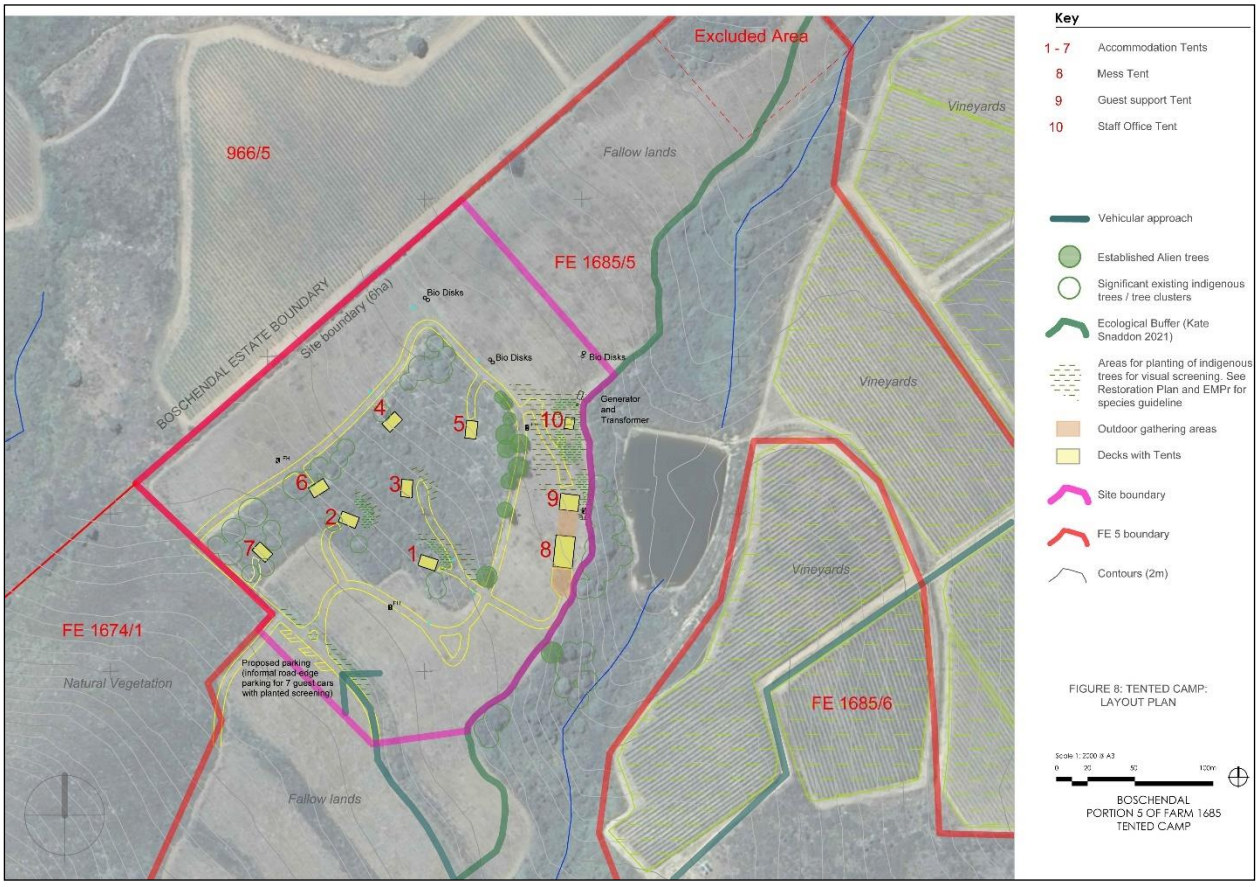


Figure 2. Site Plan (Source: NM & Associates, 2021)

Roads & Parking

The site is accessed via existing farm roads (the type which are located between vineyards/ planting blocks). However, some additional roadways have been created to provide a ring-road around the site with small sections protruding from the ring-road to access each tent structure.

The circular road network which provides access to the respective units and the communal / operations tents, is informal and follows the natural terrain and contours of the site. The roads have

been compacted, bordered by local rocks and covered with either chips or gravel, or left uncovered. Seven parking bays for the guests will be provided on the upslope side of the accommodation, with the intention of limiting vehicular movement around the site. The parking bays will be tucked informally off an existing road in groups of 2 and 3 bays (refer to Figure 2 above).

Electrical

The Tented Camp has a fully functional electrical reticulation system in place. The main supply is connected from the existing Boshendal Farm overhead line feeding an existing 315 kVA Transformer which supplies Kiosk "A". A 150 A 380 V 3-phase supply is fed from Kiosk "A" to an adjacent 380V / 3,3 kV step-up transformer which then feeds via an underground cable at 3,3 kV to the Tented Village Main Supply Point (Hurworth, 2021). The main supply point at the Tented Camp contains a 3,3 kV / 380 V step-down transformer which supplies a feed into a kiosk – Kiosk "B" that is connected to the changeover panel of the standby Generator. Kiosk "B" is the main feeder to the Tented Camp and contains supplies to: Staff Accommodation, Mess tent, Fire Pump Panel and a feeder to Kiosk "C". Kiosk "C" contains supplies to: Tent 5, BioDisc Panel, BioDisc Panel 2 and a feeder to Kiosk. Kiosk "D" contains supplies to: Tent, Tent 2, Tent 3 and a supply to Kiosk "Kiosk "contains supplies to: Tent 4, Tent 6 and Tent 7 (Hurworth, 2021).

Stormwater

There is no formal stormwater disposal system. The tented structures discharge stormwater onto the ground and this flows naturally into the landscape (Hurworth, 2021).

Telecommunications

The applicant has installed an internet system at the site. Ethernet cables have been placed in a reticulated 25 mm black conduit. This conduit has been buried at the "road" crossings at a shallow depth of 500 mm and loosely laid (i.e., no trenching) through the vegetation to connect to the various tents (Hurworth, 2021). A pole mounted receiver antennae disc has been placed on site.

Foul Sewer

All accommodation units including the mess tent are connected to a water-borne piped system that discharges into Kingspan Bio-Disk sewerage disposal units (Hurworth, 2021) (refer to Figure 3). Each unit is connected to a 110 mm diameter uPVC sewer main that flows under gravity flow to the Kingspan Bio-disk units located east of the site (Hurworth, 2021). The system treats the raw effluent via its patented system to liquid discharge quality within the "General Limits" for wastewater discharge into watercourses as set by the National Water Act (Act no 36 of 1998) (NWA), noting that there is no direct discharge to any watercourses. The treated water discharge currently flows into the landscape where the bio-disks are located (refer to Figure 3). The anticipated treated water discharge volume once the camp is fully operational is 75% of the anticipated water consumption, thus 1088 l/day (Hurworth, 2021).

Figure 3: Foul sewer reticulation system and location of bio disks (source: Hurworth, 2021)

Kingspan BioDisc® Units

Central to the operation of each Kingspan BioDisc® is the Rotating Biological Contactor (RBC), which supports a biologically active film or biomass on to which aerobic micro-organisms, naturally found in sewage, become established. Natural breakdown of sewage can then occur.

The components of each BioDisc and the breakdown process is depicted in the diagram below (refer to Figure 4).

Wastewater and sewage flow into the primary settlement zone (1) where solids are settled out and retained. Partially clarified liquor containing fine suspended solids flows upwards into the first stage Biozone (2) for breaking down by micro-organisms on the RBC. Suspended solids return to the primary settlement zone and the liquor is transferred to the second stage Biozone (3) for further treatment. Any solids remaining are settled out in the final settlement tank (4). The treated water is then discharged into the landscape. The RBC comprises banks of vacuum formed polypropylene media supported by a steel shaft. This is slowly rotated by a low energy consumption electric motor and drive assembly1

[1] https://www.kingspan.com/meati/en-in/product-groups/wastewater-management/commercial-treatment-plants/biodisc-domestic-sewage-treatment-plant (accessed 03/05/2022)

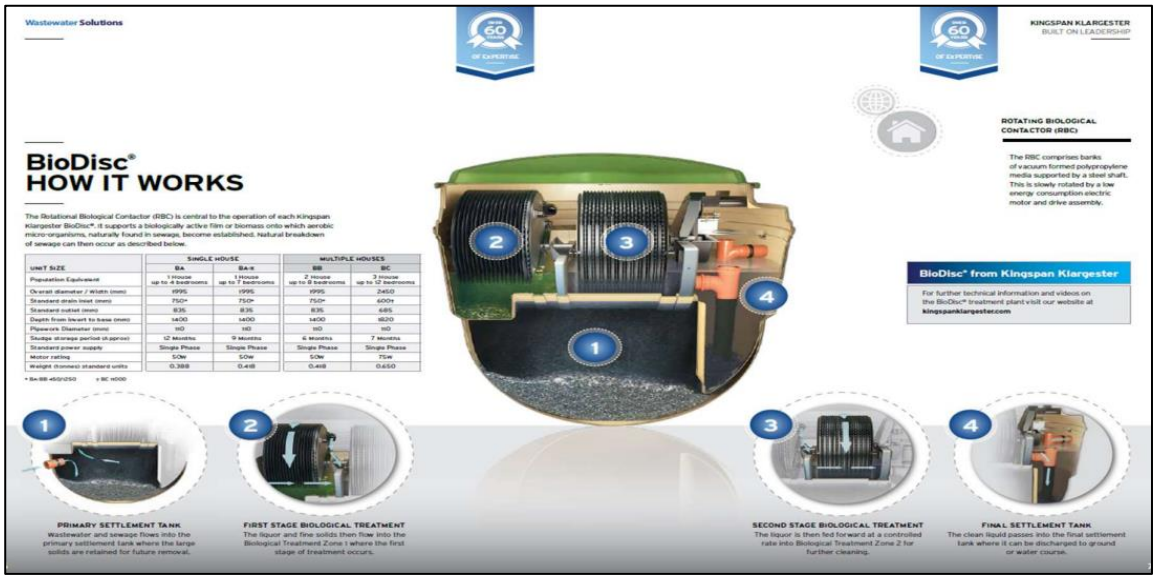


Figure 4: Components and breakdown process of the KingSpan BioDiscs used on site to treat effluent (source: Hurworth 2021)

Potable water system

Potable water is fed from a water storage reservoir. The reservoir is supplied from the existing farm natural spring (Hurworth, 2021). There is a constant supply of natural spring water to the reservoir that keeps the reservoir water levels constant. The reservoir supplies water under gravity flow to the tented camp via a 90 mm diameter HDPE class 12 water main (Hurworth, 2021).

An in-line aggregate filtration system and water purification system has been installed to improve water quality. A new in-line ultra-violet water purification system will be installed prior to commissioning of the Tented Camp to ensure that regulated potable water standards are achieved (Hurworth, 2021).

The reservoir supply is connected to a 63 mm diameter HDPE CL12 water ring main that is the secondary supply to the tented camp units (Hurworth, 2021).

The anticipated potable water consumption for an accommodation unit is and average of 150 l/day average (thus 1200 l/day in total). The consumption of the kitchen unit is anticipated to be an average of 250 l/day (Hurworth, 2021).

Fire ring main

The fire ring main is supplied from a high-pressure submersible borehole pump which draws water from the farm dam at the site. This abstraction only occurs in the event of a fire.

Listed Activities in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA):

With respect to the Listed Activities triggered, the following aspects of the proposed development are important:

- Five components of the Tented Camp facility encroach or partially encroach into the 32 m setback of an in-channel dam at the site:
    - The entire Staff Office tent (43 m²);
    - A portion of the Guest Support Tent (70 m²);
    - A portion of the gravel road to the Guest Support Tent;
    - Fat trap; and
    - The electrical line and the concrete platform constructed to support the generator and associated electrical components.
- The construction of the Tented Camp resulted in the clearance of 2 400 m² of Boland Granite Fynbos (Jackson & Martin, 2021) which is classified as an Endangered ecosystem.
- The informal ring road and access roadways to each tent which has been developed ranges from 3.7 m to approximately 5 m in width. There is no road reserve, and the site is located outside an urban area within an area which contains indigenous vegetation (Boland Granite Fynbos).

1.3 AFFECTED ENVIRONMENT

1.3.1 GEOLOGY

The geological formations underlying the site are mainly granite of the Stellenbosch Pluton, Cape Granite Suite. The site consists of a layer of stony colluvial material overlying a deeply weathered granite saprolite with a high clay content. The colluvium is derived from the sandstone slopes above (Winter et al., 2021).

1.3.2 AQUATIC ECOSYSTEM

The Tented Camp site is located adjacent to a stream, named Stream 1 (as mapped in 2007 and 2019 by Snaddon) – refer to Figure 5 & Figure 6. Stream 1 is a tributary of the Werda River, which ultimately flows in the Berg River. The riparian area around Stream 1 is typical of mountain streams in this area Stream 1 has good water quality (visual assessment) and seasonal surface flow (Snaddon, 2021). The stream flows through an in-stream dam.

According to Snaddon (2021), there is a clear boundary between terrestrial vegetation and riparian vegetation at the Tented Camp site. The riparian vegetation typically comprises:

- Tree species of various ages, with a few mature individuals, including *Searsia angustifolia*, *S. glauca, Kiggelaria africana, Olea europaea subsp. africana, Brabejum stellatifolium*.
- Grasses such as *Pennisetum macrourum*, and restios;
  Shrubs such as *Leucodendron* spp., and bracken (*Pteridium aquilinum*) occur around the margins of the riparian area.

Stream 1 and the delineated riparian area for the Tented Camp site is shown in Figure 5

Figure 5: Stream 1 and the riparian areas (green polygons) delineated at the site (Snaddon, 2021)

Stream 1 and its riparian area are categorised as Ecological Support Areas.

Stream 1 is in good condition, apart from the impacts associated with removal of indigenous vegetation in the catchment (for agriculture) and the presence of the farm dam adjacent to the site. The upper portion of Stream 1 above the farm dam lies in an A Category for PES (thus considered to be unmodified, natural), while the lower section below the dam is an C Category meaning the section is moderately modified, and while a loss and change of natural habitat and biota have occurred, the basic ecosystem functions are still predominantly unchanged

Although no primary data were collected from the stream, the quality of the habitat is such that the Stream 1 will support populations of unique species that are sensitive to changes in water quantity and quality. The stream is an important refuge for species, and provides essential ecological corridors in a highly transformed, cultivated landscape. Stream 1 is thus of high EIS.

1.3.3 TERRESTRIAL ECOSYSTEM

The project site occurs within Boland Granite Fynbos (according to the National Vegetation Map, 2018) which is listed as Endangered with a conservation target of 30 %.

A field survey by Jackson & Martin (2021) confirmed the vegetation within the project area is comprised of

- Near intact and degraded Boland Granite Fynbos (within which the accommodation tents are located);
- Intact Boland Granite Fynbos to the west of the Tented Camp;
- Riparian vegetation to the east (as assessed by Snaddon, 2021 and discussed in the preceding section); and
- Transformed land (roads and agricultural land).

These vegetation types in relation to the tent structures are depicted in Figure 6 below.

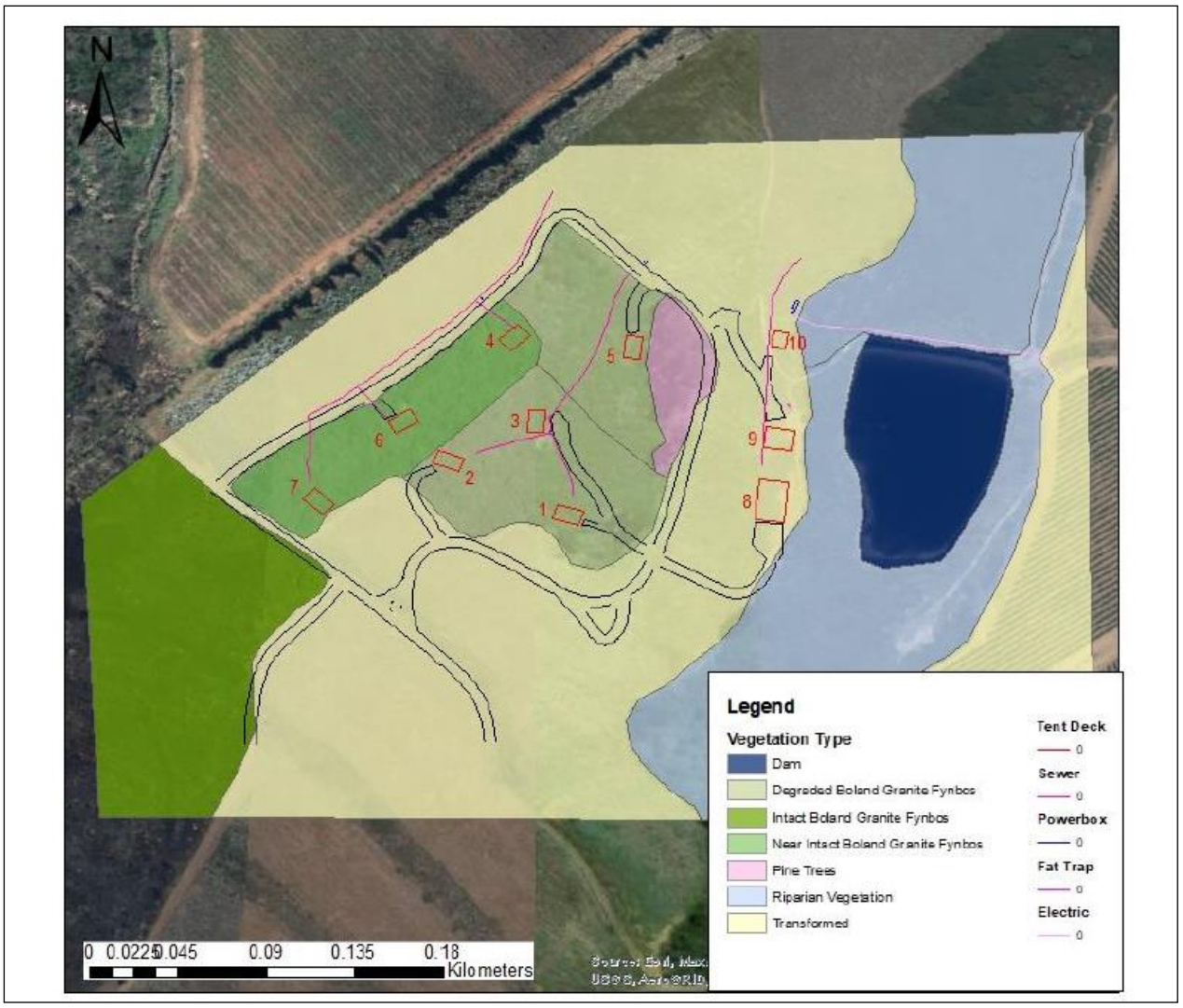


Figure 6. Vegetation map of the project area based on data collected from field survey by Jackson & Martin (2021)

In the centre of the project area where the seven accommodation tent platforms are located, is a patch of Boland Granite Fynbos. The north-western portion of this patch (where tents 4, 6 and 7 are located) is characterised as near intact with species such as *Cliffortia ruscifolia, Hermannia hyssopifolia, Leucadendron salicifolium, Osteospermum moniliferum, Searsia angustifolia* and *Dicerothamnus rhinocerotis* present. *Searsia angustifolia* (a small tree species) was also present within the patch. The eastern portion of this patch is more degraded and has a higher number of alien invasive species. On the eastern edge of this patch is a stand of large pine trees (Jackson & Martin, 2021).

There are also a large number of alien/weedy species within impacted patch of Boland Granite Fynbos, specifically the degraded patch. These include species such as *Acacia longifolia, Pinus cf. pinaster, Verbena bonariensis, Echium plantagineum, Phytolacca octandra, Solanum mauritanium* and *Pittosporum undulatum* (Jackson & Martin, 2021).

The Mess Tent (platform 8), Guest Support Tent (platform 9), Staff Office Tent (platform 10) and power boxes are all located in an area that was previously transformed. Based on historical imagery, this area was once an agricultural field used for crops. These areas are now covered in lupins, grasses and species such as *Echium plantagineum, Verbena bonariensis* and *Acacia longifolia* (Jackson & Martin, 2021).

Thirty-one plant species were recorded within the project area. Of these species, seven alien invasive and/or ruderal species, two Species of Conservation Concern (SCC) and 21 indigenous species were recorded. One Species of Conservation Concern (SCC) (*Hermannia rugosa* listed as VU) was confirmed to occur within the impacted project area and one species (Protea *burchelli* listed as VU) was recorded immediately to the west of the site and is therefore likely to occur within the site (Jackson & Martin, 2021).

According to the Western Cape Biodiversity Spatial Plan (2017), the footprint of the Tented Camp falls within an Ecological Support Area (ESA) 1 area with a small portion along the eastern boundary falling within an ESA 2 along the stream and farm dam.

Although the near-intact Boland Granite Fynbos and degraded Boland Granite Fynbos has a high sensitivity due to its status of Endangered, the SEI specific to this project infrastructure, which has a small footprint and is of low impact, is rated as Medium. However, if additional clearing occurs within this patch of vegetation, this score is likely to increase to High. The intact patch of Boland Granite Fynbos to the west of the impacted site has an overall SEI of High. The agricultural land surrounding the near-intact and degraded Boland Granite Fynbos is classified as transformed and has an overall SEI of Very Low (Jackson & Martin, 2021).

It must be noted that the patch of Boland Granite Fynbos that has been impacted by the project is infested with alien invasive species. Based on the historical satellite imagery available for the site and the size of some of the established trees, this appears to have been infested prior to construction. However, the construction of the platforms and upgrading of the ring road have exacerbated this (Jackson & Martin, 2021).

The Transformed Areas are currently fallow fields covered by ruderal species and Paterson's curse. Previously these areas were used to grow crops this (Jackson & Martin, 2021).

1.4 HERITAGE/CULTURAL/ARCHAEOLOGICAL ASPECTS

The site is located within the Founders Estate National Heritage Site (NHS) and is therefore protected in terms of the NHRA (Act No 25 of 1999). The Founders' Estates development rights application was approved by SAHRA in 2008 subject to a number of conditions. According to Winter et al., (2021) these conditions have been largely satisfied including Design Guidelines. The requirement for an Archaeological Historical Residues Management Plan (AHRMP), Conservation Management Plan (CMP) and Landscape Guidelines is in the process of being addressed and will be submitted to SAHRA in due course (Winter et al., 2021). The draft AHRMP and draft Landscape Guidelines have been prepared and were taken into account by the HIA. The Tented Camp was developed without the required permission from SAHRA and without consideration of these draft plans.

A Heritage was completed by Winter et. al (2021) to report on the heritage implications of the development.

Archaeological aspects

According to Winter et al., (2021) the intensive utilisation of the Dwars River Valley in early C20th under Rhodes Fruit Farms came with extensive investment of infrastructure in the form of leiwater canals and sluite, as well as other landscape features designed to assist with irrigation and other agricultural activities (Hart and Webley 2009). These features often persist as features in the landscape, such as the stone lined irrigation canals identified on lower lying fields. There are several areas of archaeological sensitivity within the Founders' Estates, including the early industrial landscape of the Silvermine Complex, Goedehoop Farmstead and Nieuwedorp Farmstead (ACO, 2021). However, while Stone Age material might have been located on the site, this is unlikely to have been of high significance, in situ, or densely concentrated, impacts to such archaeological materials are therefore of low significance. Given the remoteness of the location from historic werfs or settlements, no early colonial archaeology is likely to have occurred on the site, and impacts are considered to be unlikely. As the area does not fall on the lower slopes where C20th agriculture was more intensive, features associated with this period are similarly unlikely (Winter et al., 2021).

In light of the extent of previous archaeological survey and assessment of the Founder's Estate (Hart and Gribble, 2021; Hart and Webley, 2009; Kaplan, 2005), confidence in these conclusions is high, and supported by the findings of the recently compiled AHRMP which indicates that no monitoring is required for Founders' Estate 5 or the site.

Visual Aspects

The property (FE 5) has high heritage value in terms of its landscape qualities being located on the upper slopes of the Simonsberg at the interface with the Simonsberg Nature Reserve. It has high visibility from surroundings, with localised ridgelines to the north and south of the tented camp shielding the visibility of the site from immediately surroundings especially from the western portion of the Founders Estates NHS (Winter et al., 2021). The visibility of the camp from across the farm dam at the site is shown in Figure 5.

A view shed analysis was undertaken of the Tented Camp by Winter et al., (2021). The key findings of this view shed are the following:

- A zone of high visibility is confined to 500 m of the tented camp affecting FE 5, FE 3 and FE6 in the north-west portion of the Founders' Estates.
- The tents are not visible from most of the Founders' Estates.
- The tents are not visible from Goede Hoop, Cottage 1685 and Nieuwedorp.
- The tents are indiscernible beyond 3 km especially with their muted colours. Rhone and Boschendal are located close to 3 km from the tented camp within a zone of low visibility. The R45 and the R310 are also located within a zone of low visibility.
- The yellow wood avenue located on axis with Cottage 1685 and linking the historic core within the Founders' Estates is located within a zone of low-medium visibility.
- The north-south linking route at the base of the Founders Estates will not be impacted by the tented camp.

Thus, at a broader landscape scale the tent structures are visually recessive in terms of their modest scale, low pitched canopies, muted colours and vegetation. At the site scale, some of the structures are visually intrusive (Winter et al., 2021).

Winter et al., (2021) concludes that a number of visual concerns need to be addressed including the treatment of roads and parking, the rehabilitation of the exposed embankment and platform created for the larger tent structures, signage and lighting, and landscaping. The suggested rehabilitation and design measures have all been included in this EMPr.

Heritage Indicators and Assessment

In terms of design considerations, the design of the Tented Camp has not been carefully considered in terms of the siting of some tented structures, technology, materials, execution and landscaping. This impacts micro-site conditions which are mitigated to an acceptable level by the temporary nature of the tented camp facility.

Winter et al., (2021) concludes the following:

"…the unauthorised work has not caused irreversible damage to heritage significance predominantly due to the tread – lightly, low visual impact and temporary nature of the tented camp. However, the unauthorised work does have heritage implications which need to be addressed in terms of remedial action/mitigation measures which are outlined in the recommendations. A primary consideration is that the property owner of FE 5 has agreed to withhold the right to develop a homestead on the Excluded Area until the Temporary Departure to regularise the tented camp from a land use and planning perspective has lapsed and the tented camp has been removed."

1.5 SUMMARY OF IMPACTS (SUMMARY AS IDENTIFIED DURING THE 24G APPLICATION PROCESS)

The identified impacts for all phases of development are summarised in the table below.

Table 2: Summary of Impacts

PHASE		Development Alternative		No-Go Alternative	
	Impacts	**Significance rating of impacts before mitigation** (Low, Medium, Medium-High, High, Very High):	**Significance rating of impacts after mitigation** (Low, Medium, Medium-High, High, Very High):	**Significance rating of impacts before mitigation** (Low, Medium, Medium-High, High, Very High):	**Significance rating of impacts after mitigation** (Low, Medium, Medium-High, High, Very High):
CONSTRUCTION PHASE	**Freshwater Impacts:** Storage of building materials (sand, soil, bricks etc) in or close to sensitive areas – this would damage the soil structure and would destroy or shade out plants growing in and around these ecosystems. Dump areas frequently lead to the compaction of soils, which can influence re-growth of plants.	Low (-)	No impact	Not applicable	Not applicable
	Freshwater Impacts: Leakage or spillage of fuels, oils, etc. from construction machinery – this would lead to pollution of the stream.	Low (-)	No impact	Not applicable	Not applicable
	Freshwater Impacts: Leakage or spillage of fuels, oils, etc. from construction machinery – this would lead to pollution of the stream.	Medium (-)	Low (-)	Not applicable	Not applicable
	Freshwater Impacts: Foot and vehicular traffic across the site, leading to destruction or deterioration of freshwater habitat.	Low (-)	No impact	Not applicable	Not applicable
	Freshwater Impacts: Presence of construction teams and their machinery on site – this may lead to noise and light pollution in the area, which will disturb aquatic and terrestrial fauna and flora	Low (-)	Low (-)	Not applicable	Not applicable.
	Freshwater Impacts: Topsoil or sand brought onto the site, for filling and landscaping can lead to the introduction of alien or invasive seedbanks. Whole Estate and downstream	Medium (-)	Low (-) (possibly even low positive, if IAPs are consistently removed from the site)	Not applicable	Not applicable
	Ecological Impact: Loss of extent near-intact Boland Granite Fynbos and degraded Boland Granite Fynbos The clearing of vegetation for the construction of seven tent platforms (three in near-intact granite fynbos and four within degraded granite fynbos) and associated access paths has	Moderate (-)	Moderate (-)	Negligible	Negligible

	resulted in the permanent loss of 0.24 ha of vegetation. This accounts for 15% of the total impacted patch of natural vegetation and 0.08% of the total remaining extent of this vegetation type within the Western Cape Province.				
	Ecological Impact: Loss of Plant Species of Conservation Concern There are two confirmed SCC (one within the site and one directly adjacent to the site) that were recorded during the field survey as well thirteen SCC that have a high likelihood of occurrence within or adjacent to the site. The clearing of vegetation within the impacted Boland Granite Fynbos has resulted in the loss of biodiversity and may have resulted in the loss of some SCC.	Moderate (-)	Low (-)	Low (-)	Low (-)
	Ecological Impact: Disruption of Ecosystem Function and Process Habitat fragmentation occurs when a large expanse or strip of habitat is transformed such that the natural landscape is cut into smaller patches that are isolated from each other resulting in a reduction in ecological functioning, species diversity and species richness. This impact occurs when areas are cleared resulting in reduced movement due to the absence of ecological corridors. The impacted patch of Boland Granite Fynbos has been exposed to some habitat fragmentation and edge effects prior to the construction of the project infrastructure as the area surrounding it has been previously used for agriculture. The clearing of an additional 15% of this patch will have further contributed to fragmentation. However, it should be noted that clearing for the construction of access roads and the tent platforms appears to have been kept to a minimum as the vegetation surrounding these areas is well established indicating minor impacts. Further to this, the platforms are raised off the ground allowing for free the movement of faunal species and dispersal of seeds. So, although some habitat fragmentation has occurred this has been minimised by the low-impact design of the tent platforms.	Low (-)	Low (-)	Low (-)	Low (-)
	Ecological Impact: Infestation of Alien Plant Species These are common in areas that have been recently disturbed such as along the access roads, paths and around the tent platforms. There is also evidence of alien invasive species tree species such as *Acacia longifolia* and *Pinus pinaster* within the patch. It is highly probable that this patch was already infested with alien species given the size of some of these and because areas adjacent to the site show evidence of infestation. Nevertheless, the construction of the infrastructure within this patch has exacerbated the level of infestation.	Moderate (-)	Low (-)	Low (-)	Low (-)

	Ecological Impact: Disturbance to terrestrial faunal species due to construction of the tented camp Habitat clearing for the construction of the tent platforms and access paths would have created a disturbance to faunal species using the site for foraging, shelter and breeding.	Low (-)	Not applicable	Negligible	Negligible
	Socio Economic Impact: Creation of temporary, short-term employment opportunities as a result of construction/decommissioning of the facility.	Low (+)	Low (+)	Not applicable	Not applicable
	Nuisance Impacts: Dust & Noise Generation The land clearing and other construction activities would have resulted/ will result in the generation of dust and noise which may have been/ will be a nuisance to surrounding land users whilst construction/decommissioning is ongoing.	Low (-)	Very Low (-)	Not applicable	Not applicable
	Depletion of Natural Resources: Depletion of natural resources through use as material in the development/construction phase (such as water, resources for the generation of energy, construction materials etc.).	Low (-)	Low (-)	Not applicable	Not applicable
	Visual impacts / Sense of Place: The visual impact of the development has been assessed by the HIA (refer to Appendix H (v)) which notes that the Tented Camp is located on the steep upper slopes well above the 320m contour line which is at variance with the heritage indicators and approvals for the Founders Estates. However, consideration is given to the fact that the development can be considered as "nature-orientated tourism" and considered acceptable in this location due its tread lightly and temporary nature of development, and how it relates to the wilderness landscape qualities of the Simonsberg Nature Reserve. In addition, following the results of the viewshed analysis of the site which found that a zone of high visibility is confined to 500 m of the tented camp (which means that the tents are not visible from most of the Founders' Estates and other heritage sites) and since the tents are indiscernible beyond 3 km especially with their muted colours the overall visual impact is described as '**Low' negative.**				
	Cultural-Historical Aspects: The tented camp is located outside of the 0.8-hectare developable area and comprises a site development area of approximately 6 hectares, i.e. 23% of the landholding. This together with the positioning of the tented camp directly above the FE 5 homestead will have cumulative impact on the principle of Founders' Estates, i.e. one homestead per farm unit. A key mitigation is to withhold the right to develop a homestead on the Excluded Area of FE 5 until the Temporary Departure as lapsed and the tented camp has been removed. The design of the tented structures has not been well-considered in terms of the siting of some of the structures, tent architecture, technology, materials, execution and landscaping. This negatively impacts the landscape qualities of the site. This impact is however mitigated by the temporary nature of the facility. The tented camp has also not resulted in the removal of any landscape features of heritage value. Winter et al. (2021) concludes that the unauthorised work has not caused irreversible damage to heritage significance predominantly due to the tread – lightly, low visual impact and temporary nature of the camp. However, the unauthorised work does have heritage implications which need to be addressed in terms of remedial action/mitigation measures.				
OPERATIONAL PHASE	**Freshwater Impact:** Stormwater discharge into natural areas – water quality impacts.	Medium (-)	Low (-)	No impact	No impact
	Freshwater Impact: Stormwater discharge into natural areas – water quantity impacts.	Medium (-)	Low (-)	No impact	No impact
	Freshwater Impact: On-site treatment and/or storage of wastewater – impacts on water quality.	Medium (-)	Low (-)	Not applicable	Not applicable
	Freshwater Impact: Proximity of tents and human activity to the stream.	Medium (-)	Low (-)	Low (-)	No impact
	Freshwater Impact: Clearing of vegetation and disturbance of soils for maintenance/landscaping/gardening and disturbance of soils for landscaping/gardening	Medium (-)	Low (-)	Not applicable	Not applicable

	Socio-Economic Impact: Creation of temporary employment opportunities as a result of operation of the facility for five years. Note that additional indirect stimulus as a result of attracting more tourists to the area would also result.	Low (+)	Low (+)	Not applicable	Not applicable
DECOMMISSIONING PHASE	**Freshwater Impacts:** Storage of demolition materials (sand, soil, bricks etc) in or close to sensitive areas – this would damage the soil structure and would destroy or shade out plants growing in and around these ecosystems. Dump areas frequently lead to the compaction of soils, which can influence re-growth of plants.	Low (-)	No impact	Not Applicable	Not Applicable
	Freshwater Impacts: Leakage or spillage of fuels, oils, etc. from demolition machinery – this would lead to pollution of the stream.	Low (-)	No impact	Not Applicable	Not Applicable
	Freshwater Impact: Leakage or spillage of fuels, oils, etc. from demolition machinery – this would lead to pollution of the stream.	Medium (-)	Low (-)	Not Applicable	Not Applicable
	Freshwater Impact: Foot and vehicular traffic across the site, leading to destruction or deterioration of freshwater habitat.	Low (-)	No impact	Not Applicable	Not Applicable
	Freshwater Impact: Presence of teams and their machinery on site – this may lead to noise and light pollution in the area, which will disturb aquatic and terrestrial fauna and flora	Low (-)	Low (-)	Not Applicable	Not Applicable
	Freshwater Impact: Topsoil or sand brought onto the site, for filling and landscaping can lead to the introduction of alien or invasive seedbanks.	Medium (-)	Low (-) (possibly even low positive, if IAPs are consistently removed from the site)	Not Applicable	Not Applicable
	Freshwater Impact: Disturbance of soils and vegetation as a result of removal of tents and infrastructure	Medium (-)	No impact, to Low (+) significance (depending on the success of rehabilitation)	Not Applicable	Not Applicable
	Ecological Impacts: Loss of extent near-intact Boland Granite Fynbos and degraded Boland Granite Fynbos: The decommissioning of the tented camp and removal of tent platforms and infrastructure will require laydown areas and will disrupt vegetation that has re-established around the areas that were disturbed during the construction phase. Given the nature of the tents and the platforms, it is anticipated that the removal of these can be done with limited impact to the surrounding vegetation.	Low (-)	Low (-)	Not Applicable	Not Applicable
	Ecological Impacts: Infestation of Alien Plant Species: There are seven alien invasive species present within the site. These are common in areas that have been recently disturbed such as along the access roads, paths and around the tent platforms. There is also evidence of alien invasive species tree species such	Moderate (-)	Low (-)	Not Applicable	Not Applicable

	as Acacia longifolia and Pinus pinaster within the patch. Disturbance associated with the decommissioning of the site can lead to further infestation of existing alien invasive species.				
	Ecological Impacts: Disturbance to terrestrial faunal species due to construction and operation of the tented camp: Habitat clearing for the decommissioning of the tent platforms and access paths would have created a disturbance to faunal species using the site for foraging, shelter and breeding.	Low (-)	Low (-)	Not Applicable	Not Applicable
	Socio – Economic Impact: Creation of temporary, short-term employment for labourers during decommissioning of the facility.	Low (+)	Low (+)	Not applicable	Not applicable
	Nuisance Impacts: Dust & Noise Generation Decommissioning activities will result in the generation of dust and noise which may be a nuisance to surrounding land users whilst decommissioning is underway	Low (-)	Very Low (-)	Not applicable	Not applicable

1.6 STATUTORY APPROVALS

The required approvals in terms of applicable legislation are tabled below. It must be ensured that all required approvals are in place.

Table 3. Legislative approvals

LEGISLATION	ADMINISTERING AUTHORITY	TYPE Permit/ license/ authorisation/comment
National Water Act (Act No. 36 of 1998)	The Department of Water & Sanitation (DWS)	General Authorisation
South African Heritage Resources Act (Act No. 25 of 1999)	South African Heritage Resource Agency (SAHRA)	Comment and instruction on way forward regarding unlawfully commenced development without the necessary heritage permit.
Stellenbosch Municipality Land Use Planning By-law of 2015 (SM LUPBL) & Stellenbosch Municipality Zoning Scheme By-law (ZSBL) of 2019	Stellenbosch Municipality	Temporary Departure application in terms of section 15 (2) (c) of the SM LUPBL (2015) (at the same time having regard for the parameters in terms of Chapters 20 and 25 of the Stellenbosch Municipality Zoning Scheme By-law of 2019 (SM ZSBL).)

1.7 COMPONENTS OF THE EMPr

The EMPr consists of the following components:

Section 1: Introduction	Provides background information regarding the site, the proposed development and the EMPr.
Section 2: Implementation of the EMPr	Provides details of the communication and organisational structures within which the EMPr will be implemented, responsibilities of key role players, and provides the terms of reference for the ECO.
Section 3: Environmental Management Specifications for Construction Phase	Provides all construction phase environmental management requirements applicable to the principal construction contractors, and their subcontractors.
Section 4: Environmental Management Specifications for Operational Phase	Provides all operational phase environmental management requirements applicable to the Tented Camp.

Section 3: Environmental Management Specifications Decommissioning Phase	Provides all construction phase environmental management requirements applicable to the principal construction contractors, and their subcontractors.

2. DESIGN & CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

2.1 INTRODUCTION

This section of the EMPr describes mitigation measures and identifies specific people or organisations to undertake particular tasks in order to ensure that impacts on the environment are minimised during any further construction on site.

The EMPr is applicable to all works comprising the project. It is an open-ended document implying that information gained during construction activities and/or monitoring of procedures on site could lead to changes in the EMPr.

The appointed Environmental Control Officer (ECO) will monitor compliance with the EMPr and other Conditions of Approval contained in the Environmental Authorisation issued by the D:EA&DP, as they relate to environmental matters. This EMPr gives direction and guidance to all responsible parties. The responsible parties are expected to co-operate closely to minimise or avoid unnecessary environmental impacts.

Non-compliance penalties are described in this EMPr and are thus to be included into the official contract documentation. The contractor is obliged to inform the ECO immediately of events that may cause serious environmental damage or breach the requirements of the EMPr. The ECO in turn will immediately inform the Engineer and Developer and, if necessary, the environmental authorities of such events.

2.2 ROLES AND RESPONSIBILITIES

The key role-players during the various phases of the project, for the purposes of environmental management on site, include but are not limited to: the Applicant (developer), the engineer (if applicable), the main contractors (direct appointments including civil works contractor, building contractor, landscape contractor etc.) the Environmental Control Officer and representatives of the relevant Authority/ies.

Details of the responsibilities of each of the key role-players have been provided in sections 2.2.1 to 2.2.4**.** Lines of communication and reporting between the various parties are illustrated in Figure 7 below.

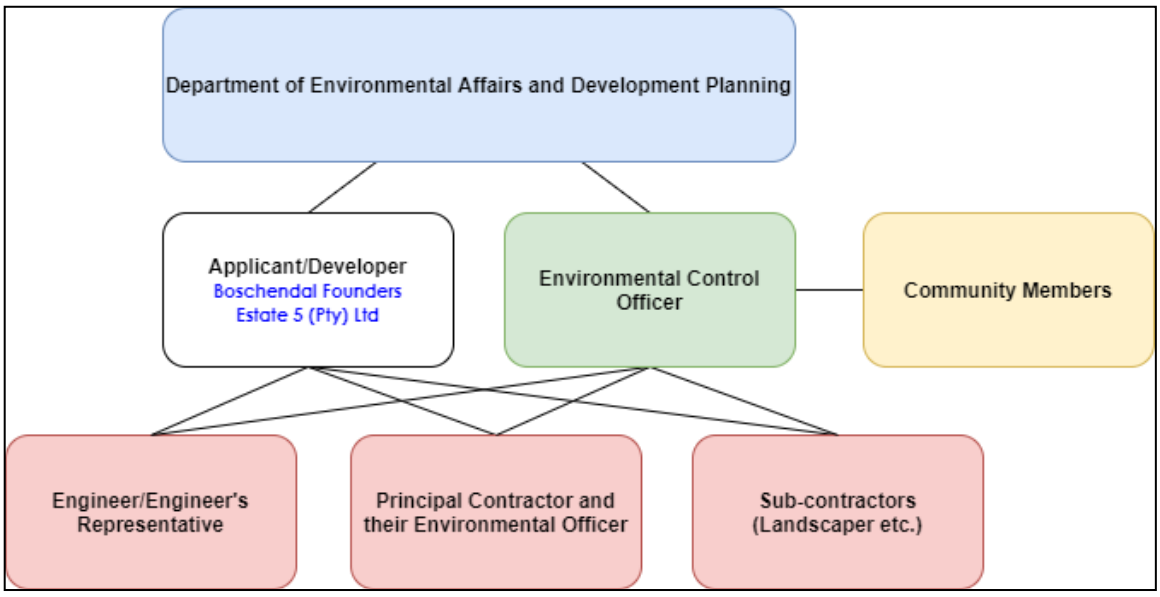


Figure 7. Typical communication and reporting structure

2.2.1 The Applicant / Developer

With respect to the construction and decommissioning phase of the Development, the Applicant / Developer is to:

- Ensure that all relevant approvals and permits have been obtained;
- Ensure that D:EA&DP have been notified of the date on which construction and decommissioning activities will be starting, one week prior to commencement of the activities (or as per the requirement of the Environmental Authorisation);
- Ensure that construction activities start prior to the expiration date of the Retrospective Environmental Authorisation issued by the D:EA&DP, failing which the approval of the development by the department would lapse unless an extension is applied for;
- Appoint a suitably qualified or experienced Environmental Control Officer prior to the start of construction and decommissioning activities on site, for the duration of the decommissioning/construction contract; and
- Appoint a suitably qualified and experienced freshwater and terrestrial ecologist to compile a rehabilitation plan for the site as well as to provide guidance and oversight of rehabilitation activities where needed and as prescribed in this EMPr.

2.2.2 The Engineer / Project Manager

For the purposes of this document, "The Engineer" refers to the engineer / project manager for the development, or any other person authorised by the Developer, to be responsible for the technical and contractual implementation of the works to be undertaken.

The responsibilities of the Engineer are to:

- Ensure that the requirements as set out in this EMPr and by the relevant Authorities are adhered to and implemented;
- Assist the ECO in ensuring that the conditions of the EMPr are being adhered to and promptly issue instructions requested by the ECO, to the Contractor. All site instructions relating to environmental matters issued by the Engineer are to be copied to the ECO;
- Assist the ECO in making decisions and finding solutions to environmental problems that may arise during the various phases of the development;

- Review and approve construction Method Statements with input from the ECO;
- Order the removal of person(s) and/or equipment not complying with the specifications (as required by the ECO or otherwise);
- Issue penalties for transgressions of Environmental Specifications; and
- Provide input into the ECO's on-going internal review of the EMPr.

2.2.3 The Contractor

For the purposes of this document "The Contractor" refers to any directly appointed company or individual (by the Developer) undertaking the implementation of the works. The Contractor will be responsible for the day-to-day implementation of the EMPr. During the course of construction and decommissioning regular compliance audits will need to be undertaken, which must be undertaken by an appropriately qualified environmental practitioner.

The Contractor is to:

- Compile the required Method Statements for submission to the Engineer and the ECO for approval;
- Ensure implementation of all applicable Environmental Management Specifications, including all additional requirements related to approved method statements, during all works on site, failing which penalties, as outlined in the EMPr may be imposed by the ECO via the Engineer;
- Ensure that all of its sub-contractors, employees, suppliers or agents etc. are fully aware of the environmental requirements detailed in the Environmental Specifications of this EMPr (the main contractor will be held liable for any penalties incurred by sub-contractors);
- Liaise closely with the Engineer and the ECO and ensure that the works on site are conducted in an environmentally sensitive manner;
- Nominate a member of personnel as the contractors' Environmental Officer who will be responsible for enforcing the EMPr specifications on a daily basis. This individual shall liaise closely with the ECO and inform the Engineer, as well as the ECO, should environmental issues on site arise, e.g. dumping, pollution, littering and damage to vegetation;
- Carry out instructions issued by the Engineer, on request of the ECO, required to fulfil his/her compliance with the EMPr;
- Investigate and comply with all existing regulations and laws/by-laws unless the relevant authority grants specific written compliance with any legislation;
- Comply with the Occupational Health and Safety Act (Act 85 of 1993) and in particular the requirements of the current Construction Regulations; and
- Make provision for inspections of the site by any Authority and/or any party authorised by the Engineer or the ECO.
- Comply with the "Duty of Care" principle (section 28 of NEMA, 1998) to avoid and prevent any pollution incidents from occurring on site.

Upon failure by the contractor or contractor's employee to show adequate consideration to the environmental aspects of this contract, monetary penalties for breach of the EMPr (and thus the contract) may be imposed by the ECO via the Engineer or to have the Contractor's representative or any employee(s) removed from the site or work suspended until the matter is remedied. No extension of time will be considered in the case of such suspensions and all costs will be borne by the Contractor.

2.2.4 Environmental Control Officer (ECO)

A suitably qualified ECO must be employed throughout the duration of any further construction on site:

During this time, the ECO is to:

- Ensure that the Contractor has a copy of the EMPr and all agreed Method Statements;
- Ensure that the approved design and development footprint of the Tented Camp is implemented;
- Assist the Engineer in identifying the need for or applying for special or required permits if applicable;
- Undertake **fortnightly** site inspections (frequency may change as required), to audit compliance of all parties with the requirements of the EMPr during construction on site including landscaping and restoration;
- Ensure that the required oversight actions by a freshwater and terrestrial consultant are undertaken as stipulated in this EMPr, if required;
- Advise/recommend on actions or issues impacting on the environment to the Engineer, who shall issue any required site instructions to the contractor;
- Environmentally educate and raise the awareness of the Contractor and his staff as to the sensitivity of the site and facilitate the appropriate attitude during works on site;
- Review and approve construction Method Statements together with the Engineer;
- Assist the Contractor in finding environmentally responsible solutions to problems;
- Recommend to the Engineer the issuing of a penalty for any environmental damage caused on site, or non-compliance with the Environmental Specifications;
- Recommend to the Engineer the removal of person(s) and/or equipment not complying with the Specifications;
- Act as the contact person between the Developer, D:EA&DP and the public with regard to environmental matters;
- Report to D:EA&DP, where required and in terms of the Conditions of Approval of the Retrospective Environmental Authorisation, regarding the implementation of the EMPr, compliance with the Conditions of Approval contained in the Environmental Authorisation and implementation of the relevant mitigation measures contained in the EMPr;
- Keep a register of complaints and record and manage any community comments or issues, having reported these first to the Engineer;
- Undertake photographic monitoring of the construction site;
- Keep records of all activities/ incidents on site concerning the environment in a site diary;
- Complete a permanent site closure report following the decommissioning of the site;
- Take immediate action on site to stop works where significant and irreparable damage is being inflicted on the environment, and inform the Engineer immediately of the occurrence and action taken; and
- Undertake a continual internal review of the EMPr and make recommendations to the Engineer and Developer. This includes monitoring of construction and decommissioning activities and compiling reports on performance relative to this EMPr.

The ECO has the authority to recommend to the D:EA&DP that works be stopped, if in his/her opinion serious harm to, or impact on, the environment is imminent, is likely to occur or has occurred. Furthermore, the ECO may also recommend that works be stopped if such actual or potential harm or impact is in contravention of this EMPr and which is, or may be, caused by construction, decommissioning or related works.

Upon failure by the contractor or contractor's employees to show adequate consideration to the environmental aspects of this contract, the ECO may recommend to the Engineer and the project management team to have the contractor's representative, or any employee(s) removed from the site or work suspended until the matter is remedied. No extension of time will be considered in the case of such suspensions and all costs will be borne by the Contractor.

2.3 MONITORING AND REPORTING

2.3.1 Site Instructions

Site Instructions, stipulating recommended actions required to improve compliance with the EMPr by the Contractor will be issued by the ECO to the Engineer, who in turn will ensure that the Contractor is informed of the said instruction.

Comments made by the ECO are advisory and all site instructions required may only be issued by the Engineer. Site Instructions will also be used for the issuing of stop work orders for the purposes of immediately halting any particular activity(ies) of the Contractor deemed to pose immediate and serious risk of unnecessary damage to the environment.

2.3.2 Monthly Monitoring Reports

The ECO will compile a monitoring checklist to facilitate checking against the requirements of the EMPr. Monthly monitoring reports will be compiled in which events, concerns and general compliance of the Contractor with the EMPr will be recorded. This report will be submitted to the Engineer and if it is deemed necessary, to the authorities (i.e. D:EA&DP).

During construction works on site, the ECO must report to the D:EA&DP, where required, regarding the implementation of the EMPr, compliance with the Conditions of Approval which would be contained in the Retrospective Environmental Authorisation and implementation of the relevant mitigation measures contained in the EMPr.

Should the EMPr require further updates, the manner and frequency for updating the EMPr must be done as follows:

An application for amendment to the EMPr must be submitted to the Competent Authority if any further amendments are to be made to the EMPr, other than potential amendments mentioned in the retrospective environmental authorisation, water use authorisation and/or the town planning approvals. Further changes may only be implemented once the amended EMPr has been authorised by the competent authority.

2.4 ENVIRONMENTAL EDUCATION PROGRAMME

The Contractor in consultation with the ECO shall arrange for a presentation to site staff to familiarise them with the environmental aspects of the EMPr within seven days from the commencement date of construction and/or decommissioning. This presentation should take cognisance of the level of education, designation and language preferences of the staff. General site staff would commonly receive a basic environmental awareness course highlighting general environmental "do's and don'ts" and how they relate to the site. Management on site e.g. site agents and foremen, who require more detailed knowledge about the environmental sensitivities on site and the contents and application of the construction phase of the EMPr document itself, will benefit from a separate presentation dealing with these issues. The ECO may call upon the services of a specialist environmental education translator should this be required.

Environmental awareness training courses shall be run for all personnel on site. All attendees shall remain for the duration of the course and sign an attendance register on completion that clearly indicates participants' names, a copy of which shall be filed in the (site) environmental file.

The Contractor's general site staff shall attend an initial presentation of approximately 45 minutes, and approximately half an hour a month thereafter for the duration of the contract shall be allowed for employees to attend any follow-up lectures, should this be deemed necessary by the ECO. In addition, all new staff and sub-contractor's employees that spend more than 1 day a week or four days in a month are to attend the environmental education program within 1 (one) week of commencement of work on site. The Contractor shall on request of the ECO provide documented proof (signed attendance registers) that all employees have received such training.

Notwithstanding the specific provisions of this clause, it is incumbent upon the Contractor to convey the sentiments of the EMPr to all personnel involved with the works.

The initial environmental awareness training course shall be presented by the ECO. Subsequent courses to be held as and when required should be presented by the Contractor's Environmental Officer or the Health and Safety Officer.

2.5 OCCUPATIONAL HEALTH & SAFETY REQUIREMENTS

The Occupational Health and Safety Act (Act 85 of 1993) and in particular the requirements of the Construction Regulations issued in July 2003, must be complied with but fall beyond the scope of this EMPr.

2.6 DISPUTE RESOLUTION

Any disputes or disagreements between role players on site (with regard to environmental management) will firstly be referred to the Engineer. If no resolution on the matter is possible then the matter will be referred to D:EA&DP for clarification.

2.7 SOCIAL RESPONSIBILITIES

The Developer and Contractor(s) shall encourage and implement wherever possible the procurement of locally based labour, skills and materials.

3. DESIGN & CONSTRUCTION ENVIRONMENTAL MANAGEMENT SPECIFICATIONS

3.1 INTRODUCTION

The Environmental Specifications contained in this section of the EMPr cover the requirements for controlling the impact of design, construction and decommissioning activities on the environment.

This section of the document describes mitigation measures in detail, and is partly prescriptive, identifying specific people or organisations to undertake specific tasks to ensure that impacts on the environment are minimised during the construction and decommissioning phases of this project. This section of the EMPr is applicable to all works associated with the design, construction and decommissioning for the development of a tented camp on Founders Estate 5, Farm 1685/5, Paarl (FE5). It is an open-ended document implying that information gained during construction and decommissioning activities and/or monitoring of procedures on site could lead to changes in the EMPr.

The appointed Environmental Control Officer (ECO) will monitor compliance with section 3 of the EMPr and other Conditions of Approval contained in the Environmental Authorisation issued by the DEA&DP, as they relate to environmental matters. This EMPr gives direction and guidance to all responsible parties. The responsible parties are expected to co-operate closely to minimise or avoid unnecessary environmental impacts.

Non-compliance penalties are described in this EMPr and are thus to be included into the official contract documentation with contractors. The Contractor is obliged to inform the ECO immediately of events that may cause serious environmental damage or breach the requirements of the EMPr. The ECO in turn will immediately inform the Engineer and Applicant and, if necessary, the environmental branch of the Local Authority, of such events.

It is noted that construction activities for the development of the Tented Camps had already commenced on site prior to this EMPr being compiled. The below environmental management requirements must be implemented and adhered to should any further construction activities take place on site (as authorised) including landscaping and restoration works. These specifications must also be referred to during the decommissioning of the camp.

3.2 METHOD STATEMENTS

The Contractor shall provide Method Statements for approval by the ECO and the Engineer prior to work commencing on aspects of the project identified to be of greater risk to the environment and/or which may not be covered in sufficient detail in the EMPr, when called upon to do so by the Engineer or ECO.

A Method Statement is a "live document" in that modifications are negotiated between the Contractor and the ECO/project management team, as circumstances unfold. All Method Statements will form part of the EMPr documentation and are subject to all terms and conditions contained within the EMPr.

Note that a Method Statement is a 'starting point' for understanding the nature of the intended actions to be carried out and allows for all parties to review and understand the procedures to be followed in order to minimise risk of harm to the environment.

A Method Statement describes the scope of the intended work in a step-by-step description in order for the ECO and the Engineer to understand the Contractor's intentions. For each instance where it is requested that the Contractor submit a Method Statement to the satisfaction of the Engineer and ECO, the format should clearly indicate the following:

- **What** - a brief description of the work to be undertaken;
- **How** - a detailed description of the process of work, methods and materials;
- **Where** - a description/sketch map of the locality of work (if applicable);
- **When** - the sequencing of actions with due commencement dates and completion date estimates;
- **Who** – The person responsible for undertaking the works described in the Method Statement; and
- **Why** – a description of why the activity is required.

The Contractor shall provide Method Statements for approval by the ECO and the Engineer prior to work commencing on aspects of the project deemed to pose environmental risks. Changes to, and adaptations of Method Statements should be made in response to changes in construction methods or where effectiveness of environmental management measures requires improvement.

The Engineer / ECO may request a Method Statement for any activity he believes may impact on the environment. The Engineer / ECO may also require changes to a Method Statement if the proposal does not comply with the Specification or if, in the reasonable opinion of the Engineer, the proposal may result in, or carries a greater than reasonable risk of damage to the environment in excess of that permitted by the Specifications.

Approved Method Statements shall be readily available on the site and shall be communicated to all relevant personnel. The Contractor shall carry out the works in accordance with the approved Method Statement. Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the Contract.

3.2.1 Specific Method Statements Required

The following Method Statements shall be provided by the Contractor and submitted to the ECO at least seven working days before any activities commence on site:

- **Site Establishment/De-establishment and Site Camp Division**

The location, layout and method of establishment of the construction camp (including all no-go areas, buildings, offices, lay down yards, vehicle wash areas, fuel storage areas, batching areas and other infrastructure required for the running of the project) shall be detailed and presented in a drawing. Cognisance must be taken of the environmental management requirements set out in this EMPr in developing this plan.

- **Fuel Storage and Use**

The design, location and construction of the fuel storage and service areas as well as for the filling and dispensing from storage tanks and management of drip trays.

- **Solid Waste Management**

Expected solid waste types, sorting methods, quantities, methods and frequency of collection and disposal, as well as location of disposal sites. Include details of the proposed recycling program.

- **Contaminated Water**

Methods of minimising, controlling, collecting and disposing of contaminated water.

- **Stormwater management**

Methods of managing, controlling, stormwater runoff during construction.

- **Cement and Concrete Batching**

Location, layout and preparation of cement / concrete mixing areas including the methods employed for the mixing of concrete, particularly the containment of runoff water from such areas and the method of transportation of concrete.

- **Dust**

Details on the methods employed for reducing dust on the site.

- **Emergency Procedures**

Emergency procedures for fire, accidental leaks and spillages of hazardous substances (including fuel and oil). Include details of risk reduction measures to be implemented including fire-fighting equipment, fire prevention procedures and spill kits (materials and compounds used to reduce the extent of spills and to breakdown or encapsulate hydrocarbons).

- **Noise mitigation methods**

Detail the steps to be implemented to reduce/avoid noise impacts on the surrounding area.

- **Additional Method Statements required**

Any additional Method Statements that may be required by the Engineer and ECO during the course of construction are to be provided by the Contractor within a minimum of 10 working days prior to the commencement of works or activities to which they apply.

The ECO may require changes to a Method Statement if the proposal does not comply with the specification or if, in the reasonable opinion of the ECO, the proposal may result in, or carries a greater than reasonable risk of damage to the environment in excess of that permitted by the specifications or any legislation.

Approved Method Statements shall be readily available on the site and shall be communicated to all relevant personnel and Sub-contractors. The Contractor shall carry out the works in accordance with the approved Method Statement. Approval of the method statement shall not absolve the Contractor from any obligations or responsibilities in terms of the contract. No claim for delay or additional cost incurred by the Contractor shall be entertained should the inadequacy of a method statement be the cause.

3.3 ENVIRONMENTAL MANAGEMENT REQUIREMENTS

The environmental management requirements take account of the findings of the 24G Environmental Impact Report (EIR) and specialist studies, together with the typical measures needed to prevent or at least minimise potential adverse environmental effects associated with construction activities. Method Statements must take account of these requirements. Additional measures may be identified during the course of construction and Method Statements would be required in this regard. Environmental management requirements cover the following:

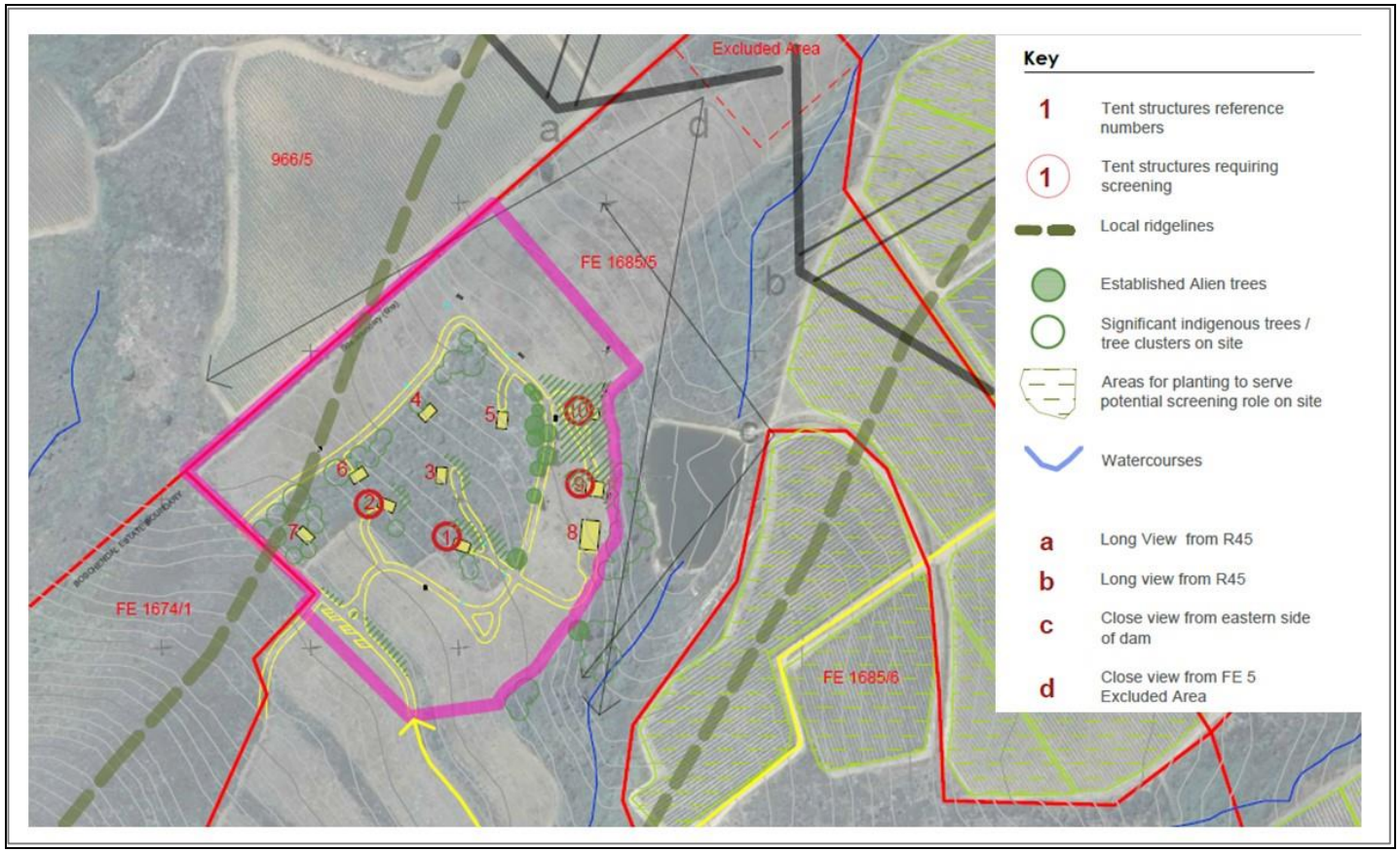
- Design & Remediation Measures;
- Waste management;
- Soil, Freshwater & Groundwater pollution management;
- Protection of natural features, fauna and flora;
- Protection of any paleontological and archaeological resources;
- Noise management;
- Dust management;
- Aesthetics;
- Site access, access routes, and traffic management;
- Labour relations, facilities and site health and safety;
- Incident management;
- Resource use (raw materials and natural resources); and
- Site clean-up and rehabilitation.

Table 4: Table of Environmental Management Requirements / Specifications for the Construction Phase

ISSUE	MANAGEMENT / MITIGATION MEASURES
DESIGN & REMEDIATION MEASURES: Management Statement and objective: To ensure that the final site designs are in line with the recommendations made in the environmental assessment phase. To ensure that all required remediation and restoration measures are implemented. Impact Management Outcomes: No deviations from the below.	
General Requirements	• No further construction activities may occur until Environmental Authorisation has been received and the required permits are in place (Jackson & Martin, 2021). • No infrastructure must be placed in areas of high sensitivity (Jackson & Martin, 2021). • Any future infrastructure required for this site must be located within the transformed area (fallow land) (Jackson & Martin, 2021). • Clearing of indigenous vegetation is not permitted (Jackson & Martin, 2021 & Snaddon, 2021). • No further clearing within the impacted Boland Granite Fynbos patch may occur for additional roads or tents (Jackson & Martin, 2021).
Heritage considerations	• The lifespan of the Tented Camp must be temporary as specified by the Temporary Departure application (5 years) in terms of section 15 (2) (c) of the SM LUPBL (Winter et. al., 2021). • No expansion of the Tented Camp may be undertaken without a permit from SAHRA in terms of Section 27 (18) of the NHRA (Winter et. al., 2021). • A homestead on the Excluded Area of FE 5 may not be constructed until the Temporary Departure to regularise the tented camp from a land use and planning perspective has lapsed and the tented camp has been removed (Winter et al., 2021). • The recommendations of the heritage specialists as presented on page 46 of the HIA and as incorporated into this EMPr must be adhered to.
Roads and Parking	• Further roads, tracks or cleared areas should be avoided, if possible, to minimise visual scars in the landscape (Winter et. al., 2021). • Access roads on site should not be widened (Jackson & Martin, 2021). • Where sections of access roads / tracks are no longer required, these must be revegetated, or narrowed down to single-track paths (Winter et. al., 2021). • Excavations for parking or turn-arounds must be avoided, especially where the underlying saprolite will be exposed (Winter et. al., 2021).

	• Cars should be parked in groups of not more than 2 or 3 alongside the access roads in unobtrusive positions as identified on the site plan (Winter et. al., 2021). • Imported material or paving for roads and parking should be avoided, except for stone chips and mulch (Winter et. al., 2021). • Parking areas should preferably be constructed using permeable materials to allow for infiltration of water (Snaddon, 2021). • Bicycle paths through the riparian area around the stream must be limited, and no new paths constructed (Snaddon, 2021).
Signage and Lighting	• Signage should be kept to a minimum. Signage is restricted to a maximum height of 1,2 m and must have dark backgrounds as per existing signage on site (Winter et. al., 2021). • No advertising signage, flags or banners will be permitted to avoid visual intrusion on the surroundings (Winter et al., 2021). • Outdoor lighting must be kept to a minimum and consist of low-level bulkhead or bollard type lighting with reflectors that cast the light downwards, and where the light source is not visible (Winter et. al., 2021). • Lighting must be directed away from all sensitive natural areas (Snaddon, 2021& Jackson & Martin, 2021). • The existing lights fixed to the outside of the tents should be fitted with reflectors or replaced with bulkhead lights as described above (Winter et. al., 2021). • All unnecessary lighting must be removed from site (Hawkes, 2021). • Wherever possible all fluorescent (including compact fluorescent), high pressure sodium vapour, mercury vapour and metal halide fittings should be exchanged for low pressure sodium vapour or monochrome yellow/orange LED fittings. Alternatively, filters should be fitted to eliminate all UV and blue components of the light emitted (Hawkes, 2021). • Lighting not in use should be switched off immediately (Hawkes, 2021). • Installation of motion-detector controls (Hawkes, 2021). • Omni-directional light fittings should be avoided, and all directional fittings should be correctly oriented so that light is restricted to where it is needed, without unnecessary spill into the surroundings. If external lighting of structures is essential (e.g. for security reasons), light sources should be directed inward toward the structure/building, so as to light up the structure and result in this becoming a large diffuse light source, rather than having bright point sources directed from the structure/building outward into the natural environment (Hawkes, 2021). • Non-directed, partially directed or omnidirectional light sources should be shielded so that light is prevented from reaching the surrounding environment. Internal lighting should as far as possible be shielded by blinds/curtains (Hawkes, 2021). • Light fixtures comprising enclosures within which insects can become trapped after being attracted by the light should be rendered insect-proof by being properly sealed. Where complete sealing is not possible due to resulting heat build-

<table>
<tr><td></td><td>up and danger of equipment failure or fire, the fixtures should be replaced, or sealed using metal gauze to allow airflow but prevent ingress by insects (Hawkes, 2021).
• Research into alternative monochrome LED sources that avoid peak firefly sensitivity wavelengths should be encouraged (Hawkes, 2021).</td></tr>
<tr><td>Landscaping</td><td>• Further clearing or excavations that expose the saprolite must be avoided on site (Winter et. al., 2021).
• Existing exposed embankments must be revegetated if a low dry-packed stone wall or gabion is constructed at the foot of the embankment and backfilled with any available colluvial soil from the site (Winter et. al., 2021).
• The clayey ground surface around the mess and kitchen, which becomes sticky in winter and hard in summer, should be covered with a geofabric and stone chips to create a more trafficable and visually pleasing surface (Winter et. al., 2021).
• No gardenesque planting layouts or exotic plant material is permitted to be planted (Winter et. al., 2021).
• All invasive exotic vegetation, such as pine seedlings, Port Jackson and bugweed, must be cleared from the farm portion relating to the camp on an ongoing basis. This will also help to reduce fuel load in terms of fire hazard (Winter et al., 2021).
• The mature Monterey pines, which are spreading seedlings on the mountain slopes, must be removed on a phased basis over the next 5 years, as the indigenous vegetation takes over (Winter et al., 2021).
• Suitable fast-growing indigenous trees should be planted adjacent to the more visually exposed tents (refer to Figure 8). The below tree list must be followed (Winter et. al., 2021 & Jackson & Martin, 2021):
<table>
<tr><th>SPECIES NAME*</th><th>COMMON NAME</th><th>COMMENTS</th></tr>
<tr><td>Apodytes dimidiate</td><td>White pear</td><td>Useful for screening</td></tr>
<tr><td>Brabejum stallatifolium</td><td>Wild almond</td><td>Grows along water courses on the Founders' Estate. Bushy, spreading habit. Useful for visual screening.</td></tr>
<tr><td>Cassine peragua</td><td>Bastard saffron</td><td>Small shrubby tree of mountain slopes and water courses. Fruit attracts birds.</td></tr>
<tr><td>Metrosideros angustifolia</td><td>Lance-leaf myrtle</td><td>Small bushy evergreen tree mainly found along water courses. Useful for visual screening.</td></tr>
<tr><td>Olea europaea subsp. africana</td><td>Wild olive</td><td>Common evergreen tree adapted to woodland and stony or sandy hillslopes. Useful for visual screening, windbreaks and bank stabilisation.</td></tr>
<tr><td>Olea capensis</td><td>Ironwood</td><td>Small to medium bushy tree occurring in scrub or evergreen forest.</td></tr>
<tr><td>Olinia ventosa</td><td>Hard pear</td><td>Medium-size tree occurring in evergreen forest or scrub and rocky hillslopes. Fruit attracts birds. Fairly fast growth.</td></tr>
<tr><td>Salix mucronata</td><td>Cape willow</td><td>Small to medium bushy tree. Occurs mainly along stream banks. Useful for visual screening and bank stabilisation.</td></tr>
<tr><td>Tarchonanthus camphoratus</td><td>Camphor bush</td><td>Small bushy tree occurring in a variety of habitats. Useful for erosion control.</td></tr>
<tr><td>Virgilia oroboides</td><td>Keurboom</td><td>Small, bushy pioneer tree with fragrant pea-like flowers. Makes fast growth, but is short-lived.</td></tr>
</table>
* Note per specialist ecological report: Due to the Boland Granite Fynbos occurring in the area being listed as Endangered, avoid species that are not indigenous to this vegetation type, spreading into it and becoming a problem. For this reason, avoid species that easily self-seed. These species should only be transplanted in the areas that are considered transformed. Only indigenous species to the area should be used for the restoration of the patch of Boland Granite Fynbos.</td></tr>
</table>

	• No fertilizer may be used on the site (Snaddon, 2021). • Landscaping requiring ongoing maintenance around the tents must be kept to a minimum, especially within the ecological buffers (Snaddon, 2021).  **Figure 8: Site constraints and informants showing proposed location of trees to serve as visual screening (source Winter, 2021)**
Restoration Plan	• The 1.6 ha patch that the project infrastructure is located within must be restored to represent natural Boland Granite Fynbos (refer to Figure 9. This includes removal of aliens and re-introduction of representative species (Jackson &Martin, 2021).

	• Only species indigenous to the vegetation associated with the Simonsberg Mountain must be planted within the Boland Granite vegetation type (Jackson & Martin, 2021). • Vegetation located around the tent platforms must be restored using species indigenous to Boland Granite Fynbos in order to increase diversity. No exotic species should be planted (Jackson & Martin, 2021). • It is recommended that *Protea burchelli* and *Hermannia rugosa* are replanted within the impacted patch of Boland Granite Fynbos (Jackson & Martin, 2021). • Eco-logs must be placed in areas that are bare of vegetation or that are being rehabilitated, in order to trap sediment, water and seeds (Snaddon, 2021). • Any invasive alien vegetation identified on site must be cleared and removed from site according to an alien invasive management plan (Jackson & Martin, 2021) - *refer to operational phase EMP* • With the exception of the large pine trees on the north-eastern corner of the site which could be heritage trees (to be confirmed) all category 1b species must be removed from site. The removal will need to be managed and maintained until these species have been eradicated. It is suggested that locally indigenous species specific to this vegetation type are planted in the gaps left by the removal of alien invasive plants (Jackson & Martin, 2021). • **Restoration must be undertaken by a qualified fynbos restoration specialist/qualified botanist in line with the specifications contained in this EMPr. Exact areas and methods for restoration must be defined by the specialist.**

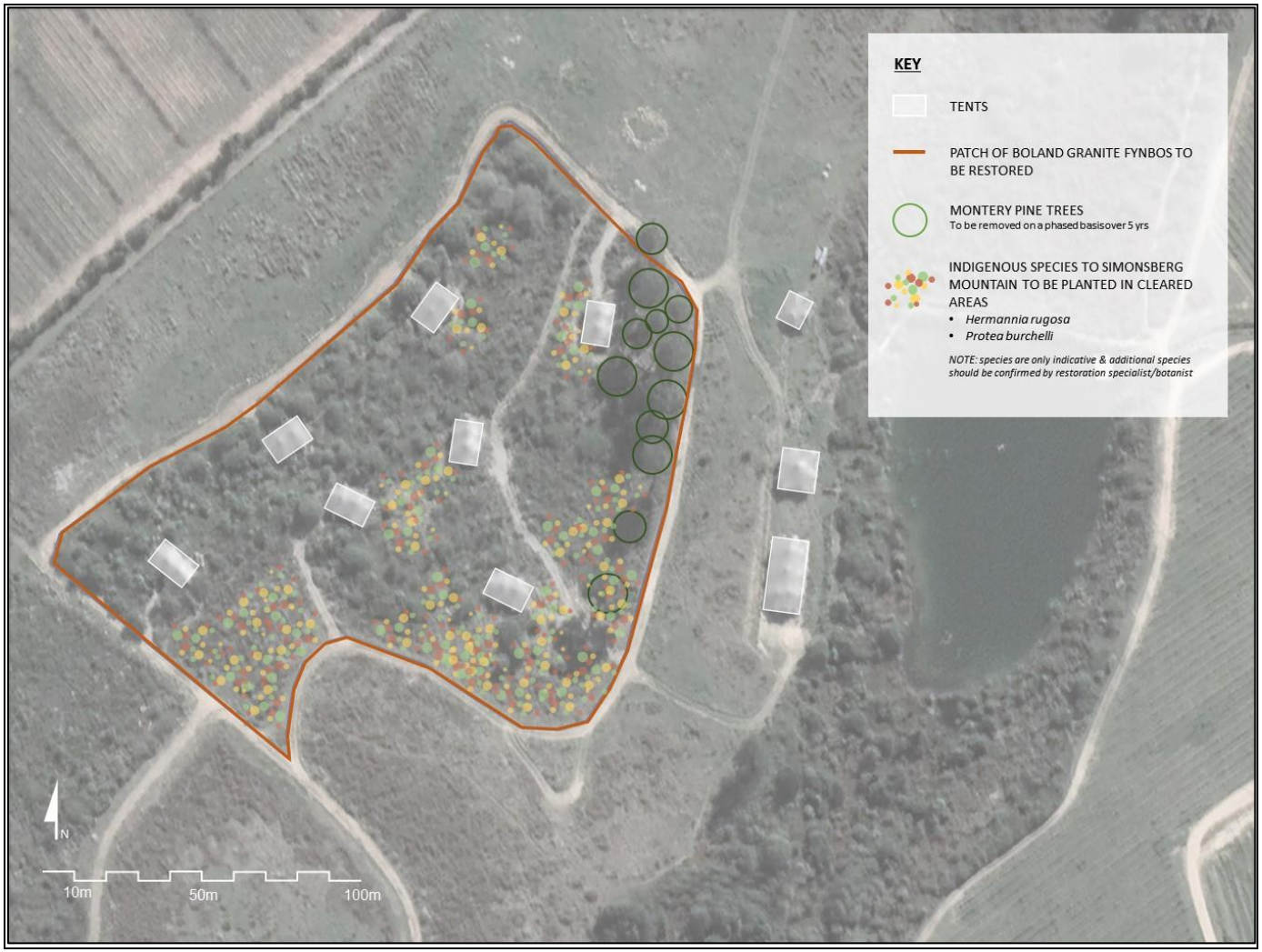


Figure 9: Visual representation of area were restoration should be undertaken i.e., the impacted patch of Boland Granite Fynbos (created by EAP) to be defined by specialist

Stormwater & run-off design and management	• All hardened areas within the site should be associated (where possible) with vegetated filter strips (broad, sloped vegetated areas that accept shallow runoff from hardened surfaces), bioswales (landscaped areas that are designed to remove silt and a number of pollutants from runoff, through ensuring that water flows slowly along these gently sloping (<6% slope) features, often planted with grass or other plant species, mulch or riprap), and / or bio-retention systems (vegetated areas where runoff is filtered through a filter media layer, e.g. sand, as it percolates downwards), all of which are designed to reduce the quantity of runoff leaving a hardened surface and entering the stormwater system (Snaddon, 2021). • Stormwater should not be conveyed directly (eg. by pipe or drain) into the stream but must flow along unlined swales, permeable areas and bioswales (Snaddon, 2021). • Effort should be made to minimise the hardening of surfaces across the whole site. Natural areas, gardens and road verges are areas where water can filter into the ground (Snaddon, 2021). • New hardened surfaces (impermeable) must be limited to the developable area outside the stream's riparian area (i.e. outside the ecological buffer) (Snaddon, 2021). • Runoff from hardened surfaces must be allowed to filter into the soil (Snaddon, 2021). • Pathways through the stream's riparian area must be permeable (Snaddon, 2021). • Parking areas should preferably be constructed using permeable materials to allow for infiltration of water (Snaddon, 2021).
Sewer design	• The area immediately around the sewage treatment units should be protected with a berm, which would catch surface water flowing out of any of the components (Snaddon, 2021). • Treated wastewater should be directed to a soakaway downslope of each Unit, and not discharged to the stream, or used for irrigation on the site (Snaddon, 2021).

ISSUE	MANAGEMENT / MITIGATION MEASURES
WASTE MANAGEMENT Management Statement and objective: To prevent pollution/contamination associated with the generation and temporary storage of general waste, hazardous waste construction rubble and litter generated by the workforce on site during construction/decommissioning. Impact Management Outcomes: No non-conformances and no pollution of soil, groundwater and/or stormwater/freshwater as a result of waste generation and management activities.	
General requirements	• Construction related waste will typically include general waste (such as plastic packaging, strapping, and lunch wrappers.), rubble (like broken bricks, tiles, waste concrete) and limited quantities of hazardous waste items (e.g. paint tins, oily rags etc.).

	• The Contractor shall be responsible for the establishment of an integrated waste management system that is acceptable to the Engineer and ECO, and a Method Statement is required in this regard. The Method Statement must include a description of the estimated quantity and types of waste, a description of the services required to store, collect, transport and dispose of waste and a procedure for separating recyclable and non-recyclable material. The local authority must be notified of any changes to the estimated quantities and types of waste. • No refuse, demolition rubble or waste material will be disposed of by burying. • Construction and demolition waste must be sorted into recyclable and non-recyclable waste. • The Contractor will be responsible for ensuring the removal of the waste to municipal-approved recycling facilities (where possible), as well as the final disposal of non-recyclable wastes at a registered landfill facility. • On-site waste segregation shall take place. Waste shall be sorted into the following categories: - Paper / cardboard; - Metals; - Non-recyclable general waste; - Glass; and - Hazardous waste. • Contact the following numbers for information on recycling collection points: - Plastic containers: Plastics Federation (021) 591 5512; - Cans and tins: Collect-a-Can (021) 534-7010; - Glass: Consol Glass (021) 888 4000; - Motor and cooking oils: Oilkol (086) 110 1961; - Paper: Nampak 0800 018 818; and - Organic waste: Reliance Compost (021) 872 5962. • Small local businesses offering waste management services should be supported, where feasible.
Storage, handling and disposal of general waste	• All waste shall be sorted in the waste handling / storing area. The location of the waste storage area shall be located at least 50 m from the riparian area and must be approved by the ECO (Snaddon, 2021). • Waste may be temporarily stored on site in a central waste storage area that is weatherproof and scavenger-proof, and which both the Engineer and the ECO have approved. • Colour-coded or clearly marked skips / bins will be utilised in order to differentiate the various waste types suitable to each receptacle. • General waste must be removed from the site at least once every two weeks provided that it does not pose a risk to human health.

	• Waste may only be disposed of at a licenced landfill site approved by the Engineer and the ECO or to legitimate recycling facilities. • Waste disposal certificates must be obtained and filed in the environmental file and submitted with the monthly audit reports. • As far as possible, materials used or generated by construction shall be recycled. **Recycling ensures that we do not waste valuable resources** **Recycling can also create employment opportunities**
Litter prevention and housekeeping	• Litter and general waste materials (excluding rubble and hazardous waste materials) shall be disposed of into scavenger- and weather-proof bins. • The Contractor shall provide sufficient bins with lids on site to store the waste produced on a daily basis. Bins shall not be allowed to become overfull and shall be emptied as required, but at least weekly, to prevent overtopping. • The Contractor shall provide dedicated resources to clean up the Contractor's camp and working areas **daily** and ensure that refuse is placed within the central waste storage area to prevent spreading as a result of wind. • Empty cement bags must be collected from the construction area by the end of every day and before rain events and shall be stored in bins that are either placed under cover or have been fitted with lids. • Wind-blown litter beyond the site boundary that are in the opinion of the ECO emanating from works on site must be cleared as part of the waste management of the site.
Storage, handling and disposal of hazardous waste	• Hazardous waste must be stored separately and in a location a minimum of 50 m from the riparian area and stream. Hazardous waste containers must be stored in a secure area with bunding / secondary containment. The location of the storage area is to be approved by the Engineer and the ECO. • All hazardous waste must be placed in drums / containers labelled for this purpose. These containers must be kept securely closed when not in use and must be protected from the ingress of rain. • Hazardous waste may not be disposed to a General Landfill site and waste must be removed by a registered hazardous waste Contractor for disposal to a licensed hazardous waste landfill. This must be done at least once every three months in accordance with the limit applicable to the temporary storage of hazardous waste, provided that it does not pose a risk to human health. • Records of hazardous waste disposal must be maintained. The Contractor shall retain copies of receipts from such waste disposal sites to the Engineer and ECO as proof of proper disposal. • Storage and disposal of waste items are also controlled through other relevant legislation which must be complied with e.g. Occupational Health & Safety Act.
Storage, handling and disposal of vegetative waste	• Cleared vegetative material is not to be disposed anywhere and must be chipped and/or composted at a licensed facility.

	• Any invasive alien plant species, which are removed from the site, are not to be chipped for mulch if they are in a seed-bearing state. Such material is to be disposed of at a suitable waste disposal site. • Plant material removed from the site is not to be burnt for disposal on site.
Storage, handling and disposal of builders and demolition rubble	• In accordance with the integrated waste management approach to be followed through the construction and decommissioning phases of the development, materials used or generated by construction, or the construction areas shall be re-used as far as possible (either on site or on a different site) • All builders'/demolition rubble is to be removed from the works area on a weekly basis and taken to the temporary storage area at the site camp. • The Contractor shall provide resources to clean up the Contractor's camp and working areas of rubble generated in the course of construction work at least twice a week, or more frequently if specifically required. • Rubble shall be temporarily stockpiled in a waste skip or a central stockpile and shall be removed from site to an approved landfill site as soon as it constitutes a practical load for removal and before temporary closure of the site. • No plastics, shrink wrap, paint buckets or any other debris that do not constitute clean building rubble, shall be stored at such stockpile sites.

ISSUE	MANAGEMENT / MITIGATION MEASURES
SOIL, FRESHWATER & GROUNDWATER POLLUTION MANAGEMENT Management Statement and objective: To prevent impacts on the riparian area, to prevent groundwater, soil and freshwater pollution / sedimentation associated with the handling storage and use of hazardous materials or materials that have the potential to cause environmental harm. Impact Management Outcomes: No non-conformances, no evidence of sedimentation and no pollution of soil, groundwater and/or stormwater or any water courses as a result of the construction/decommissioning activities.	
Prevention of impacts on the watercourse and riparian area at the site	• The stream and riparian areas that are outside of the approved development footprint should be demarcated as "no-go" areas prior to commencement of construction and decommissioning activities. No vehicles, machinery, personnel, construction material, cement, fuel, oil, bitumen or waste should be allowed into these no-go areas, unless express permission is granted by the Environmental Control Officer (ECO) for specific activities. Refer also to Figure 10 for a No-Go Area map. • No spoil material, including excavated soil, should be temporarily stockpiled within any stream and riparian areas and all soil stockpiles should be covered (e.g. with geotextile or plastic sheeting) and not exceed a maximum height of 1.5 m (Snaddon, 2021). • The site office and construction camp, and all temporary toilets and solid waste disposal facilities, should be located at least 50 m from the edge of the stream and riparian areas (Snaddon, 2021). • During construction and decommissioning activities, the stream and riparian areas adjacent to the site should be inspected at least weekly by the DEO for signs of disturbance, sedimentation and pollution. If signs of disturbance, sedimentation or pollution are noted, immediate action should be taken to remedy the situation and, if necessary, a Freshwater Ecologist should be consulted for advice on the most suitable remediation measures.

Hydrocarbon storage & handling	• Bulk storage of fuel/hydrocarbons is strictly prohibited, and the temporary storage of such substances will be limited as far as possible. Note that storage of fuel in volumes greater than 200 litres is subject to a flammable substance permit, obtainable from the local fire chief. All storage areas for such substances shall be bunded, covered and have an impermeable surface and shall be located in areas approved by the ECO, at least 50 m from the edge of riparian area on site. • The Contractor shall ensure that all liquid fuels (petrol and diesel) are stored in tanks with lids, which are kept firmly shut. • Machinery prone to oil or fuel leakage must be located at least 50 m away from the edge of the riparian area, with the area adequately bunded in order to contain leakages (Snaddon, 2021). • All construction machinery and vehicles should be checked for oil and fuel leaks daily. • Servicing of vehicles, machinery, plant or equipment is strictly prohibited on the site. • Refuelling and fuel storage areas, and areas used for the emergency repair or parking of vehicles and machinery, should be located on impermeable bases and should have bunds around them to contain any possible spills. • All maintenance of plant shall be performed off site. If it is necessary to do emergency repairs on site, the Contractor shall obtain the approval of the Engineer and ECO prior to commencing activities and ensure that there is no contamination of the surrounding soil or vegetation by using drip trays to collect waste oil and other lubricants. • Drip trays shall be provided in construction areas for stationary plant (such as compressors) and for "parked" plant (such as scrapers, loaders, vehicles). Drip trays shall be inspected and emptied daily and serviced when necessary. In particular, drip trays shall be closely monitored during rain events to ensure that they do not overflow. Drip trays must be free of cracks/ holes / punctures to ensure no spillage from these receptacles. • Stationary equipment (such as generators, water pumps, cement mixers etc.) must also be placed inside drip trays whilst in use to contain oil and fuel leaks. Drip trays must be checked and cleaned daily (Snaddon, 2021). • When parked, a drip tray must be placed under the temporary fuel storage tanker (bowzer) to contain incidental drips and spills. • Refuelling of plant/equipment must be undertaken on a concrete platform with secondary containment. The necessary decanting equipment must be used to prevent spills and leaks whilst refuelling.
Hazardous chemical substances storage and handling	• If potentially hazardous substances are to be stored on site, the Contractor shall provide a Method Statement detailing the substances/ materials to be used, together with the storage, handling and disposal procedures of the materials. • Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) used during construction shall be stored in secondary containers. • No storage of hazardous or chemical substances is permitted within 50 m of the edge of the riparian area. • The relevant Material Safety Data Sheets (MSDS) shall be available on site. • Procedures detailed in the MSDSs shall be followed in the event of an emergency situation. • No paint products and chemical additives and cleaners such as thinners and turpentine, may be disposed of on site

Spills and spill control	• A Method Statement must be put in place for the handling of spills and leaks. The Contractor shall ensure that his employees are aware of the procedure to be followed in this regard and shall make the necessary materials and equipment for dealing with spills and leaks available on site at all times. Clean-up and remediation must occur immediately after a spill incident. • All fuel, oil or hydraulic fluid spills are to be reported to the Engineer or ECO immediately. • In the event of a hydrocarbon spill, the source of the spillage must be isolated, and the spillage contained. Should a leak emanate from equipment (such as earth moving equipment), the machinery shall be parked on a hard surface until such time as a repair can be made, to prevent contamination of bare ground. • The Contractor shall ensure that there is always a supply of appropriate material readily available to absorb/ breakdown and where possible be designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle the volume of a spill similar to the volume of the largest container on site used for storage of such substances that are not stored and / or used inside a bunded area. This material must be approved by the Engineer prior to any refuelling or maintenance activities. • Refer also to the Incident Management specification table.
Cement handling	• Cement powder has a high pH. Spillage of dry cement powder and concrete slurry will affect both soil and water pH adversely. The permitted location of the batching plant (including the location of cement stores and sand and aggregate stockpiles) shall be indicated on the site layout plan and approved by the ECO. • Mixing of concrete must occur at least 50 m away from the riparian area (Snaddon, 2021). • Cement is to be stored in a secure weatherproof location to avoid contamination of the environment. • All runoff from batching areas shall be strictly controlled so that contaminated water does not enter stormwater, or groundwater or any water courses. Dagga boards and mixing trays should be used at all mixing and supply points. • Cleaning of equipment and flushing of mixers shall not result in pollution of the surrounding environment. • Settling tanks for the evaporation of contaminated water should be constructed with an impermeable surface. Settling tanks must be stored at least 50m away from the riparian area. Sediment should be left to dry out before being removed to the hazardous waste skip.

Prevention of soil and ground water pollution (contaminated water handling)	• The Contractor shall prevent pollution of surface or ground water as a result of construction activities. Such pollution could result from the release, accidental or otherwise, of chemicals, oils, fuels, sewage, water from excavations, construction water, water carrying soil or other particles or waste products, etc. • No residues from cleaning activities or any other form of contaminated water may be released onto bare soil or into vegetated areas. Such wastewater must be appropriately contained and disposed. • Any incident that may result in the pollution of a water resource must be reported to the ECO and the Department of Water and Sanitation immediately. • No watercourse in the greater area shall be used for disposal / dumping of any material or substance under any circumstances, even temporarily. • The washing of equipment shall be restricted to urgent or preventative maintenance requirements only. • Wash areas for domestic use shall ensure that the disposal of contaminated "grey" water is sanctioned by the Engineer. • Water containing potential pollutants such as cements, concrete, lime, chemicals, fuels and hydrocarbons shall be contained and discharged into an impermeable storage facility for evaporation and ultimate removal from the site or for recycling. This particularly applies to water emanating from concrete batching plants and concrete swills, and to runoff from hydrocarbon storage areas. Under no circumstance may contaminated water be discharged into the watercourse at the site or in the greater area. • Contaminated runoff should be prevented from entering stormwater, groundwater and freshwater systems. • Washing of vehicles, machinery, plant or equipment is strictly prohibited on the site.
Erosion prevention and sedimentation control	Erosion and sedimentation can occur due to the loss of vegetation, compaction of soils due to excavations, trampling by construction personnel and movement and storage of materials and machinery during the construction. The following mitigation measures must be put in place: • Exposed surfaces should be compacted as quickly as possible. • The Contractor shall take all reasonable measures to limit erosion and sedimentation due to the construction activities. Where erosion and/or sedimentation occurs, whether on or off the site, despite the Contractor complying with the foregoing, rectification shall be carried out in accordance with details specified by the Engineer. Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification shall be carried out to the reasonable requirements of the Engineer. • The Contractor shall be vigilant during periods where strong winds prevail (especially during the dry summer months) to manage dust generation in accordance with the Dust Control Regulations. No potable water shall be used for dust suppression purposes while water restrictions apply. Refer also to the Dust Management specification table.

ISSUE	MANAGEMENT / MITIGATION MEASURES
PROTECTION OF NATURAL FEATURES, FAUNA AND FLORA • Management Statement and objective: To ensure that no vegetative cover is removed and/or impacted on outside of the approved works area. To protect any protected plant species on the property and prevent impacts on fauna found on the site. To preserve the top layers of soil for use in rehabilitation. Appropriate temporary storage and stockpiling of topsoil to prevent erosion, sedimentation, and dust pollution. To avoid intrusion into the adjacent natural areas and prevent related impacts. • Impact Management Outcomes: No removal of vegetation and/or other impacts on any vegetative cover. No damage or defacing of any natural features situated in or around the site. No negative impacts on the breeding seasons of fauna found in the vicinity of the site No harm or destruction of faunal habitats or the death of any animals on the site or as a result of actions of removing fauna off site.	
Site camp division and No-go areas	• A Method Statement detailing the layout and method of establishment of the construction/decommissioning camp (including all buildings, offices, lay down yards, wash areas, fuel storage areas, batching areas and other infrastructure required for the running of the project) and indicating these in a drawing shall be submitted to the ECO for review and approval. • All site camps, laydown areas etc. must be located in already transformed areas (i.e. not within riparian or biodiversity sensitive areas). No further clearing of the Granite Fynbos vegetation and Boland Fynbos vegetation is permitted on site (Jackson & Martin, 2021). • All construction areas must be clearly demarcated and the area outside of this to be labelled as "no-go areas" so as to prevent encroachment into areas not required for construction. • The edge of the riparian area must be clearly demarcated and fenced off (using temporary fencing and danger tape) before any work or site preparation begins. These areas are defined as the no-go areas during construction/decommissioning phases (Snaddon, 2021). • The Contractor shall restrict all activities, materials, equipment and personnel to within the area specified. • Movement of vehicles and personnel, stockpiling, dumping or storage of equipment or materials outside the designated working areas, termed as "no-go" areas, will not be permitted without written authorisation of the Engineer and ECO. • No-go areas will be demarcated to the satisfaction of the Engineer and the ECO so as to prevent unauthorised entry into these areas. • The recommended buffer for Stream 1 (above the dam) is 42 m for the Construction Phase reducing to 36 m below the dam (Snaddon, 2021). • Storage of materials must occur at least 50 m away from any sensitive areas within bunded areas (Snaddon, 2021). • Pathways and access roads for construction, demolition and decommissioning must avoid the stream and its riparian area (Snaddon, 2021).

	• No-go areas for this project include the riparian buffer area of stream 1, the intact Boland Granite Fynbos vegetation and watercourse to the west of the site and all areas within the impacted patch of Boland Granite Fynbos except for disturbed tented platform areas and internal roads and pathways (refer to the no-go area map in Figure 10.)
Management of potential disturbance to fauna	• If animal species are encountered in the course of construction/decommissioning activities the ECO or the Site Engineer (if the ECO is not on site) must be consulted so that any animals vulnerable to injury can be moved.

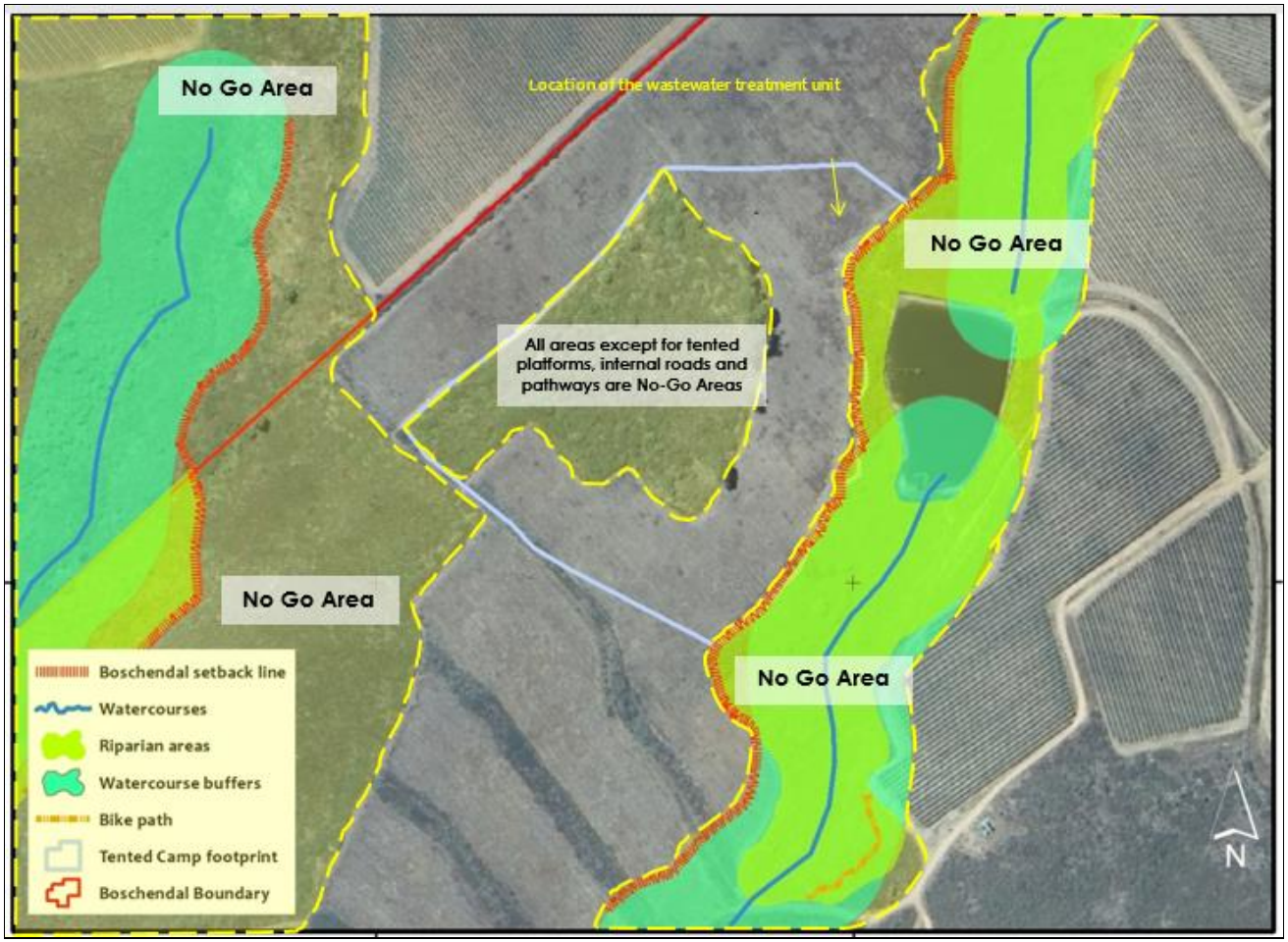


Figure 10: No-Go Area Map

	• Hunting of any animal species is strictly prohibited. • If any dangerous species are encountered, the ECO must be consulted regarding their removal and all contractor employees shall be moved away from the area until a professional can remove the animal in a safe manner. • There may be no interference or harassment of wild animal species. If wild animals are encountered, they should be avoided and not approached. • Assist (harmless) animals in moving: When animals are observed and they appear to be trapped or unable to escape to a safe area, they should be assisted in so doing. Animals that are potentially dangerous should be moved with the help of knowledgeable and experienced persons. It is recommended that the Cape Reptile Club (Secretary: Marcel Witberg: 082 784 7314) be approached for the contact details of a local person who would be able to be on site at short notice, should a situation arise. This person should be put on standby for the period of site clearance. • Do not leave holes and trenches open for extended periods of time. Holes and trenches should be left open for as short a period of time as possible, because such cavities act as pitfall traps for small animals.
Management of potential disturbance to flora	• Constant monitoring of the construction/demolition site by the Site Engineer and ECO must occur, and all alien plant species removed from or destroyed on the site (Snaddon, 2021). • No materials containing invasive plant seeds, litter or contaminants may be imported. The Supplier shall be informed of the sites of origin of imported gravel, sand, stone, etc. and shall have the authority to reject imported material if deemed necessary. • Topsoil and sand imported on site must be inspected for seedlings throughout construction and decommissioning phases. All identified seedlings must be removed regularly from site (Snaddon, 2021). • If any SCC are to be impacted, these must be relocated to nearest appropriate habitat (Jackson & Martin, 2021).

ISSUE	MANAGEMENT / MITIGATION MEASURES
PROTECTION OF ANY PALEONTOLOGICAL AND ARCHAEOLOGICAL RESOURCES **Management Statement and objective:** Protection of archaeological and/or palaeontological resources on, or adjacent to the site. **Impact Management Outcomes:** No non-conformances in terms of the specifications contained in the EMPr and no impacts on such resources.	
General	• The supervisor/foreman must be encouraged and informed of the need to watch for potential fossil and buried archaeological material. • This aspect must be carefully explained to workers during the Environmental Education Programme undertaken by the ECO. • The ECO will advise on demarcation of this area and notify a relevant specialist to view material and ascertain whether further study of the area is required.

	• If any human remains are discovered during earth moving activities, they are to be treated with respect and the South African Police Service contacted immediately. Should the SAPS indicate that the remains are older than 60 years, SAHRA should be notified. An archaeologist should be contracted to remove such remains at the expense of the developer. A maximum of 30 days should be set-aside in the construction program for the recovery of archaeological material where/if discovered. The contact details for the SAHRA are as follows: 111 Harrington Street, Cape Town, 8001 P O Box 4637, Cape Town, 8000 Tel: (021) 462 4502 Fax: (021) 462 4509 Email: director@sahra.org.za **The following is noted in terms of the NHRA (as instructed by SAHRA):** • 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Ngqabutho Madida 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • 38(4)d – See section 51(1) of the NHRA regarding offences; • 38(4)e – The following conditions apply with regards to the appointment of specialists: i) If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA;

ISSUE	MANAGEMENT / MITIGATION MEASURES
NOISE MANAGEMENT **Management Statement and objective:** To avoid and/or minimise impacts on the adjacent land-users. To provide a forum for any Interested and/or Affected Parties to raise their concerns and log complaints for remediation action and prevention of similar incidents. **Impact Management Outcomes:** No disruptions or nuisance to adjacent land-users caused by noise from the construction/decommissioning of the site. Effective complaints handling. No repeat complaints received.	
Management of potential noise disturbance	Noise, at a level typically associated with construction activities, would be experienced by surrounding land users as well as the users of the road during the course of construction and decommissioning works • Noise generated on site from all the proposed activities must comply with the Western Cape Noise Control Regulations Provincial Notice 200/2013. • The Contractor's attention is drawn to the Noise Regulations as promulgated in terms of the Environment Conservation Act and relevant Local Authority bylaws. • All noise and sounds generated by machinery must adhere to SABS 0103 specifications for the maximum permissible noise levels for construction in residential areas. • In terms of noise legislation, a noise exemption permit needs to be obtained if the limits as contemplated in legislation will be exceeded for any given period of time. This requires obtaining of signatures from affected parties within a 150 m radius of a site. • Working hours must be restricted to normal daily working hours considered in the construction regulations. Should works be necessitated outside of these hours, surrounding residents must receive timeous notification. • Machinery to be fitted with silencers and no sound amplification equipment such as sirens, loud hailers and hooters may be used on site except in emergencies. • No amplified music shall be allowed on site. • No noise generating work may take place at night unless prior approval was granted by the local municipality and notification was sent to the surrounding residents. • The Contractor shall take preventative measures, such as screening, muffling, timing and pre-notification of affected parties to minimise complaints regarding noise. • The Contractor shall control the movement of all vehicles and plant including that of his suppliers so that they remain on designated routes/haul roads, so as not to cause an undue environmental damage.

ISSUE	MANAGEMENT / MITIGATION MEASURES
DUST MANAGEMENT **<u>Management Statement and objective:</u>** No unacceptable levels of dust. To avoid and/or minimise impacts on adjacent land-users to ensure that any such impacts are appropriately dealt with to prevent further impacts in the longer term. To prevent wind and water erosion and/or sedimentation of any natural features. To provide a forum for any Interested and/or Affected Parties to raise their concerns and log complaints for remediation action and prevention of similar incidents. **<u>Impact Management Outcomes:</u>** No disruptions to surrounding land-use activities, no nuisance to adjacent land-users caused by dust. Effective complaints handling. No repeat complaints received.	
Prevention of dust nuisance	• Dust generated from all the phases of the proposed activities must comply with the NEM: AQA, National Dust Control Regulations (Government Notice No. R. 827) of 1 November 2013, all Local Authority Bylaws as well as the National Dust Control Regulations, Notice R.827 of 2013 and must be adhered to. These regulations prohibit a person from conducting any activity in such a way as to give rise to dust in such quantities and concentrations that the dust, or dust fallout, has a detrimental effect on the environment, including human health. • All potential air pollutants on site must be monitored and if causing significant emissions must be mitigated strictly as per this EMPr • The Contractor shall take all reasonable measures to minimize any dust nuisance, pollution of streams and inconvenience to or interference with the public (or others) as a result of the execution of the works. A Method Statement will be required in this regard as determined by the Engineer and ECO. • During windy and dry conditions, dust suppression methods must be employed. NOTE: The use of potable water for dust suppression is not permitted when water restrictions are in place and discouraged even when water restrictions are not in place. • Stockpiles of materials as well as the loads on all trucks transporting any material that could lead to dust pollution should be covered with a tarpaulin or similar cover to minimise dust / windblown sand. • All stockpile of building materials (e.g. sand) must be protected so as to prevent erosion by wind and water. • In extreme cases, a dust suppression product (e.g. dustex) should be used. The product used must receive prior approval from a freshwater consultant. • During extremely high winds, dust generating activities should be avoided. • Excavation, handling and transport of erodible materials shall be avoided under high wind conditions or when a visible dust plume is present. • All access and haul routes/ roads shall be cleared from sand and/or mud or debris deposited by construction vehicles associated with this project. • The Contractor shall be responsible for any clean-ups resulting from the failure by his employees or suppliers to properly secure transported materials.

	• The Contractor shall take preventative measures, such as screening, dust control, timing and pre-notification of affected parties to minimise complaints regarding dust. • If, in the reasonable opinion of the ECO, excessive dust is noted or complaints regarding dust exceed 1 complaint a week, the ECO may request dust fallout monitoring to be undertaken to determine the need for additional control measures.

ISSUE	MANAGEMENT / MITIGATION MEASURES
AESTHETICS (VISUAL) **Management Statement and objective:** To ensure that visual impacts are avoided as far as possible, and where these cannot be altogether avoided, that it is reduced to acceptable limits. **Impact Management Outcomes:** No unacceptable visual impacts occur as a result of construction activities.	
Site Housekeeping	• The Contractor shall take appropriate measures to ensure that construction activities do not have an unreasonable impact on the aesthetics of the area. • Should it be deemed necessary, the ECO may request that activities which may have a high visual impact be suitably screened off to the surrounding environment. Site construction hoarding / fencing should be dark in colour and free of excessive branding. • The Contractor shall supply and maintain adequate and suitable sheds or containers for the storage of materials. Sheds for the storage of materials that may deteriorate or corrode if exposed to the weather shall be weather-proof, adequately ventilated and provided with raised floors. • All site establishment/de-establishment components (as well as equipment) shall be positioned to limit visual intrusion on neighbours and the size of the area disturbed. • The type and colour of roofing and cladding materials to the Contractor's temporary structures shall be selected to reduce reflection. • The Contractor shall ensure that any lighting installed on the site for his activities does not interfere with road traffic or cause a reasonably avoidable disturbance to the surrounding community or other users of the area. Site lighting should be kept to a minimum and should not be flood type lighting where possible. • Neon, spot or up lighting are visually inappropriate. Light sources should be screened and filtered as far as possible. • Construction signage should not be excessively sized or located along sensitive visual corridors.

	• Machinery and trucks should be stored and kept out of sight of surrounding residential areas and scenic routes where possible. • Site lighting during construction should be kept to a minimum and be directed away from sensitive vegetation and riparian areas. • Machinery and trucks entering and leaving the site should take care not to leave rubble, sand, rock, branches and the like on roads linking to the site.

ISSUE	MANAGEMENT / MITIGATION MEASURES
SITE ACCESS, ACCESS ROUTES AND TRAFFIC MANAGEMENT **Management Statement and objective:** To avoid and/or minimise impacts on the adjacent road network and road users any such impacts are appropriately dealt with to prevent further impacts in the longer term. To avoid construction related impacts associated with the movement of construction/demolition vehicles on adjacent residents. **Impact Management Outcomes:** No disruptions to traffic or adjacent residents, no damage to vehicles and related claims and no nuisance to adjacent communities caused by dust.	
General	• Pathways and access roads for construction, demolition and decommissioning must avoid the stream and its riparian area (Snaddon, 2021) (refer to no-go area map included in Figure 10). • Existing access routes and roadways should be used. • The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (including "no-go" areas) and required to comply with the specifications. • The Contractor shall ensure that delivery drivers are supervised during off loading, by someone with an adequate understanding of the requirements of the specifications. • Access to the site must be carefully managed to avoid unauthorised entry onto the site, and to prevent loitering of construction contractors beyond the development area. • The Contractor shall control the movement of all vehicles and plant including that of his suppliers so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic and comply with all relevant laws and specifications. In addition, such vehicles and plant shall be so routed and operated as to minimise disruption to regular users of the routes not on the site. • All construction vehicle movement shall as far as possible be limited to off-peak hours wherever possible. Delivery of materials or collecting waste shall be scheduled outside of peak periods. • The vehicles of the Contractor and his suppliers shall not exceed the 40 km/h speed restriction within the site and surrounding road network.

	• Where necessary, additional traffic control measures should be implemented. • Construction/demolition of the infrastructure is to be undertaken as part of one construction contract of a limited duration to prevent protracted construction impacts to parties along the affected section of the road. • Subsequent to construction works, all access routes must be inspected and any repairs necessary as a result of the construction of the roadway must be undertaken.

ISSUE	MANAGEMENT / MITIGATION MEASURES
LABOUR RELATIONS, FACILITIES AND SITE HEALTH AND SAFETY **Management Statement and objective:** To ensure the safety of all site personnel as well as the adjacent land users. **Impact Management Outcomes:** No injuries / incidents on site and emergency situations managed effectively. No safety breaches.	
Employment	• Make use of previously disadvantaged individuals for the bulk of the unskilled labour as well as for skilled labour, where feasible.
General safety	• Environmental awareness training courses shall be run for all personnel on site. All new staff and sub-contractors employees that spend more than 1 day a week or four days in a month must attend the environmental education program within 1 (one) week of commencement of work on site. All attendees shall remain for the duration of the course and sign an attendance register on completion that clearly indicates participant's names, a copy of which shall be handed to the engineer. • Telephone numbers of emergency services, including the local firefighting service, shall be posted conspicuously in the Contractor's office near the telephone.
General site security	• No unauthorised firearms are permitted on site and access to the work site by unauthorised persons is to be prevented by the Contractor as far as is practical. • The work site is to be secured and access by members of the public is to be prevented. • The Occupational Health and Safety Act (Act 85 of 1993) and in particular the requirements of the Construction Regulations issued in July 2003, must be complied with. • With the possible exception of any security staff who may be required to stay overnight at the Contractor's camp, no personnel will be permitted to live on site. • Security staff must be provided with heating and cooking facilities (in order that they do not need to light fires), access to toilet facilities and communication equipment. • Any security lighting at the Contractor's Camp is to be placed in such a way as to not cause a nuisance to residents of the area or interfere with road and traffic on adjacent roads or the adjacent natural areas.

Trenching	• Any trenching required for the provision of services to the site shall be done in an environmentally sensitive manner. • Trenching for services should be done in accordance with the engineering specifications (SANS 1200DB). • Trenching shall be kept to a minimum. • The planning and selection of trench routes shall be undertaken in liaison with the Engineer and cognisance should be given to minimising the potential for soil erosion. • Trench routes within permitted working areas shall be clearly defined and marked beforehand with, for example, painted stakes. • Trench lengths shall be kept as short as practically possible before backfilling and compacting. • Trenches shall be re-filled to the same level as (or slightly higher to allow for settlement) the surrounding land surface to minimise erosion. Excess soil shall be stockpiled in an appropriate manner. • Where there is a particularly high erosion risk, anti-erosion measures shall be implemented e.g. a fabric such as Geojute (biodegradable). In addition, the ECO must be consulted if the removal of any landscape planting is unavoidable. • Measures should be instituted to safeguard workers in service trenches from collapse of the sidewalls of the trenches (see safeguarding measures below). • Trenches should be safeguarded against the collapse of sidewalls by means of support plates against the walls which in turn is mounted with support arms. The support plates / panels should be adjustable to accommodate trenches of various depths. • Subsurface services should be designed and constructed so that they are located sufficiently far from buildings that their backfilled trenches do not interfere with the foundations of other structures.
Ablution facilities	• No staff members are permitted to commence with work on a site without suitable toilet and wash facilities available for them (Snaddon, 2021). • One chemical toilet is to be provided on site for every 30 contract personnel at each working area. These toilets must have doors and locks and shall be secured to the ground to prevent them blowing over. Toilet paper shall always be provided. • Sanitary facilities shall be located within 150m from any point of work, but not closer than 50 m from any riparian area. • Washing, whether of the person or of personal effects, and acts of excretion and urination are strictly prohibited other than at the facilities provided. • The Contractor shall provide suitable sanitary arrangements at the Contractor's Camp and approved points around the designated work area to allow easy access to all employees on site. • Toilets are to be emptied at least once a week and always prior to builders' holidays (Snaddon, 2021).

	• The Contractor shall ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from site. • Discharge of waste from toilets into the environment and burial of waste is strictly prohibited. • The Contractor shall maintain the toilets in a clean, neat and hygienic condition. If the Contractor fails to provide and/or maintain all site sanitation facilities in a clean and hygienic condition, the Engineer may order the Contractor to suspend any or all work on the site until these requirements are met. No payment shall be made for any delays or disruption of the works caused thereby nor shall extensions of time be granted for such delays.
Eating Areas	• The Contractor shall designate eating areas to the approval of the Engineer which shall be clearly demarcated. Sufficient tamper- and wind- proof bins shall be present in this area. • The Contractor shall erect and maintain information posters for the information of his employees depicting actions to be taken to ensure compliance with aspects of the Specifications. Such posters shall be erected at the eating areas and any other locations specified by the Engineer.
Drinking Water	• The Contractor shall ensure that drinking water is available for all staff on site. If no potable water source is available on site, then the Contractor shall import drinking water to the site.
Working Hours	• Working hours must be restricted to normal daily working hours considered in the construction regulations and the National Building Standards SANS 10400:1990. • If works are to take place outside of normal working hours, the ECO and the Engineer are to be notified and disturbance to the surrounding land users is to be prevented. • Note that legislation requires the Contractor to obtain approval for carrying out works at night. This entails obtaining signatures from everyone within a 150 m radius of a site. Furthermore, the Engineer will, where required, notify the Relevant Authority of work done outside of normal working hours.

ISSUE	MANAGEMENT / MITIGATION MEASURES
INCIDENT MANAGEMENT **Management Statement and objective:** To guide the way in which emergencies and/or environmental incidents are handled on site and remediate any damage appropriately. To prevent the starting of fires on site. **Impact Management Outcomes:** No non-conformances and no adverse impacts on the environment as a result of emergency situations and/or environmental incidents. No fires started on the site.	
General	• Method Statements are required for the management of fire incidents as well as for accidental leaks and spills.

Prevention of fires	• No fires shall be permitted on site. Notices are to be prominently displayed that no fires are allowed. Any fires that occur, shall be reported to the Engineer immediately. • Burning is not permitted as a waste disposal method. • Smoking shall only be permitted in designated smoking areas, depicted by the appropriate signage. Such areas shall not be located close to fire hazards. Notices are to be prominently displayed prohibiting smoking in areas that are deemed fire hazards. Such areas shall include the workshop and fuel storage areas and any areas where the vegetation or other material is such as to make liable the rapid spread of an initial flame. • The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. • A fire evacuation route is to be clearly demarcated and kept clear of obstruction at all times. The Contractor shall ensure that his employees are aware of the procedure to be followed in the event of a fire. • The Contractor shall appoint a Fire Officer who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. The Contractor shall forward the name of the Fire Officer to the Engineer for his approval seven days prior to the date of the environmental awareness training course. • The Contractor shall supply all site offices, kitchen areas, workshop areas, materials, stores and any other areas identified by the ECO with tested and approved firefighting equipment. Firefighting equipment is to be maintained in good working order. • Welding, gas cutting or cutting of metal will only be permitted within specifically designated and adequately marked areas on the site. These sites are to be approved by the ECO. • All flammable material is to be stored in a suitable lockable storage area and combustible materials may not accumulate on site. • Symbolic safety signs depicting "No Smoking", "No Naked Lights" and "Danger" are to be provided, and are to conform to the requirement of SABS 1186. The volume capacity of any fuel tanks shall be displayed. The product contained within the tank shall be clearly identified; using the emergency information system detailed in SABS 0232 part 1. Any electrical or petrol-driven pump shall be equipped and positioned, so as not to cause any danger of ignition of the product. • In the event of a fire emergency: o The site supervisor or worker should sound the fire alarm; o The site supervisor or worker should notify the Stellenbosch municipality (021 808 8888); o All workers on site should go to the designated emergency assembly point; o The Fire Officer shall do a head count of all workers and ensure all personnel are present; and o When the Fire Brigade arrives, the Fire Officer shall provide them with all the information they require regarding the incident.

Accidental Leaks and Spillages	• The Contractor shall ensure that his employees are aware of the procedure to be followed for dealing with spills and leaks, which shall include notifying the Engineer and the relevant authorities. • Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the Engineer. • The site shall have a suitable number of spill kits available. A spill kit (with the supply of absorbent material) shall be readily available at works areas to absorb any emergency hydrocarbon spills, and where possible be designed to encapsulate minor hydrocarbon spillage. There are a number of products on the market, which are designed and suitable as absorbents and encapsulators of hydrocarbons. The following are examples of those products used to contain incidental spillage: - Spill-Sorb – oil and chemical absorbent and encapsulating products - Drizzat Pads - Enretech Powder – absorbent and encapsulator - Peat moss
	• Treatment and remediation of spill areas shall be undertaken to the satisfaction of the ECO. In the event of a spill: - The source of the spillage shall be isolated. - The Contractor shall contain the spillage using sand berms, sandbags, pre-made booms, and sawdust or other absorbent materials. - Cordon off and ensure safety of the spillage area. - Notify the Engineer, ECO and the Pollution Control Inspectorate (if serious spillage has occurred in a sensitive environment). - The ECO (in consultation with the Pollution Control Inspectorate where necessary) shall determine the need for further remedial actions. - All cleared materials will be treated as hazardous waste and disposed of as such, in accordance with the waste management specifications of this EMPr. - Where spillage into stream, riparian areas or sensitive vegetation occurs, the ECO, Site Manager, DEA&DP, DWS and the Stellenbosch Municipality Environmental branch should be notified immediately.

ISSUE	MANAGEMENT / MITIGATION MEASURES
RESOURCE USE (RAW MATERIALS AND NATURAL RESOURCES) **Management Statement and objective:** To prevent excessive and unnecessary use of natural resources and wasting of natural resources during the construction and decommissioning phases. **Impact Management Outcomes:** Development of an attitude towards a reduction in natural resources consumption where feasible and possible	
Water Use	• Conduct activities in accordance with any water restrictions set by the local Municipality in terms of the applicable By-Law which may be in place at the time. • Where the use of potable water is required, such as for mixing of cement, the Contractor must submit an application for the use of potable water on site prior to starting construction. • As far as possible, limit the use of potable water to activities which require them. • Dripping taps/ leaking pipes should be addressed immediately to limit waste of water.
Energy/Fuel Use	• Plant should not be left running while not in use.
Construction Materials	• Make use of locally supplied building materials where possible. • Reclaimed building materials should be used where possible. • In accordance with the integrated waste management approach to be followed through the construction and decommissioning phases of the development, materials used or generated by construction or the construction areas shall be re-used as far as possible. • No materials containing invasive plant seeds, litter or contaminants may be imported. The Supplier shall be informed of the sites of origin of imported gravel, sand, stone, etc. and shall have the authority to reject imported material if deemed necessary. • Durable building materials to increase the lifespan of the developments should be used. • Low VOC paints & building materials should be used. • Adequate storage facilities for raw materials should be provided in order to minimise damage during construction works. • Where possible, suppliers with a green footprint or certification are to be used.

ISSUE	MANAGEMENT / MITIGATION MEASURES
SITE CLEAN-UP AND REHABILITATION **Management Statement and objective:** To prevent impacts on the environment as a result of the decommissioning activities. Rehabilitation of the site to its previous condition (prior to construction). **Impact Management Outcomes:** No non-conformances with the specifications contained within the EMPr.	
Site clean-up & rehabilitation following construction activities	• All-natural areas that are to remain untransformed but that are impacted by the dumping of materials must be ripped and re-planted after construction is complete, to the satisfaction of the Environmental Control Officer (ECO) (Snaddon, 2021). • After construction activities, any areas within the footprint that have been degraded from their condition prior to construction and as a result of the construction activities must be to their former condition (Jackson & Martin, 2021). All construction scars are to be rehabilitated immediately after construction is complete. • Where appropriate, the Contractor shall employ a suitably qualified person to rehabilitate areas damaged by construction activities during the course of the project (Snaddon, 2021). • The Contractor shall ensure that all temporary structures, equipment, materials, waste and facilities used for construction purposes are removed upon completion of the construction activities. • The site clean-up shall be to the satisfaction of the Engineer and the ECO. • The Contractor's procedure for rehabilitation shall be approved by the ECO and the Engineer and where required, the Local Authority environmental representative.

3.4 PENALTIES AND BONUSES

Where the Contractor inflicts damage upon the environment or fails to comply with any of the Environmental Specifications contained within this EMPr, they shall be liable to pay a penalty for breach of the conditions of the Environmental Specifications which form part of the works contract.

The Contractor is deemed NOT to have complied with these Environmental Specifications if:

- There is evidence of contravention of the Environmental Specifications within the boundaries of the site, site extensions and haul/ access roads;
- Environmental damage ensues due to negligence;
- The Contractor fails to comply with corrective or other instructions issued by the Engineer within a specific time; or
- The Contractor fails to respond adequately to complaints from the public.

Penalties shall be issued per incident and per individual for the Contractor's responsibility. The amount of the penalty shall be determined by the Engineer, in consultation with the ECO. The Engineer shall inform the Contractor of the contravention and he shall notify the consulting quantity surveyor to deduct such a penalty from monies due under the Contract prior to the issuing of the monthly payment certificates.

Payment of any penalties in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

The following penalties (not an exclusive list) shall be issued in addition to any remedial costs incurred as a result of non-compliance with the Environmental Specifications and shall be imposed by the Engineer on the Contractor for contraventions of the Environmental Specifications by individuals or operators employed by the Contractor and/or his sub-contractors. Where there are ranges, the amount shall depend on the severity and extent of the damage done to the environment, as indicated in the table below:

OFFENCE	PENALTY
A Contractor fails to inform the ECO immediately of events that may cause serious environmental damage or breach the requirements of the EMPr	R 500
The Contractor fails to produce Method Statements on identified aspects of the project prior to commencement of that aspect	R 300 per Method Statement
The Contractor's Environmental Site File is incomplete/non-existent	R 500
The Contractor fails to keep activities within the site boundaries	R 1,000
Dust and/or erosion occurs because of lack of appropriate implementation of mitigation measures	R 200
Green waste is not disposed of at an approved waste site or composting facility	R400
Trespassing of people into no-go areas	R 500
Trespassing of machinery or equipment into no-go areas	R 500 – R 2 000
Delivery drivers are off-loading without supervision	R 300
Loads for transporting are unsecured or uncovered	R 500
Temporary storage of fuel used for construction purposes is not within specifications	R 100- R1,000
Fuel is dispensed with the incorrect equipment	R 400
Individuals are smoking in the vicinity of the fuel stores	R 200
Appropriate safety signs (e.g. Danger) are not displayed	R 200

There is a lack of firefighting equipment at the fuel stores	R 500
The storage areas fail to comply with standard fire safety regulations	R 200
Inadequate supply of material to absorb / breakdown and encapsulate minor hydrocarbon spillage	R 500- R1000
An integrated waste management system is not established	R 100- R1000
Waste is buried as a means of disposal	R 1000- R3000
There is evidence of littering	R 20 per item
Appropriate scavenger and weatherproof bins are not supplied	R 400- R1000
Bins are overflowing	R 150 per bin
Refuse is not removed or disposed of at an approved site	R 100-R1000
Empty cement bags are not removed from the construction area and placed under cover or discarded in the hazardous waste stream	R 500- R2000
Hazardous waste is not stored in an enclosed area	R 1000
Hazardous waste is not disposed of at a hazardous waste disposal facility	R 500 – R1000
Rubble is not appropriately stored in a skip or central stockpile	R 500
Materials that do not constitute clean building rubble are stored at the stockpiling site	R 200
An individual makes use of areas other than the designated facilities for ablutions	R 200
Latrine facilities and first-aid services are not in a sanitary condition	R 500
Insufficient provision of toilets	R 1000
Toilet waste (sewage) is discharged or buried in the environment	R 1000 – R2000
Potential pollutants are not stored safely away to prevent pollution of ground or surface water	R 500
Washing of vehicles or cement chutes occurs on site or in the vicinity of sensitive areas	R 800
Hazardous chemical substances are not stored in secondary containers	R 800- R2000
Paint products, chemical additives or cleaners are being disposed of on site	R 200 – R 1500
Adequate sheds/ dry containers for the storage of materials are not provided	R 500
Maintenance of plant occurs on site when only emergency maintenance is permitted	R 200
Emergency maintenance is performed without efforts to prevent contamination of the surrounding environment	R 100 – R1500
Individuals fail to repair leaking equipment immediately	R 100 per item
Drip trays are not provided in construction areas under all relevant plant/equipment	R 100 – R500 per absent drip tray
Effective silencing devices are not in use to reduce noise impacts	R 50
Amplified music is heard on site	R 50
Failure to provide environmental awareness training to all site personnel	R 200 per staff member/ worker
Necessary Information posters (procedures for ensuring compliance) are not displayed	R 500
Lighting of fires occurs on site	R 200 – R 10 000
Smoking occurs outside of designated areas	R 20 – R 50
Unnecessary spillage of cement due to inadequate prevention measures, or haphazard working procedures	R 500 – R 1 500
Spillage of cement products are not rectified to the satisfaction of the ECO	R 50 – R 1000
Cement is not stored in a suitable weatherproof location	R 500
Polluted runoff is reaching groundwater/stormwater	R 200 – R 3 000
Screening and suitable containment is not in place /constructed in the concrete batching area	R 100 – R 500
Hydrocarbon spills are not isolated, contained, cleared and rehabilitated	R 100 – R 2 000
Appropriate safety precautions are not implemented	R 20 – R 1 000
Unauthorised firearms are present on site	R 1 000
Personnel other than security staff are living on site	R 1 000

An individual is not attempting to protect natural features during construction	R 50 – R 2 000
Individuals are swimming or washing (clothes, equipment etc.) in natural water bodies on or near the site	R 500- R1000
An individual's activities are resulting in the removal or damage of flora	R500- R1500
Animals are being trapped, poisoned, shot or harmed	R 100 – R 1 500
Erosion or sedimentation caused by construction is not rectified	R 400 – R 2 000
The ECO is not notified of heritage or archaeological remains found	R 1 000
Trenching is conducted without the specified environmental specifications	R 1000
Failure to avoid stormwater impacts through the adequate protection of stormwater inlets	R 100 per inlet
Unapproved materials are used for landscaping (e.g. invasive plant seeds)	R 50 – R 2000
All elements of the site are not removed during clean-up for closure	R 100 – R 3000
A specialist is not employed for rehabilitation where necessary	R 500- R2000
The site not fenced and/or demarcated as required	R 300- R3000
The site is not fully secured	R 50 – R 500
Water wastage	R 100 – R 1000
Method statements not appropriately and/or fully implemented	R 50 – R 300 per Method Statement
Speed limit on site not adhered to	R 100

Note that for each subsequent similar offence, the penalty shall be doubled in value to a maximum value of R 10 000.00.

The following penalties are suggested for transgression where damage has been done to the environment:

a	Erosion	A penalty equivalent in value to the cost of rehabilitation plus 20%
b	Oil Spills	A penalty equivalent in value to the cost of clean-up operation plus 20%
c	Damage to sensitive environments	A penalty equivalent in value to the cost of restoration plus 20%
d	Damage to archaeological finds	A penalty to a maximum of R 100 000 shall be paid for any damage to any archaeological sites/finds

All monies collected through penalties shall be held an environmental fund by the Developer and be accounted for. A summary page is to be included with the monthly payment certificates as a record of penalties issued to date. A portion of these funds may be used for token monetary bonuses to individual site staff members that have shown exceptional diligence in applying good environmental practice on the site. The remaining funds shall be allocated for the purposes of contributing to environmental education efforts in the local community e.g., for environmental books for the library, posters, excursions or trees for local schools or environmental resource material for the local public library. The Developer, in consultation with the ECO, Engineer and possibly the local authority, will make a final decision regarding the precise allocation of all penalty funds. Documentation accounting for all penalty funds obtained and how these funds were utilized shall be copied to D: EA&DP, together with the environmental closure documentation on completion of the project.

3.5 MEASUREMENT AND PAYMENT

3.5.1 Basic Principles

No separate measurement and payment will be made to cover the costs of complying with the provisions of these Environmental Specifications except in the case of the points noted below and as scheduled items. Such costs shall be deemed to be covered by the rates tendered for the items in the Schedule of Quantities completed by the Contractor when submitting his tender.

Some of the important cost items have been listed below to assist the Contractor in making provision for implementation of the Environmental Specifications. This list is by no means exhaustive and should only be used as a guideline.

a. **Protection of stock piles from blowing or washing away:** The spraying or covering of stockpiles, including the supply of the spray or cover material, as required.

b. **Trench shielding / protection:** Including all required support structures and resources required.

c. **Storage of fuel and oils:** The supply, construction, installation, transport, upkeep and removal of all facilities required for storage and management of fuel and oils.

d. **Cement-laden water management:** The supply, construction, installation, transport, upkeep and removal of all facilities required for the management of wastewater from concrete operations.

e. **Contaminated water management:** The supply, construction, installation, transport, upkeep and removal of all facilities required for managing contaminated water.

f. **Stormwater and flood management:** The supply, construction, installation, transport, upkeep and removal of all facilities required for managing storm water run-off from the site and protection of works from flooding.

g. **Bunding and management of run-off from workshop areas and supply of drip trays for stationary and "parked" plant:** The supply, construction, installation, transport, upkeep and removal of all facilities required for bunding and managing the run-off from workshop areas as well as all drip trays required.

h. **Prevention of harm to animals:** The supply and installation of drift fences and safe animal passages.

i. **Dust management:** The supply, application, transport, upkeep and removal of all materials required to ensure that dust is adequately controlled.

j. **Solid waste management:** The supply, application, transport, upkeep and removal of all materials required to ensure that solid waste is adequately controlled (including a waste sorting and recycling program).

k. **Fire control:** The supply, transport, upkeep and removal of all material required for fire control.

l. **Eating areas:** The supply, construction, installation, transport, upkeep and removal at the end of the construction of all eating areas structures.

m. **Ablutions:** The supply, maintenance, regular emptying and removal of toilets.

n. **Site demarcation:** The supply, installation and removal at the end of the construction of all temporary fences.

3.5.2 Scheduled items

(a) Provision of venue and staff attendance at the environmental awareness training course

The provision of a venue and attendance at the environmental training course will be measured as a lump sum.

The sum shall cover all costs incurred by the Contractor in providing the venue and facilities and in ensuring the attendance of all relevant employees and sub-contractors, at the training.

(b) Method Statements: additional work

No separate measurement and payment will be made for the provision of Method Statements but, where the Engineer requires a change on the basis of his opinion that the proposal may result in or carries a greater than warranted risk of damage to the environment in excess of that warranted by the Environmental Specifications, then any additional work required, provided it could not reasonably have been foreseen by an experienced Contractor, shall be valued accordingly.

A stated sum is provided in the Schedule of Quantities to cover payment for such additional work.

4. OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT PLAN

4.1 SCOPE & RESPONSIBILITY

The environmental specifications contained in this section address the requirements for controlling environmental impacts resulting from operational activities.

The responsibility of the implementation of the Operational EMP lies with the applicant/holder of the Environmental Authorisation (if issued) (i.e., Boschendal Founders Estate 5 (Pty) Ltd). The provincial environmental authorities may at any given time conduct site visits to audit compliance with these specifications.

4.2 OPERATIONAL SPECIFICATIONS

The environmental specifications pertaining to the operational phase are based on the anticipated impacts for this phase which were assessed during the 24G process most of which would essentially be mitigated through the implementation of the recommended design and remediation measures (as included in the previous section of this EMPr).

Specifications specific to the operation include are included in accordance with the anticipated impacts as tabled in Table 2.

The environmental specifications contained in this section address the requirements for controlling the environmental impacts resulting from operational activities. As such, it contains specifications for:

- Freshwater Ecosystem Impacts;
- Employment Policy; and
- Alien Invasive Species Management.

Specifications specific to the operation of the facility are outlined in the tables below.

FRESHWATER ECOSYSTEM IMPACTS:
Management Statement and objective: To protect the watercourse and riparian area at the site Impact Management Outcomes: No impact to freshwater ecosystems during the operation of the development.
• Lighting should face away from the stream (Snaddon, 2021). • Visitors should be discouraged from walking on the bed and banks of the stream, and into the wetter areas, through construction of walkways and benches, guiding visitors to use specific pathways and areas (Snaddon, 2021). • Bicycle paths through the riparian area around the stream must be limited, and no new paths constructed (Snaddon, 2021). • All pathways must be regularly checked for signs of erosion, and stabilised or re-routed should this occur (Snaddon, 2021). • The recommended buffer for Stream 1 (above the dam) is 42 m for the Operational Phase reducing to 33 m below the dam (Snaddon, 2021) and must be adhered to. • Runoff from hardened surfaces must be allowed to filter into the soil. • Pathways through the stream's riparian area must be permeable (Snaddon, 2021).

- Parking areas should preferably be constructed using permeable materials to allow for infiltration of water (Snaddon, 2021).
- Stormwater maintenance activities are best done during the dry season.
- No fertilizer may be used on the site (Snaddon, 2021).
- Soaps and cleaning agents must be environmentally friendly brands (Snaddon, 2021).
- Wastewater conveyance, storage or treatment infrastructure must be placed outside of the delineated ecological buffers (Snaddon, 2021).
- All sewage storage facilities must be regularly checked for leaks and overflow. Nitrate levels must be monitored regularly (every 2-3 months) and the recycle stages adapted to ensure that levels are within General Limits (Snaddon, 2021).
- Lighting not in use should be switched off immediately (Hawkes, 2021).

EMPLOYMENT POLICY

Management Statement and objective: To provide fair and equal opportunities for employment.

Impact Management Outcomes: Employment of at least 95% local staff.

- Local labour should be sourced as far as possible and the majority of the labour force must be previously disadvantaged individuals, as far as possible.

ALIEN INVASIVE SPECIES MANAGEMENT PLAN

Management Statement and objective: To bring the invasive alien plants on site under control through systematic, integrated and appropriate control methods within (1-5) years that will allow indigenous vegetation to recover, reduce fire risk, and improve water security.

Impact Management Outcomes: Recovered indigenous vegetation with little to zero alien infestation.

GENERAL SPECIFICATIONS AS PER SPECIALIST RECOMMENDATIONS:

- An Alien Invasive Management Plan must be implemented for the duration of the project and up to at least five years after decommissioning phase or up until a botanist signs off that the site has been adequately rehabilitated and infestation of alien species is no longer a threat (Jackson & Martin, 2021).
- No kikuyu grass is allowed anywhere on site (Snaddon, 2021).
- The spread of alien plant species into all-natural areas must be prevented and monitored (Snaddon, 2021).
- Road verges must be monitored for alien species, especially grasses (Snaddon, 2021).
- All invasive exotic vegetation, such as pine seedlings, Port Jackson and bugweed, should be cleared from the farm portion relating to the camp on an ongoing basis. This will also help to reduce fuel load in terms of fire hazard (Winter et al., 2021).
- The mature Monterey pines, which are spreading seedlings on the mountain slopes, should ideally be removed on a phased basis over the next 5 years, as the indigenous vegetation takes over (Winter et al., 2021).
- Alien species should be removed from the area to the west of the impacted patch to ensure that these do not spread downhill and back into the area around the tented camp (Jackson & Martin, 2021).

METHODS TO BE EMPLOYED:

- The National Environmental Management: Biodiversity Act, 10 of 2004 (NEM:BA), regulates all invasive organisms in South Africa. Regulations have been published in Government Notices R.506, R.507, R.508 and R.509 of 2013 under NEMBA. According to this act and the regulations, any species designated under Section 70 cannot be propagated, grown, bought or sold without a permit. Categories listed are:
    - **Category 1a:** Invasive species requiring compulsory control. Any specimen of a Category 1a listed
    - species must, by law, be eradicated.
    - **Category 1b:** Invasive species requiring compulsory control as part of an invasive species control program. These species must be removed and destroyed.
    - **Category 2:** Invasive species regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy or accept as a gift any plants listed as Category 2 plants. No permits will be issued for Category 2 plants to exist in riparian zones.
    - **Category 3**: Invasive species regulated by activity. An individual plant permit is required to undertake any of the following restricted activities: import, possess, grow, breed, move, sell, buy or accept as gifts. No permits will be issued for Category 3 plants to exist in riparian zones.
- Invasive plants must be controlled in compliance with NEMBA section 75 (1-3) Duty of Care Guidelines which requires that:
    - Means and methods must be appropriate to the species
    - Clearing is conducted in such a way that it causes the least harm to biodiversity and the;
    - Environment; and
    - IAPs offspring must be targeted (follow-up operations)

- While a comprehensive field survey was not undertaken, the species identified on site by Martin (2021) are tabled below:

SPECIES NAME	COMMON NAME	NEMBA CATEGORY	PHOTOGRAPH
Acacia longifolia	Sydney golden wattle, western yarrow	1b	 *Acacia longifolia* *https://en.wikipedia.org/wiki/Acacia_longifolia*
Pinus cf. pinaster	Maritime pine, cluster pine	1b	 *Pinus cf. pinaster* *(https://www.cabi.org/isc/datasheet/41688)*

Verbena bonariensis	Pretty verbena, purple top vervain	1b	 *Verbena bonariensis* (https://alienplantsbelgium.myspecies.info/content/verbena-bonariensis)
Echium plantagineum	Salvation jane, Paterson's curse	1b	 *Echium plantagineum* (https://www.agric.wa.gov.au/biological-control/patersons-curse-what-you-should-know)
Phytolacca octandra	red ink plant, forest inkberry	1b	 *Phytolacca octandra* (https://www.nzpcn.org.nz/flora/species/phytolacca-octandra/)
Solanum mauritanium	Ear leaf nightshade, Tobacco weed	1b	

			 *Solanum mauritanium (https://www.cabi.org/isc/datasheet/50533)*
Pittosporum undulatum	Sweet pittosporum, Victorian box, Victorian laurel, Australian cheese wood, Mock orange	1b	 *Pittosporum undulatum* (https://www.capetowninvasives.org.za/target-species/target-plants/australian-cheesewood-pittosporum-undulatum)

- The most suitable clearing method for these species and the site is mechanical control i.e., manual clearing/felling
- Appropriate equipment to be used during clearing activities include tree poppers, chainsaws, bow saws, brush cutters, machetes.
- The following methods should be employed:
  - **Seedlings:** Plants to be pulled out by hand including all the roots.
  - **Sapling:** Plants to be pulled out by hand or using a tree popper.
  - **Trees:** The stem must be cut as close to the ground as possible.
- Felled and pulled material must be debranched and crosscut into manageable logs which are then stacked for chipping.
- Heaps of chipped material are spaced out at approximately 10-20 m intervals at a height not exceeding 3,5 m.
- Chips are used in composting on the farm.
- Alien biomass should not be left on site unchipped in case of potential re-infestation or for it to serve as fuel load in case of a fire.
- Alien biomass that could pose a risk of re-infestation should be disposed of at a suitably licenced waste disposal facility and may not be burned.

MONITORING & CONTROL:

- Follow-up control to control new shoots from stumps, soil etc. following initial clearing should take place within 1 month of clearing

- Maintenance of the site should be incorporated into the farm wide alien control management procedures which is currently undertaken every 6-months – 1 year (approx. 500 ha) (pers. comms., N Bates, Boschendal)

SOLID WASTE MANAGEMENT PLAN

Management Statement and objective: To prevent pollution associated with the generation and temporary storage of general waste, hazardous waste and litter generated by operations on site.

Impact Management Outcomes: No non-conformances and no pollution of soil, groundwater and/or stormwater/freshwater as a result of waste generation and management activities.

- General waste generated during the operational phase will comprise typical domestic waste generated by administrative and housekeeping operations as well as waste associated with convenience stores and take-away food outlets, such as paper, lunch wrappers, packaging material etc. Potential hazardous waste will comprise of empty oil cans / tins, oily rags, paint spent fluorescent tubes, etc.
- The facility must provide for the proper disposal of sanitation products.
- An integrated waste management system must be implemented, and this must be underpinned by the following waste management hierarchy:

- Waste from the facility is to be incorporated into the existing waste management system for the Boschendal Farm.
- All waste manifest documents must be filed for a reasonable time after disposal by a private contractor.
- All general waste material (e.g., non-hazardous waste) should be contained in lined general waste bins.
- In the view of preventing human-wildlife conflict, any bins placed outdoors must be baboon-proof.
- Any hazardous waste will be stored in separate lined waste bins. The bins would be marked as hazardous and flammable.
- Note that hazardous waste volumes are not to exceed 20kg per day.
- Although it is not anticipated that any waste temporarily stored on site (as no waste would permanently be held on site) would exceed 80 m^3, if it does, then the National Norms and Standards for the storage of Waste in terms of Government Notice (GN) No. 926 of 29 November 2013 would apply and the applicant would be required to register the facility on, and subsequently continue to update, the Department's Integrated Pollutant and Waste Information System.

- Waste storage and sorting areas must be enclosed such that the activity is contained within the allocated footprint area.
- Windblown litter from the waste storage and sorting areas must be monitored and removed from adjacent properties daily.
- The handling of waste must take place on a hardened surface.

NOISE & FOOD PREPARATION MANAGEMENT
Management Statement and objective: To prevent noise pollution and adherence to local laws related to food preparation Impact Management Outcomes: No non-conformances and no noise pollution
• If food is prepared on the premises for sale to the public, the applicant must apply to the Stellenbosch Municipality for the necessary license as well as to the Cape Winelands District Municipality for a certificate of fitness in terms of R638 of 22 June 2018. • All food preparation / handling premises must comply with the requirements of R638 relating to food premises. • If any activity on the premises generates noise, the onus is on the owner to have the necessary sound tests taken and to present the results to this Department. (The SABS Code of Practice 0103 of 1994 as well as the Regulations of the Environmental Conservation Act No. 73 of 1989 must serve as a guideline.)

PREVENTION OF HUMAN WILDLIFE CONFLICT
Management Statement and objective: To prevent human conflict with wildlife Impact Management Outcomes: No harming of wild animals or human harm from wildlife interactions
• Any bins placed outdoors must be baboon-proof. • Food must not be left on display or easily accessible. • Hunting of any animal species is strictly prohibited. • The feeding of wild animals is strictly prohibited. • There may be no interference or harassment of wild animal species. If wild animals are encountered, they should be avoided and not approached. • Appropriate signage for guests preventing human-wildlife should be considered should wildlife be frequently encountered on site.

4.3 MONITORING AND AUDITING

It is recommended that a single operational audit be conducted by an independent professional six months from lawful commencement of operation of the camp in order to determine whether remediation and design measures were implemented and identified operational impacts have been successfully mitigated. A report detailing the findings thereof should be provided to the DEA&DP, upon receipt of which, the DEA&DP would indicate the need and frequency for future operational audits.

It is noted that the DEA&DP my stipulate the frequency of operational audits in the Environmental Authorisation (if issued). This section should be updated to reflect this condition, if applicable.

5. DECOMMISSIONING PHASE ENVIRONMENTAL MANAGEMENT PLAN

5.1 SCOPE & RESPONSIBILITY

The Tented Camp must be decommissioned after five years of operation. Environmental impacts resulting from decommissioning activities must be controlled through the environmental specifications contained in this section. Note that since impacts associated with the decommissioning phase will be similar to construction phase impacts, the environmental management specifications contained in the Construction EMP must also be adhered to when the camp is demolished. The Decommissioning phase includes the complete rehabilitation of the site following the demolition of the camp.

The responsibility of the implementation of the decommissioning EMP lies with the applicant/holder of the Environmental Authorisation. The provincial environmental authorities may at any given time conduct site visits to audit compliance with these specifications.

The Roles & Responsibilities defined under section 2.2 would also be applicable during the decommissioning phase.

5.2 DECOMMISIOING SPECIFICATIONS

The following environmental specifications contained in the Construction EMP must be adhered to during decommissioning works (refer to Table 4):

- Waste management;
- Soil, freshwater & groundwater pollution management;
- Protection of natural features, fauna and flora;
- Protection of any paleontological and archaeological resources;
- Noise management;
- Dust management;
- Aesthetics;
- Site access, access routes, and traffic management;
- Labour relations, facilities and site health and safety;
- Incident management;
- Resource use (raw materials and natural resources); and
- Site clean-up and rehabilitation.

Measures specific to the decommissioning of the facility are tabled overleaf.

Table 5: Table of Environmental Management Requirements / Specifications for the Decommissioning Phase

ISSUE	MANAGEMENT / MITIGATION MEASURES
SITE DECOMISSIONING & REHABILITATION **Management Statement and objective:** To prevent impacts on the environment as a result of the decommissioning activities. Rehabilitation of the site to its previous condition (prior to construction). **Impact Management Outcomes:** No non-conformances with the specifications contained within the EMPr during demolition works and the full rehabilitation of the site.	
Site decommissioning	• Constant monitoring of the decommissioning activities must be conducted by the Site Engineer and ECO (Snaddon, 2021) – *this has been addressed in section 5.3* • The edge of the riparian area must be clearly demarcated and fenced off (using temporary fencing and danger tape) before any decommissioning and clean-up begins and should be treated as a no-go area during the decommissioning phase. (Snaddon, 2021) (Refer also to Figure 10 for the No-Go Area map). • Removal of the tents and platforms must be completed using the access path created to access each tent. The foundations of each unit must be left intact to reduce disturbance (Jackson & Martin, 2021).
Site rehabilitation post-decommissioning	• All impacted areas on the Tented Camp site and areas impacted by the associated infrastructure must be rehabilitated once the camp has been removed (Snaddon, 2021). • The Rehabilitation Plan must include an appropriate fire regime and burning schedule. • **A Rehabilitation Plan must be compiled with input from a terrestrial and freshwater ecologist (Snaddon, 2021), and incorporated into this EMPr.**

5.3 MONITORING AND AUDITING

A suitably qualified ECO must be employed throughout the duration of the decommissioning phase:

During this time, the ECO is to:

- Ensure that the Contractor has a copy of the EMPr and all agreed Method Statements;
- Undertake **weekly** site inspections (frequency may change as required), to audit compliance of all parties with the requirements of the EMPr during the decommissioning of the site;
- Compile a **weekly checklist** which reports on decommissioning activities and compliance with this EMPr;
- Advise/recommend on actions or issues impacting on the environment to the Engineer, who shall issue any required site instructions to the contractor;
- Environmentally educate and raise the awareness of the Contractor and his staff as to the sensitivity of the site and facilitate the appropriate attitude during works on site;
- Review and approve construction Method Statements;
- Recommend to the Engineer the issuing of a penalty for any environmental damage caused on site, or non-compliance with the Environmental Specifications;
- Recommend to the Engineer the removal of person(s) and/or equipment not complying with the Specifications;
- Act as the contact person between the Developer, D:EA&DP and the public with regard to environmental matters;
- Report to D:EA&DP, where required and in terms of the Conditions of Approval of the Environmental Authorisation, regarding the implementation of the EMPr, and implementation of the relevant mitigation measures contained in the EMPr;
- Keep a register of complaints and record and manage any community comments or issues, having reported these first to the Engineer;
- Undertake photographic monitoring of the site;
- Keep records of all activities/ incidents on site concerning the environment in a site diary;
- Take immediate action on site to stop works where significant and irreparable damage is being inflicted on the environment, and inform the Engineer immediately of the occurrence and action taken;
- Undertake a continual internal review of the EMPr and make recommendations to the Engineer and Developer; and
- Ensure that a freshwater and terrestrial consultant are commissioned by the Holder of the Environmental Authorisation to compile a Rehabilitation Plan for the site and that the plan is incorporated into this EMPr.

Following the decommissioning of the site, the ECO is to complete a Final Closure Audit Report. Once the site has been cleared of all construction related debris, materials and equipment the ECO will undertake an audit and report on the condition of the site and the adequacy of decommissioning efforts. The Audit must check against the methods and objectives of the Decommissioning EMPr. The construction site will be regarded as being "closed" on agreement between the ECO and the Engineer/Project manager the Contractor.

The Final Closure Report must furthermore report on the compilation of the required Rehabilitation Plan. It is noted that the Rehabilitation Plan may have further monitoring and auditing requirements which would need to be incorporated into this EMPr and followed.

6. REFERENCES

Hawkes, P.G, 2021, FE5 (Pty) Ltd Tented Camp: Terrestrial Invertebrate Assessment, Afribugs CC, Pretoria.

Hurworth, M, 2021, Civil Engineering Services Report, MH & A Consulting Engineers, Cape Town

Jackson, A & Martin T, 2021, Boschendal Tented Camp S24G Ecological Report, Biodiversity Africa, Cape Town.

Lanz, J, 2021, Site sensitivity verification and Agricultural compliance statement for NEMA 24G Application for FE5 (Pty) Ltd Tented Camp, Wynberg.

Snaddon, K, 2021, Environmental Impact Assessment of Founders Estate 5 Tented Camp, Boschendal Estate, The Freshwater Consulting Group, Kommetjie.

Winter, S, 2021, Heritage Statement: Tented Camps, Founders Estates National Heritage Site, Boschendal Farmlands, Dwars River Valley, Stellenbosch, Muizenburg.

APPENDIX 1

METHOD STATEMENT TEMPLATE

METHOD STATEMENT:

CONTRACT: _____ **DATE:** _____

PROPOSED ACTIVITY (give title of Method Statement and reference number from the EMPr):

WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works):

WHERE ARE THE WORKS TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:	End Date:

HOW ARE THE WORKS TO BE UNDERTAKEN (provide as much detail as possible, including annotated maps and plans where possible):

Note: please give too much information rather than too little. Please ensure that issues such as emergency procedures, hydrocarbon management, wastewater management, access, individual responsibilities, materials, plant used, maintenance of plant, protection of natural features etc. are covered where relevant

DECLARATIONS

1) RESPONSIBLE OFFICER (ECO/ ESO)

The work described in this Method Statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm:

_____ _____

(signed) (print name)

Dated: _____

2) PERSON UNDERTAKING THE WORKS (Contractor)

I understand the contents of this method statement and the scope of the works required of me. I further understand that this method statement may be amended on application to other signatories and that the ECO/ ESO will audit my compliance with the contents of this method statement. I understand that this method statement does not absolve me from any of my obligations or responsibilities in terms of the Contract.

_____ _____

(signed) (print name)

Dated: _____

3) EMPLOYER (*i.e.* Developer/ Owner/Project Manager)

The works described in this method statement are approved.

_____ _____ _____

(signed) (print name) (designation)

Dated: _____

APPENDIX 2

CURRILULUM VITAE:

APPENDIX J

Supporting documents relating to compliance/enforcement history of the applicant, including but not limited to, Pre-compliance/compliance notices, Pre-directives/directives etc

NOT APPLICABLE

APPENDIX K

Certified copy of Identity Document of Applicant

REPUBLIC OF SOUTH AFRICA
NATIONAL IDENTITY CARD

Surname:
KROPMAN
Names:
AMELIA RUTH
Sex:
F
Nationality:
RSA
Identity Number:
8201030040089
Date of Birth:
03 JAN 1982
Country of Birth:
RSA
Status:
CITIZEN

Signature

Conditions:

This card has been issued by the Department of Home Affairs in terms of the Identification Act, Act 68 of 1997

If found please return to the Department of Home Affairs
For enquiry or verification purposes contact 0800 60 11 60

Date of issue:
12 AUG 2017

RSA

107473009

APPENDIX L

Certified copy of the title deed (or title deeds in the case of linear activities)

TITDS

117 41

Cluver Markotter Inc
Cluver Markotter Building
Mill Street
Stellenbosch
7600

Prepared by me

CONVEYANCER
J A L DE WAAL

BC 00059480/2016
GEKANSELLEER
CANCELLED
REGISTRATEUR/REGISTRAR

FEE
110 00
R 150 00

VERBIND 24 OCT 2016 MORTGAGED
VIR FOR R 22 000 000 00

B 067817/08
21 NOV 2008
REGISTRATEUR/REGISTRAR

PREFERENCE OF NOTARIAL DEED 00000313/2008 WAIVED IFO BONDHOLDER

VIR ENDOSSEMENTE KYK GLADSY
FOR ENDORSEMENTS SEE PAGE 19

T 073858/08

DEED OF PARTITION TRANSFER

(in terms of Section 26 of the Deeds Registries Act,1937 (No 47 of 1937))

BE IT HEREBY MADE KNOWN THAT:

THAT

MICHELLE VAN WYK

appeared before me the REGISTRAR OF DEEDS at CAPE TOWN, he, the said Appearer, being duly authorised thereto by virtue of:

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

1. **BOSCHENDAL FOUNDERS ESTATE 2 (PROPRIETARY) LIMITED NO. 2006/023676/07**

DATA / VERIFY
27 NOV 2008
VAN WYK JENNY

DATA / CAPTURE
26 NOV 2008
MASIU T

PREFERENCE OF LEASE K 1316/2008 L WAIVED IFO BONDHOLDER

VERBIND MORTGAGED

VIR FOR R 18 400 000,00

B 26763-2016

07 OCT 2016

REGISTRATEUR/REGISTRAR

BO 23814/2020

GEKANSELLEER
CANCELLED

REGISTRATEUR/REGISTRAR

17 SEP 2020

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

2. **BOSCHENDAL FOUNDERS ESTATE 3 (PROPRIETARY) LIMITED NO. 2006/023695/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

3. **BOSCHENDAL FOUNDERS ESTATE 4 (PROPRIETARY) LIMITED NO. 2006/023167/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

4. **BOSCHENDAL FOUNDERS ESTATE 5 (PROPRIETARY) LIMITED NO. 2006/023139/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

5. **BOSCHENDAL FOUNDERS ESTATE 6 (PROPRIETARY) LIMITED NO. 2006/023078/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

6. **BOSCHENDAL FOUNDERS ESTATE 7 (PROPRIETARY) LIMITED NO. 2006/022999/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

7. **BOSCHENDAL FOUNDERS ESTATE 8 (PROPRIETARY) LIMITED NO. 2006/023032/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

8. **BOSCHENDAL FOUNDERS ESTATE 9 (PROPRIETARY) LIMITED NO. 2006/022753/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

9. **BOSCHENDAL FOUNDERS ESTATE 10 (PROPRIETARY) LIMITED NO. 2006/023527/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

10. **BOSCHENDAL FOUNDERS ESTATE 11 (PROPRIETARY) LIMITED NO. 2006/023498/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

11. **BOSCHENDAL FOUNDERS ESTATE 12 (PROPRIETARY) LIMITED NO. 2006/023252/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

12. **BOSCHENDAL FOUNDERS ESTATE 13 (PROPRIETARY) LIMITED NO. 2006/023209/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

13. **BOSCHENDAL FOUNDERS ESTATE 14 (PROPRIETARY) LIMITED NO. 2006/023333/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

14. **BOSCHENDAL FOUNDERS ESTATE 15 (PROPRIETARY) LIMITED NO. 2006/023240/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

15. **BOSCHENDAL FOUNDERS ESTATE 16 (PROPRIETARY) LIMITED NO. 2006/015486/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

16. **BOSCHENDAL FOUNDERS ESTATE 17 (PROPRIETARY) LIMITED NO. 2006/023258/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

17. **BOSCHENDAL FOUNDERS ESTATE 18 (PROPRIETARY) LIMITED NO. 2006/023254/07**

AND

a Power of Attorney signed at STELLENBOSCH on 26 SEPTEMBER 2008 granted to him by:

18. BOSCHENDAL FOUNDERS ESTATE 19 (PROPRIETARY) LIMITED NO. 2006/022621/07

AND the said Appearer declared that whereas his said Principals heretofore held and possessed in joint ownership:

REMAINDER FARM NO 1685 BOSCHENDAL in the Municipality STELLENBOSCH, Division PAARL, Province of the WESTERN CAPE

IN EXTENT: 411,2168 (FOUR HUNDRED AND ELEVEN COMMA TWO ONE SIX EIGHT) HECTARES

HELD by the Transferee by virtue of Deed of Transfer No T 073854/08 **/2008 in equal shares**

AND WHEREAS the said joint owners have agreed on **4 September 2008** to partition the said land by sub-dividing the same according to their respective interests therein and receiving transfer in severalty of such sub-divided portions;

NOW, THEREFORE, the said Appearer in his capacity aforesaid and in pursuance of the above in part recited agreement, declared that he did by these presents, cede and transfer in full and free property unto and on behalf of the said

BOSCHENDAL FOUNDERS ESTATE 5 (PROPRIETARY) LIMITED NO. 2006/023139/07

Its successors and titles or assigns,

PORTION 5 of the FARM NO 1685 BOSCHENDAL in the Municipality of STELLENBOSCH, Division PAARL, Province of the WESTERN CAPE

IN EXTENT: 26,2549 (TWENTY SIX COMMA TWO FIVE FOUR NINE) Hectares

AS WILL APPEAR from the annexed Diagram S.G. No 7524/2007 and held by Deed of Transfer No T 73854 /08 /2008

A. **SUBJECT** to the conditions referred to in Deed of Transfer No. T 11413/1897.

B. **By** Notarial Deed No. K 190/2001S the above property is **ENTITLED** to:

1. A water pipeline servitude 2,00 metres wide, the north western boundary whereof is represented by the line w1x1y1G on Diagram No. 3176/2000 annexed to Deed of Transfer No. T 17276/ 2001

   together with a general right of way to gain access to the said pipeline servitude over Portion 1 of the Farm No. 1631, Stellenbosch Municipality, Division of Paarl in extent 102,4981 Hectares held by Deed of Transfer No. T 17276/ 2001.

2. A water pipeline servitude 2,00 metres wide the western boundary whereof is represented by the line bcdefgh on Diagram No. 3179/2000 annexed to Deed of Transfer No. T 17276/ 2001

   together with a general right of way to gain access to the said pipeline servitude over Portion 4 of the Farm No. 1631, Stellenbosch Municipality, Division of Paarl, in extent 30,3951 Hectares held by Deed of Transfer No. T 17276/ 2001.

3.1. A pipeline servitude 2 metres wide the north western boundary whereof is represented by the line Aa on Diagram No. 3182/2000 annexed to Deed of Transfer No. T 17276/2001.

3.2. A pipeline servitude 2 metres wide the north eastern boundary whereof is represented by the line ab on Diagram No. 3182/2000 annexed to Deed of Transfer No. T 17276/2001.

3.3. A pipeline servitude 2 metres wide the south western boundary whereof is represented by the line AM on Diagram No. 3182/2000 annexed to Deed of Transfer No. T 17276/2001

together with a general right of way to gain access to the said pipeline servitudes, over Portion 1 of the Farm No. 1632, Stellenbosch Municipality, Division of Paarl, in extent 4274 square metres held by Deed of Transfer No. T 17276/ 2001

Subject to conditions as will more fully appear from said Notarial Deed.

C. **By** Deed of Transfer No. T 17276/2001

ENTITLED to an electric power transmission servitude 2,00 metres wide, the centre line whereof is represented by the line tu on Diagram No. 3179/2000 annexed thereto over Portion 4 of the Farm No. 1631, Stellenbosch Municipality, Division of Paarl, in extent 30,3951 thereby transferred.

D. **By** Deed of Transfer No T17499/2004 the within property is ENTITLED to a general servitude of right of way over

(a) Portion 6 of the Farm Boschendal No. 1674, in the Stellenbosch Municipality, Division of Paarl, Western Cape Province in extent 42,4407 hectares

and

(b) Portion 7 of the Farm Boschendal No. 1674, in the Stellenbosch Municipality, Division of Paarl, Western Cape Province in extent 106,6670 hectares held thereunder to provide unrestricted access to the within property

As will more fully appear from said Deed of Transfer.

E. By Notarial Deed No K210/2004S dated 6 February 2004, as will appear from Deed of Transfer No T17501/2004, the withinmentioned properties are:

1. SUBJECT to

(a) A pipeline servitude 3 metres wide for the purpose of conveying irrigation and domestic water pumped from the dams thereon over the within properties.

(b) A general servitude of right of way 5 metres wide to provide access to the within properties for purposes of maintenance, repair, cleaning and replacement.

in favour of

1. Portion 3 of the farm Boschendal No 1674 situate in the Stellenbosch Municipality, Division of Paarl, Western Cape Province.

   In extent 115,9123 (one hundred and fifteen comma nine one two three) hectares

2. Portion 4 of the farm Boschendal No 1674 situate in the Stellenbosch Municipality, Division of Paarl, Western Cape Province.

   In extent 165,2636 (one hundred and sixty five comma two six three six) hectares

3. Portion 6 of the farm Boschendal No 1674 situate in the Stellenbosch Municipality, Division of Paarl, Western Cape Province.

   In extent 42,4407 (forty two comma four four nought seven) hectares

4. Portion 7 of the farm Boschendal No 1674 situate in the Stellenbosch Municipality, Division of Paarl, Western Cape Province.

   In extent 106,6670 (one hundred and six comma six six seven nought) hectares

5. Portion 11 of the farm Boschendal No 1674 situate in the Stellenbosch Municipality, Division of Paarl, Western Cape Province.

In extent 76,0665 (seventy six comma nought six six five) hectares.

6. Portion 13 of the farm Boschendal No 1674 situate in the Stellenbosch Municipality, Division of Paarl, Western Cape Province.

In extent 341,9417 (three hundred and forty one comma nine four one seven) hectares.

7. Portion 1 of the farm No 1647, situated in the Stellenbosch Municipality, Division of Paarl, Western Cape Province.

In extent 49, 5372 (forty nine comma five three seven two) hectares.

(hereinafter called Portion 1/1647)

8. The remainder of the Farm Old Bethlehem No. 153 situated in the Stellenbosch Municipality, Division of Stellenbosch, Province of the Western Cape

In extent 78,2330 (seventy eight comma two three three nought) hectares

9. Portion 1 of the Farm Old Bethlehem No. 153 situated in the Stellenbosch Municipality, Division of Stellenbosch, Province of the Western Cape.

In extent 13,1701 (thirteen comma one seven nought one) hectares.

10. Portion 2 of the Farm Old Bethlehem No. 153 situated in the Stellenbosch Municipality, Division of Stellenbosch, Province of the Western Cape.

    In extent 20, 2962 (twenty comma two nine six two) hectares.

11. Portion 4 of the Farm Old Bethlehem No. 153 situated in the Stellenbosch Municipality, Division of Stellenbosch, Province of the Western Cape.

    In extent 27, 6944 (twenty seven comma six nine four four) hectares.

12. Portion 5 of the Farm Old Bethlehem No. 153 situated in the Stellenbosch Municipality, Division of Stellenbosch, Province of the Western Cape.

    In extent 28,5183 (twenty eight comma five one eight three) hectares.

13. Portion 6 of the Farm Old Bethlehem No. 153 situated in the Stellenbosch Municipality, Division of Stellenbosch, Province of the Western Cape.

    In extent 91,5997 (ninety one comma five nine nine seven) hectares

14. Portion 7 of the Farm Old Bethlehem No. 153 situated in the Stellenbosch Municipality, Division of Stellenbosch, Province of the Western Cape.

In extent 11,7002 (eleven comma seven nought nought two) hectares.

15. Portion 9 of the Farm Old Bethlehem No. 153 situated in the Stellenbosch Municipality, Division of Stellenbosch, Province of the Western Cape.

In extent 17,8637 (seventeen comma eight six three seven) hectares.

16. Portion 10 of the Farm Old Bethlehem No. 153 situated in the Stellenbosch Municipality, Division of Stellenbosch, Province of the Western Cape.

In extent 21,2846 (twenty one comma two eight four six) hectares

17. Portion 11 of the Farm Old Bethlehem No. 153 situated in the Stellenbosch Municipality, Division of Stellenbosch, Province of the Western Cape.

In extent 19,1588 (nineteen comma one five eight eight) hectares

18. Portion 12 of the Farm Old Bethlehem No. 153 situated in the Stellenbosch Municipality, Division of Stellenbosch, Province of the Western Cape.

In extent 69,6436 (sixty nine comma six four three six) hectares

19. Portion 13 of the Farm Old Bethlehem No. 153, situated in the Stellenbosch Municipality, Division of Stellenbosch,Province of the Western Cape.

In extent 29,8347 (twenty nine comma eight three four seven) hectares.

The aforesaid properties 1-19 all HELD by Deed of Transfer No T17499/2004

20 Portion 2 of the Farm 1647 situated in the Stellenbosch Municipality, Division of Paarl, Province of the Western Cape.

In extent 69, 2495 (sixty nine comma two four nine five) hectares.

Held by Deed of Transfer No T17500/2004

2. **ENTITLED** to the benefit of

(a) A pipeline servitude 3 metres wide over the 20 properties described in Condition A above for the purpose of conveying irrigation and domestic water pumped from the dams thereon over such properties.

(b) A general servitude of right of way 5 metres wide over the 20 properties described in Condition A above to provide access thereto for purposes of maintenance, repair, cleaning and replacement.

SUBJECT to such conditions as will more fully appear from such Notarial Deed.

F. By Notarial Deed of Servitude of Restraint No K787/2005S dated 13 July 2005, as will appear from Deed of Transfer No T17501/2004, the above properties are subject to a servitude of restraint on competing business in favour and enforceable by DGB (Proprietary) Limited, No. 1946/021311/07, as the Lessee of lease over Farm Le Rhone, being Portion 12 of the Farm 1674 in extent 188,3148 hectares and held by Notarial Deed of Lease No K785/2005L for as long as the lease is in force.

As will morefully appear from the said Notarial Deed.

G. By Notarial Deed of General Servitude Rights of Access and Traversing Rights, Sewerage, Effluent, Electricity and Water Rights No K 786/2005S dated 13th July 2005, as will appear from Deed of Transfer No T17501/2004, the above properties are subject and entitled, as the case may be, to the following servitudes in favour of DGB (Proprietary) Limited, No. 1946/021311/07 its administrators and assigns and successors-in-title (hereinafter referred to as the "TENANT", in its capacity as tenant under Lease No K785/2005L (registered this day), for the duration of the said lease:

(a) subject and entitled as the case may be, to a servitude of mutual access and traversing rights;

(b) subject to an electricity servitude over Portion 9 of the Farm Boschendal No 1674, extending 80,1969 (eighty comma one nine six nine) hectares (para 5 of T17501/2004);

(c) subject to a sewerage servitude;

(d) subject to a servitude relating to effluent;

(e) subject to a servitude relating to water usage in respect of Portion 8 of the Farm Boschendal No 1674, extending 50,2598 (fifty comma two five nine eight) hectares (para 4 of T17501/2004) and Portion 9 of the Farm Boschendal No 1674, extending 80,1969 (eighty comma one nine six nine) hectares; and

(f) subject to the condition that the owner of the property shall be obliged to register of all or any of the abovementioned servitudes, as may be applicable, in favour of the TENANT in the event that the TENANT takes transfer of the ownership of any or all of the properties (which shall include portion 12 of the Farm Boschendal No 1674, extending 188,3148 (one eight eight comma three one four eight) hectares or any portion thereof),

as will more fully appear from the said Notarial Deed.

H. BY VIRTUE of Notarial Deed of Lease No K 1316/08(6) /2008L, as will appear from Certificate of Consolidated Title No T73852 (5)/2008, the withinmentioned property is subject to a Long Term Notarial Lease Agreement for a period of 99 years as from 1 July 2007 in favour of Boschendal Winery (Proprietary) Limited, No 2004/020895/07. As will more fully appear from the said Notarial Deed with Diagram SG No 3515/2008 annexed.

I. SUBJECT FURTHER to the following condition imposed by the Stellenbosch Municipality in terms of Section 42(1) of the Land Use Planning Ordinance (No 15 of 1985), upon the approval of the subdivision of Portions 2, 5, 8 and 9 of the Farm Boschendal No 1674 in the Municipality of Stellenbosch, Division Paarl, Province of the Western Cape, as will appear from Deed of Transfer No T73854(8)/2008:

(a) The property shall not be alienated without the written consent of BOSCHENDAL ESTATE FOUNDERS' ESTATES PROPERTY MEMBERS ASSOCIATION (Registration No: 2008/010914/08) (Association Incorporated under Section 21 of the Companies Act, No 61 of 1973) (hereinafter referred to as BEFEPOA), having been obtained to the effect that there has been full compliance by the registered owner of the property with Articles 5.2 to 5.9 (both

inclusive) of the Memorandum and Articles of Association of BEFEPOA.

J. SUBJECT AND ENTITLED to the following condition imposed by the Stellenbosch Municipality in terms of Section 42(1) of the Land Use Planning Ordinance (No 15 of 1985), upon the approval of the subdivision of Portions 2, 5, 8 and 9 of the Farm Boschendal No 1674 in the Municipality of Stellenbosch, Division Paarl, Province of the Western Cape:

(a) As the case may be, a servitude right of access or egress 2,5 (two comma five) metres wide or 3 (three) metres wide, whichever is applicable, over and in favour of the withinmentioned property.

K. SUBJECT FURTHER to the following condition imposed by the Joint Owners of Remainder Farm No 1685 Boschendal in terms of the Partition Agreement dated 4 September 2008:

(a) After subdividing the property into the 18 portions, as referred to in the Consent by the Department of Agriculture in terms of the Subdivision of Agricultural Land Act, 1970, No 39884, the said properties shall not be further subdivided.

WHEREFORE the Appearer, renouncing all the right and title his Principals heretofore jointly had to the premises, on behalf of aforesaid, did, in consequence, also acknowledge his said Principals with the exception of the above transferee to be entirely dispossessed of and disentitled to the land hereby transferred; and that, by virtue of these presents, the said

BOSCHENDAL FOUNDERS ESTATE 5 (PROPRIETARY) LIMITED
NO. 2006/023139/07

or its Successors in Title or assigns, now is and henceforth shall be entitled thereto conformably to local custom, the State, however reserving its rights, and finally acknowledging his remaining Principals to have received as a consideration transfer on this day of their respective share in the landed property partitioned as aforementioned.

IN WITNESS WHEREOF, I the said Registrar, together with the Appearer, have subscribed to these presents, and have caused the Seal of Office to be affixed thereto.

THUS DONE and EXECUTED at the Office of the Registrar of Deeds at Cape Town on 21 November 2008

q.q.

In my presence

REGISTRAR OF DEEDS

CERTIFIED COPY FOR REGISTRATION
FOR SURVEYOR-GENERAL
DATE 25 FEB 2008

Friedlaender, Burger & Volkmann - Land Surveyors

SIDES Metres		ANGLES OF DIRECTION		CO-ORDINATES Y System WG 19°		X
		Constants :			0,00	0,00
AB	526,00	229 00 00	A	+	5684,05	+ 3749680,71
BC	89,83	319 07 20	B	+	5287,07	+ 3749335,63
CD	88,12	7 25 00	C	+	5228,27	+ 3749403,55
DE	243,96	325 06 50	D	+	5239,65	+ 3749490,93
EF	197,83	326 55 00	E	+	5100,12	+ 3749691,05
FG	81,56	52 53 50	F	+	4992,13	+ 3749856,81
GH	115,35	91 29 10	G	+	5057,18	+ 3749906,01
HJ	75,48	177 32 20	H	+	5172,49	+ 3749903,02
JK	81,20	175 08 50	J	+	5175,73	+ 3749827,61
KL	72,90	157 15 30	K	+	5182,60	+ 3749746,70
LM	38,03	133 15 10	L	+	5210,78	+ 3749679,47
MN	51,98	89 52 00	M	+	5238,46	+ 3749653,41
NP	103,63	11 55 00	N	+	5290,46	+ 3749653,53
PQ	119,94	35 56 30	P	+	5311,86	+ 3749754,93
QR	51,23	7 41 40	Q	+	5382,26	+ 3749852,04
RS	207,79	338 47 30	R	+	5389,12	+ 3749902,81
ST	212,62	52 27 50	S	+	5313,95	+ 3750096,53
TU	195,11	149 02 00	T	+	5482,55	+ 3750226,07
UV	141,16	130 43 30	U	+	5582,94	+ 3750058,77
VW	148,19	204 13 10	V	+	5689,92	+ 3749966,67
WX	25,70	159 38 20	W	+	5629,13	+ 3749831,52
XY	60,23	223 12 10	X	+	5638,07	+ 3749807,43
YA	120,27	133 31 10	Y	+	5596,84	+ 3749763,53
	497	PNIEL	△	+	3832,38	+ 3751650,78
	498	RHODESDAM	△	+	4138,34	+ 3749355,50

S.G. No.
7524/2007
Approved.
for
Surveyor - General
Date : 19-2-08

SHEET 1 OF 2 SHEETS

Note:

The figure Aa1zCDEFGHJKLMNPQRSTUVWXY represents a leasehold area vide Diagram No. 7519/2007, D/T

The figure ABCDEFGHJKLMNPQRSTUVWXY represents 26,2549 hectares of land, being

PORTION 5 OF THE FARM NO. 1685 BOSCHENDAL

Situate in the Stellenbosch Municipality
Administrative District of Paarl
Province of Western Cape
Surveyed in Aug. 2000 - Jun. 2003,
Oct. - Nov. 2006 & Oct. 2007 by me

PLS 0080 D P Burger Pr Land Surveyor

This diagram is annexed to No. T73858/08 Dated i.f.o. 21 NOV 2008 Registrar of Deeds	The original diagram is No. 7518/2007 Annexed to Filed as Plan No. 7518/2007	File No. Parl.1685 S.R. No. 3226/2007 Comp. BH-8BDO (3767) BH-8DBB (3779) LPI C0550000

FARM 1685/5 PAARL

STELLENBOSCH MUNISIPALITEIT
STELLENBOSCH MUNICIPALITY

Erf / Erwe onderverdeel kragtens Artikel 25 van Ordonnansie Nr. 15 van 1985 en hierin uiteengesit.
Erf / Erven subdivided in terms of Section 25 of Ordinance No. 15 of 1985 and herein reflected in order for registration in terms of Section 31 (1).
in order vir registrasie ingevolge Artikel 31 (1).

Munisipale Bestuurder / Municipal Manager

Datum / Date 1/10/98

CERTIFIED COPY FOR REGISTRATION
FOR SURVEYOR-GENERAL
DATE 25 FEB 2008

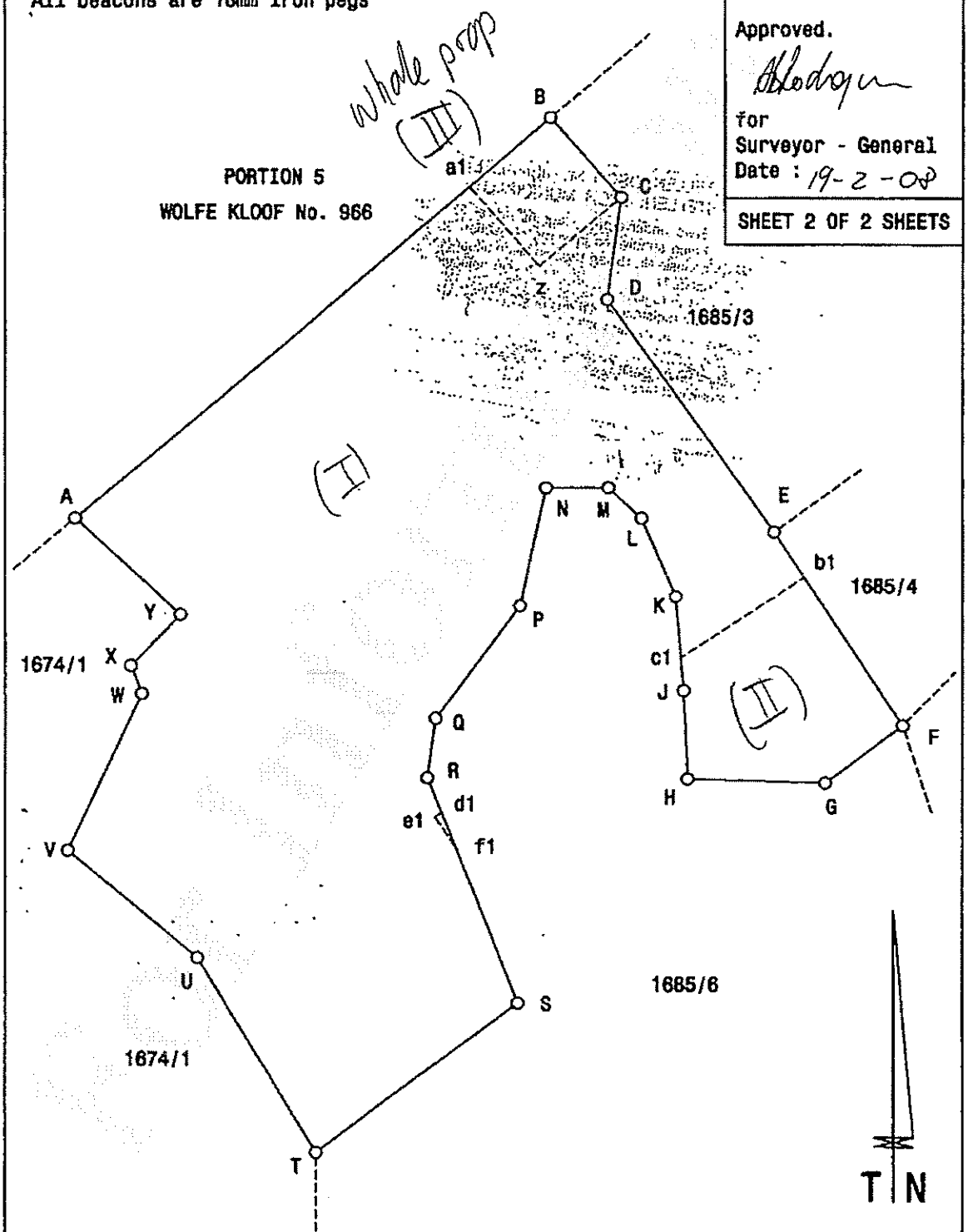
Friedlaender, Burger & Volkmann - Land Surveyors

Beacon Description

All beacons are 16mm iron pegs

S.G. No.
7524/2007
Approved.
for
Surveyor - General
Date : 19-2-08

SHEET 2 OF 2 SHEETS



APPROVED IN TERMS OF SECT. 25 OF ORD. 15/1985
REF Farm 1674/3; Paarl
DATE 2005-12-23

APPROVED IN TERMS OF SECT. 4 OF ACT 70/1970
REF 39884
DATE 2005-06-01

PORTION 5 OF THE FARM NO. 1685 BOSCHENDAL

Administrative District of Paarl

Surveyed in Aug. 2000 - Jun. 2003,
Oct. - Nov. 2006 & Oct. 2007
by me

SCALE 1 : 5000

PLS 0080 D P Burger Pr Land Surveyor

FARM 1685/5 PAARL

STELLENBOSCH MUNISIPALITEIT
STELLENBOSCH MUNICIPALITY

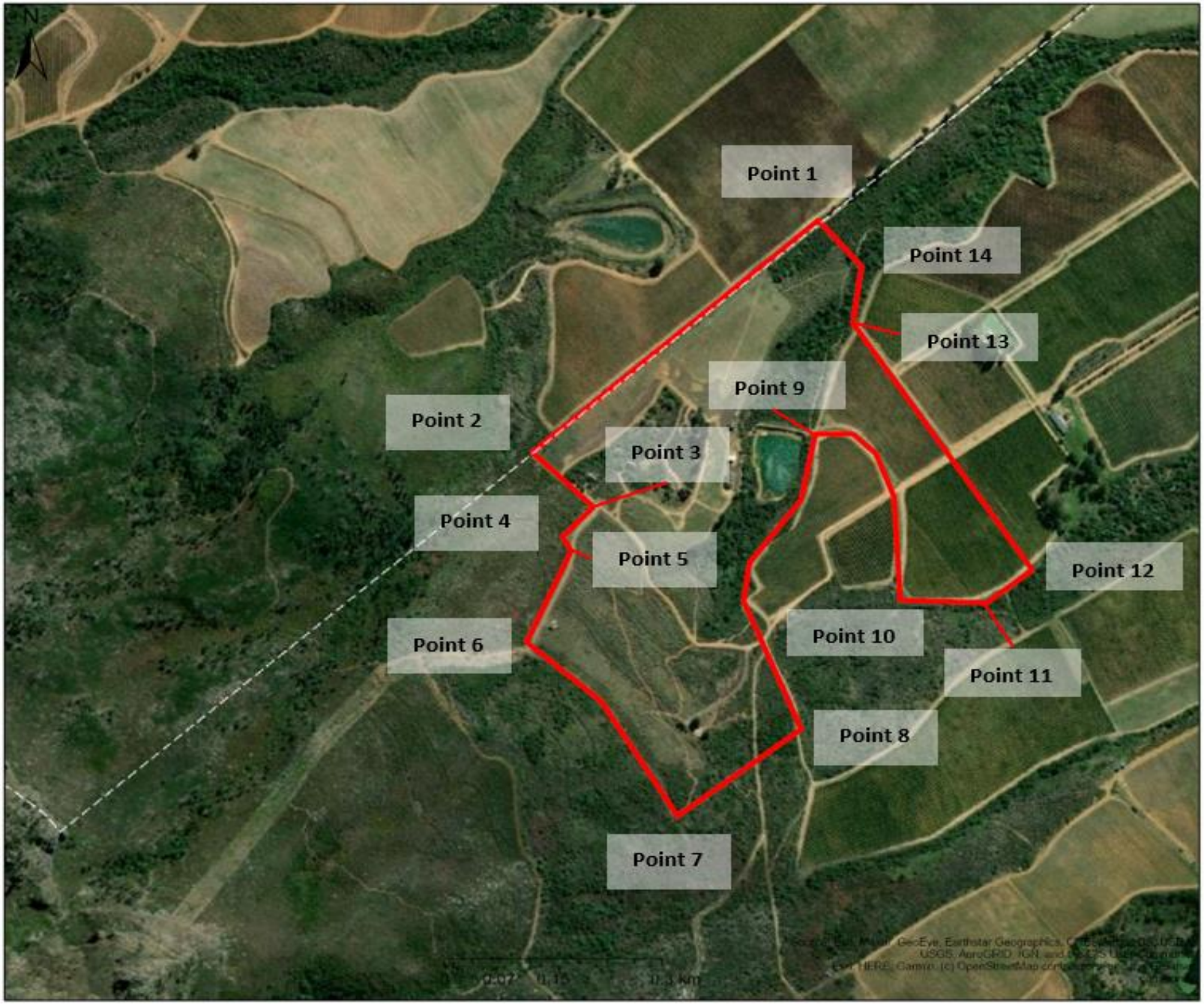
Erf / Erwe onderverdeel kragtens Artikel 25 van Ordonnansie Nr. 15 van 1985 en hierin uiteengesit,
Erf / Erven subdivided in terms of Section 25 of Ordinance No. 15 of 1985 and herein reflected in
In order vir registrasie ingevolge Artikel 31 (1)
order for registration in terms of Section 31 (1)

Munisipale Bestuurder / Municipal Manager

Datum / Date 11.01.06

APPENDIX M

Co-ordinate Maps



Property Coordinates Map

Legend

Scale: 1:9 028

Date created: October 21, 2021

Compiled with CapeFarmMapper

Western Cape Government

Agriculture

Site Coordinates Map

Legend

Farm Portions

Scale: 1:4 514

Date created: October 21, 2021

Compiled with CapeFarmMapper

Western Cape Government

Agriculture

APPENDIX N

DEADP confirmation of NEMA triggers

Department of Environmental Affairs and Development Planning
D'mitri Matthews
Development Management
Dmitri.Matthews@westerncape.gov.za | Tel: 021 483 8350

REFERENCE: 16/3/3/6/1/B3/28/1149/20
DATE: **17/09/2020**

The Board of Directors
Boschendal (Pty) Ltd
P. O. Box 35
PNIEL
7681

Attention: Mr. S. Groenewald

Cell: (072) 294 8556
Email: Stephen@Boschendal.co.za

Dear Sir

RE: APPLICABILITY OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998) ("NEMA") ENVIRONMENTAL IMPACT ASSESSMENT ("EIA") REGULATIONS, 2014 (AS AMENDED), WITH RESPECT TO THE DEVELOPMENT OF A TENTED CAMP ON FOUNDER'S ESTATE PORTION 5 OF FARM NO. 1685, AND BOARDWALK ALONG THE DAM ON PORTION 16 OF FARM NO. 1685, PNIEL

1. The correspondence dated 3 August 2020, as received by this Department on 14 August 2020, refers.

2. Following the review of the abovementioned correspondence, this Department draws your attention to the following:

2.1 Mountain Villa and boardwalk on Portion 16 of Farm No. 1685:
2.1.1 The construction of the Mountain Villa and the boardwalk nearby took place in late 2012/ early 2013.
2.1.2 Small sections of land have been cleared and excavated for the installation of the poles. There may have been some minor clearing of vegetation within the footprint of the boardwalk (noting that the boardwalk is raised so much vegetation exists underneath it in present day). The boardwalk is located along the banks of the dam and within the riparian area of Stream 5, which has a cobble bed, with what appears to be perennial surface flow.
2.1.3 There would also have been land clearing, excavation, and levelling for the development of the house (i.e. Mountain Villa).
2.1.4 A road network traversing the centre of the site, next to and within the original wetland area.

2.2 Please note the following with respect to the Mountain Villa and boardwalk on Portion 16 of Farm No. 1685:
2.2.1 According to the Department's database, no previous correspondence was issued by the Department with respect to the Mountain Villa.

2.2.2 A section of the Mountain Villa, boardwalk, jetty and the aviary, are structures located within 32m of a watercourse that exceeds 100m². At the time of construction of the structures, the following listed activities in terms of the NEMA EIA Amendment Regulations, 2010 would have been applicable. Find below a description of the listed activity and its similarly listed activity in terms of the NEMA EIA Regulations, 2014 (as amended):

Table 1: Listed activities applicable to the Mountain Villa and boardwalk

Listing Notice 1 of the EIA Amendment Regulations of June 2010:	**Listing Notice 1 of the EIA Regulations 2014 (as amended):**
Activity Number 11: The construction of: (i) canals; (ii) channels; (iii) bridges; (iv) dams; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x) buildings exceeding 50 square metres in size; or (xi) infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	Activity Number 12: The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — excluding— (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the

	commencement of development and where indigenous vegetation will not be cleared.

The abovementioned is based on:

- A section of the Mountain Villa, boardwalk, jetty and the aviary, are structures located within 32m of a watercourse that exceeds 100m².

2.3 Tented camp on Portion 5 of Farm No. 1685:

2.3.1 A larger tent and platform near the dam which would be used as a restaurant.

2.3.2 A tent and platform that would be used as a kitchen.

2.3.3 A tent and platform that would be used as an office/staff facility.

2.3.4 The seven accommodation tents are tucked into a patch of vegetation which comprises a combination of alien and indigenous species. Each tent can sleep two guests. Each structure comprises a wooden deck/ platform which rests on a steel frame supported by steel legs that are individually cemented into the ground for support. The top structures comprise of compressed wood walling covered by canvas with a stretch "gazebo-type" roof which pin to the ground around the platform. It is noted in Figure 36 that the inside of the accommodation tent has a double bed and what appears to a single fold up bed/stretcher on the left side.

2.3.5 Four small bio septic tanks.

2.3.6 A 116m³ water tank/reservoir.

Table 2: Listed activities applicable to the tented camp area:

Listing Notice 1 of the EIA Regulations 2014 (as amended):	**Listing Notice 3 of the EIA Regulations 2014 (as amended):**
Activity Number 12: The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (j) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; — excluding— (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in	Activity Number 4: The development of a road wider than 4 metres with a reserve less than 13,5 metres. **i. Western Cape** i. Areas zoned for use as public open space or equivalent zoning; ii. Areas outside urban areas; (aa) Areas containing indigenous vegetation; (bb) Areas on the estuary side of the development setback line or in an estuarine functional zone where no such setback line has been determined; or iii. Inside urban areas: (aa) Areas zoned for conservation use; or (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority.

Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.	
Possibly listed activity	
	Listing Notice 3 of the EIA Regulations 2014 (as amended):
	Activity Number 6: The development of resorts, lodges, hotels, tourism or hospitality facilities that sleeps 15 people or more. **i. Western Cape** i. Inside a protected area identified in terms of NEMPAA; ii. Outside urban areas; (aa) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; or (bb) Within 5km from national parks, world heritage sites, areas identified in terms of NEMPAA or from the core area of a biosphere reserve; - excluding the conversion of existing buildings where the development footprint will not be increased.

The abovementioned is based on:

- The structures (restaurant tent, office, kitchen etc.) within 32m of the watercourse exceeds the 100m² threshold.
- Access roads (ranging in width from approximately 3.7m to approximately 5m) between the accommodation tents were constructed in an area containing indigenous vegetation.
- Confirmation of whether the tents are able to accommodate more than 2 people must be provided because it will determine whether Activity 6 of LN 3 is applicable or not.

2.4 Since the abovementioned activities has been commenced with, without obtaining the required Environmental Authorisation. Section 24G process must be followed to rectify the unlawful commencement of listed activities in terms of the NEMA EIA Regulations 2014 (as amended).

3. Please note that the applicant must comply with any other statutory requirements that may be applicable to the undertaking of the activity.

4. Kindly quote the abovementioned reference number in any future correspondence concerning the proposed development.

5. This Department reserves the right to revise or withdraw its comments and request further information based on any information received.

Yours faithfully

pp Coetzee

HEAD OF COMPONENT
ENVIRONMENTAL IMPACT MANAGEMENT SERVICES: REGION 1
DEPARTMENT OF ENVIRONMENTAL AFFAIRS AND DEVELOPMENT PLANNING

CC to: (1) Ms. M. Penwarden (Chand Environmental Consultants cc) Email: marielle@chand.co.za
(2) Mr. S. van der Merwe (Stellenbosch Municipality) Email: schalk.vandermerwe@stellenbosch.gov.za

APPENDIX O

DFFE Screening Tool Report

SCREENING REPORT FOR AN ENVIRONMENTAL AUTHORIZATION OR FOR A PART TWO AMENDMENT OF AN ENVIRONMENTAL AUTHORISATION AS REQUIRED BY THE 2014 EIA REGULATIONS – PROPOSED SITE ENVIRONMENTAL SENSITIVITY

EIA Reference number: Pending

Project name: Tented Camp

Project title: Development of a Tented Camp on Founders Estate, Portion 1685/5, Boschendal, Franschhoek

Date screening report generated: 23/03/2020 13:09:55

Applicant: Boschendal (Pty) Ltd

Compiler: Chand Environmental Consultants

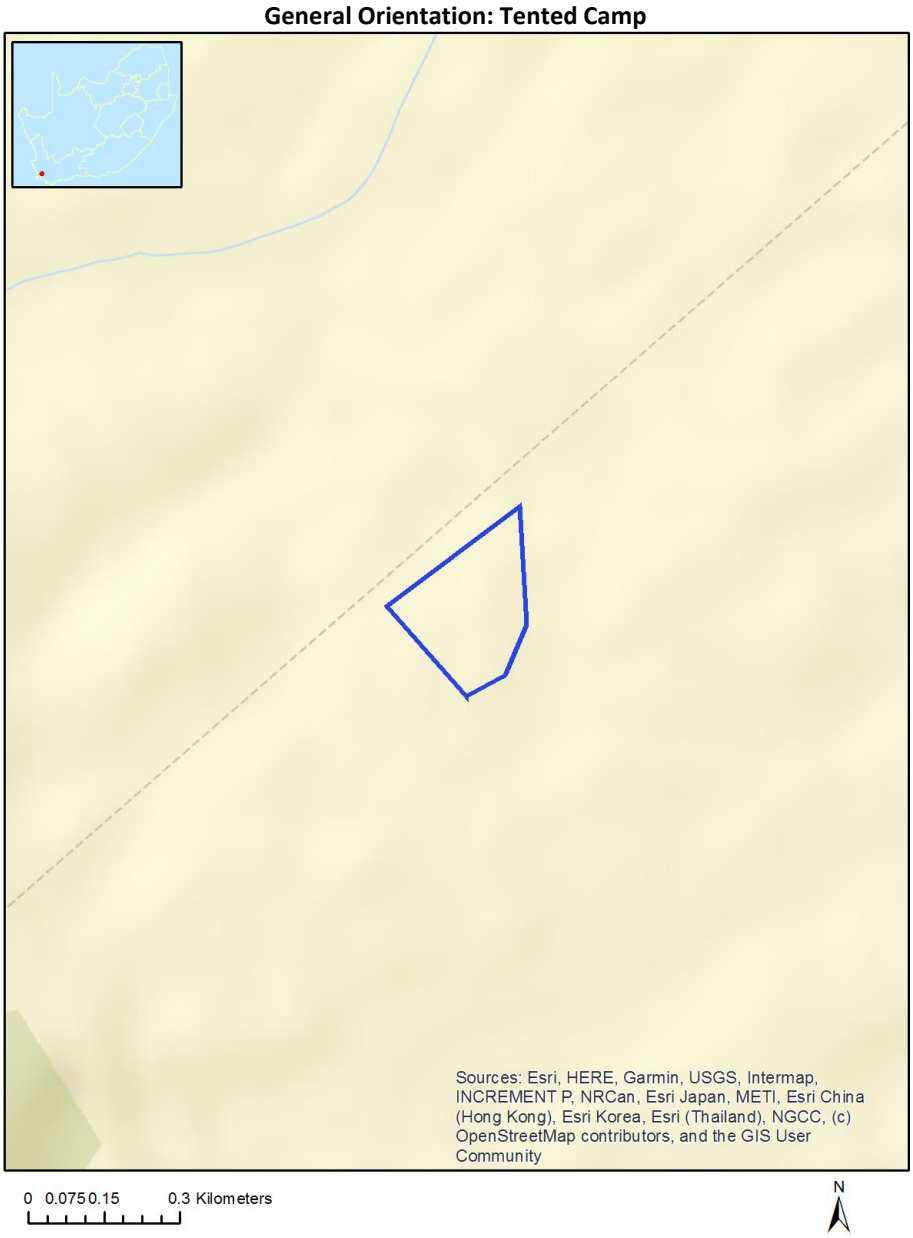
Compiler signature:

……

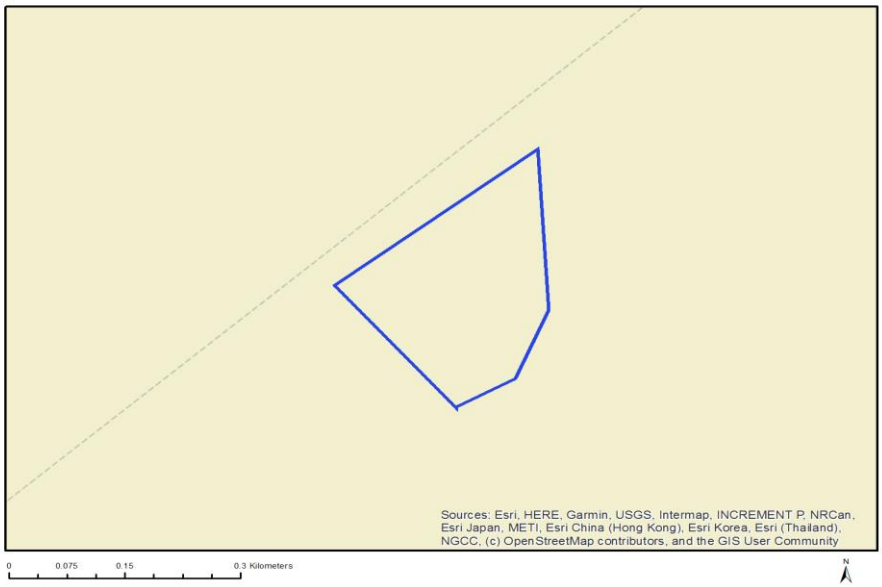
Table of Contents

Proposed Project Location

Orientation map 1: General location



Map of proposed site and relevant area(s)



Cadastral details of the proposed site

Property details:

No	Farm Name	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
1		1685	0	33°52'59.64S	18°57'6.75E	Farm
2		1685	5	33°52'27.53S	18°56'27.59E	Farm Portion

Development footprint[1] vertices:
No development footprint(s) specified.

Wind and Solar developments with an approved Environmental Authorisation or applications under consideration within 30 km of the proposed area

No nearby wind or solar developments found.

Environmental Management Frameworks relevant to the application

No intersections with EMF areas found.

[1] "development footprint", means the area within the site on which the development will take place and incudes all ancillary developments for example roads, power lines, boundary walls, paving etc. which require vegetation clearance or which will be disturbed and for which the application has been submitted.

Environmental screening results and assessment outcomes

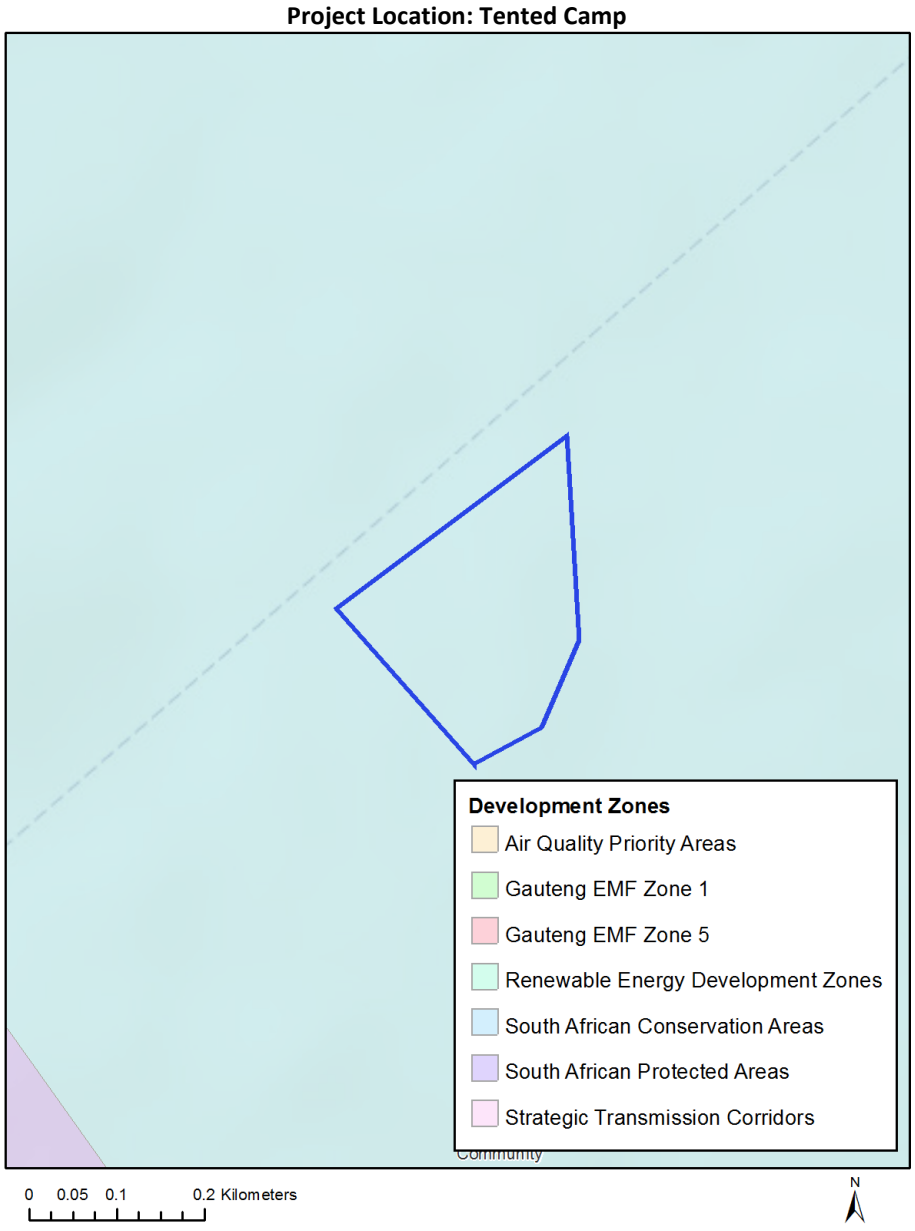
The following sections contain a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development site as well as the most environmental sensitive features on the site based on the site sensitivity screening results for the application classification that was selected. The application classification selected for this report is:
Any activities within or close to a watercourse|Any activities within or close to a watercourse.

Relevant development incentives, restrictions, exclusions or prohibitions

The following development incentives, restrictions, exclusions or prohibitions and their implications that apply to this site are indicated below.

Incentive, restriction or prohibition	**Implication**
Strategic Transmission Corridor-Central corridor	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/GNR_350_of_13_April_2017.pdf
South African Conservation Areas	https://screening.environment.gov.za/ScreeningDownloads/DevelopmentZones/SACAD_OR_2019_Q4_Metadata.pdf

Map indicating proposed development footprint within applicable development incentive, restriction, exclusion or prohibition zones



Proposed Development Area Environmental Sensitivity

The following summary of the development site environmental sensitivities is identified. Only the highest environmental sensitivity is indicated. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only and must be verified on site by a suitably qualified person before the specialist assessments identified below can be confirmed.

Theme	Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
Agriculture Theme		X		
Animal Species Theme			X	

Aquatic Biodiversity Theme				X
Archaeological and Cultural Heritage Theme		X		
Civil Aviation Theme			X	
Paleontology Theme			X	
Plant Species Theme		X		
Defence Theme				X
Terrestrial Biodiversity Theme	X			

Specialist assessments identified

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report. It is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the site situation.

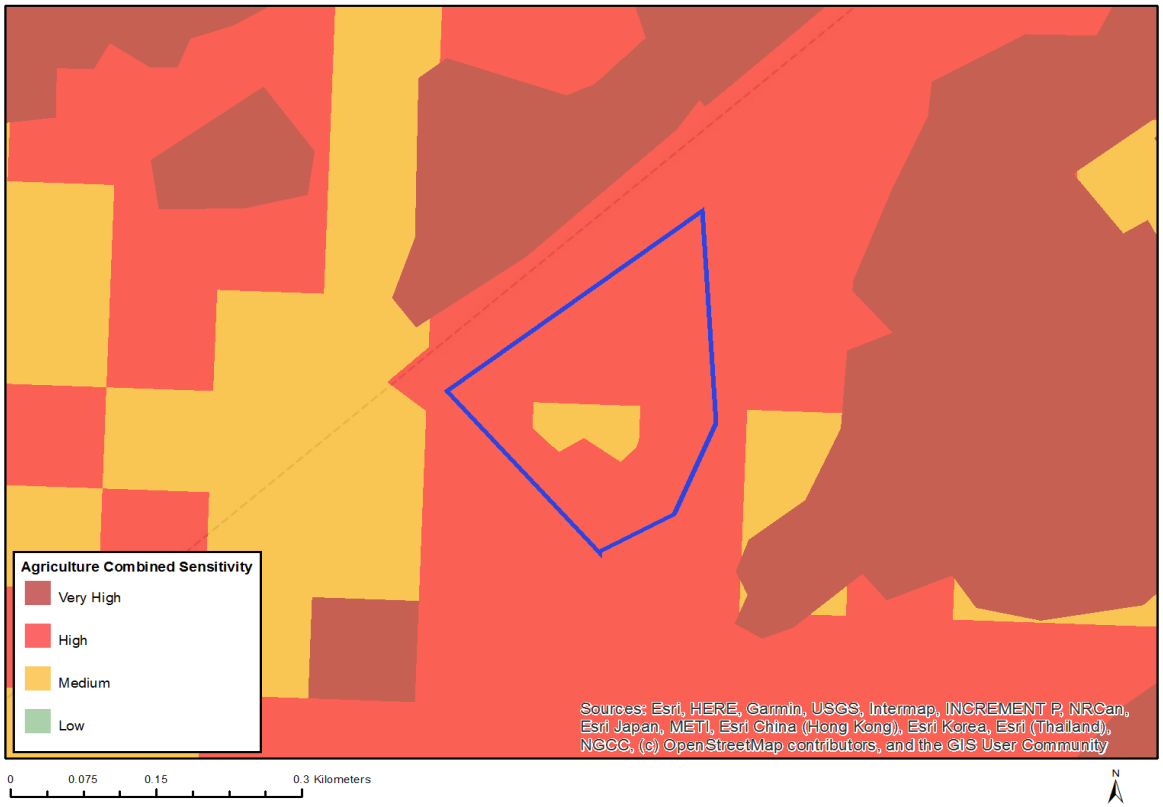
No	Specialist assessment	Assessment Protocol
1	Landscape/Visual Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
2	Archaeological and Cultural Heritage Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
3	Palaeontology Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
4	Terrestrial Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_Terrestrial_Biodiversity_Assessment_Protocols.pdf
5	Aquatic Biodiversity Impact Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_Aquatic_Biodiversity_Assessment.pdf
6	Hydrology Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
7	Socio-Economi	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols

	c Assessment	/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
8	Plant Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf
9	Animal Species Assessment	https://screening.environment.gov.za/ScreeningDownloads/AssessmentProtocols/DraftGazetted_General_Requirement_Assessment_Protocols.pdf

Results of the environmental sensitivity of the proposed area.

The following section represents the results of the screening for environmental sensitivity of the proposed site for relevant environmental themes associated with the project classification. It is the duty of the EAP to ensure that the environmental themes provided by the screening tool are comprehensive and complete for the project. Refer to the disclaimer.

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY

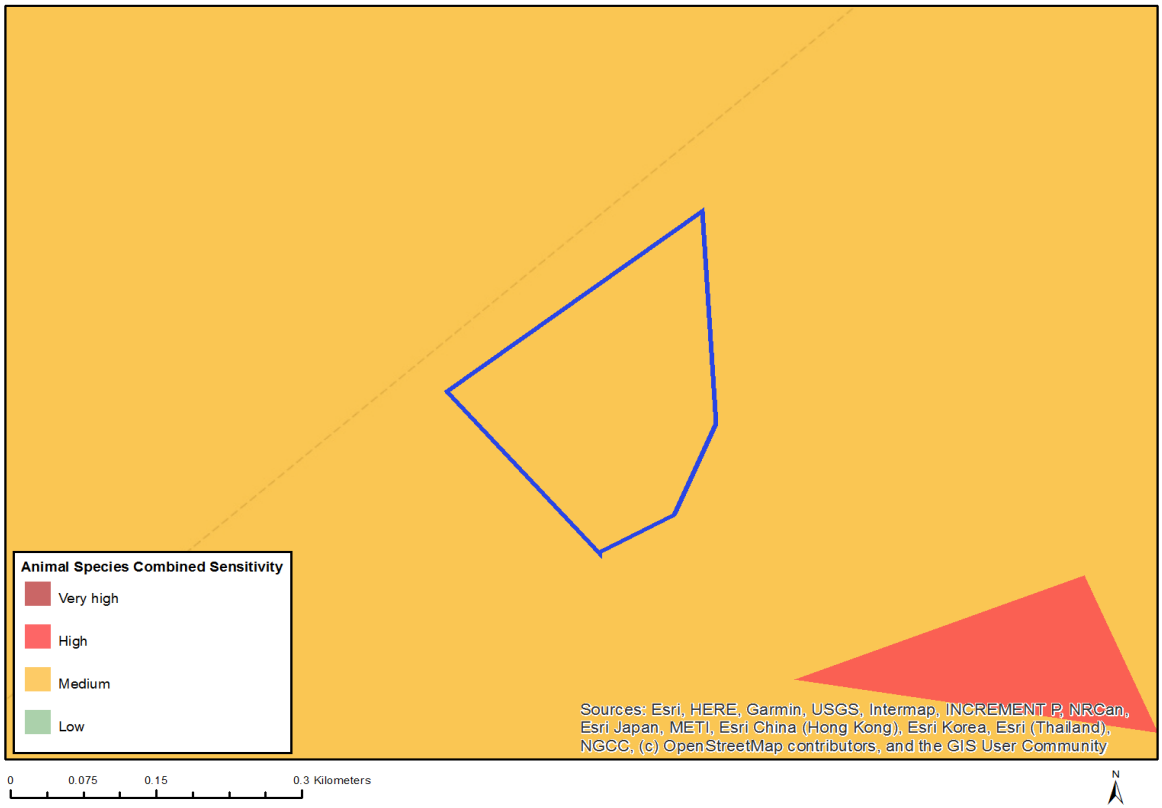


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY

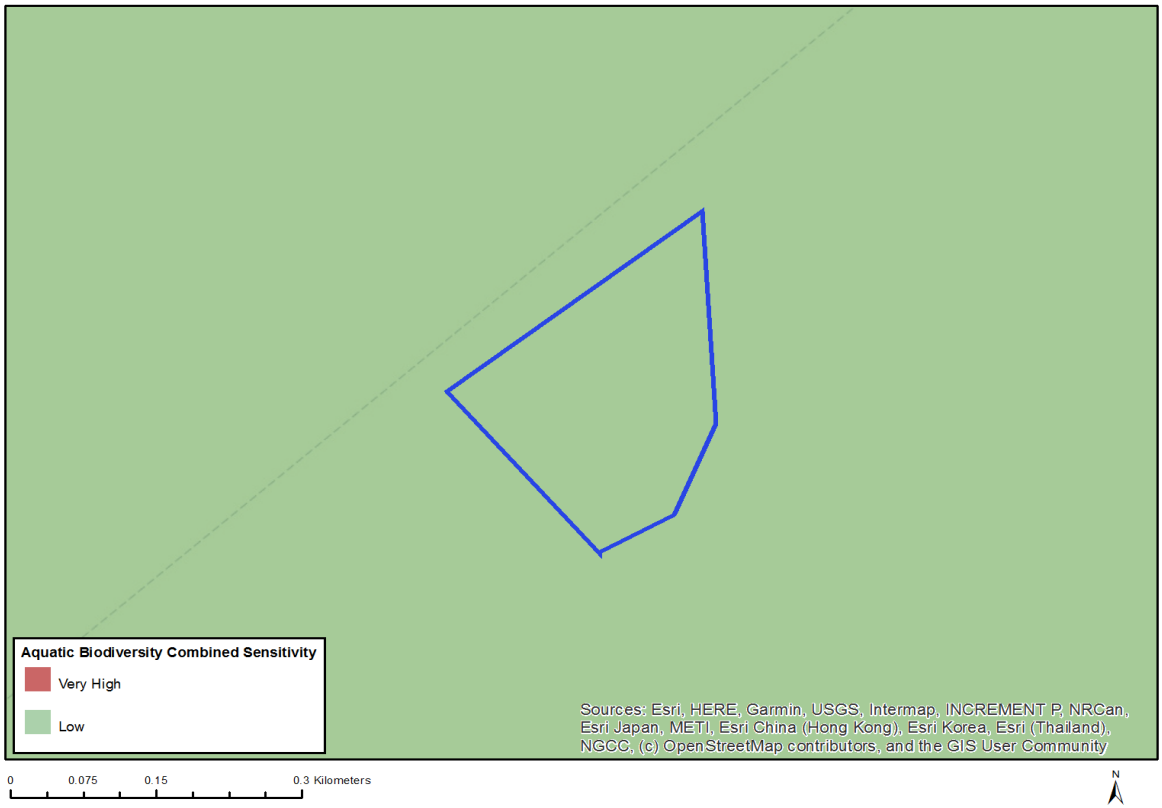


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Sensitive species 7
Medium	Insecta-Kedestes lenis lenis

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY

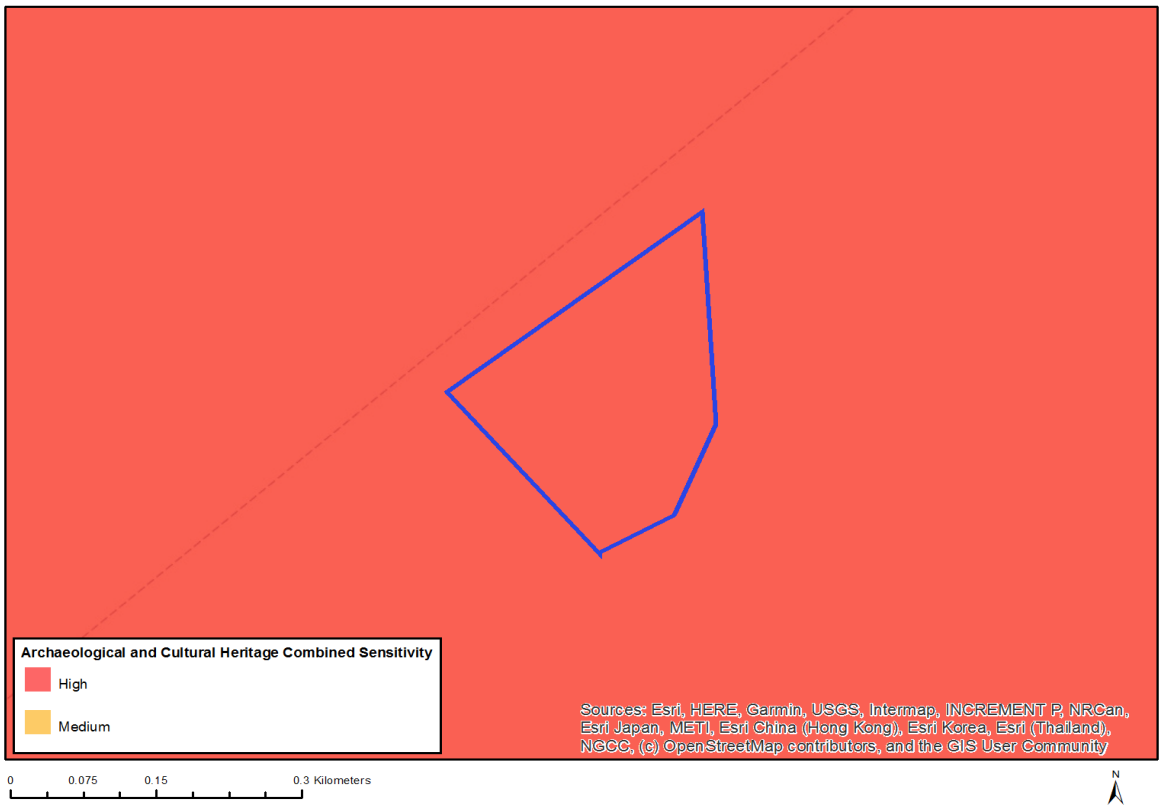


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity Areas

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY

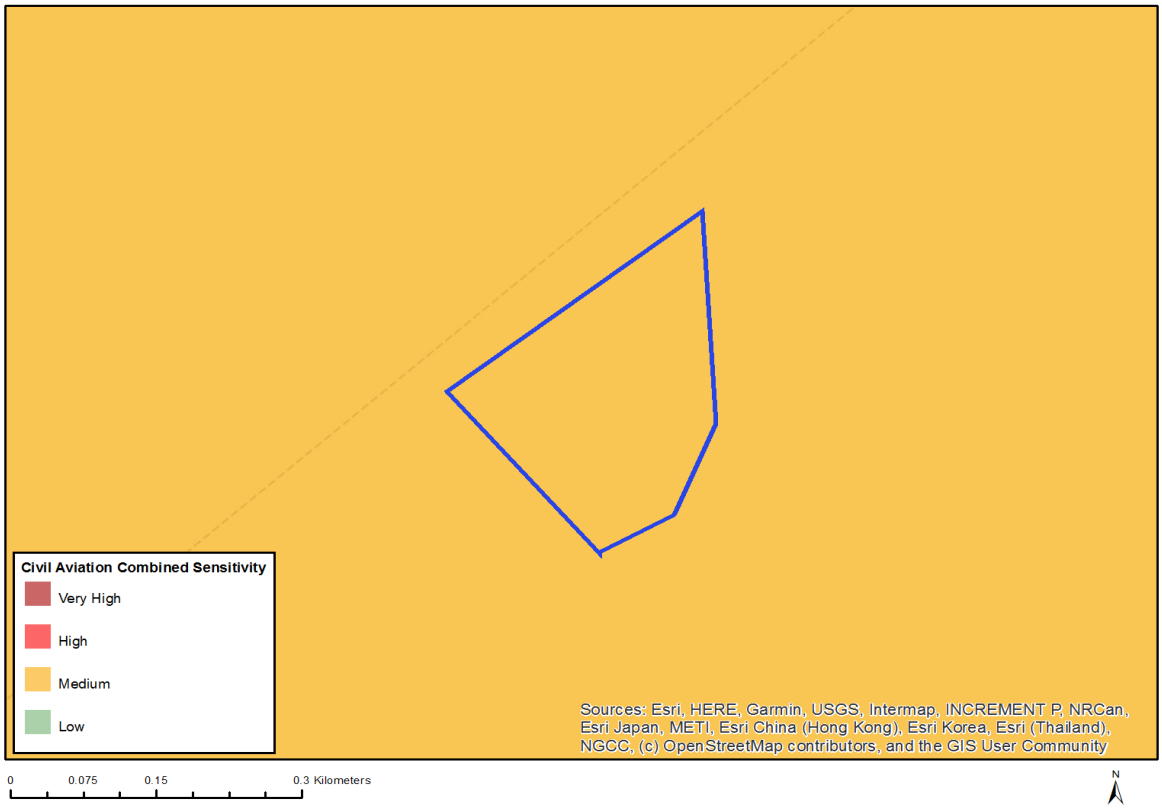


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 500 m of a heritage site
High	Within 1 km of a protected area

MAP OF RELATIVE CIVIL AVIATION THEME SENSITIVITY

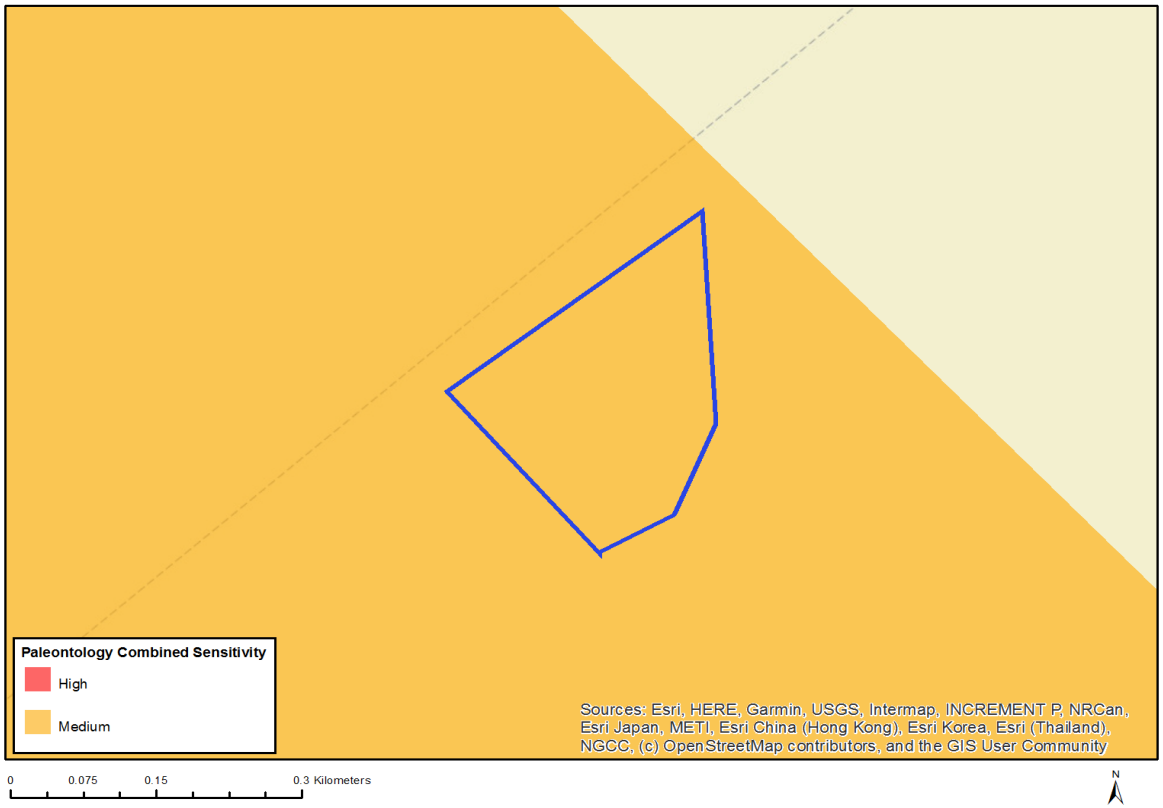


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Between 15 and 35 km from a civil aviation radar
Medium	Between 15 and 35 km from a major civil aviation aerodrome
Medium	Between 8 and 15 km of other civil aviation aerodrome

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

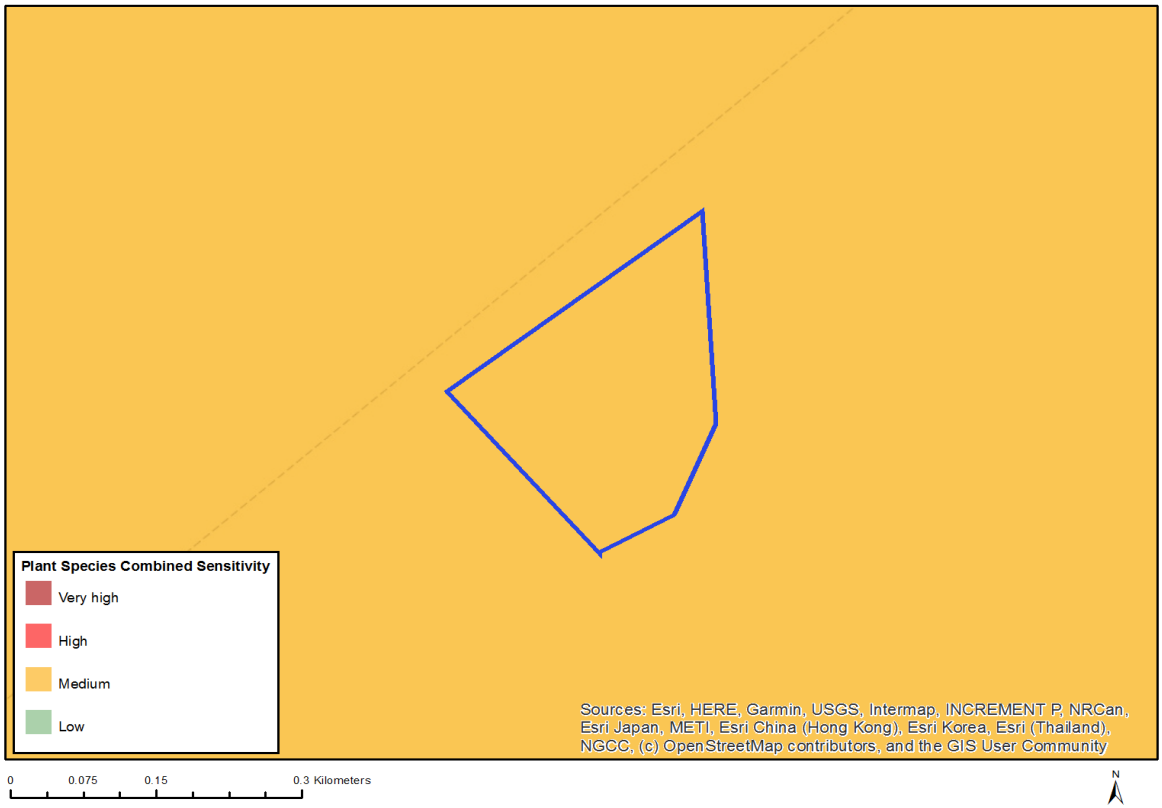


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Rock units with a medium paleontological sensitivity

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

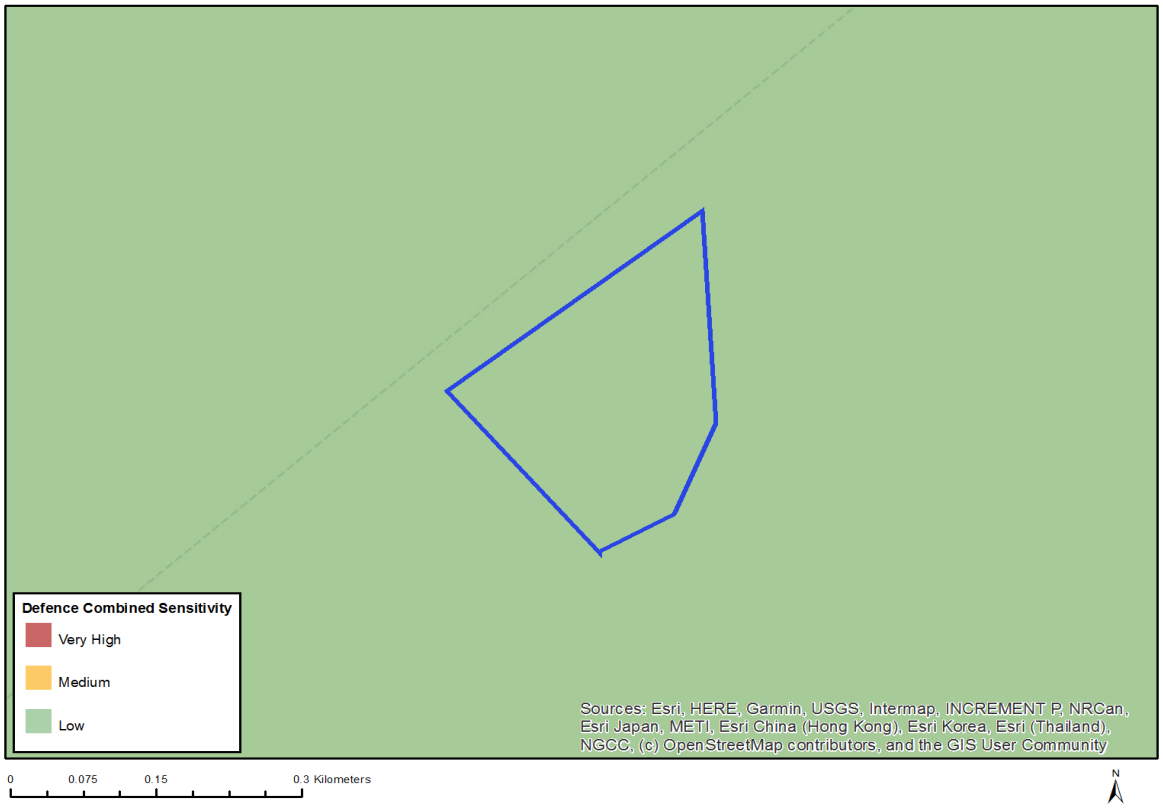
Sensitivity Features:

Sensitivity	Feature(s)
High	Leucadendron daphnoides
High	Protea burchellii
Medium	Antimima aristulata
Medium	Erepsia patula
Medium	Erepsia ramosa
Medium	Lobostemon regulariflorus
Medium	Aristea lugens
Medium	Tritoniopsis elongata
Medium	Sensitive species 85
Medium	Sensitive species 72
Medium	Sensitive species 78
Medium	Sensitive species 96
Medium	Geissorhiza erosa
Medium	Geissorhiza humilis
Medium	Ixia erubescens
Medium	Ixia sarmentosa
Medium	Ixia rouxii
Medium	Codonorhiza azurea
Medium	Sensitive species 458
Medium	Sensitive species 640
Medium	Sensitive species 599
Medium	Sensitive species 766

Medium	Sensitive species 772
Medium	Ruschia geminiflora
Medium	Ruschia schollii
Medium	Drosanthemum hispifolium
Medium	Oxalis strigosa
Medium	Erica abietina subsp. perfoliosa
Medium	Erica filiformis var. filiformis
Medium	Hermannia rugosa
Medium	Sensitive species 364
Medium	Sensitive species 690
Medium	Sensitive species 676
Medium	Sensitive species 697
Medium	Sensitive species 588
Medium	Wachendorfia brachyandra
Medium	Isoetes capensis
Medium	Sensitive species 744
Medium	Trianoptiles solitaria
Medium	Cannomois arenicola
Medium	Elegia squamosa
Medium	Restio rigoratus
Medium	Restio papillosus
Medium	Restio pratensis
Medium	Restio duthieae
Medium	Restio paludosus
Medium	Sensitive species 293
Medium	Sensitive species 299
Medium	Sensitive species 718
Medium	Xiphotheca lanceolata
Medium	Xiphotheca reflexa
Medium	Metalasia capitata
Medium	Sensitive species 666
Medium	Psoralea fascicularis
Medium	Psoralea alata
Medium	Cliffortia phillipsii
Medium	Muraltia decipiens
Medium	Muraltia macropetala
Medium	Aspalathus aculeata
Medium	Aspalathus lebeckioides
Medium	Aspalathus muraltioides
Medium	Aspalathus araneosa
Medium	Aspalathus attenuata
Medium	Sensitive species 526
Medium	Phylica strigulosa
Medium	Phylica thunbergiana
Medium	Otholobium rotundifolium
Medium	Podalyria sericea
Medium	Podalyria argentea
Medium	Skiatophytum skiatophytoides
Medium	Aponogeton angustifolius
Medium	Leucadendron corymbosum
Medium	Leucadendron daphnoides
Medium	Leucadendron lanigerum var. lanigerum
Medium	Leucadendron argenteum
Medium	Leucospermum grandiflorum
Medium	Leucospermum gueinzii
Medium	Leucospermum hypophyllocarpodendron subsp. canaliculatum
Medium	Leucospermum lineare
Medium	Protea scorzonerifolia
Medium	Protea burchellii
Medium	Protea lacticolor

Medium	Serruria gracilis
Medium	Serruria kraussii
Medium	Serruria pinnata
Medium	Lampranthus peacockiae
Medium	Lampranthus sociorum
Medium	Lampranthus dilutus
Medium	Lampranthus filicaulis
Medium	Lampranthus glaucus

MAP OF RELATIVE DEFENCE THEME SENSITIVITY

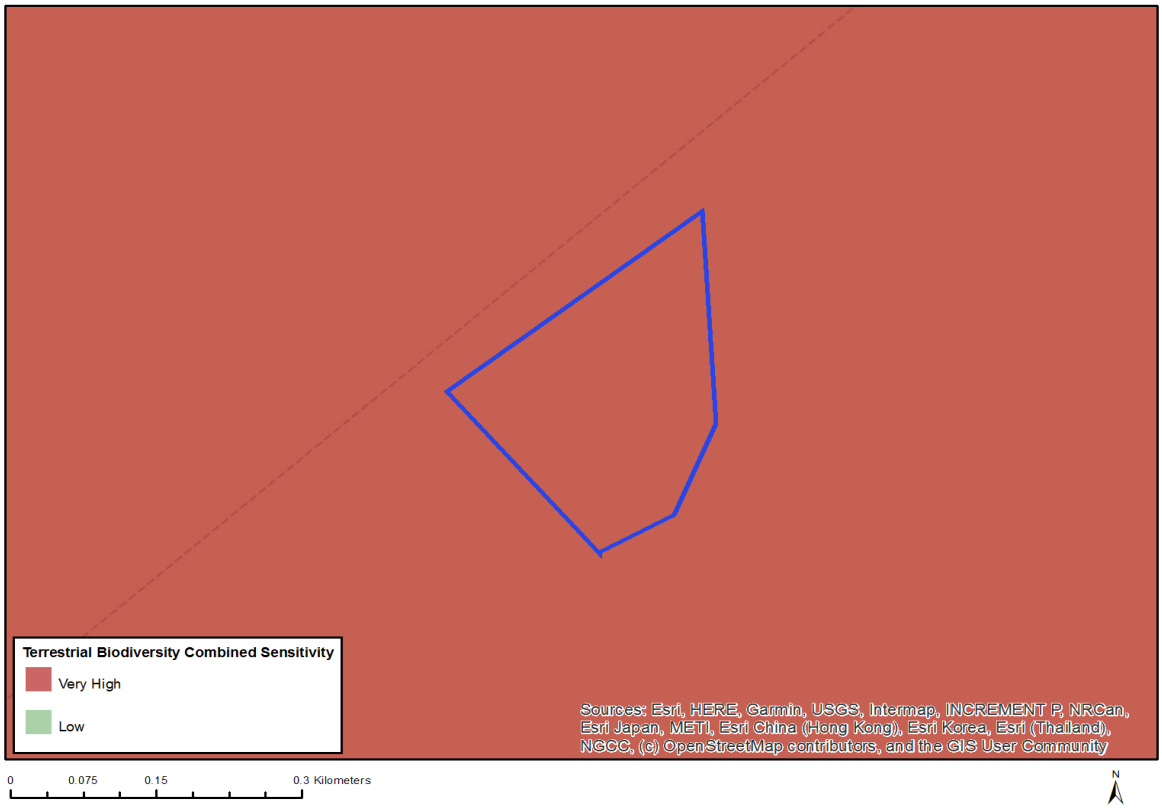


Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Vulnerable ecosystem
Very High	Ecological Support Area 2
Very High	Ecological Support Area 1
Very High	Strategic Water Source Area

APPENDIX P

Site Sensitivity Verification Report

SITE SENSITIVITY VERIFICATION REPORT
THE DEVELOPMENT OF A TENTED CAMP ON FOUNDERS ESTATE 5, FARM 1685/5, PAARL (FE5)

DATE: 1 October 2021

INTRODUCTION AND SCOPE:
The "Protocols for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes ("the Protocols") were published in Government Gazette No. 43110 on 20 March 2020 and Government Gazette No. 43855 on 30 October 2020. The Protocols are allowed for in terms of Sections 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA").

The Protocols must be complied with for every new application for Environmental Authorisation that is submitted after 9 May 2020. According to the Protocols, the EAP must verify the current use of the site in question and its environmental sensitivity as identified by the Screening Tool to determine the need for specialist inputs in relation to the themes included in the Protocols. This document serves as the Site Sensitivity Verification Report for the Development of a Tented Camp on Founders Estate 5 which commenced in 2019 without Environmental Authorisation.

The location of the proposed development is shown in the aerial image included in Figure 1 and the developed site is indicated in Figure 2 . This site sensitivity verification relates to one Screening Tool Report completed for the site when intial site investigations commenced in March 2020.

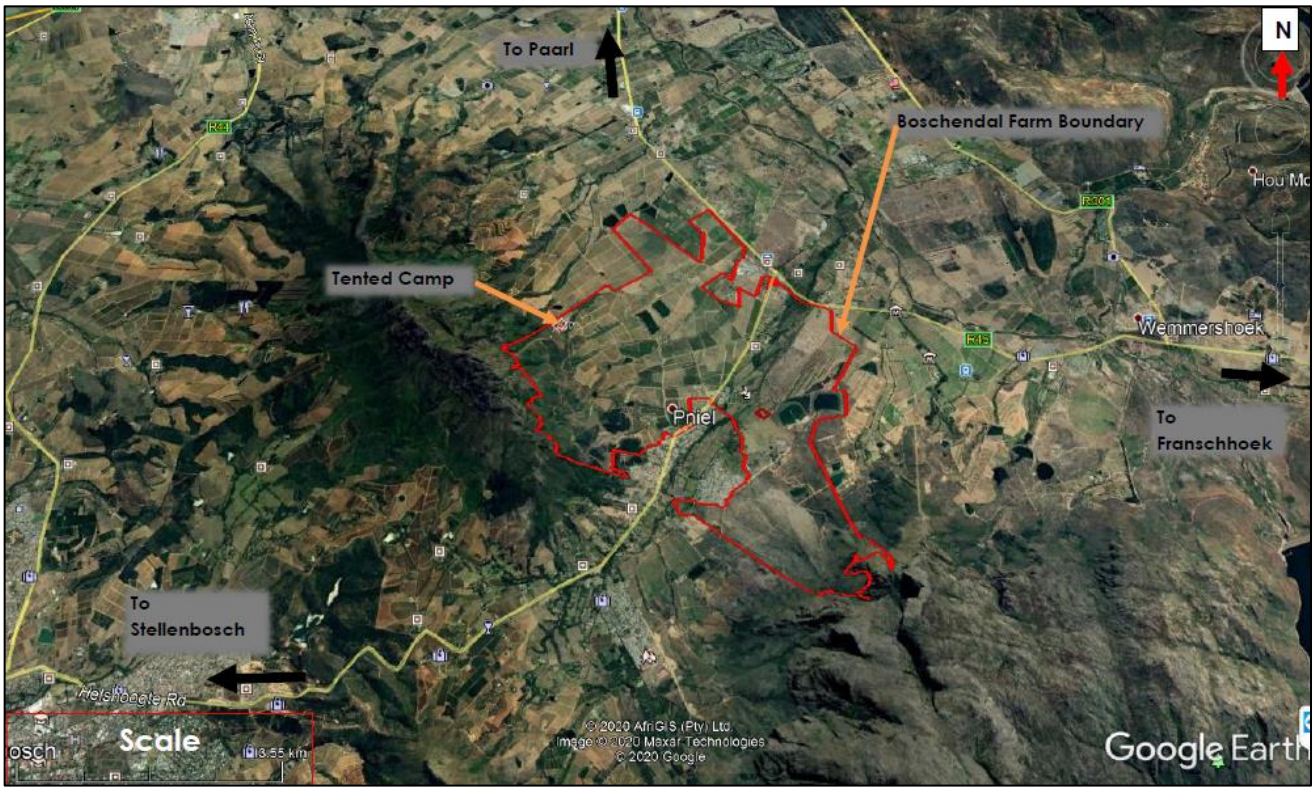


Figure 1: Locality Map (created using Google Earth Pro)

Figure 2: Aerial View of Site

SENSITIVITY VERIFICATION METHODOLOGY:
The site sensitivity verification statement was compiled by the EAP and is based on:

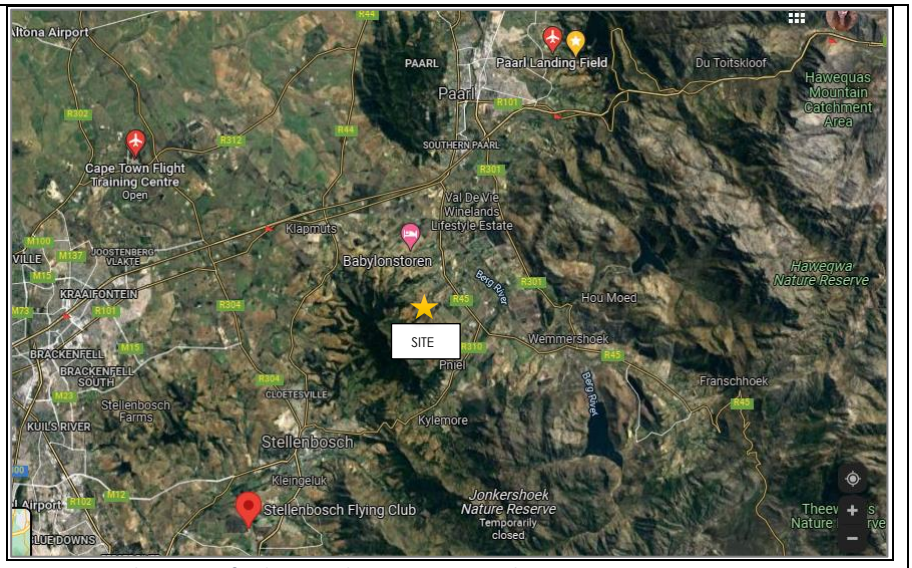
- Site visit undertaken on 5 May 2020 & 7 September 2021.
- A desktop investigation using biodiversity and land use mapping tools (BGIS, Cape Farm Mapper, City of Cape Town Zoning Viewer, etc.); and
- Baseline information recorded in specialist assessments and reports undertaken by a soil scientist, heritage practitioner, freshwater ecologist, botanical, and two faunal specialists.

SITE SENSITIVITY VERIFICATION:
The table below, supporting photographs and reference to specialist assessments serve to:

- Verify land use and sensitivities identified in the screening report; and
- Confirm / contest the need for the various specialist inputs called for in terms of the screening tool report.

SENSITIVITY AND SPECIALIST INPUT IDENTIFIED IN TERMS OF THE DFFE SCREENING TOOL	VERIFICATION OF SITE-SPECIFIC SENSITIVITY AND MOTIVATION ON THE NEED FOR SPECIALIST INVESTIGATION
Agricultural Theme: **High** sensitivity Necessitating an agricultural impact assessment (in accordance with the protocol prescribed in GNR 320). Actual Sensitivity: **Medium**	The STR assigns a 'High' sensitivity for the agricultural theme. Given this rating, a site sensitivity verification was undertaken by soil scientist, Johann Lanz, who verified the entire site as being of 'Medium' sensitivity instead and confirmed the required level of agricultural assessment as an Agricultural Compliance Statement. An Agricultural Compliance Statement (Lanz, 2021) in compliance with the protocols prescribed by GNR 320 has been undertaken (refer to Appendix H (iv) of the EIR).

Animal Species Theme: Medium sensitivity Necessitating an animal species assessment (in accordance with Animal Species Assessment Protocols prescribed in GN 43855) Actual Sensitivity: **Low**	The STR indicates the site as having 'Medium' sensitivity for the animal species theme given the potential presence of two invertebrate species, namely *Kedestes lenis lenis* (False Bay Unique Ranger butterfly) and Sensitive species 7 (SSp7) (a butterfly of which the identity is not revealed). As such, a thorough desktop study was commissioned to ascertain whether there is any chance of the species occurring on site and whether a detailed survey of the entire project area for these species would be appropriate to determine specific impacts. Hawkes (2021) confirmed that the probability that either *Kedestes lenis lenis* or SSp7 will be present on site is negligible and no impact on these species is expected. As such, an Animal Species Compliance Statement for the two species was completed (refer to Appendix H (iii) of the EIR for the full report). In addition, the Ecological Assessment (Jackson & Martin, 2021) commissioned for the project looked at faunal diversity at the site and the potential impacts on fauna (refer to Appendix H (ii) of the EIR).
Aquatic Biodiversity Theme: Very High sensitivity Necessitating an aquatic biodiversity impact assessment (in accordance with the protocol prescribed in GNR 320, Aquatic Biodiversity Assessment Protocols). Actual Sensitivity: **Very High**	Given this rating and the presence of a watercourse and in-stream dam at the site, a Freshwater Impact Assessment was undertaken by Snaddon (2021), and the findings included in the EIR (refer to Appendix H (i) of the EIR for the full report)
Archaeological and Cultural Heritage Theme: Very High sensitivity Necessitating archaeological & cultural impact assessments (General Assessment Protocols) Actual Sensitivity: **Vey High**	The STR indicate Vey High sensitivity in this regard, which is in line with the Founders Estates' state of protection as a National Heritage Site. A full Heritage Impact has been undertaken (Winter et al., 2021) which contemplated this theme and related impacts in detail (refer to Appendix H (v) of the EIR for the full HIA).
Civil Aviation Theme Medium sensitivity The need for a civil aviation assessment (in accordance with the protocol prescribed in GNR 320) Actual Sensitivity: **Low - Negligible**	The STR notes that the site is located within 8 and 15 km of a civil aviation aerodrome and within 15 - 35 km from a major civil aviation aerodrome/radar. This is presumably as a result of the Cape Town Flight Training Centre and/or the Paarl Landing Field and/or Stellenbosch Flying Club, all being located approx. 30km away from the site (refer to Figure 3).

	 *Figure 3: Civil aviation facilities within proximity to the site* The Tented Camp would, however, not affect any civil aviation activity given that the structures are not high and do not comprise any telecommunications structures that may have potential to interfere with navigation/communication. There are also no runway facilities or any other activity that could affect an aviation aerodrome or radar or its operations. This rating is therefore disputed to, in fact, be Low- Negligible. As such, no specialist investigations are deemed necessary.
Defence Theme **Low** sensitivity Actual Sensitivity: **Low**	Defence is rated as 'Low' sensitivity by the STR as such no specialist investigations into this theme and associated impacts are deemed necessary.
Palaeontology Theme: **Low** sensitivity Necessitating a palaeontological assessment (General Assessment Protocols) Actual Sensitivity: **Low**	Palaeontology is rated as 'Low' sensitivity by the STR as such no specialist investigations into this theme and associated impacts are deemed necessary. Despite this, the HIA undertaken has contemplated cultural and heritage aspects in detail, including palaeontology.
Plant Species Theme: **Medium** sensitivity Necessitating a plant species assessment (General Assessment Protocols). Actual Sensitivity: **Medium**	Given the 'Medium' rating for the plant species theme (along with a Very High rating for Terrestrial Biodiversity) an Ecological Impact Assessment was undertaken for the site. The Report notes the various plant species (indigenous and alien) located within the proposed development footprint. The Ecological Impact Assessment is included in the EIR.
Terrestrial Biodiversity Theme: **Very High** sensitivity Necessitating a terrestrial biodiversity impact	Given the 'Very High' rating for this theme Ecological Impact Assessment was undertaken for the site. The study reports on both terrestrial plants and animal species and associated ecological impacts brought upon by the development.

assessment and a plant species assessment (Terrestrial Biodiversity Assessment Protocols) Actual Sensitivity: **Very High**	The Ecological Impact Assessment has been included in the EIR and appended to the report (refer to Appendix H (ii))
Additional specialist studies called for by the Screening Report	
Landscape/Visual Impact Assessment (General Assessment Protocols)	A detailed HIA has been undertaken which includes a details assessment of impacts on the cultural landscape including visual considerations.
Socio-Economic Assessment (General Assessment Protocols)	The socio-economic aspects of the site and proposal have been considered and addressed in the EIR through inclusion of the following: • Socio-economic profile of the affected community and • Detailing the financial contribution of the project to the economy as well as to previously disadvantaged individuals. Given the small-scale, seasonal and temporary nature of the development, a full Socio-Economic Impact Assessment is not deemed necessary.
Avian Impact Assessment	Avian species occurring near the site have been noted and potential impacts considered in the Ecological Impact Report. The specialist found that larger bird species (vultures, eagles) and waterbirds would not have been negatively influenced by the habitat removed for the Tented Camp and that the disturbance to faunal species using the site for foraging, shelter and breeding would have resulted in a Low (-) impact. Given this a more detailed Avian Impact Assessment is not deemed necessary.

References:

Hawkes, P.G, 2021, FE5 (Pty) Ltd Tented Camp: Terrestrial Invertebrate Assessment, Afribugs CC, Pretoria.

Hurworth, M, 2021, Civil Engineering Services Report, MH & A Consulting Engineers, Cape Town

Jackson, A & Martin T, 2021, Boschendal Tented Camp S24G Ecological Report, Biodiversity Africa, Cape Town.

Lanz, J, 2021, Site sensitivity verification and Agricultural compliance statement for NEMA 24G Application for FE5 (Pty) Ltd Tented Camp, Wynberg.

Snaddon, K, 2021, Environmental Impact Assessment of Founders Estate 5 Tented Camp, Boschendal Estate, The Freshwater Consulting Group, Kommetjie.

Winter, S, 2021, Heritage Statement: Tented Camps, Founders Estates National Heritage Site, Boschendal Farmlands, Dwars River Valley, Stellenbosch, Muizenburg.

APPENDIX Q

Methodology employed to determine impact significance

EVALUATION METHODS FOR ENVIRONMENTAL IMPACTS

The evaluation method for determining significance of impacts is shown below.[1]

Note that an adjustment was made, which involved changing the consequence column to the significance column, due to the fact that probability should not necessarily determine significance, as, for example, catastrophic events would be highly significant, even though the probability of such an event occurring is low.

Definitions of or criteria for environmental impact parameters

The significance of environmental impacts is a function of the environmental aspects that are present and to be impacted on, the probability of an impact occurring and the consequence of such an impact occurring before and after implementation of proposed mitigation measures.

(a) Extent (spatial scale):

Ranking criteria

L	M	H
Impact is localized within site boundary	Widespread impact beyond site boundary; Local	Impact widespread far beyond site boundary; Regional/national

Take into consideration:

- Access to resources; amenity
- Threats to lifestyles, traditions and values
- Cumulative impacts, including possible changes to land uses at and around the site.

(b) Duration:

Ranking criteria

L	M	H
Quickly reversible, less than project life, short term (0-5 years)	Reversible over time; medium term to life of project (5-15 years)	Long term; beyond closure; permanent; irreplaceable or irretrievable commitment of resources

Take into consideration:

- Cost – benefit economically and socially (e.g. long or short term costs/benefits)

[1] (Adapted from T Hacking, AATS – Envirolink, 1998: An innovative approach to structuring environmental impact assessment reports. In: IAIA SA 1998 Conference Papers and Notes

(c) Intensity (severity):

Type of Criteria	Negative			Positive		
	H-	**M-**	**L-**	**L+**	**M+**	**H+**
Qualitative	Substantial deterioration, death, illness or injury, loss of habitat/diversity or resource, severe alteration or disturbance of important processes.	Moderate deterioration, discomfort, Partial loss of habitat/biodiversity/resource or slight or alteration	Minor deterioration, nuisance or irritation, minor change in species/habitat/diversity or resource, no or very little quality deterioration.	Minor improvement, restoration, improved management	Moderate improvement, restoration, improved management, substitution	Substantial improvement, substitution
Quantitative	Measurable deterioration Recommended level will often be violated (e.g. pollution)	Measurable deterioration Recommended level will occasionally be violated	No measurable change; Recommended level will never be violated	No measurable change; Within or better than recommended level.	Measurable improvement	Measurable improvement
Community response	Vigorous	Widespread complaints	Sporadic complaints	No observed reaction	Some support	Favourable publicity

Take into consideration:

- Cost – benefit economically and socially (e.g. high nett cost = substantial deterioration)
- Impacts on human-induced climate change
- Impacts on future management (e.g. easy/practical to manage with change or recommendation)

(d) Probability of occurrence:

Ranking criteria

L	M	H
Unlikely; low likelihood; Seldom No known risk or vulnerability to natural or induced hazards.	Possible, distinct possibility, frequent Low to medium risk or vulnerability to natural or induced hazards.	Definite (regardless of prevention measures), highly likely, continuous High risk or vulnerability to natural or induced hazards.

The specialist study must attempt to quantify the magnitude of impacts and outline the rationale used. Where appropriate, international standards are to be used as a measure of the level of impact.

(e) Status of the impact:

Describe whether the impact is positive, negative or neutral for each parameter. The ranking criteria are described in negative terms. Where positive impacts are identified, use the opposite, positive descriptions for criteria.

Based on a synthesis of the information contained in (a) to (e) above, the specialist will be required to assess the significance of potential impacts in terms of the following criteria:

(f) Significance: (Duration X Extent X Intensity)

Intensity = L				
Duration	**H**			
	M			Medium
	L	Low		
Intensity = M				
Duration	**H**			High
	M		Medium	
	L	Low		
Intensity = H				
Duration	**H**			
	M			High
	L	Medium		
		L	M	H
		Extent		

Positive impacts would be ranked in the same way as negative impacts, but result in high, medium or low positive consequence.

(g) Degree of confidence in predictions:

State the degree of confidence in the predictions, based on the availability of information and specialist knowledge.

(h) Significance Table Format:

Example of how significance tables should be formatted.

	Extent	**Duration**	**Intensity**	**Status**	**Significance**	**Probability**	**Confidence**
Without Mitigation							
With Mitigation							

APPENDIX R

Letter from Applicant

Founders Estate 5 (Pty) Ltd
FE 5 Boschendal Wine Estate
R310 Pniel road
Franschhoek
7960

14 December 2021

To Whom It May Concern,

Please be advised that in my capacity as the current sole director of Boschendal Founders Estate 5 (Pty) Ltd, I hereby confirm that I was not involved in the planning and construction of the Tented Camp in 2019. I have only been the director of the company as of July 2021.

My understanding is that the developer at the time mistakenly considered the tents to be temporary structures which would not need approval from the relevant authorities. I however cannot speak on behalf of parties whom are no longer associated with the company.

It is my intention to regularise the development in order to operate the business legally.

Yours Sincerely,

Amelia Ruth Kropman

APPENDIX S

Pre-Directive issued to the applicant on 22 March 2022

Department of Environmental Affairs and Development Planning
Ziyaad Allie
Rectification
Ziyaad.Allie@westerncape.gov.za | Tel: 021 483 2991

24G Application: 14/2/4/2/1/E4/5/0003/22

SECTION 24G PRE-DIRECTIVE

The Managing Director
Boschendal Founders Estate 5 (Pty) Ltd
The BIG Backpackers
18 Thornhill Road
GREEN POINT
8005

Email: amy@campcanoe.co.za

Attention: Amelia Kropman

PRE-DIRECTIVE IN TERMS OF SECTION 24G OF THE *NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 107 OF 1998* ("NEMA"): THE UNLAWFUL DEVELOPMENT OF A TENTED CAMP ON FOUNDERS ESTATE 5, FARM 1685/5, PAARL

1. Section 24G of the NEMA provides for the consequences of unlawful commencement, and upon application to the competent authority, applies to any person who has commenced a listed or a specified activity without environmental authorisation in contravention of section 24F(1) or has commenced, undertaken or conducted a waste management activity without a waste management licence in terms of section 20(b) of the National Environmental Management: Waste Act, 59 of 2008 ("NEM: WA").

2. The Department has received your application dated 22 February 2022 regarding the unlawful development of a tented camp on Founders Estate 5, Farm 1685/5, Paarl.

3. Having considered the information in respect of your application, you are hereby given notice of this Department's intention to issue you with a Directive in terms of section 24G of the NEMA, which will direct you to:

3.1. Compile a report containing-

"*(vii) Compile a report containing-*

(dd)a description of the public participation process followed during the course of compiling the report, including all comments received from interested and affected parties and an indication of how the issues raised have been addressed."

4. Kindly be reminded of the NEMA public participation requirements for applications for environmental authorisation:
   4.1. Section 24(1A) and 24(4)(a) of the NEMA stipulate the minimum requirements for applications for environmental authorisation and includes the requirement for public participation to be undertaken.
   4.2. Please refer to Chapter 6 of the Environmental Impact Assessment Regulations, 2014 (as amended G.N. No 326 of 7 April 2017) for detail on the public participation process to be followed for applications for environmental authorisation.
   4.3. In terms of section 24O of the NEMA, the relevant competent authority must consult with every State department that administers a law relating to a matter affecting the environment when such authority considers an application for an environmental authorisation.
   4.4. The applicant/Environmental Assessment Practitioner ("EAP") is required to inform this Department, in writing, upon submission of the application to the relevant State Departments. Upon receipt of this confirmation, this Department will in accordance with section 24O(2) & (3) of NEMA, inform the relevant State Departments of the commencement date of the 30 day commenting period.

5. In terms of the public participation process ("PPP") to be undertaken, kindly be advised that you/the EAP must record and respond to all comments received during the public participation process. The comments and responses must be captured in a Comment and Response Report and must also include a description of the PPP followed. The Comments and Responses Report must be made available to registered Interested and Affected Parties for review and/or comment, if any, before it is submitted to the Department for consideration.

6. Together with a public participation process, that comprises of comments and responses, the section 24G application process includes the issuing and payment of an administrative fine, prior to deciding on the application.

7. In addition to any representations made in the application form, you are afforded a period of **7 (seven) calendar days** from the date of receipt of this Pre-directive to make written representations to the Department as to why a Directive should not be issued.

8. Please note that if you fail to comply with a Directive, you will have committed a criminal offence in terms of 49A(1)(g) of the NEMA.

9. In addition, section 49B of the NEMA stipulates that a person convicted of an offence in terms of section 49A(1)(g) is liable to a fine not exceeding R10 million, or to imprisonment for a period not exceeding 10 years or to both such fine and such imprisonment.

Adv Charmaine Mare

Digitally signed by Adv Charmaine Mare
Date: 2022.03.22 08:43:34 +02'00'

ADV. CHARMAINE MARÉ

DIRECTOR: ENVIRONMENTAL GOVERNANCE

CC: (1) Claudette Muller (EAP) Email: claudette@chand.co.za