

PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED
DEVELOPMENT OF THE REFELE VILLAGE SPORTS FACILITY, MOUNT FLETCHER,
ELUNDINI LOCAL MUNICIPALITY, EASTERN CAPE PROVINCE.

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PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF THE REFELE VILLAGE SPORTS FACILITY, MOUNT FLETCHER WITHIN ELUNDINI LOCAL MUNICIPALITY OF THE EASTERN CAPE PROVINCE

NOTE: The phase 1 archaeological impact assessment was conducted as a requirement of the National Heritage Resources Act 25 of 1999, Section 38 (1)(a)

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as –

(c) any development or other activity which will change the character of the site –

(i) exceeding 5 000 m² in extent, or

This report follows the minimum standard guidelines required by the South African Heritage Resources Agency (SAHRA) and the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) for compiling a full Phase 1 Archaeological Impact Assessment (AIA).

1 EXECUTIVE SUMMARY

1.1 Purpose of the Study

The purpose of the study was to conduct a phase 1 archaeological impact assessment for the proposed development of the Refele Village Sports Facility, Mount Fletcher within Elundini Local Municipality of the Eastern Cape Province.

The survey was conducted to establish the range and importance of the exposed and *in situ* archaeological heritage material remains, sites and features; to establish the potential impact of the development; and to make recommendations to minimize possible damage to the archaeological heritage.

1.2 Brief Summary of Findings

No archaeological or other heritage remains, features, or sites were observed within the proposed area for the development of the Refele Village Sports Facility, Mount Fletcher within Elundini Local Municipality of the Eastern Cape Province.

1.3 Recommendations and Mitigation

The area is considered as having a *low archaeological heritage significance*. Development may proceed as planned; however, the following recommendations must be as part of the environmental management plan for the project:

1. If concentrations of pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work must cease

immediately and be reported to the Albany Museum (046 622 2312) and/or the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) (043 745 0888) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the findings will then be conducted to establish the contextual status of the sites and remove the archaeological deposit before development activities continue.

2. Construction managers/foremen and/or the Environmental Control Officer (ECO) should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

2 DECLARATION OF INDEPENDENCE

This section confirms a declaration of independence that archaeological heritage specialist, Ms Celeste Booth, has no financial or any other personal interests in the project for the proposed agricultural development.

Ms Celeste Booth was appointed on a strictly professional basis to conduct a Phase 1 Archaeological Impact Assessment in line with the South African national heritage legislation, the National Heritage Resources Act 25 of 1999 (NHRA 25 of 1999) and in response to the recommendations provided by the Department of Environmental Affairs and according to the environmental impact assessment regulations.

3 SUMMARY OF SPECIALIST EXPERTISE

Ms Celeste Booth (BSc Honours: Archaeology) is an archaeologist who has had eleven years of full-time experience in Cultural Resource Management in the Eastern Cape and sections of the Northern Cape and Western Cape. Ms Booth has conducted several Archaeological Desktop Studies and Phase 1 Archaeological Impact Assessments within the Eastern Cape and in the Karoo region across the Eastern Cape, Northern Cape and Western Cape.

4 INTRODUCTION

4.1 BACKGROUND INFORMATION

4.1.1 Type of Development (Extract from the Background Information Document)

Nako Iliso, on behalf of the Elundini Local Municipality, proposes to construct a sports field and track at Refele Village, Mount Fletcher. Nako Iliso have appointed Coastal and Environmental Services (t/a CES) as the project Environmental Assessment Practitioner (EAP).

The Elundini Municipality proposes to develop a sports facility which includes the following:

1. A soccer/rugby pitch
2. A netball and volleyball court
3. A running track around the pitch – alternatives for tartan finish or grass
4. A grandstand to house 350 to 500 spectators
5. Toilet facilities for both girls and boys
6. Change-room facilities
7. An administration building with 2 offices and a boardroom
8. Parking on site and fencing around the perimeter
9. Access road and gate

Development of the sports field and track will result in the clearing of indigenous vegetation.

4.2 Applicant

Elundini Local Municipality

4.3 Environmental Assessment Practitioner (EAP)

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5 SCOPE OF WORK AND TERMS OF REFERENCE

The purpose of the study was to conduct a phase 1 archaeological impact assessment for the proposed development of the Refele Village Sports Facility, Mount Fletcher within Elundini Local Municipality of the Eastern Cape Province.

The survey was conducted to:

- Make a basic surface assessment of the study site (including a desktop study or brief background assessment of the area) to identify, describe, record the localities;
- Assign a heritage site significance rating to heritage resources protected by law; and

- Make recommendations to the relevant Provincial Heritage Resources Authority (PHRA) regarding the conservation or mitigation thereof for purposes of development.

Archaeological and historical material remains, features, and sites were evaluated and assessed based on the following points:

- Type of site;
- Location and environmental surrounds;
- Site category;
- Context and condition;
- Estimated size and depth of deposit;
- Cultural affinities;
- Record site content;
- Record basic information of finds;
- Estimate relative age of sites from cultural material and other information;
- Record and describe graves, graveyards, and informal burials;
- Assess the importance and significance of material remains, features, and sites; and;
- Significance ratings based on local to international.

6 LEGISLATIVE AND POLICY FRAMEWORK

An archaeological impact assessment is required as a requisite of the National Heritage Resources Act 25 of 1999, Section 38 (a):

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as –
- (c) any development or other activity which will change the character of the site –
- (i) exceeding 5 000 m² in extent

This report follows the minimum standard guidelines required by the South African Heritage Resources Agency (SAHRA) and the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) for compiling a Phase 1 Archaeological Impact Assessment.

7 ARCHAEOLOGICAL BACKGROUND

No systematic archaeological research has been conducted within the immediate area of the proposed development. Several archaeological and heritage impact assessments have been conducted within the wider region.

Most archaeological research that has been conducted in the wider regions of the north-eastern Cape and Lesotho. Most recently archaeologists have been conducting extensive archaeological research up the coast within the Mkambathi region.

7.1 Early Stone Age (ESA) - 1.5 million to 250 000 years ago

The Early Stone Age from between 1.5 million and 250 000 years ago refers to the earliest that *Homo sapiens sapiens* predecessors began making stone tools. The earliest stone tool industry was referred to as the Olduvan Industry originating from stone artefacts recorded at Olduvai Gorge, Tanzania. The Acheulian Industry, the predominant southern African Early Stone Age Industry, replaced the Olduvan Industry approximately 1.5 million years ago, is attested to in diverse environments and over wide geographical areas. The hallmark of the Acheulian Industry is its large cutting tools (LCTs or bifaces), primarily handaxes and cleavers. Bifaces emerged in East Africa more than 1.5 million years ago (mya) but have been reported from a wide range of areas, from South Africa to northern Europe and from India to the Iberian coast. The end products were similar across the geographical and chronological distribution of the Acheulian techno-complex: large flakes that were suitable in size and morphology for the production of handaxes and cleavers perfectly suited to the available raw materials (Sharon 2009).

One of the most well-known Early Stone Age sites in southern Africa is Amanzi Springs (Deacon 1970), situated about 10 km north-east of Uitenhage and 45 km south east of the WEF site. The site is situated on a north-facing hill overlooking the Coega River. The earliest reference to the spring was made by an early traveller, Barrow (1801). FitzPatrick first reported stone artefacts in the area in 1924. Ray Inskeep (Inskeep 1965) conducted a small-scale excavation of the site in 1963. It was only in 1964 and 1965 that large scale excavations were conducted by Hilary Deacon. In a series of spring deposits, a large number of stone tools were found *in situ* to a depth of 3-4 m. Wood and seed material preserved remarkably very well within the spring deposits, and possibly date to between 800 000 to 250 000 years old.

Other Early Stone Age sites that contained preserved bone and plant material include Wonderwerk Cave in the Northern Province, near Kimberly and Montagu Cave in the Western Cape, near the small town of Montagu (Mitchell 2007). Early Stone Age sites have also been reported in the foothills of the Sneeuwberge Mountains (in Prins 2011).

The locations of Early Stone Age sites are biased by several factors, the change in land surface, so that the evidence of coastal exploitation is absent, the survival of Early Stone Age material either *in situ* or sealed within Pleistocene deposits is limited by soil and water activities and numerous processes in environmental change over time and research interests of professional archaeologists. Early Stone Age materials are the earliest evidence for human ancestors occupying the Transkei and Ciskei regions and typically occur on floodplains of perennial rivers and along drainage lines and water courses.

Museum collections have handaxes mixed collections and other collections attributed to the Early Stone Age. Sites of convincing Early Stone Age date are indicated in most areas of the Ciskei and are present in the Transkei districts of Kentani, Butterworth, Nqamakwe,

St. Mark's, Engcobo, Matatiele, Mount Frere, Mount Ayliff, Bizana, Idutywa, Lusikisiki, Mount Currie and Umtata (Derricourt 1977).

7.2 Middle Stone Age (MSA) – 250 000 – 30 000 years ago

The Middle Stone Age spans a period from 250 000 - 30 000 years ago and focuses on the emergence of modern humans through the change in technology, behaviour, physical appearance, art and symbolism. Various stone artefact industries occur during this time period, although less is known about the time prior to 120 000 years ago, extensive systemic archaeological research is being conducted on sites across southern Africa dating within the last 120 000 years (Thompson & Marean 2008). The large handaxes and cleavers were replaced by smaller stone artefacts called the Middle Stone Age flake and blade industries. Surface scatters of these flake and blade industries occur widespread across southern Africa although rarely with any associated botanical and faunal remains. It is also common for these stone artefacts to be found between the surface and approximately 50-80 cm below ground. Fossil bone may in rare cases be associated with Middle Stone Age occurrences (Gess 1969). These stone artefacts, like the Earlier Stone Age handaxes are usually observed in secondary context with no other associated archaeological material.

The Middle Stone Age is distinguished from the Early Stone Age by the smaller-sized and distinctly different stone artefacts and *chaîne opératoire* (method) used in manufacture, the introduction of other types of artefacts and evidence of symbolic behaviour. The prepared core technique was used for the manufacture of the stone artefacts which display a characteristic faceted striking platform and includes mainly unifacial and bifacial flake blades and points. The Howiesons Poort Industry (80 000 - 55 000 years ago) is distinguished from the other Middle Stone Age stone artefacts: the size of tools is generally smaller, the range of raw materials include finer-grained rocks such as silcrete, chalcedony, quartz and hornfels, and include segments, backed blades and trapezoids in the stone toolkit which were sometimes hafted (set or glued) onto handles. In addition to stone artefacts, bone was worked into points, possibly hafted, and used as tools for hunting (Deacon & Deacon 1999).

Other types of artefacts that have been encountered in archaeological excavations include tick shell (*Nassarius kraussianus*) beads, the rim pieces of ostrich eggshell (OES) water flasks, ochre-stained pieces of ostrich eggshell and engraved and scratched ochre pieces, as well as the collection of materials for purely aesthetic reasons. Although Middle Stone Age artefacts occur throughout the Eastern Cape, the most well-known Middle Stone Age sites include the type-site for the Howiesons Poort stone tool industry, Howiesons Poort (HP) rock shelter, situated close to Grahamstown, and Klasies River Mouth Cave (KRM), situated along the Tsitsikamma coast. Middle Stone Age sites are located both at the coast and in the interior across southern Africa.

Systematic archaeological research has been conducted on several sites yielding evidence of Middle Stone Age occupation occurring within the foothills of the Drakensburg and extending into Lesotho and KwaZulu Natal. Strathalan Cave B situated about 10 km north-east of Maclear and about 100 – 110 km east of the proposed development area, shows evidence of human behaviour between 29 000 and 22 000 years ago. This period highlights the final years of the Middle Stone Age and is considered transient between the Middle and Late Stone Ages. Excavations at the site revealed that the small cave may have been used as a camp site during cold winter nights and that the people occupying the cave behaved like Late Stone Age hunter-gatherers in some respects, but not all (Opperman, 1996; Opperman & Heydenrych 1990). During 1978 an archaeological research programme was initiated in the north-eastern Cape to gain information on the end Pleistocene and Holocene hunter-gatherer populations and the palaeoecology along a gradient transecting the extension of the Drakensberg escarpment into the Cape. Excavations were conducted at a series of sites in the Dordrecht-Elliot-Ugie-Barkley East area which was usually well-known for its painted sites. The only excavations that were previously carried were at Bellevue (**Drakensburg**), **Moshebi's Shelter** and **Sehonghong** (in eastern Lesotho) and Merino Walk within the Barkley East region. Below the escarpment two rock shelters were excavated at Bonawe and Te Vrede (Elliot and Ugie Districts) above the escarpment excavations have been undertaken in the Barkley East District at Colwinton, Prospect, Wartrail and Ravenscraig. In addition to this an excavation has been conducted at a site on the farm Grassridge near Dordrecht. All sites included end-Pleistocene and Holocene material except Wartrail (entirely Holocene) and Grassridge (Earlier late Pleistocene occupation). Additional sites that also contain late / terminal Pleistocene and Holocene deposits in the eastern highlands of South Africa and Lesotho include Rose Cottage Cave and Melikane, Ha Soloja Shelter does not show evidence of any Late Stone Age occupation (Plug 1996).

Several archaeological research projects are currently ongoing within the wider former Transkei and north-eastern Cape / southern Drakensburg region.

Scatters of Middle Stone Age stone artefacts are also known to occur within the region of the Eastern Cape Highlands where they occur along minor and major river courses in exposed and disturbed areas such as quarries, erosion dongas, gravel farm roads and **'manmade' dams**.

7.3 Later Stone Age (LSA) – 30 000 years ago – recent (100 years ago)

The Later Stone Age (LSA) spans the period from about 20 000 years ago until the colonial era, although some communities continue making stone tools today. The period between 30 000 and 20 000 years ago is referred to as the transition from the Middle Stone Age to Later Stone Age; generally, there is a lack of crucial sites and evidence that represent this change, however, several sites in the eastern Cape Highlands, in eastern Lesotho and the Drakensburg in KwaZulu Natal have been dated to this time period. By the time of the

Later Stone Age the genus *Homo*, in southern Africa, had developed into *Homo sapiens*, and in Europe, had already replaced *Homo neanderthalensis*.

The Later Stone Age is marked by a series of technological innovations, new tools and artefacts, the development of economic, political and social systems, and core symbolic beliefs and rituals. The stone toolkits changed over time according to time-specific needs and raw material availability, from smaller microlithic Robberg (20/18 000-14 000 ya), Wilton (8 000-the last 500 years) Industries and in between, the larger Albany/Oakhurst (14 000-8 000ya) and the Kabeljous (4 500-the last 500 years) Industries. Bored stones were used as part of digging sticks, grooved stones for sharpening and grinding, and stone tools fixed to handles with mastic also become more common. Fishing equipment such as hooks, gorges and sinkers also appear within archaeological excavations. Polished bone tools such as eyed needles, awls, linkshafts and arrowheads also become a more common occurrence. Most importantly bows and arrows revolutionized the hunting economy. It was only within the last 2 000 years that earthenware pottery was introduced, before then tortoiseshell bowls were used for cooking and ostrich eggshell (OES) flasks were used for storing water. Decorative items like ostrich eggshell and marine/fresh water shell beads and pendants were made.

Hunting and gathering made up the economic way of life of these communities; therefore, they are normally referred to as hunter-gatherers. Hunter-gatherers hunted both small and large game and gathered edible plantfoods from the veld. For those that lived at or close to the coast, marine shellfish and seals and other edible marine resources were available for gathering. The political system was mainly egalitarian, and socially, hunter-gatherers lived in bands of up to twenty people during the scarce resource availability dispersal seasons and aggregated according to kinship relations during the abundant resource availability seasons. Symbolic beliefs and rituals are evidenced by the deliberate burial of the dead and in the rock art paintings and engravings scattered across the southern African landscape.

The majority of hunter-gatherer archaeological sites found usually date from the past 10 000 years where San hunter-gatherers inhabited the landscape living in rock shelters and caves as well as on the open landscape. These latter sites are difficult to find because they are in the open veld and often covered by vegetation and sand. Sometimes these sites are only represented by a few stone tools and fragments of bone. The preservation of these sites is poor and it is not always possible to date them (Deacon and Deacon 1999). Caves and rock shelters, however, in most cases, provide a more substantial preservation record of pre-colonial human occupation.

Later Stone Age sites occur both at the coast (caves, rock shelters, open sites and shell middens) and in the interior (caves, rock shelters and open sites) across southern Africa. There are more than a few significant Later Stone Age sites in the Eastern Cape. The most popular are the type-sites for the above-mentioned stone artefact industries, namely Wilton (for the Wilton Industry), Melkhoutboom (for the Albany Industry), both rock

shelters situated to the west of Grahamstown, and Kabeljous Rock Shelter (for the Kabeljous Industry) situated just north of Jeffreys Bay. Caves and rock shelters that were occupied by the San during the Later Stone Age sometimes contain numerous paintings along the walls.

Several cave and rock shelter sites have been recorded into the north-eastern Cape and the foothills of the southern Drakensberg. Several of the sites mentioned in the Middle Stone Age section show evidence of Later Stone Age occupation. Later Stone Age deposits dating from the terminal Pleistocene to 100BP include Rose Cottage Cave (eastern Free State) and **Melikane, Sehonghong and Moshebi's Shelter in eastern Lesotho. In the foothills** of the Drakensberg recent Later Stone Age assemblages have been documented in the Phuthiatsana-ea-Thaba Basin and include 17 large rock shelters, 32 small rock shelters and cliff edge, 8 large rocks and 8 open sites. Later Stone Age assemblages have also **been documented at Mhlwazini Cave and Collingham Shelter (Plug 1996).** Colwinton's formal stone tool assemblage was dominated by the scrapers which is consistent with a majority of Later Stone Age assemblages in southern Africa. Potsherds and bone fish hooks were also recorded at the site as well as at Bellevue and Driel (Opperman 1982). Strathalan Cave B situated about 10 km north-east of Maclear shows evidence of human behaviour between 29 000 and 22 000 years ago. However, radiocarbon dating indicates a hiatus of 10 000 years between the final Middle Stone Age date and first Later Stone Age occupation of the adjacent Strathalan Cave A. Ravenscraig was noted for the occurrence of chalcedony bladelets and stone artefacts resembling the Robberg Industry of the southern and eastern Cape. The lowest stratigraphic layer at Colwinton contained stone artefacts resembling those of the Albany Industry of the southern and eastern Cape (Opperman 1982).

According to Derricourt (1977) open Later Stone Age sites in the Transkei and Ciskei are mostly located close to water regardless of whether it may be seasonal or perennial and water courses and notes that lydianite (indurated shale / hornfels) is predominant as a raw material. He also notes that it is possible that Later Stone Age open sites may be distinguished by those containing pottery and those without.

7.4 Last 2 000 years – Khoekhoen Pastoralism

Until 2 000 years ago, hunter-gatherer communities traded, exchanged goods, encountered and interacted with other hunter-gatherer communities. From about 2 000 years ago the social dynamics of the southern African landscape started changing with the **immigration of two 'other' groups of people, different in physique, political, economic and social systems, beliefs and rituals.** One of these groups, the Khoekhoen pastoralists or herders entered southern Africa with domestic animals, namely fat-tailed sheep and goats, travelling through the south towards the coast. Khoekhoen pastoralist sites are often found close to the banks of large streams and rivers. They also introduced thin-walled pottery common in the interior and along the coastal regions of southern Africa. Their

economic systems were directed by the accumulation of wealth in domestic stock numbers and their political make-up was more hierarchical than that of the hunter-gatherers.

The most significant Khoekhoen pastoralist sites in the Eastern **Cape include Scott's Cave** near Patensie (Deacon 1967), Goedgeloof shell midden along the St. Francis coast (Binneman 2007) and Oakleigh rock shelter near Queenstown (Derricourt 1977). Often, these archaeological sites are found close to the banks of large streams and rivers. It is much more difficult to locate Khoekhoen open sites, owing to their settlement pattern and **lack of stone artefacts, makes evidence of occupation almost 'invisible'.**

Pre-agriculturalist pottery have been documented at some of the sites mentioned above. Pottery within the wider region of the proposed development area, from Swaziland to the north-eastern Cape, dates between 2 100 and 2 200 years and could possibly be earlier, predating the arrival of the of the agriculturalists by 400 years. No sheep remains have been found in association with the pottery which is stylistically different from those of the later agriculturalists (Iron Age populations) and a mean thickness of 7-8 mm Pottery has been documented at Driel Shelter, **Clarke's Shelter and Mhlwazini Cave in the northern Drakensberg** with dates ranging between of $2\ 160 \pm 50\text{BP}$ and $1\ 775 \pm 40\text{BP}$; at Collingham Shelter and Good Hope Shelter with dates ranging between $2\ 160\ \text{BP}$ and $1\ 770\ \text{BP}$; **and at Moshebi's Shelter in eastern Lesotho** with a date of $2\ 180 \pm 45\text{BP}$. In the Barkley East district, the dates for the pottery documented at Colwinton Shelter and Bonawe Shelter in the north-eastern Cape, Barkley East District, range between $2\ 250 \pm 80\text{BP}$ and $920 \pm 50\text{BP}$ (Mazel 1992).

7.5 Last 2 000 Years - The Iron Age

The **Nguni-speaking agropastoralists or 'first-farming communities' or Iron Age** communities entered southern Africa along the east coast within the last 2 000 years. They owned domestic stock, namely goats, sheep and cattle. Their pottery was different to that of the Khoekhoe, in the shape, thickness, heavy decoration and variety of the vessels. First farming communities lived a relatively sedentary way of life, they planted sorghum and millet, and were therefore limited to settle in the summer rainfall areas. In addition, first farming communities possessed the skill of metal working, having the ability to mine and work iron, copper, tin and even gold. Their economic systems were also based on the accumulation of wealth through owner-ship and their political organization was slightly more hierarchical than that of the Khoekhoen.

Much research has been conducted on the Iron Age (IA) across southern Africa, therefore resulting in well-established chronological and typological frameworks and settlement and economic patterns for the Iron Age sequence (Huffman 2007). The Iron Age sequence is based on ceramic phases determined by vessel profile and decoration motif and placement.

According to Huffman (2007) an eastern migration stream, known as the Chifumbaze Complex spread southwards from East Africa south into southern Africa during the period

of about AD 200—300 where several KwaZulu-Natal and north-Eastern Cape sites were occupied. The Early Iron Age sites in the Eastern Cape dates to between circa AD 600 to AD 900 and can be divided into the following ceramic facies (Maggs 1989; Huffman 2007):

- Msuluzi (AD 500-700);
- Ndondondwane (AD 700 – 800);
- Ntshekane (AD 800 – 900).

Thicker and decorated pottery sherds, kraals, possible remains of domesticated animals, upper and lower grindstones, storage pits, metal and iron implements are associated with identifying Early Iron Age sites. The sites are generally large settlements, but the archaeological visibility may in most cases be difficult owing to the organic nature of the homesteads. Additional evidence of these agropastoralist groups derives from rock paintings of cattle painted by hunter-gatherer groups who encountered or interacted with these communities. The bones of cattle and sheep excavated at Oakleigh Shelter near Queenstown may be an indication of possible stock theft (Derricourt 1977). The Early Iron Age (EIA) first-farming communities during the first millennium AD generally preferred to occupy river valleys within the eastern half of southern Africa owing to the summer-rainfall climate that was conducive for growing millet and sorghum.

In comparison to other areas containing Iron Age sites only a small amount of Iron Age research has been conducted in the Eastern Cape thus far. Earlier investigations into the Early Iron Age in the Transkei and Ciskei includes work at Buffalo River Mouth (Wells 1934; Laidler 1935), at Chalumna River Mouth (Derricourt 1977) and additional research by Feely (1987) and Prins (1989). Early Iron Age Sites (EIA) sites also include Kulubele situated in the Great Kei River Valley near Khomga (Binneman 1996), Ntsitsana situated in the interior Transkei, 70 km west of the coast, along the Mzimvubu River (Prins & Granger 1993), and Canasta Place situated on the west bank of the Buffalo (Qonce) River (Nogwaza 1994). Along the coast, near Coffee Bay, Early Iron Age sites have been dated from AD 670 and includes the sites of Mpame and Mqanduli. Early Iron Age pottery scatters have been documented along several area of the Wild Coast coastline including Zig-Zag Cave near Port St Johns (Derricourt 1977).

Hilltop settlement is mainly associated with Later Iron Age (LIA) settlement patterns that occurred during the second millennium AD. The Later Iron Age communities later moved from settlement in river valleys to the hilltops. Later Iron Age settlements have been formally recorded by the Albany Museum. With the exception of the Tembu, stone buildings which characterizes the Iron Age sites of Sotho areas, is absent in the Transkei and Ciskei, and a pattern of some mobility without, it is presumed, a stone working technology of significance, makes the allocation of sites a major problem (Derricourt 1973).

Huffman's (2004) ceramic sequence among the Nguni groups contains three facies:

- Blackburn (AD 1 050 – 1 300): along north and south coasts of KwaZulu Natal;
- Moor Park (AD 1 300 – 1 700): first recorded in Estcourt Midlands then along Transkei coast where it was called Umgazana Ware. Appears south of the

Mtamvuma River and it is suggested that it was the beginning of the division between southern and northern Nguni people and probably continued into the nineteenth century;

- Nqabeni (AD 1 700 – 1 850): style centres on KwaZulu Natal;

7.6 Human Remains

It is difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface. Human remains are usually observed when they are exposed through erosion or construction activities for development. Several human remains have been rescued eroding out of the dunes along this coastline. In some instances, packed stones or rocks may indicate the presence of informal pre-colonial burials.

The Albany Museum Database holds records of human remains that have been exposed and collected for conservation and curation within the wider region especially along the coastal areas. Cultural Resource Management practitioners whilst conducting archaeological heritage impact assessments have also recorded formal historical and contemporary cemeteries and informal burials within the wider region.

7.7 Rock Art (Paintings and Engravings)

Rock art is generally associated with the Later Stone Age period mostly dating from the last 5000 years to the historical period. It is difficult to accurately date the rock art without destructive practices. The southern African landscape is exceptionally rich in the distribution of rock art which is determined between paintings and engravings. Rock paintings occur on the walls of caves and rock shelters across southern Africa and are prolific in the Southern Drakensberg, north-eastern Cape extending the entire Drakensberg range into KwaZulu-Natal and Lesotho. Rock engravings are limited to the Karoo and Northern Cape Regions and do not generally occur within the north-eastern Cape region and Transkei region.

Rock art research within the Southern Drakensberg has been conducted by several researchers and students from the Rock Art Research Institute, University of the Witwatersrand, over a period of 25 years, with a well-established database of site from Maclear, Tsolo, Barkly East, Ugie, Dordrecht and the wider region and extent of the Drakensberg range and Maluti Mountains. The South African Rock Art Database established by the Rock Art Research Institute is a useful source for rock art site information across southern Africa.

8 DESCRIPTION OF THE PROPERTY

8.1 Location data

The proposed sports field and track is situated at the village of Refele, approximately 20km north-west of Mount Fletcher in the Elundini Local Municipality within the Joe Gqabi District Municipality in the Eastern Cape Province. Access to the site is via, the existing gravel road from Mount Fletcher to Refele.

The proposed sports field site is located on the Farm 261 in the Mount Fletcher Region, Eastern Cape Province.

8.2 Map

1:50 000 Topographic Map: 3028AD MOUNT FLETCHER
(not included, map off the CD-ROM was damaged)



Figure 1. Google Earth generated map of the location of the proposed Refele Sports Field Development showing the nearby villages and town (Mount Fletcher).



Figure 2. Google Earth generated map of the location of the proposed Refele Sports Field Development showing the nearby villages and town (Mount Fletcher).



Figure 3. Close-up view of the proposed Refele Sports Field Development.

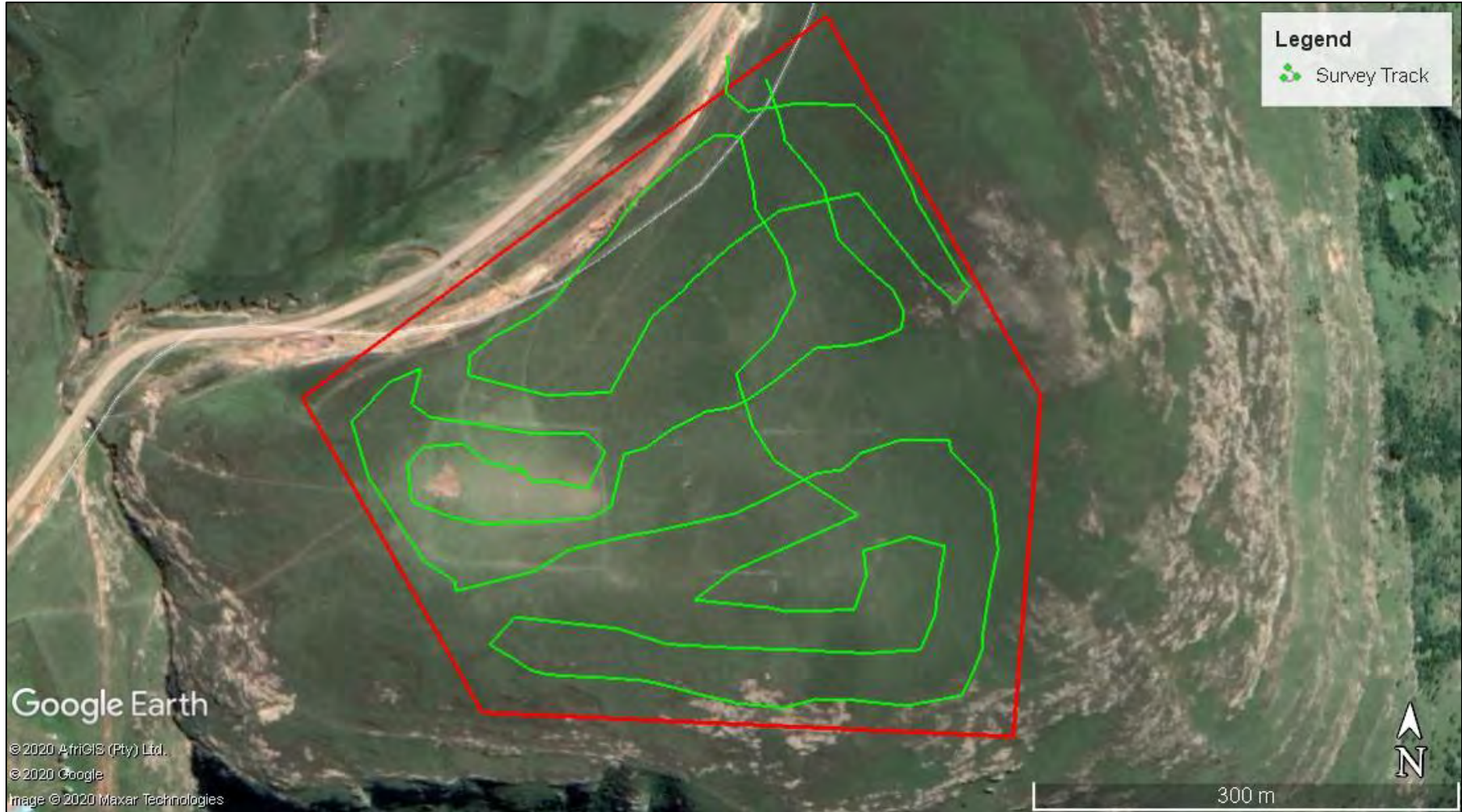


Figure 4. Close-up view of the proposed Refele Sports Field Development showing the survey track.

9 ARCHAEOLOGICAL INVESTIGATION

9.1 Methodology

A literature review was conducted prior to the field survey to establish the potential archaeological and heritage sites that may be encountered within the proposed area and provide insight into the archaeological background of the wider region. No systematic archaeological research has been conducted within the immediate area of the proposed development. Several archaeological, heritage and cultural impact assessments have been conducted within the wider region.

The survey was conducted on foot. GPS co-ordinates and photographs were taken using a Garmin Oregon 650 GPS unit.

9.2 Results of the Archaeological Investigation

The general landscape of the proposed development area was covered in dense grass vegetation which obscured archaeological surface visibility during the survey (Figures 5 - 12). Very few exposed, disturbed, or eroded surface areas occurred within the study area. The area is currently also being used for grazing of domestic stock.

The existing sports field comprises two soccer goals posts and a goal post to the south of the soccer field (Figures 13 - 15). The existing sports field is visible on historical Google Earth imagery dating back to the year 2 000.

No graves, archaeological or other heritage remains, features, or sites were observed within the proposed development area. It is unlikely that any heritage resources or sites will be uncovered during the development activities.



Figure 5. View of the general landscape of the proposed development area.



Figure 6. View of the general landscape of the proposed development area.



Figure 7. View of the general landscape of the proposed development area.



Figure 8. View of the general landscape of the proposed development area.



Figure 9. View of the general landscape of the proposed development area.



Figure 10. View of the general landscape of the proposed development area.



Figure 11 View of the general landscape of the proposed development area.

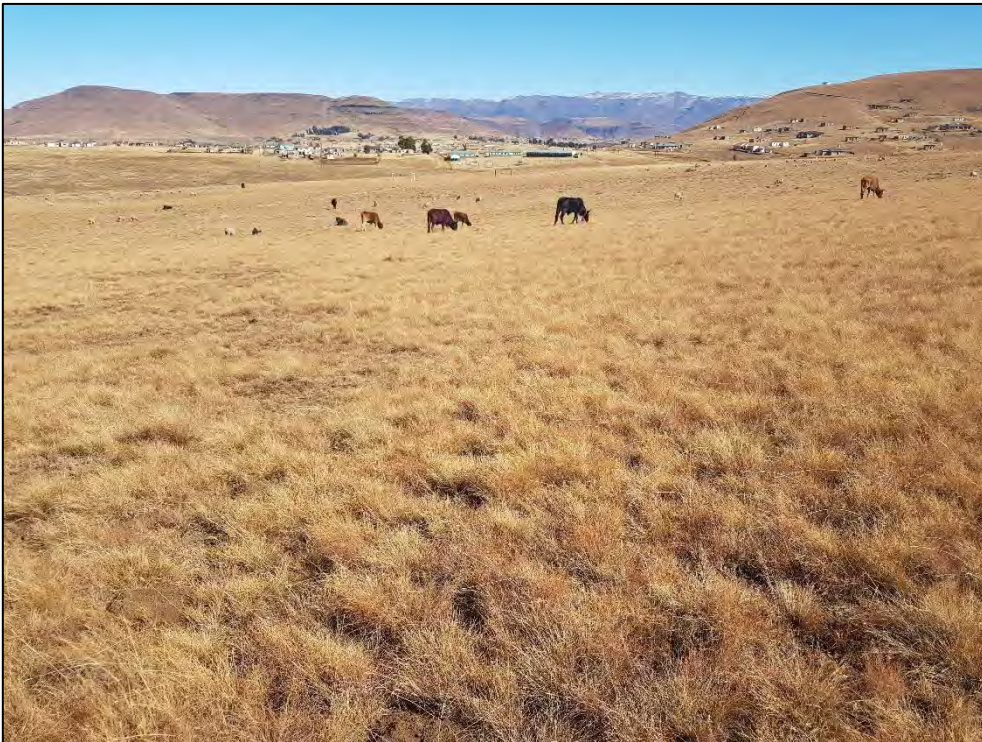


Figure 12 View of the general landscape of the proposed development area.



Figure 13 View of the general landscape of the proposed development area.



Figure 14 View of the general landscape of the proposed development area.

10 COORDINATES AND SITES FOR THE PROPOSED DEVELOPMENT OF THE REFELE VILLAGE SPORTS FACILITY, MOUNT FLETCHER WITHIN ELUNDINI LOCAL MUNICIPALITY OF THE EASTERN CAPE PROVINCE.

Table 1. Coordinates and sites for the proposed development of the Refele Village Sports Facility, Mount Fletcher within Elundini Local Municipality of the Eastern Cape Province.

REFERENCE	DESCRIPTION	CO-ORDINATE	HERITAGE GRADING
Refele Sports Field Development	Center point of proposed development	30°36'29.35"S; 28°21'53.29"E	N/A

11 RECOMMENDATIONS

The area is considered as having a *low archaeological heritage significance*. Development may proceed as planned; however, the following recommendations must be as part of the environmental management plan for the project:

1. If concentrations of pre-colonial archaeological heritage material and/or human remains (including graves and burials) are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) (043 745 0888) so that systematic and professional investigation/excavation can be undertaken. Phase 2 mitigation in the form of test-pitting/sampling or systematic excavations and collections of the findings will then be conducted to establish the contextual status of the sites and remove the archaeological deposit before development activities continue.
2. Construction managers/foremen and/or the Environmental Control Officer (ECO) should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

12 CONCLUSION

The proposed area for development is of low archaeological cultural sensitivity and development may proceed as planned taking into consideration the recommendations of this report. Stone artefacts usually occur between the surface and up to 50 – 80 cm below the surface therefore if concentrations of stone artefacts are uncovered during the agricultural activities, an archaeologist must be contacted to assess the site, however it is highly unlikely. There is always a possibility that human remains or other archaeological and historical material may be uncovered during the development. Such material must be reported to the Eastern Cape Provincial Heritage Resources Agency (ECPHRA) (043 745 0888) or the Albany Museum (046 622 2312) if exposed.

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14 RELEVANT ARCHAEOLOGICAL AND HERITAGE IMPACT ASSESSMENTS

Very little systematic archaeological research has been conducted within the immediate and surrounding areas for the proposed project, therefore, Cultural Resource Management (CRM) Reports, such as archaeological and heritage impact assessments, assist in attempting to predict the archaeological and heritage resources that may be found within the proposed development areas. The following reports are considered relevant to the current project:

- Anderson, G. 2012. Heritage survey of the Proposed Ugie Road Upgrade and Borrow Pit, Eastern Cape.
- Booth, C. 2011. An Archaeological Desktop Study for the Proposed Elliot Wind Energy Facility on a site West of Elliot, Sakhisizwe Local Municipality.
- Booth, C. 2016. A Letter of Recommendation (With Conditions) For the Exemption of a Full Phase 1 Archaeological Impact Assessment (AIA) For the Proposed Mining Permit Application on The Farm 379, Division of Maclear, Elundini Local Municipality, Joe Gqabi District Municipality, Eastern Cape Province.
- Kruger, N. 2013. Archaeological Impact Assessment for the Sinqumeni and Dukati Bulk Water Supply Scheme, Eastern Cape Province.

- Prins, F. 2010. Cultural Heritage Impact Assessment of the proposed 132kV Eskom Powerline from Sappi to Elliot and Ugie Substations, Eastern Cape.
- Prins, F. 2011. Cultural Heritage Assessment of a Section of the National Route R61 between Umtata and Queenstown and Associated Quarry and Borrow Pits.
- Van Ryneveld, K. 2010. Phase 1 Archaeological Impact Assessment: Oulubeni Villages Water Reticulation Scheme: Bulk Water Supply Backlog – Ngcobo Cluster 6 (Luqolweni, Mareleni, Sidindi, Empindweni, Engxangaxasi, Silidindi and Hala Villages), Oulubeni, Eastern Cape, South Africa.
- Van Ryneveld, K. 2010. Phase 1 Archaeological Impact Assessment: Expansion of the Cala Landfill Site, Closure of the Elliot Landfill Site and Establishment of a Waste Water Transfer Station at each site, Cala and Elliot, Eastern Cape, South Africa.
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- Van Ryneveld, K. 2012. Phase 1 Archaeological Impact Assessment: Penhoek Pass – Upgrade of the N6-4 [km52 – km 66.20], between Queenstown and Jamestown, Eastern Cape Province, Eastern Cape, South Africa.
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15 GENERAL REMARKS AND CONDITIONS

NOTE: This report is a phase 1 archaeological impact assessment (AIA) only and does not include or exempt other required specialist assessments as part of the heritage impact assessments (HIAs).

The National Heritage Resources Act (Act No. 25 of 1999, Section 35 [Brief Legislative Requirements]) requires a full Heritage Impact Assessment (HIA) in order that all heritage resources including all places or objects of aesthetics, architectural, historic, scientific, social, spiritual, linguistic, or technological value or significance are protected. Thus, any

assessment should make provision for the protection of all these heritage components including archaeology, shipwrecks, battlefields, graves, and structures older than 60 years, living heritage, historical settlements, landscapes, geological sites, palaeontological sites and objects.

It must be emphasized that the conclusions and recommendations expressed in this phase 1 archaeological impact assessment (AIA) are based on the visibility of archaeological remains, features and sites and may not reflect the true state of affairs. Many archaeological remains, features and sites may be covered by soil and vegetation and will only be located once this has been removed. In the event of such archaeological heritage being uncovered (such as during any phase of construction activities), archaeologists or the relevant heritage authority must be informed immediately so that they can investigate the importance of the sites and excavate or collect material before it is destroyed. The onus is on the developer to ensure that this agreement is honoured in accordance with the National Heritage Resources Act No. 25 of 1999 (NHRA 25 of 1999).

Archaeological Specialist Reports (desktops and AIA's) will be assessed by the relevant heritage resources authority. The final comment/decision rests with the heritage resources authority that may confirm the recommendations in the archaeological specialist report and grant a permit or a formal letter of permission for the destruction of any cultural sites.

APPENDIX A: HERITAGE LEGISLATIVE REQUIREMENTS

Sections 3, 34, 35, 36, 38, 48, 49 and 51 of the National Heritage Resources Act 25 of 1999 apply:

S3. National estate

(1) For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.

(2) Without limiting the generality of subsection (1), the national estate may include –

- (a) places, buildings, structures and equipment of cultural significance;
- (b) places to which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features of cultural significance;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and palaeontological sites;
- (g) graves and burial grounds, including –
 - (i) ancestral graves;
 - (ii) royal graves and graves of traditional leaders;
 - (iii) graves and victims of conflict;
 - (iv) graves of individuals designated by the Minister by notice in the Gazette;
 - (v) historical graves and cemeteries; and
 - (vi) other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- (h) sites of significance relating to the history of slavery in South Africa;
- (i) movable objects, including –
 - (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological specimens;
 - (ii) objects to which oral traditions are attached or which are associated with living heritage;
 - (iii) ethnographic art and objects;
 - (iv) military objects;
 - (v) objects of decorative or fine art;
 - (vi) objects of scientific or technological interest; and
 - (vii) books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act (Act No. 43 of 1996).

(3) Without limiting the generality of subsections (1) and (2), a place or object is to be considered part of national estate if it has cultural significance or other special value because of –

- (a) its importance in the community, or pattern of South Africa's history;**
- (b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;**
- (c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;**
- (d) its importance in demonstrating the principal characteristics of a particular class of **South Africa's natural** or cultural places or objects;
- (e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- (f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- (g) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- (i) sites of significance relating to the history of slavery in South Africa.

S34. Structures

- (1) No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority.
- (2) Within three months of the refusal of the provincial heritage resources authority to issue a permit, consideration must be given to the protection of the place concerned in terms of one of the formal designations provided for in Part 1 of this Chapter.
- (3) The provincial heritage resources authority may at its discretion, by notice in the Provincial Gazette, make an exemption from the requirements of subsection (1) within a defined geographical area, provided that it is satisfied that heritage resources falling into the defined area or category have been identified and adequately provided for in terms of the provisions of Part 1 of this Chapter.
- (4) Should the provincial heritage resources authority believe it to be necessary if by, following a three-month notice period published in the Provincial Gazette, withdraw or amend a notice under subsection (3).

S35. Archaeology, palaeontology and meteorites

- (1) Subject to the provisions of section 8, the protection of archaeological and palaeontological sites and material and meteorites is the responsibility of a provincial heritage resources authority: Provided that the protection of any wreck in the territorial waters and maritime cultural zone shall be the responsibility of SAHRA.
- (2) Subject to the provisions of subsection (8)(a), all archaeological objects, palaeontological material and meteorites are the property of the State. The responsible heritage authority must, on behalf of the State, at its discretion ensure that such objects are lodged with a museum or other public institution that has a collation policy acceptable to the heritage resources authority and may in doing so establish such terms and conditions as it sees fit for the conservation of such objects.
- (3) Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development or agricultural activity must immediately report the find to the responsible heritage resources authority, or to the nearest local authority or museum, which must immediately notify such heritage resources authority.
- (4) No person may, without a permit issued by the responsible heritage resources authority—
 - (a) destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite;
 - (b) destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;
 - (c) trade in, sell for private gain, export or attempt to export from the Republic any category of archaeological or palaeontological material or object, or any meteorite; or
 - (d) bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.
- (5) When the responsible heritage resources authority has reasonable cause to believe that any activity or development which will destroy, damage or alter any archaeological or palaeontological site is under way, and where no application for a permit has been submitted and not heritage resources management procedure in terms of section 38 has been followed, it may –
 - (a) Serve on the owner or occupier of the site or on the person undertaking such development an order for the development to cease immediately for such period as is specified in the order;
 - (b) Carry out an investigation for the purpose of obtaining information on whether or not an archaeological or palaeontological site exists and whether mitigation is necessary;
 - (c) If mitigation is deemed by the heritage resources authority to be necessary, assist the person on whom the order has been served under paragraph (a) to apply for a permit as required in subsection (4); and
 - (d) Recover the costs of such investigation from the owner or occupier of the land on which it is believed an archaeological or palaeontological site is located or from the person proposing to undertake the development if no application for a permit is received within two weeks of the order being served.

- (5) The responsible heritage resources authority may, after consultation with the owner of the land on which archaeological or palaeontological site or a meteorite is situated, serve a notice on the owner or any other controlling authority, to prevent activities within a specified distance from such site or meteorite.
- (6)(a) Within a period of two years from the commencement of this Act, any person in possession of any archaeological or palaeontological material or object or any meteorite which was acquired other than in terms of a permit issued in terms of this Act, equivalent provincial legislation or the National Monuments Act, 1969 (Act No. 28 of 1969), must lodge with the responsible heritage resources authority lists of such objects and other information prescribed period shall be deemed to have been recovered after the date on which this Act came into effect.
 - (b) Paragraph (a) does not apply to any public museum or university.
 - (c) The responsible authority may at its discretion, by notice in the Gazette or the Provincial Gazette, as the case may be, exempt any institution from the requirements of paragraph (a) subject to such conditions as may be specified in the notice, and may by similar notice withdraw or amend such exemption.
- (8) and object or collection listed under subsection (7) –
 - (a) remains in the ownership of the possessor for the duration of his or her lifetime, and SAHRA must be notified who the successor is; and
- (9) must be regularly monitored in accordance with regulations by the responsible heritage authority.

S36. Burial grounds and graves

- (1) Where it is not the responsibility of any other authority, SAHRA must conserve and generally care for burial grounds and graves protected in terms of this section, and it may make such arrangements for their conservation as it sees fit.
- (2) SAHRA must identify and record the graves of victims of conflict and any other graves which it deems to be of cultural significance and may erect memorials associated with the grave referred to in subsection (1), and must maintain such memorials.
- (3)(a) No person may, without a permit issued by SAHRA or a provincial heritage resources authority—
 - (a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;
 - (b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or
 - (c) bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.
- (3) SAHRA or provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)(a) unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.
- (4) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection (3)(b) unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority -
 - (a) Made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and
 - (b) Reached agreements with such communities and individuals regarding the future of such grave or burial ground.
- (5) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority –
 - (a) Carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and
 - (b) If such grave is protected or is of significance, assist any person who or community which is the direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

(6)(a) SAHRA must, over a period of five years from the commencement of this Act, submit to Minister for his or her approval lists of graves and burial grounds of persons connected with the liberation struggle and who died in exile or as a result of the action of State security forces or agents provocateur and which, after a process of public consultation, it believes should be included among those protected under this section.

(c) The Minister must publish such lists as he or she approved in the Gazette.

(6) Subject to section 56(2), SAHRA has the power, with respect to the graves of victims of conflict outside the Republic, to perform any function of a provincial heritage resources authority in terms of this section.

(7) SAHRA must assist other State Departments in identifying graves in a foreign country of victims of conflict connected with the liberation struggle and, following negotiations with the next of kin, or relevant authorities, it may re0inter the remains of that person in a prominent place in the capital of the Republic.

S.37 Public monuments and memorials

Public monuments and memorials must, without the need to publish a notice to this effect, be protected in the same manner as places which are entered in a heritage register referred to in section 30.

S38. Heritage resources management

(1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as –

(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;

(b) the construction of a bridge or similar structure exceeding 50 m in length;

(c) any development or other activity which will change the character of the site –

(i) exceeding 5 000 m² in extent, or

(ii) involving three or more erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;

(d) the re-zoning of a site exceeding 10 000 m² in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must as the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

(2) The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection (1) –

(a) if there is a reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management; or

(b) notify the person concerned that this section does not apply.

(3) The responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a): Provided that the following must be included:

(a) The identification and mapping of all heritage resources in the area affected;

(b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6(2) or prescribed under section 7;

(c) An assessment of the impact of development on such heritage resources;

(d) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;

(e) The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;

- (f) If heritage resources will be adversely affected by the proposed development, the consideration of alternative; and
 - (g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.
- (4) The report must be considered timeously by the responsible heritage resources authority which must, after consultation with the person proposing the development, decide –
- (a) whether or not the development may proceed;
 - (b) any limitations or conditions to be applied to the development;
 - (c) what the general protections in terms of this Act apply, and what formal protections may be applied, to such heritage resources;
 - (d) whether compensatory action is required in respect of any heritage resources damaged or destroyed as a result of development; and
 - (e) whether the appointment of specialists is required as a condition of approval of the proposal.
- (5) A provincial heritage resources authority may not make any decision under subsection (4) with respect to any development with impacts on a heritage resource protected at national level unless it has consulted SAHRA.
- (6) The applicant may appeal against the decision of the provincial heritage resources authority to the MEC, who –
- (a) must consider the views of both parties; and
 - (b) may at his or her discretion –
 - (i) appoint a committee to undertake an independent review of the impact assessment report and the decision of the responsible heritage resources authority;

And
 - (ii) consult SAHRA; and
 - (c) must uphold, amend or overturn such decision.
- (7) The provisions of this section do not apply to a development described in subsection (1) affecting any heritage resource formally protected by SAHRA unless the authority concerned decides otherwise.
- (8) The provisions of this section do not apply to a development as described in subsection (1) if an evaluation of the impact of such development on heritage resources is required in terms of the impact of such development of heritage resources is required in terms of the Environment Conservation Act, 1989 (Act No. 73 of 1989), or the integrated environmental management guidelines issued by the Department of Environmental Affairs and Tourism, or the Mineral Act, 1991 (Act No. 50 of 1991), or any other legislation: Provided that the consenting authority must ensure that the evaluation fulfils the requirements of the relevant heritage resources authority in terms of subsection (3), and any comments and recommendations of the relevant heritage resources authority with regards to such development have been taken into account prior to the granting of the consent.
- (9) The provincial heritage resources authority, with the approval of the MEC, may, by the notice in the Provincial Gazette, exempt from the requirements of this section any place specified in the notice.
- (10) Any person who has complied with the decision of a provincial heritage resources authority in subsection (4) or of the MEC in terms of subsection (6) or other requirements referred to in subsection (8), must be exempted from compliance with all other protections in terms of this part, but any existing heritage agreements made in terms of section 42 continue to apply.

S48. Permits

- (1) A heritage resources authority may prescribe the manner in which an application is made to it for any permit in terms of this Act and other requirements for permit applications, including –
- (a) any particulars or information to be furnished in the application and any documents, drawings, plans, photographs and fees which should accompany the application;
 - (b) minimum qualifications and standards of practice required of persons making application for a permit to perform specified actions in relation to particular categories of protected heritage resources;
 - (c) standards and conditions for the excavation and curation of archaeological and palaeontological objects and material and meteorites recovered by authority of a permit;

- (d) the conditions under which, bore a permit is issued, a financial deposit must be lodged and held in trust for the duration of the permit or such period as the heritage resources authority may specify, and conditions of forfeiture of such deposit;
 - (e) conditions for the temporary export and return of objects under section 32 or section 35;
 - (f) the submission of reports on work done under authority of a permit; and
 - (g) the responsibilities of the heritage resources authority regarding monitoring of work done under authority of a permit.
- (2) On application by any person in the manner prescribed under subsection (1), a heritage resources authority may in its discretion issue to such person a permit to perform such actions at such time and subject to such terms, conditions and restrictions or directions as may be specified in the permit, including a condition –
- (a) that the applicant give security in such form and such amount determined by the heritage resources authority concerned, having regard to the nature and extent of the work referred to in the permit, to ensure the satisfactory completion of such work or the curation of objects and material recovered during the course of the work; or
 - (b) providing for the recycling or deposit in a materials bank of historical building materials; or
 - (c) stipulating that design proposals be revised; or
 - (d) regarding the qualifications and expertise required to perform that actions for which the permit is issued.
- (3) A heritage resources authority may at its discretion, in respect of any heritage resource protected by it in terms of the provisions of Chapter II, by notice in the Gazette or the Provincial Gazette, as the case may be, grant an exemption from the requirement to obtain a permit from it for such activities or class of activities by such persons or class of persons in such circumstances as are specified in the notice.

S49. Appeals

- (1) Regulations by the Minister and the MEC must provide for a system of appeal to the SAHRA Council for a provincial heritage resources council against a decision of a committee or other delegated representative of SAHRA or a provincial heritage resources body authority.
- (2) Anybody wishing to appeal against a decision of the SAHRA Council or the council of a provincial heritage resources authority must notify the Minister or MEC in writing within 30 days. The Minister or MEC, must have due regards to –
- (a) the cultural significance of the heritage resources in question;
 - (b) heritage conservation principles; and
 - (c) any other relevant factor which is brought to its attention by the appellant or the heritage resources authority.

S51. Offences and penalties

- (1) Notwithstanding the provisions of any other law, any person who contravenes –
- (a) sections 27(18), 29(10), 32(13) OR 32(19) is guilty of an offence and liable to a fine or imprisonment or both such fine and imprisonment as set out in item 1 of the Schedule;
 - (b) sections 33(2), 35(4) is guilty of an offence and liable to a fine or imprisonment or both such fine and imprisonment as set out in item 2 of the Schedule;
 - (c) sections 28(3) or 34(1) is guilty of an offence and liable to a fine or imprisonment or both such fine and imprisonment as set out in item 3 of the Schedule;
 - (d) sections 27(22), 32(15), 35(6), or 44(3) is guilty of an offence and liable to a fine or imprisonment or both such fine and imprisonment as set out in item 4 of the Schedule;
 - (e) sections 27(23)(b), 32(17), 35(3) or 51(8) is guilty of an offence and liable to a fine or imprisonment or both such fine and imprisonment as set out in item 5 of the Schedule;
 - (f) sections 32(13), 32(16), 32(20), 35(7)(a), 44(2), 50(5) or 50(12) is guilty of an offence and liable to a fine or imprisonment or both such fine and imprisonment as set out in item 6 of the Schedule.
- (2) The Minister, with the concurrence of the relevant MEC, may prescribe a penalty of a fine or of imprisonment for a period not exceeding six months for any contravention or failure to comply with regulations by heritage resources authorities or by-laws by local authorities.
- (3) The Minister or the MEC, as the case may be, may make regulations in terms of which the magistrate of the district concerned may –

- (a) levy admission of guild fines up to a maximum amount of R10 000 for infringement of the terms of this Act for which such heritage resources authority is responsible; and
 - (b) serve a notice upon a person who is contravening a specified provision of this Act or has not complied with the terms of a permit issued by such authority, imposing a daily fine of R50 for the duration of the contravention, subject to a maximum period of 365 days.
- (4) The Minister may from time to time by regulation adjust the amounts referred to in subsection (3) in order to account for the effect of inflation.
- (5) Any person who-
- (a) fails to provide any information that is required to be given, whether or not on the request of a heritage resources authority, in terms of this Act;
 - (b) for the purpose of obtaining, whether for himself or herself or for any other person, any permit, consent or authority in terms of this Act, makes any statement or representation knowing it to be false or not knowing or believing it to be true;
 - (c) fails to comply with or perform any act contrary to the terms, conditions, restrictions or directions subject to which any permit, consent or authority has been issued to him or her in terms of this Act;
 - (d) obstructs the holder of a permit in terms of this Act in exercising a right granted to him or her by means of such a permit;
 - (e) damages, takes, or removes, or causes to be damaged, taken or removed from a place protected in terms of this Act any badge or sign erected by a heritage authority or a local authority under section 25(2)(j) or section 27(17), any interpretive display or any other property or thing.
 - (f) receives any badge, emblem or any other property or thing unlawfully taken or removed from a place protected in terms of this Act; and
 - (g) within the terms of this Act, commits or attempts to commit any other unlawful act, violates any prohibition or fails to perform any obligation imposed upon him or by its terms, or who counsels, procures, solicits or employs any other person to do so.
- shall be guilty of an offence and upon conviction shall be liable to such maximum penalties, in the form of a fine or imprisonment or both such fine and such imprisonment, as shall be specified in the regulations under subsection (3).
- (6) Any person who believes that there has been an infringement of any provision of this Act, may lay a charge with the South African Police Service or notify a heritage resources authority.
- (7) A magistrate's court shall, notwithstanding the provisions of any other law,** be competent to impose any penalty under this Act.
- (8) When any person has been convicted of any contravention of this Act which has resulted in damage or to alteration of a protected heritage resource the court may -
- (a) order such person to put right the result of the act of which he or she was guilty, in the manner so specified and within such period as may be so specified, and upon failure of such person to comply with the terms of such order, order such person to pay to the heritage resources authority responsible for the protection of such resource a sum equivalent to the cost of making good; or
 - (b) when it is of the opinion that such a person is not in a position to make good damage done to a heritage resources by virtue of the offender not being the owner or occupier of a heritage resources or for any other reason, or when it is advised by the heritage resources authority responsible for the protection of such resource that it is unrealistic or undesirable to require that the results of the act be made good, order such person to pay the heritage resources authority a sum equivalent to the cost of making good.
- (9) In addition to other penalties, if the owner of a place has been convicted of an offence in terms of this Act involving the destruction of, or damage to, the place, the Minister on the advice of SAHRA or the MEC on the advice of a provincial heritage resources authority, may serve on the owner an order that no development of such place may be undertaken, except when making good the damage and maintaining the cultural value of the place, or for a period not exceeding 10 years specified in the order.
- (10) Before making the order, the local authority and any person with a registered interest in the land must be given a reasonable period to make submissions on whether the order should be made and for how long.
- (11) An order of no development under subsection (9) attaches to the land and is binding not only on the owner as at the date of the order, but also on any person who becomes an owner of the place while the order remains in force.
- (12) The Minister on the advice of SAHRA, may reconsider an order of no development and may in writing amend or repeal such order.

(13) In any case involving vandalism, and whenever else a court deems it appropriate, community service involving conservation of heritage resources may be substituted for, or instituted in addition to, a fine or imprisonment.

(14) Where a court convicts a person of an offence in terms of this Act, it may order for forfeiture to SAHRA or the provincial heritage resources authority concerned, as the case may be, of a vehicle, craft, equipment or any other thing used or otherwise involved in the committing of the offence.

(15) A vehicle, craft, equipment or other thing forfeited under subsection (14) may be sold or otherwise disposed of as the heritage resources authority concerned deems fit.

APPENDIX B: GRADING SYSTEM

The National Heritage Resources Act 25 of 1999 stipulates the assessment criteria and grading of archaeological sites. The following categories are distinguished in Section 7 of the Act and the South African Heritage Resources Agency:

- National: This site is suggested to be considered of Grade 1 significance and should be nominated as such. Heritage resources with qualities so exceptional that they are of special national significance.
- Provincial: This site is suggested to be considered of Grade II significance and should be nominated as such. Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region
- Local: This site is suggested to be Grade IIIA significance. This site should be retained as a heritage register site (High significance) and so mitigation as part of the development process is not advised.
- Local: This site is suggested to be Grade IIIB significance. It could be mitigated and (part) retained as a heritage register site (High significance).
- **'General' Protection A (Field Rating IV A): This site should be mitigated before destruction (usually High/Medium significance).**
- **'General' Protection B (Field Rating IV B): This site should be recorded before destruction (usually Medium significance).**
- **'General' Protection C (Field Rating IV C): This site has been sufficiently recorded (in the Phase 1). It requires no further recording before destruction (usually Low significance).**

APPENDIX C: IDENTIFICATION OF ARCHAEOLOGICAL FEATURES AND MATERIAL FROM COASTAL AND INLAND AREAS: guidelines and procedures for developers

1. Stone artefacts

Stone artefacts are the most common and identifiable precolonial artefacts occurring on the South Africa landscape. Early Stone Age, Middle Stone Age and Later Stone Age stone artefacts occur in various concentrations on the South Africa landscape. Stone artefacts are very commonly found occurring on flat floodplains in a mostly secondary or disturbed context. However, they can be also be found in an *in situ* or undisturbed context in areas where little human or animal impact happens such as open sites mostly near rocky outcrops, amongst boulders and caves.

These may be difficult for the layman to identify. However, large accumulations of flaked stones which do not appear to have been distributed naturally should be reported. If the stone tools are associated with bone remains, development should be halted immediately and archaeologists notified.



Early Stone Age (ESA) stone artefact
(1.5 million years ago – 250 000 years ago)



Middle Stone Age stone artefacts
(250 000 – 30 000 years ago)



Later Stone Age stone artefacts
(30 000 years ago – historical times)

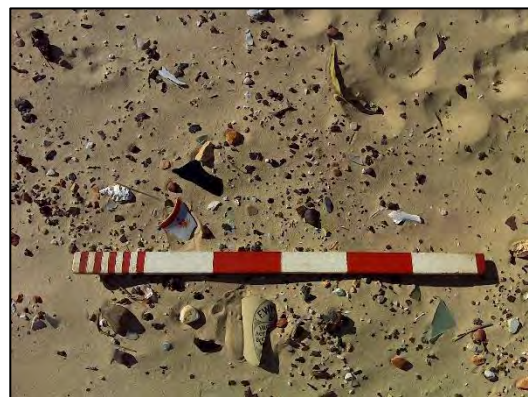
2. Pottery scatters

Pottery scatters can be associated with either Khoekhoen pastoralists, the Nguni first farming communities (referred to as the South African Iron Age) or colonial settlement and can be dated to within the last 2 000 years which occur both at the coast and inland. Pottery associated with Bushmen / hunter-gatherers is generally thought to occur in the Karoo region. The most obvious difference between Khoekhoen and Nguni pottery are the decorations, shapes, sizes and wall thickness. Khoekhoen pottery is generally thinner than the thicker walled and robust Nguni pottery. Colonial ceramics ranges from earthenware, stoneware, porcelain and European glazed and unglazed ceramics.

Precolonial pottery and Colonial ceramics are more easily identifiable by the layman and should be reported.



**Khoekhoen earthenware pottery
(last 2 000 years)**



3. Historical artefacts and features

**Iron Age earthenware pottery
(last 2 000 years)**



Examples of 19th century European ceramics

These are easy to identify and include colonial artefacts (such as ceramics, glass, metal, etc.), foundations of buildings or other construction features and items from domestic and military activities **associated with early travellers' encounters on the landscape and European settlement.**



**Example of a Fortified Structure
(Fort Double Drift)**



Ruin of stone packed dwelling



Glass artefacts

4. Shell middens (marine and freshwater)

Shell middens can be defined as an accumulation of marine or freshwater shell deposited by past human populations rather than the result of natural or animal activity. Marine shell middens occur all along the coast and may extend within 5 km of the coastline. This area is generally regarded as being archaeologically sensitive. The shells are concentrated in a specific locality above the high-water mark and frequently contain various edible and sometimes inedible marine shells, stone tools, pottery, bone (fish and animal) and occasionally also human remains. Shell middens may be of various sizes and depths, but an accumulation which exceeds 1 m² in extent, should be reported to an archaeologist. Freshwater shell middens occur along river banks and comprise freshwater shell, fish and animal bone, stone tools, pottery, and sometimes human remains.



Examples of the occurrence of coastal shell middens

5. Large stone features

They come in different forms and sizes, but are easy to identify. The most common are roughly circular stone walls (mostly collapsed) and may represent stock enclosures, remains of wind breaks or cooking shelters. Others consist of large piles of stones of different sizes and heights and are known as *isisivane*. They are usually near river and mountain crossings. Their purpose and meaning are not fully understood; however, some are thought to represent burial cairns while others may have symbolic value.



Examples of stone packed features

6. Graves, Burials and Human Skeletal material

Formal historical graves are easily identifiable as they are in most cases fenced off or marked with engraved headstones. Informal stone packed graves in several instances also occur within these fenced off areas.

It is difficult to detect the presence of archaeological human remains on the landscape as these burials, in most cases, are not marked at the surface. Human remains are usually observed when they are exposed through erosion or construction activities for development. Several human remains have been rescued eroding out of the dunes along this coastline and dongas in inland areas. In some instances, packed stones or rocks may indicate the presence of informal pre-colonial burials.

Human remains, whether the complete remains of an individual buried during the past, or scattered human remains resulting from disturbance of the grave, should be reported. In general, the remains are buried in a flexed position on their sides, but are also found buried in a sitting position with a flat stone capping and developers are requested to be on the alert for this.



Exposed human remains eroding out a coastal shell midden.



Exposed human remains eroding out an inland donga



DETAILS OF EAP AND DECLARATION OF INTEREST IN TERMS OF REGULATIONS 12 AND 13 OF THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED.

(For official use only)

File Reference Number:

NEAS Reference Number:

Date Received:

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

PROJECT TITLE

PROPOSED DEVELOPMENT OF THE REFELE VILLAGE SPORTS FACILITY, MOUNT FLETCHER, ELUNDINI LOCAL MUNICIPALITY, EASTERN CAPE PROVINCE.

Specialist:

Celeste Booth

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Version 1 of April 2017

Handwritten signature

Handwritten initials



Province of the
EASTERN CAPE
ECONOMIC DEVELOPMENT,
ENVIRONMENTAL AFFAIRS & TOURISM



E-mail:

r.thomson@cesnet.co.za

4.2 The specialist appointed in terms of the Regulations_

I, Celeste Booth, declare that

General declaration:

- 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 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

TJA Booth Heritage Consulting

Name of company (if applicable):

18.11.2020

Date:

Signature of the Commissioner of Oaths:

18.11.2020

Date:

COMMISSIONER OF OATHS
OFFREY MARK NETTELTON
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Province of the
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ECONOMIC DEVELOPMENT,
ENVIRONMENTAL AFFAIRS & TOURISM



Designation:

**COMMISSIONER OF OATHS
GEOFFREY MARK NETTELTON**

Official stamp (below)

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REPUBLIC OF SOUTH AFRICA**



DRAFT Ecological Impact Assessment



ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES

**REFELE VILLAGE SPORTS FACILITY, MOUNT FLETCHER,
ELUNDINI LOCAL MUNICIPALITY, EASTERN CAPE PROVINCE,
SOUTH AFRICA**

ECOLOGICAL IMPACT ASSESSMENT REPORT

Prepared for:

ELUNDINI LOCAL MUNICIPALITY
C/O MR HERMAN PIETERSEN
NAKO ILISO

Prepared by:



ENVIRONMENTAL AND SOCIAL ADVISORY SERVICES

EAST LONDON

*Also in Cape Town, Port Elizabeth, Johannesburg,
Grahamstown, Maputo (Mozambique) and Romsey (UK)*

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OCTOBER 2020

REVISIONS TRACKING TABLE

CES Report Revision and Tracking Schedule

Document Title:	Draft Ecological Impact Assessment for the proposed Refele Village Sports Facility, Mount Fletcher, Elundini Local Municipality, Eastern Cape Province of South Africa.		
Client Name & Address:	Elundini Local Municipality c/o Mr Herman Pietersen Nako Iliso		
Status:	Draft Ecological Impact Assessment		
Issue Date:	October 2020		
Lead Author:	Ms Nicole Wienand Ms Hlumela Mduduma		
Reviewer:	Ms Tarryn Martin		
Study Leader/ Registered Environmental Assessment Practitioner – Approval:	Dr Alan Carter Ms Robyn Thompson		
Report Distribution	<i>Circulated to</i>	<i>No. of hard copies</i>	<i>No. electronic copies</i>
Report Version	<i>October 2020</i> DRAFT ECOLOGICAL IMPACT ASSESSMET		

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Contents of the Specialist Report

The contents of this specialist report complies with the legislated requirements as described in Appendix 6 of the National Environmental Management Act (No 107 of 1998; NEMA) Regulations of 2014 (as amended) (GN R. 326 of 2017).

SPECIALIST REPORT REQUIREMENTS ACCORDING TO APPENDIX 6 OF GN R. 982 OF 2014, AS AMENDED IN GN R. 326 OF 2017		SECTION OF REPORT
1.	A specialist report prepared in terms of these Regulations must contain—	Chapter 1 and Appendix D
	(a) details of— (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	
	(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Section 1.2
	(c) an indication of the scope of, and the purpose for which, the report was prepared;	Chapter 1
	(cA) an indication of the quality and age of base data used for the specialist report;	Section 3.1
	(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Chapter 8 and Section 9.1
	(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 2.4 and 3.1
	(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Chapter 3
	(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 3.5 and Chapter 7
	(g) an identification of any areas to be avoided, including buffers;	Chapter 7 and 9.1.3
	(h) a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Chapter 5; Chapter 7 and Section 9.1.3
	(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 2.4
	(j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Chapter 9
	(k) any mitigation measures for inclusion in the EMPr;	Section 8.1 and Section 9.2
	(l) any conditions for inclusion in the environmental authorisation;	
	(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	
	(n) a reasoned opinion— (i) whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (ii) if the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and	Section 9.3



	mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	
	(o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	Section 2.5
	(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	
	(q) any other information requested by the competent authority.	N/A (No other information has yet been requested)
2.	(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	



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LIST OF ACRONYMS AND ABBREVIATIONS

AIS	Alien Invasive Species
BAR	Basic Assessment Report



CARA	Conservation of Agricultural Resource Act
CBA	Critical Biodiversity Area
CITES	Convention on International Trade in Endangered Species
CR	Critically Endangered
DAFF	Department of Agriculture, Forestry and Fisheries
DEFF	Department of Environmental Affairs, Forestry, and Fisheries
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECBCP	Eastern Cape Biodiversity Conservation Plan
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMPr	Environmental Management Programme
EN	Endangered
ESA	Ecological Support Area
GIS	Geographical Information System
GN	Government Notice
Ha	Hectares
IBA	Important Bird Area
IUCN	International Union for Conservation of Nature
LC	Least Concern
NBF	National Biodiversity Framework
NBSAP	National Biodiversity Strategy and Action Plan
NEMA	National Environmental Management Act
NEM:BA	National Environmental Management: Biodiversity Act
NEM:PAA	National Environmental Management: Protected Areas Act
NFA	National Forest Act
NFEPA	National Freshwater Ecosystem Priority Areas
NPAES	National Protected Areas Expansion Strategy
NSBA	National Spatial Biodiversity Assessment
NT	Near Threatened
NWA	National Water Act
PA	Protected Area
PES	Present Ecological State
PNCO	Provincial Nature Conservation Ordinance
POSA	Plants of Southern Africa
PPP	Public Participation Process
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SOTER	Soil and Terrain (Database of South Africa)
TOPS	Threatened or Protected Species
VU	Vulnerable
WMA	Water Management Area
WUA	Water Use Authorisation



1 PROJECT TEAM

1.1. DETAILS AND EXPERTISE OF THE SPECIALISTS

Ms Nicole Wienand (*Role: Junior Botanical Specialist and Report Writer*)

Ms Nicole Wienand is an Environmental Consultant based in the Port Elizabeth branch. Nicole obtained her BSc Honours in Botany (Environmental Management) from Nelson Mandela University (NMU) in December 2018. She also holds a BSc Degree in Environmental Management (Cum Laude) with majors in Botany and Geology from NMU. Nicole's honours project focused on the composition of subtidal marine benthic communities on warm temperate reefs off the coast of Port Elizabeth, while her undergraduate project focused on the investigation of dune movement in Sardinia Bay. Nicole's key interests include marine and terrestrial ecology. Since her appointment with CES in January 2019, Nicole has conducted ecological specialist studies for the following projects: ZMY Steel Traders (Pty) Ltd., Steel Recycling Plant in Zone 5 of the Coega SEZ; Kareekrans Boerdery Agricultural Development, near Middleton, Eastern Cape Province; Sitrusrand Dwarsleegte Farm Citrus Development near Kirkwood, Eastern Cape Province; and the Mosselbankfontein Coastal Dune and Ecological Impact Assessment near Witsand, in the Western Cape Province.

Ms Hlumela Mduduma (*Role: Aquatic Specialist*)

Hlumela Mduduma is an environmental consultant in the East London branch. In addition, Hlumela completed a BSc degree with majors in Geology and Chemistry and a BSc Honours degree in Geology from the University of Fort Hare. She then completed her MSc in Geology (Hydrogeology) from the University of KwaZulu- Natal. Hlumela's Masters dissertation focused on the Hydrochemical Characterization of the Northern KwaZulu-Natal historic coal mining districts, where she investigated the success of the governments' groundwater rehabilitation strategy on northern KwaZulu-Natal's abandoned coal mines. She has assisted in a number of aquatic as well as vegetation specialist studies and has experience in a number of Water Use license Related Applications, Basic Assessment Reports, Environmental Management Plans as well as the Public Participation Process. Hlumela is interested in all aspects of environmental quality management.

Ms Tarryn Martin (*Role: Report Review*)

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 specialises in conducting vegetation assessments in South Africa, Mozambique and other African countries. These assessments are often to IFC standards, specifically Performance Standard 6. Tarryn has also undertaken critical habitat assessments for areas requiring biodiversity offsets. Other botanical related work includes, developing alien management plans and biodiversity management and



monitoring plans.

1.2. DECLARATION

Role on Study Team	Declaration of independence
Report production (Ecological Component)	<ul style="list-style-type: none"> • I, Nicole Wienand, 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.
Report production (Aquatic Component)	<ul style="list-style-type: none"> • I, Hlumela Mduduma, 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;



	<ul style="list-style-type: none"> • 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.
<p>Report Reviewer & Final Sign-off</p>	<ul style="list-style-type: none"> • I, Ms 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.



2 INTRODUCTION

2.1. PROJECT DESCRIPTION

Nako Iliso, on behalf of the Elundini Local Municipality, has proposed the clearance of approximately 11.8 hectares (ha) of indigenous vegetation for the establishment of a sports field and associated infrastructure at Refele Village, near Mount Fletcher in the Eastern Cape Province (Figure 2.1 and 2.2). The proposed development will include the following infrastructure:

- A soccer/rugby pitch;
- A netball and volleyball court;
- A running track around the pitch – alternatives for tartan finish or grass;
- A grandstand to house 350 to 500 spectators;
- Toilet facilities for both girls and boys;
- Change-room facilities;
- An administration building with 2 offices and a boardroom;
- Parking on site and fencing around the perimeter; and
- Access road and gate.

The proposed development triggers the need for a Basic Assessment (BA) Process as per the National Environmental Management Act (NEMA) (Act No. 107 of 1998 and subsequent amendments) Environmental Impact Assessment (EIA) Regulations (2014 and subsequent amendments). CES has been appointed by Nako Iliso to apply for Environmental Authorisation (EA) in terms of the above-mentioned regulations by means of conducting a BA Process, inclusive of the relevant specialist studies. This Ecological Impact Assessment forms part of the BA for the proposed Refele Village Sports Facility.

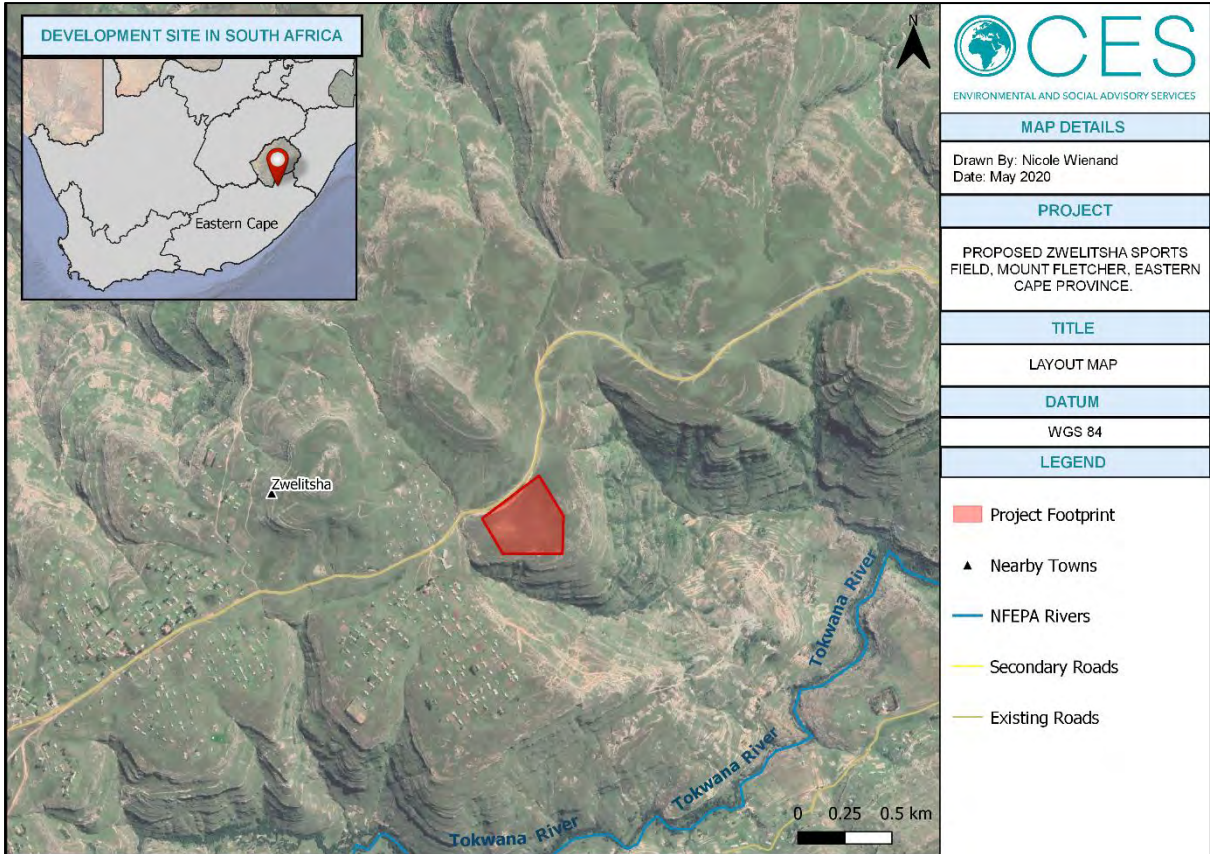


Figure 2.1: Development footprint of the proposed Sports Facility.

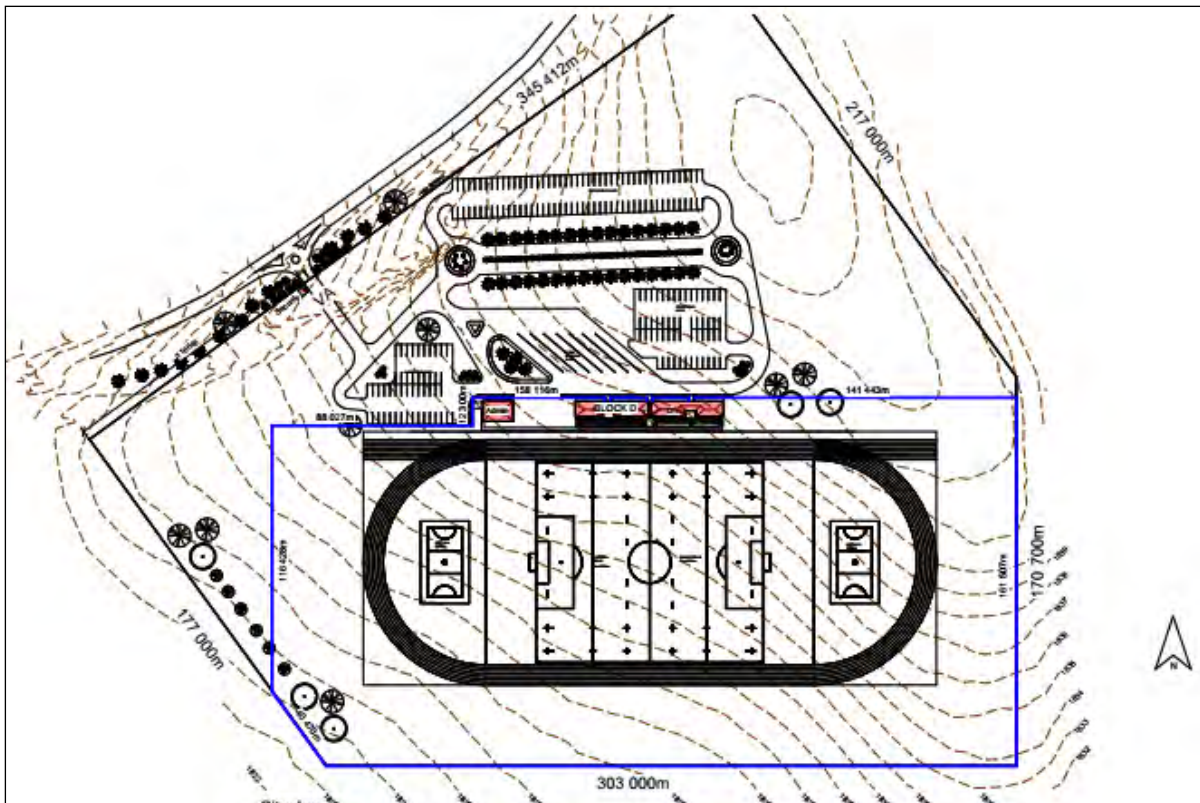


Figure 2.2: Site development plan for the proposed Sports Facility.



2.2. PROJECT LOCATION

The proposed sports facility is situated at the village of Refele, approximately 20 km north-west of Mount Fletcher in the Elundini Local Municipality within the Joe Gqabi District Municipality in the Eastern Cape Province. Access to the site is via the existing gravel road from Mount Fletcher to Refele (Figure 2.3).

The proposed sports facility is located on the Farm 621 in the Mount Fletcher Region, Eastern Cape Province.

Table 2.1: Property details of the farm on which the proposed Sports Facility is located.

Surveyor General Code	Farm/ Erf No	Portion	Latitude	Longitude	Property Type
C0990000000026100000	621	RE/62	30°38.5'	28°22.0'	Communal Farm

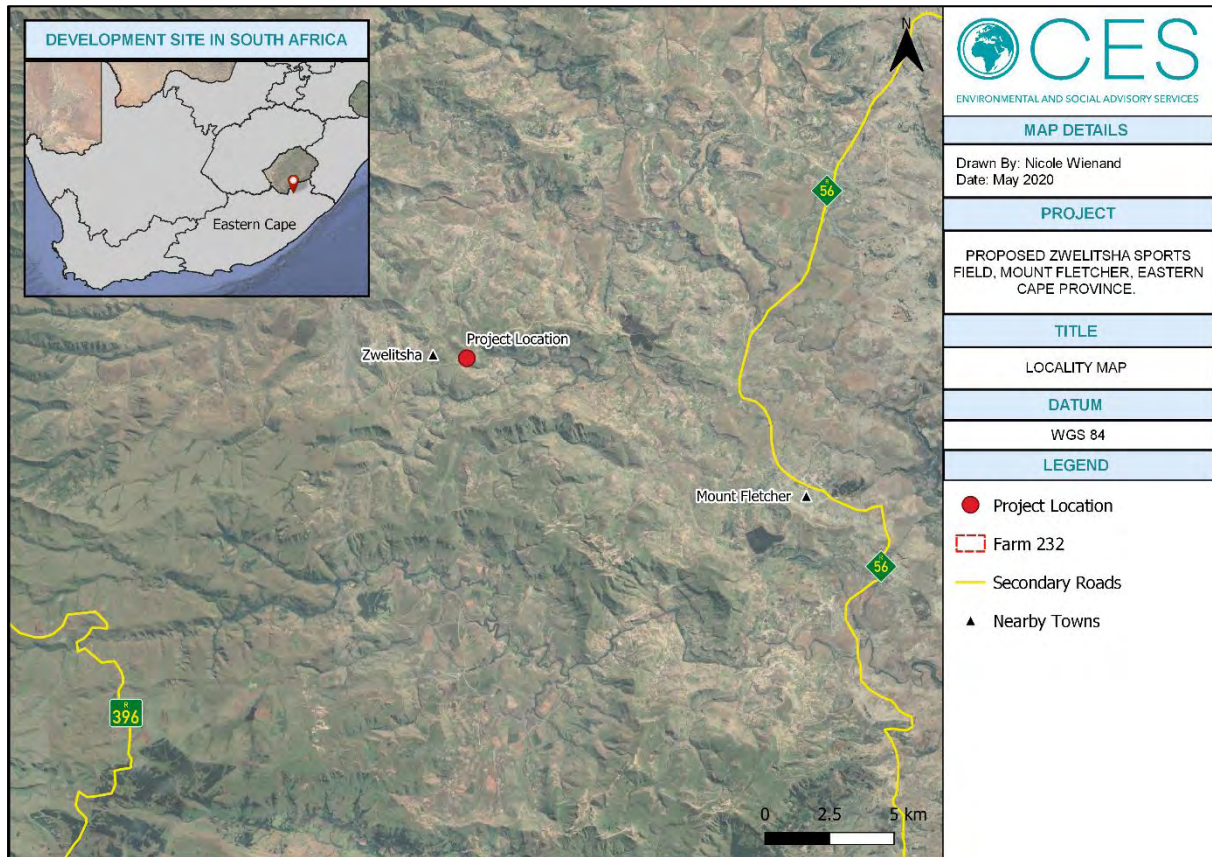


Figure 2.3: Locality Map of the proposed Sports Facility.

2.3. OBJECTIVES AND TERMS OF REFERENCE

The main objective of this report is to determine the baseline terrestrial ecological environment of the study site and to assess the potential impacts the proposed development may have on the terrestrial (and aquatic) habitat.

The following terms of reference were used for the objectives of this study:



- Describe the study site in terms of land cover and terrestrial habitat. This will include a full desktop analysis of the fauna and flora likely to occur within the project site.
- Review relevant legislation, policies, guidelines and standards.
- Conduct a site survey to determine the baseline ecological conditions of the study site. This will entail the identification of any Species of Conservation Concern (SCC), areas that may be susceptible to invasion by alien plant species, existing environmental degradation, and any environmentally sensitive aquatic aspects of the study site.
- Produce a sensitivity map that illustrates areas with significant development constraints.
- Describe the likely scope, scale and significance of direct and indirect positive and negative impacts resulting from the proposed development both in terms of the footprint and the immediate surrounding area during construction and operation, as well as the no-go option.
- Provide a detailed description of appropriate mitigation measures that could be adopted to reduce negative impacts for each phase of the project, where required.
- Identify any need for future permitting. **[NB: It is not the purpose of the study to comply with or apply for any permitting requirements at this stage.]**

2.4. ASSUMPTIONS AND LIMITATIONS

This report is based on the information available at the time of compiling the report and, as a result, is subject to the following assumptions and limitations:

- The report is based on the project description and the site layout provided to CES by the Proponent;
- Descriptions of the natural and social environments are based on limited fieldwork and available literature. However, the time available in the field was sufficient to provide enough information to make a decision on the status of the affected area;
- A detailed faunal survey was not conducted. The faunal survey was mainly a desktop study, using information from previous ecological surveys conducted in the area, supplemented by recording animal species that were observed during the site survey;
- The report is based on a combination of desktop and on-site analysis;
- It should be emphasised that sampling could only be carried out at one stage in the annual or seasonal cycle – in this case winter. Therefore, it is possible that some spring or summer flowering plant species may have gone undetected;
- Species of Conservation Concern (SCC) are difficult to find and identify, thus species described in this report do not comprise an exhaustive list. Although no SCC were identified during the site visit, it is possible that some spring or summer flowering SCC have gone undetected.
- The information, as presented in this document, only has reference to the study site as indicated on the project maps. Therefore, this information cannot be applied to any other area without a detailed investigation being undertaken.

2.5. PUBLIC CONSULTATION

The Public Participation Process (PPP) followed to date has been described in detail in the Draft Basic Assessment Report (BAR). The Draft BAR, together with the Draft Ecological Impact Assessment Report, will be made available for a 30-day commenting and public review



period. Any comments received on the Draft Ecological Impact Assessment Report will be included in the Final Ecological Impact Assessment Report.



3 ASSESSMENT METHODOLOGY

3.1. THE ASSESSMENT

The study site and surrounding areas were assessed using a two-phased approach. Firstly, a desktop and baseline assessment of the project area was conducted in terms of current vegetation classifications and biodiversity programmes and plans. Published literature on the ecology of the area was referenced in order to describe the study site in the context of the region and the Eastern Cape Province. The following documents/plans are referenced:

- South African Vegetation Map (SA VEGMAP) (Mucina *et al.*, 2018);
- Council for Geoscience (2013);
- Soil and Terrain (SOTER) Database of South Africa (2008);
- Eastern Cape Biodiversity Conservation Plan (ECBCP, 2007);
- The National Freshwater Ecosystem Priority Areas (NFEPA, 2011);
- 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 Protected Areas Expansion Strategy (NPAES, 2010);
- Review of the SANBI Red Data List;
- Convention on International Trade in Endangered Species (CITES);
- International Union for Conservation of Nature (IUCN);
- Provincial Nature Conservation Ordinance (PNCO);
- Plants of Southern Africa (POSA) – Quarter Degree Square (QDS) level;
- Animal Demography Unit (ADU) database for reptiles, amphibians and mammals – QDS level;
- Avibase - The World Bird Database;
- National Biodiversity Management: Biodiversity Act (NEM:BA) List of Alien Invasive Vegetation;
- Department of Agriculture, Forestry and Fisheries (DAFF) List of Protected Trees (2014);
- DWS Desktop Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) Model (2014);
- Department of Water Affairs and Forestry: Level 2 River Ecoregional Classification System for South Africa, Lesotho and Swaziland (2005); and
- National Spatial Biodiversity Assessment (NSBA) – River Ecosystems (2004).

A site visit was conducted on the 7th of July 2020. The purpose of the site visit was to conduct floral surveys and assess the ecological habitat conditions in order to inform the identification of potential impacts the proposed development may have on the surrounding natural environment and to inform the significance of those impacts

3.2. SPECIES OF CONSERVATION CONCERN

Data on the known distribution and conservation status for each potential plant SCC was obtained in order to develop a list of SCC. In general, these will be species that are already



known to be threatened or at risk and which will be most affected by the proposed activity. SCC have been selected for conservation/protection by means of a combination of applicable legislation, guidelines and conservation status lists. The following publications were utilised to cross reference conservation and protection statuses of various species:

- National Environmental Management: Biodiversity Act (No. 10 of 2004) - Chapter 4, Part 2 - Threatened and Protected Species (TOPS list);
- Endangered and Protected Flora in the 1974 Provincial Nature Conservation Ordinance (PNCO) – Schedule 3 and 4;
- 1976 List of Protected Trees (Government Gazette No. 9542 Schedule A) in the 1998 National Forest Act (NFA) as amended in November 2014; and
- SA Red Data List (<http://redlist.sanbi.org>).

The South African Red Data List of plants uses the internationally recognised IUCN Red List Categories and Criteria to measure a species risk of extinction. The Red List of South African plants is used widely for conservation management and planning throughout South Africa.

Species that are afforded special protection and are protected by CITES (Convention on International Trade in Endangered Species of Wild Flora and Fauna) are also regarded as SCC (see <http://www.cites.org>).

3.3. SAMPLING PROTOCOL

The study area was visually surveyed to evaluate vegetation composition and to provide detailed information on the plant communities present. The aim of the site visit was to characterise and describe each vegetation community within the study site as well as identify areas of high sensitivity and SCC. Visible species within the study site were identified using plant identification guides and other published literature. Vegetation types within the study area were assessed and surveyed and vegetation communities were then described according to the dominant set of species recorded from each type. These were mapped and assigned a sensitivity score.

The site inspection took into account the amount of time available for the study and limitations such as the seasonality of the vegetation.

3.4. VEGETATION MAPPING

The revised SA VEGMAP (2018) was established in order to “provide floristically based vegetation units of South Africa, Lesotho and Swaziland at a greater level of detail than had been available before.” The map was developed using a wealth of data provided by a network of ecologists, biologists and conservation planners that make periodic contributions to the project. These contributions have allowed for the best national vegetation map to date, the last being that of Acocks developed over 50 years ago. The SANBI Vegetation map informs finer scale bioregional plans and includes an additional 47 new vegetation units since its refinement in 2012.

The SA VEGMAP project has two main aims:



1. To determine the variation in and units of Southern African vegetation based on the analysis and synthesis of data from vegetation studies throughout the region, and
2. To compile a vegetation map. The aim of the map was to accurately reflect the distribution and variation on the vegetation and indicate the relationship of the vegetation with the environment. For this reason, the collective expertise of vegetation scientists from various universities and state departments were harnessed to make this project as comprehensive as possible.

The map and accompanying book describes each vegetation type in detail, along with the most important species, including endemic species and those that are biogeographically important.

The SA VEGMAP is compared to actual conditions of vegetation observed onsite during the site assessment through mapping from aerial photographs, satellite images, literature descriptions (e.g. SANBI and ECBCP) and related data gathered on the ground.

3.5. SENSITIVITY ASSESSMENT

The approach used to determine the vegetation sensitivity of the study area is described below. Zones of low, moderate and highly sensitive areas were delineated according to a system developed by CES and used in numerous ecological studies. Ultimately sensitivity was determined based on the presence or lack of the following:

- Degree of disturbance and transformation;
- Presence of floral Species of Conservation Concern (SCC);
- Vegetation types (which also constitute faunal habitats) of conservation concern;
- Areas of high biodiversity as determined by species composition and community structure; and
- The presence of important process areas such as:
 - Ecological corridors
 - Topographical features (especially steep and rocky slopes that provide niche habitats for both plants and animals).

It must be noted that the sensitivity zonings in this study are based solely on ecological characteristics and social and economic factors have not been taken into consideration. The sensitivity analysis described here is based on twelve (12) criteria which are considered to be of importance in determining ecosystem and landscape sensitivity. The method predominantly involves identifying sensitive vegetation or habitat types, topography and land transformation, biodiversity patterns (hotspots) and biodiversity process areas (ecological infrastructure and corridors) (Table 3.1).

Although very simple, this method of analysis provides a good, yet conservative and precautionary assessment of the ecological sensitivity.



Table 3.1: Criteria used for the analysis of the sensitivity of the area.

CRITERIA		LOW SENSITIVITY	MODERATE SENSITIVITY	HIGH SENSITIVITY
1	Topography	Level or even	Undulating; fairly steep slopes	Complex and uneven with steep slopes
2	Vegetation - Extent or habitat type in the region	Extensive	Restricted to a particular region / zone	Restricted to a specific locality / site
3	Conservation status of fauna / flora or habitats	Well conserved independent of conservation value	Not well conserved, moderate conservation value	Not conserved - has a high conservation value
4	Species of special concern - Presence and number	None, although occasional regional endemics	No endangered or vulnerable species, some indeterminate or rare endemics	One or more endangered and vulnerable species, or more than 2 endemics or rare species
5	Habitat fragmentation leading to loss of viable populations	Extensive areas of preferred habitat present elsewhere in region not susceptible to fragmentation	Reasonably extensive areas of preferred habitat elsewhere and habitat susceptible to fragmentation	Limited areas of this habitat, susceptible to fragmentation
6	Biodiversity contribution	Low diversity or species richness	Moderate diversity, and moderately high species richness	High species diversity, complex plant and animal communities
7	Erosion potential or instability of the region	Very stable and an area not subjected to erosion	Some possibility of erosion or change due to episodic events	Large possibility of erosion, change to the site or destruction due to climatic or other factors
8	Rehabilitation potential of the area or region	Site is easily rehabilitated	There is some degree of difficulty in rehabilitation of the site	Site is difficult to rehabilitate due to the terrain, type of habitat or species required to reintroduce
9	Disturbance due to human habitation or other influences (alien invasive species)	Site is very disturbed or degraded	There is some degree of disturbance of the site	The site is hardly or very slightly impacted upon by human disturbance
10	Ecological function in the landscape (corridor, niche habitats)	Low ecological function. No corridors or niche habitats	N/A (There are NO moderate ecological functions. It is considered either high or low)	High ecological function. Portions of entire sections of the site contains corridors or niche habitats
11	Ecological services (food, water filter, grazing, etc.)	Low to no ecological services on site	Some sections of the site contains ecological services	Most of the site contains ecological services



CRITERIA		LOW SENSITIVITY	MODERATE SENSITIVITY	HIGH SENSITIVITY
12	Aquatic environments (Rivers, wetlands, drainage line etc)	Outside of the 32m watercourse buffer. Outside of the 500m wetland buffer	Within 32m of the watercourse. Within 500m of a natural wetland, but outside of 50m wetland buffer	Development within the watercourse.

A sensitivity map was developed with the aid of a satellite image so that the sensitive regions and vegetation types could be plotted (see Chapter 7).

3.6. ECOLOGICAL IMPACT ASSESSMENT

3.6.1 Impact rating methodology

To ensure a balanced and objective approach to assessing the significance of potential impacts, a standardized rating scale was adopted which allows for the direct comparison of specialist studies. This rating scale has been developed in accordance with the requirements outlined in Appendix 1 of the NEMA EIA Regulations (2014 and subsequent 2017 amendments).

The details of this rating scale are included in Appendix C.



4 RELEVANT LEGISLATION

Environmental legislation relevant to the proposed development is summarised in Table 4.1 below. Biodiversity Plans and Programmes are discussed in Chapter 5 where they are used to describe the desktop ecological conditions of the study area.

Table 4.1: Environmental legislation considered in the preparation of the Ecological Impact Assessment for the proposed Sports Facility.

LEGISLATION/POLICY	DESCRIPTION	IMPLICATIONS FOR THE PROPOSED DEVELOPMENT
The Constitution (Act 108 of 1996)	<p>The Constitution of the Republic of South Africa is the supreme law of the land. As a result, all laws, including those pertaining to this Management Plan, must conform to the Constitution. The Bill of Rights - Chapter 2 of the Constitution, includes an environmental right (Section 24) according to which, everyone has the right:</p> <p>a) <i>To an environment that is not harmful to their health or well-being; and</i></p> <p>b) <i>To have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that:</i></p> <p>i. <i>Prevent pollution and ecological degradation;</i></p> <p>ii. <i>Promote conservation; and</i></p> <p>iii. <i>Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.</i></p>	<ul style="list-style-type: none"> • Obligation to ensure that the proposed activity will not result in pollution and ecological degradation; and • Obligation to ensure that the proposed development is ecologically sustainable, while demonstrating economic and social development.
<p>National Environmental Management Act (NEMA) (Act 108 of 1998), and its subsequent amendments.</p> <p>NEMA Amended EIA Regulations (GNR. 326) (2017)</p>	<p>Relevant Sections of the Act: Section 2, 23, 24, 24-1, 28-33</p> <ul style="list-style-type: none"> • Application of the NEMA principles (e.g. need to avoid or minimise impacts, use of the precautionary principle, polluter pays principle, etc.) • Application of fair decision-making and conflict management procedures are provided for in NEMA. • Application of the principles of Integrated Environmental Management and the consideration, investigation and assessment of the potential impact of existing and planned activities on the environment; socio-economic conditions; and the cultural heritage. <p>NEMA introduces the duty of care concept, which is based on the policy of</p>	<ul style="list-style-type: none"> • An application for Environmental Authorisation (as triggered by the Amended EIA Regulations) will be submitted to the Eastern Cape Provincial DEDEAT.



LEGISLATION/POLICY	DESCRIPTION	IMPLICATIONS FOR THE PROPOSED DEVELOPMENT
	<p>strict liability. This duty of care extends to the prevention, control and rehabilitation of significant pollution and environmental degradation. It also dictates a duty of care to address emergency incidents of pollution. A failure to perform this duty of care may lead to criminal prosecution and may lead to the prosecution of managers or directors of companies for the conduct of the legal persons.</p> <p>In addition, NEMA introduced a framework for environmental impact assessments, the Amended EIA Regulations (2017). The NEMA EIA Regulations aim to avoid detrimental environmental impacts through the regulation of specific activities that cannot commence without prior environmental authorisation. Authorisation either requires a Basic Assessment or a Full Scoping and Environmental Impact Assessment, depending on the type of activity. These assessments specify mitigation and management guidelines to minimise negative environmental impacts and optimise positive impacts.</p>	<ul style="list-style-type: none"> • In terms of Section 28, every person who causes; has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent pollution or rectify the damage caused – The undertaking of a specialist study, in this case an Ecological and Aquatic Impact study in order to identify potential impacts on the ecological environment and to recommend mitigation measures to minimise these impacts, complies with Section 28 of NEMA. • This report complies with Appendix 6 of the Amended Environmental Impact Assessment Regulations (GNR. 326 of 2017) as regulated by the National Environmental Management Act (Act 107 of 1998 and amended in 2014; NEMA), which cover the requirements of the content of a Specialist Report. • The developer must apply the NEMA principles, the fair decision-making and conflict management procedures that are provided for in NEMA. • The developer must apply the principles of Integrated Environmental Management and consider, investigate and assess the potential impact of existing and planned activities on the environment, socio-economic conditions and the cultural heritage.



LEGISLATION/POLICY	DESCRIPTION	IMPLICATIONS FOR THE PROPOSED DEVELOPMENT
<p>National Environmental Management: Biodiversity Act (Act 10 of 2004), and its subsequent amendments.</p> <p>Threatened Ecosystems</p> <p>Threatened and Protected Species</p> <p>Alien Invasive Species Regulations, 2014.</p>	<p>The National Environmental Management: Biodiversity Act (NEMBA), No. 10 of 2004, aims to assist with the management and conservation of South Africa’s biological diversity through the use of legislated planning tools. These planning tools include the declaration of bioregions and the associated bioregional plans as well as other mechanisms for managing and conserving biodiversity. The objectives of the Act include inter alia: To provide for:</p> <ul style="list-style-type: none"> • The management and conservation of biological diversity within the Republic and of the components of such biological diversity; • The use of indigenous biological resources in a suitable manner; • The fair and equitable sharing of benefits arising from bio-prospecting of genetic material derived from indigenous biological resources; and • To give effect to ratified international agreements relating to biodiversity which are binding on the Republic. • To provide for co-operative governance in biodiversity management and conservation; and • To provide for a South African National Biodiversity Institute to assist in achieving the objectives of the Act. <p>In addition to this, Sections 50-62 of the Act provide details relating to the protection of threatened or protected ecosystems and species, while Sections 63-77 of the Act provide details relating to alien and invasive species with the purpose of preventing their introduction and spread, managing, controlling and eradicating of alien and invasive species.</p> <p>The NEMBA Alien and Invasive Species List (Government Notice 599 of 2014) lists Alien and Invasive species that are regulated by the NEMBA Alien and Invasive Species Regulations (Government Notice 98 of 2014).</p>	<ul style="list-style-type: none"> • The proposed site is not located within or near to a threatened ecosystem. • The proposed development occurs within 10 km of a NPAES Focus Area - the Southern Berg Griqualand NPAES Focus Area. • No TOP species may be removed or damaged without a permit; and • Should any alien vegetation occur on site, these must be cleared using appropriate means.



LEGISLATION/POLICY	DESCRIPTION	IMPLICATIONS FOR THE PROPOSED DEVELOPMENT
<p>Conservation of Agricultural Resources Act, (Act 43 of 1983).</p>	<p>The Conservation of Agricultural Resources Act, No. 43 of 1983 aims to control over-utilisation of the natural agricultural resources to promote the conservation of soil, water sources and vegetation through the combat of weeds and invader plants. Regulations 15 and 16 under this Act, which relate problem plants were amended in March 2001.</p> <p><i>It should be noted that the CARA regulations for the legal obligations regarding alien invasive plants in South Africa have been superseded by the National Environmental Management: Biodiversity Act, 2004 (Act no. 10 of 2004) – Alien and Invasive Species (AIS) Regulations which was promulgated on 1 October 2014. However, CARA has not been repealed and is still included as a reference point to use in terms of the management of AIS where certain species may not be included in the NEM:BA AIS list.</i></p>	<ul style="list-style-type: none"> Should any alien invasive species be identified on site, these should be removed and disposed of in an appropriate manner.
<p>National Forest Act (Act 84 of 1998) and its subsequent amendments.</p>	<p>The NFA provides the legal framework for the protection and sustainable use of South Africa’s indigenous forests. Any area that has vegetation which is characterised by a closed and contiguous canopy and under storey plant establishment is defined as a ‘forest’ and as a result falls under the authority of the Department of Environmental Affairs, Forestry and Fisheries (DEFF): Forestry sector.</p>	<ul style="list-style-type: none"> No Forest patches will be impacted by the proposed development.
<p>National Water Act (Act 36 of 1998)</p>	<p>The purpose of this Act (Section 2) is to ensure that the Nation’s water resources are protected, used, developed, conserved and controlled in ways that take into account, including:</p> <ol style="list-style-type: none"> Promoting sustainable use of water Protection of aquatic and associated ecosystems and their biological diversity Reducing and preventing pollution and degradation of water resources <p><u>Protection of Water Resources (Sections 12-20)</u> Provides details of measures intended to ensure the comprehensive protection of all water resources, including the water reserve and water quality.</p>	<ul style="list-style-type: none"> Appropriate measures must be taken to prevent the pollution of water courses (including drainage lines) and other water resources. Riparian zones must be protected.



LEGISLATION/POLICY	DESCRIPTION	IMPLICATIONS FOR THE PROPOSED DEVELOPMENT
	<p>With respect to the establishment of water quality objectives, objectives may relate to (Section 13):</p> <ul style="list-style-type: none"> • the presence and concentration of particular substances in the water • the characteristics and quality of the water resource and the in-stream and riparian habitat • the characteristics and distribution of aquatic biota • the regulation and prohibition of in-stream and land-based activities which may affect the quantity and quality of the water resources <p><u>Section 19 deals with Pollution Prevention (Part 4)</u></p> <p>The person (including a municipality) who owns, controls occupies or uses the land in question, is responsible for taking reasonable measures to prevent pollution of water resources. If such measures are not taken, the catchment management agency concerned, may itself do whatever is necessary to prevent the pollution or remedy its effects and recover all reasonable costs from the persons responsible for the pollution.</p> <p>The 'reasonable measures' which have to be taken may include measures to:</p> <ul style="list-style-type: none"> • Cease, modify or control any act or process causing the pollution; • Comply with any prescribed waste standard or management practice; • Contain or prevent the movement of pollutants; • Eliminate any source of the pollution; • Remedy the effects of the pollution; and • Remedy the effect of any disturbance to the bed and banks of a watercourse. <p>With respect to pollution of rivers, the following definition is relevant when considering the potential impacts of development on water resources. Pollution may be deemed to occur when the following are affected:</p>	



LEGISLATION/POLICY	DESCRIPTION	IMPLICATIONS FOR THE PROPOSED DEVELOPMENT
	<ul style="list-style-type: none"> • the quality, pattern, timing, water level and assurance of instream flow; • the water quality, including the physical, chemical and biological characteristics of the water; • the character and condition of the in-stream and riparian habitat; • the characteristics, condition and distribution of the aquatic biota. <p>The Act defines ‘instream habitat’ as including the physical structure of a watercourse and the associated vegetation in relation to the bed of the watercourse.</p> <p><u>Riparian Ecosystems</u> ‘Riparian habitat’ 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 and physical structure distinct from those of adjacent land areas.</p> <p><u>Section 21 deals with the Use of Water</u> Section 21 (a-k) describes activities defined as a water use under the Act. These activities may only be undertaken subject to the application for, and issue of, a water use licence.</p>	
<p>National Environmental Management: Protected Areas Amendment Act (No. 31 of 2004)</p>	<p>The purpose of this Act is to provide for the protection and conservation of ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes and seascapes. The objectives of this Act are-</p> <ul style="list-style-type: none"> • To provide, within the framework of national legislation, including the National Environmental Management Act, for the declaration and management of protected areas; • To provide for co-operative governance in the declaration and management of protected areas; • To effect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity; • To provide for a representative network of protected areas on state land, private land and communal land; 	<ul style="list-style-type: none"> • The proposed project does not occur within any protected area or NPAES Focus Area. However, the project occurs within 10 km of the Southern Berg Griqualand NPAES Focus Area.



LEGISLATION/POLICY	DESCRIPTION	IMPLICATIONS FOR THE PROPOSED DEVELOPMENT
	<ul style="list-style-type: none">• To promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas;• To promote participation of local communities in the management of protected areas, where appropriate; and• To provide for the continued existence of South African National Parks.	



5 DESCRIPTION OF THE BIOPHYSICAL ENVIRONMENT

5.1. CLIMATE

The climate of the region is classified as subtropical in the highlands and temperate oceanic in the low-lying areas. The region is well known for its fluctuating temperatures, with temperatures ranging from 11°C to 42°C. Frost is common between March and November and occurs on an average of 150 days per annum with snow common in higher lying areas. Most of the region receives an average of 600mm-800mm of rain per annum, except for the higher lying regions which typically receives around 800mm-1200mm of rain per annum. This region forms the catchment of the Umzimvubu River, which flows from Elundini to the coast, supplying large volumes of water to the Indian Ocean (Elundini Local Municipality, 2017-2022).

5.2. TOPOGRAPHY

The project area is mountainous and falls within the southern Drakensberg range. Altitude ranges increase towards the west, sloping down towards the east. The project area is located at approximately 1800 m above sea level on a relatively flat top, decreasing in elevation towards the southeast as a result of the incision by the Tokwana River (Figure 5.1).

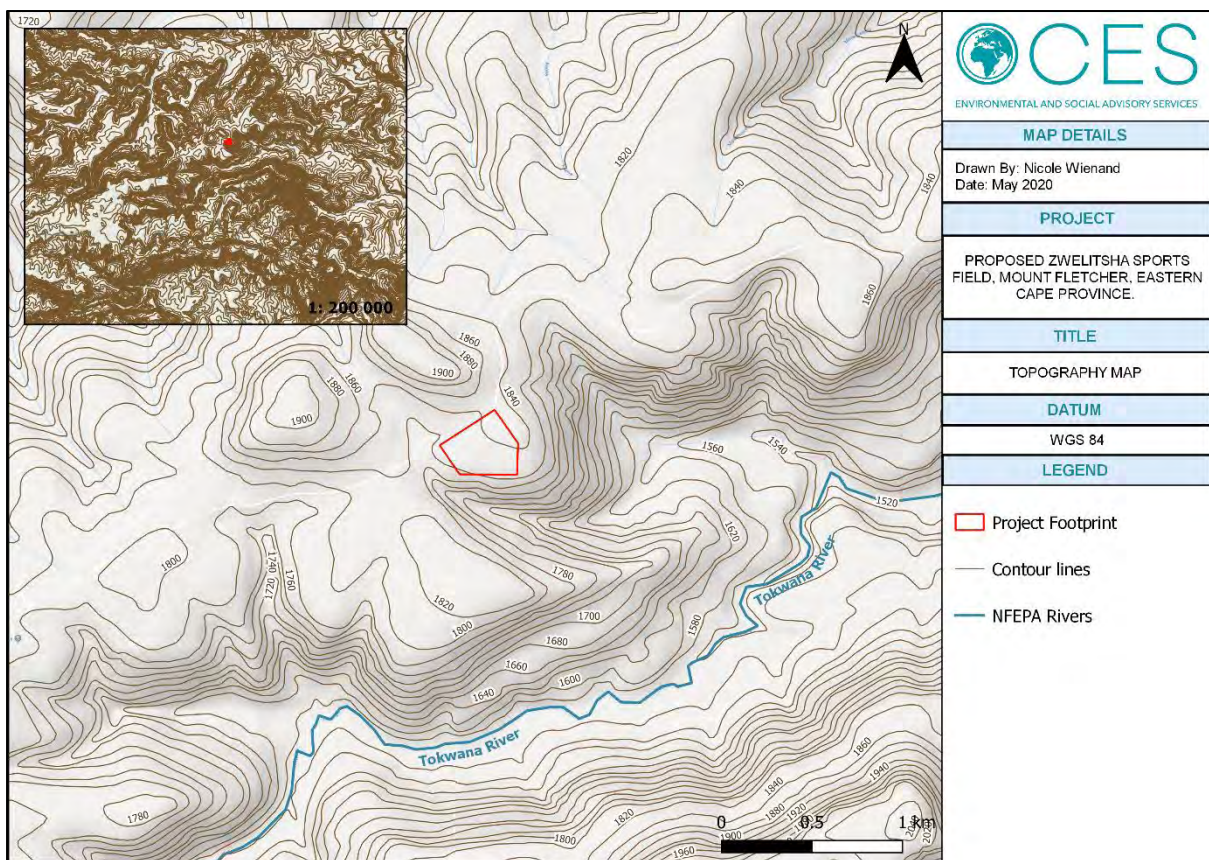


Figure 5.1: Topography map of the study area.



5.3. SOILS AND GEOLOGY

The soils within the study area are classified as Eutric Regosols (SOTER, 1995) (Figure 5.2). Regosols are typically ‘young’ soils with poorly developed horizons, except for an ochric (surface) horizon which is generally thin and low in organic matter. These soils are highly permeable and have a low water holding capacity making them unfavourable for agricultural purposes and sensitive to drought, hence the classification of the agricultural sensitivity of the site as MEDIUM within the DEA Screening Report (Figure 5.3). Regosols are prone to erosion, particularly on sloping surfaces, and often form a hard surface crust during dry periods that prevents the infiltration of water and the emergence of seedlings. These soils are typically used for extensive grazing. The term ‘eutric’ refers to soils with a base saturation (in 1 M NH4OAc at pH 7.0) of 50% or more within 20-100 cm from the soil surface.

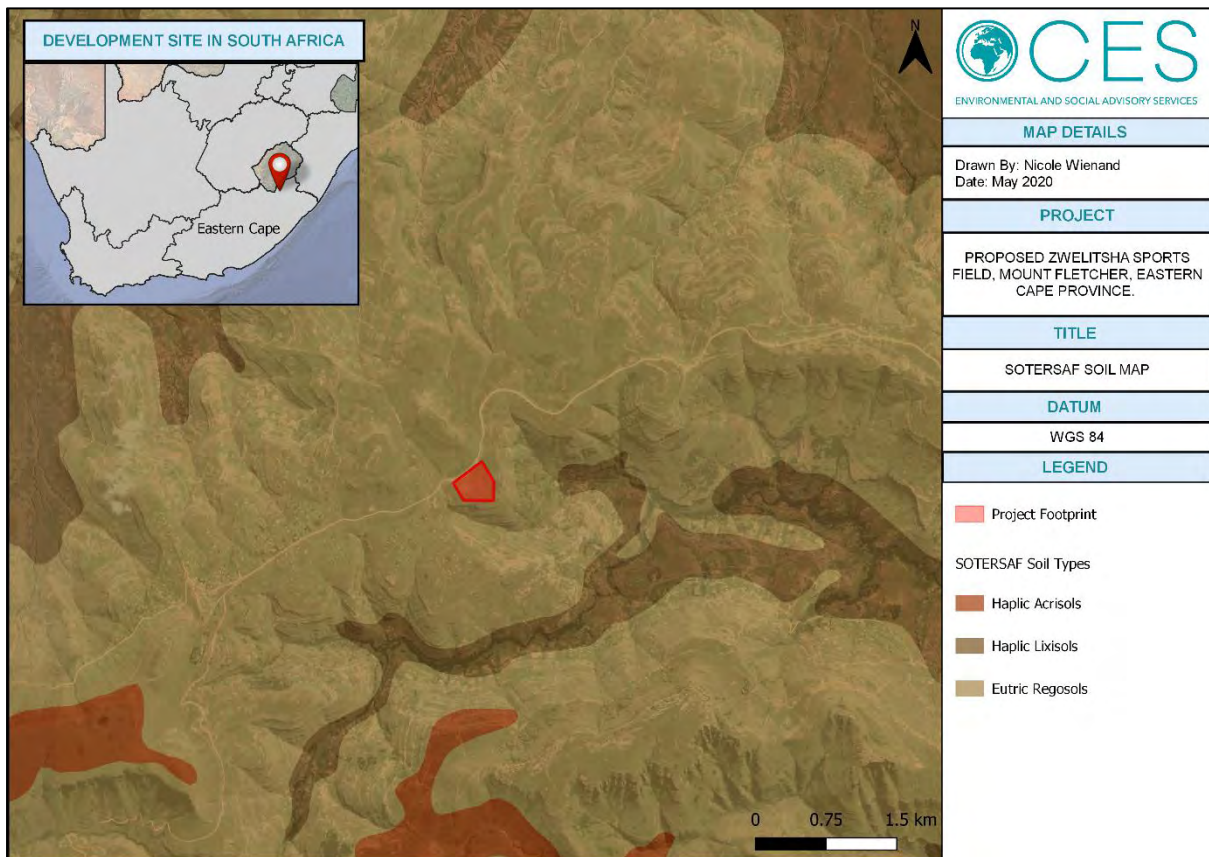


Figure 5.2: SOTER SAF (1995) Soil Map of the project area.



Figure 5.3: Relative agricultural theme sensitivity of the site (source: DEA Screening Report).

The geology underlying the project area consists of sedimentary deposits of the Late Triassic to Early Jurassic Elliot Formation which forms part of the Stormberg Group – the uppermost geological group of the Karoo Super group (Figure 5.4). The Elliot Formation is dominated by a red-bed succession of mudstones, siltstones that often appear finely laminated, and fine- to medium-grained sandstones. The average thickness of the formation ranges between 28 m to 150 m (KwaZulu Natal and Free State Drakensburg), with maximum thicknesses of 460 m to 480 m reported south of the basin. The Elliot Formation is well known for its palaeontology as it represents the boundary of the Triassic and Jurassic in South Africa, containing a range of vertebrate fossils and a plethora of ichnofossils (Bordy and Eriksson, 2015).

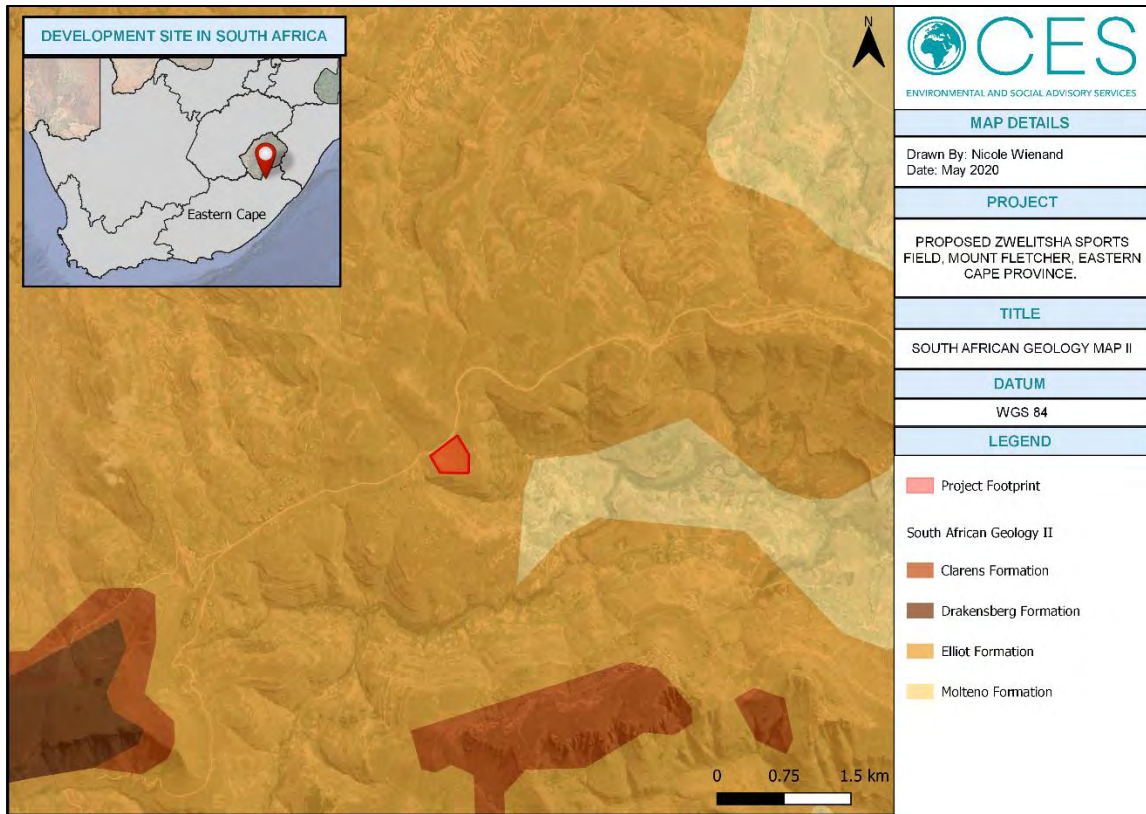


Figure 5.4: South African Geology II Map of the project area.

5.4. LAND COVER

According to the SA National Land-Cover Map (SANLC, 2018) the study site is located within *Natural Grassland*, with minor *natural rock surfaces* (Figure 5.5). The site is currently utilised as a sports field for recreational activities by the surrounding local community and cattle grazing.

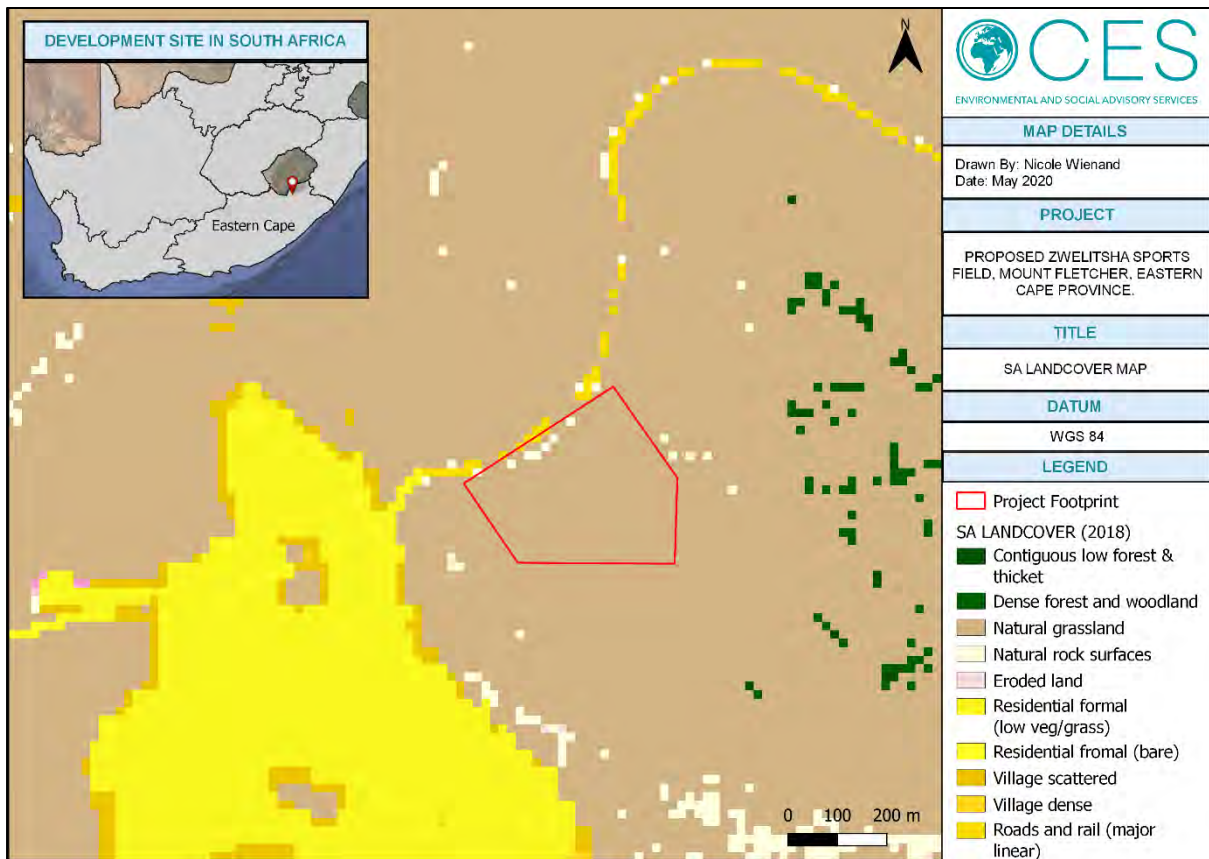


Figure 5.5: South African National Land Cover Map of the project area.

5.5. VEGETATION AND FLORISTICS

5.5.1 SANBI Classification (Mucina et al., 2018)

The South African Vegetation Map (SA VEGMAP) of 2018 is an important resource for biodiversity monitoring and conservation management in South Africa. Under the custodianship of the South African National Biodiversity Institute (SANBI) the SA VEGMAP, (2018) was updated in order to ‘provide floristically based vegetation units of South Africa, Lesotho and Swaziland at a greater level of detail than had been available before’. The map provides a detailed description of each of South Africa’s unique vegetation types along with a comprehensive list of the important species associated with each, including endemic and biologically important species.

The project area falls within the grassland biome. Grasslands in South Africa boast remarkable biodiversity and cover approximately one third of South Africa’s total land surface area, stretching over the majority of the Eastern Cape and KwaZulu-Natal Provinces. These ecosystems provide important habitat for a range of the country’s rare, endangered and endemic animal and plant species, with plant diversity of the grassland biome only second to that of the fynbos biome. The incredible diversity and provision of ecosystem services has contributed to the classification of these ecosystems as an important biodiversity asset of global significance. Grasslands are considered important water production landscapes and provide various ecosystem services particularly for rural communities in South Africa (SANBI, 2013).

The two (2) key ecological drivers of grassland ecosystems include climate and fire which influences their character, community structure, composition and primary productivity. In



addition to climate and fire, other ecological drivers influencing these factors include grazing, soil types and nutrient status. Unfortunately, due to their high biodiversity and the suitability for human habitation, these ecosystems are impacted by various anthropogenic activities including grazing by livestock, over harvesting of natural resources, misappropriation of fire, mining, agriculture, urban and industrial expansion, amongst others (SANBI, 2013).

The grassland type of the project area is classified as Southern Drakensberg Highland Grassland (Figure 5.6). This vegetation type occurs within the Eastern Cape and KwaZulu Natal Provinces, on steeply sloping mountainous areas on and below the summit of the Great Escarpment supporting dense tussock grassland. On slopes, the tussock grassland sometimes has a dwarf- shrubby component and in exposed rocky areas this vegetation type appears as a dwarf shrubland. Southern Drakensberg Highland Grassland is characterised by summer rainfall and dry winters. It is classified as **Least Threatened** (Skowno *et al.*, 2019) with a conservation target of 27%. Approximately 9% of this vegetation type is statutorily conserved in uKahlamba Drakensberg Park and Malekgonyane (Ongeluksnek) Wildlife Reserve. However, more than 5% has been transformed for cultivation. *Acacia dealbata* is the most common alien invader (Mucina *et al.*, 2006). Please refer to Section 6.2 for a list of important taxa common to Southern Drakensberg Highland Grassland.

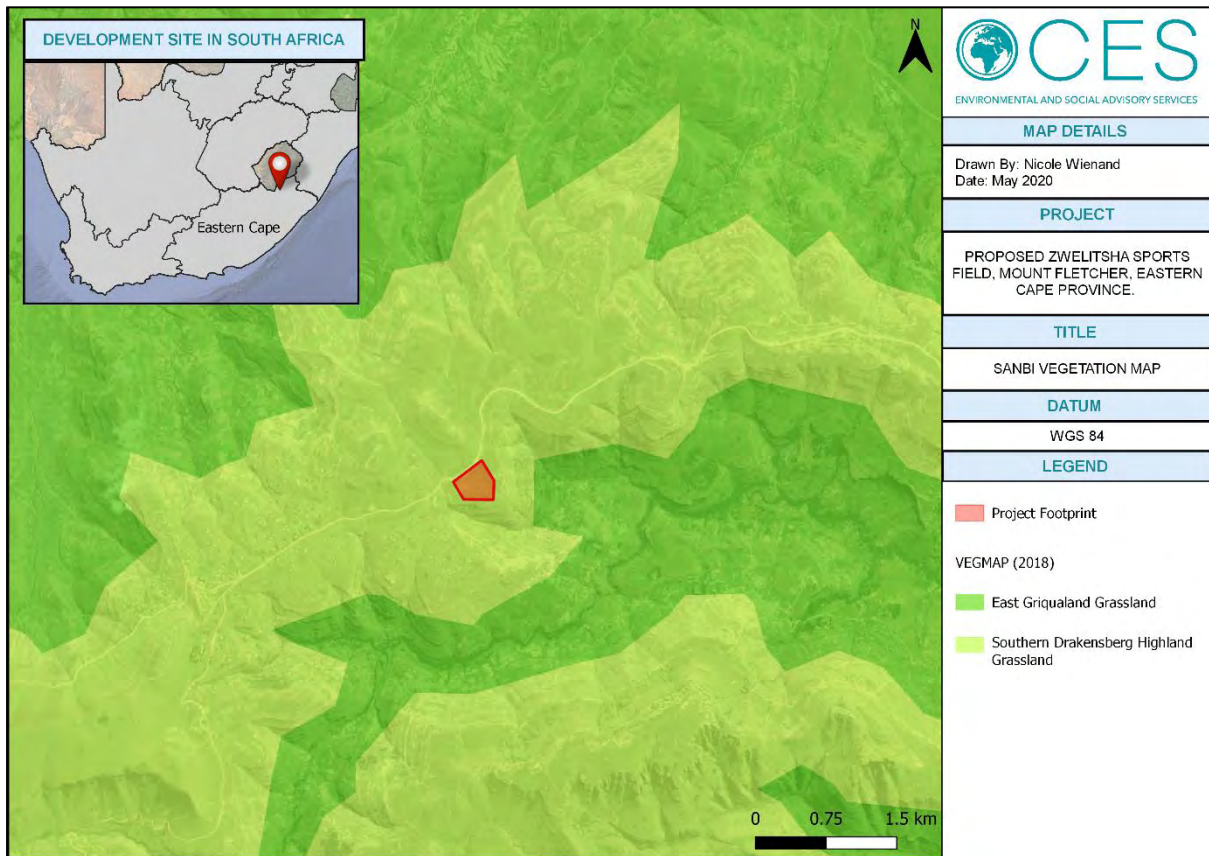


Figure 5.6: SANBI (2018) Vegetation Map of the project area.

According to the DEA Screening Report the plant species sensitivity of the site is classified as MEDIUM sensitivity. The sensitivity features contributing to this classification are listed in Table 5.1.

Table 5.1: Sensitivity features contributing the to medium plant species sensitivity theme as per the DEA Screening Report.

Sensitivity	Feature(s)
Medium	Sensitive species 12



Medium	Sensitive species 747
Medium	<i>Carex subinflata</i>
Medium	Sensitive species 297

5.5.2 Forest Classification (NFA)

No natural forest patches will be impacted by the proposed Sports Facility. The nearest forest patch is located approximately 30 km south east of the project area.

5.6 BIODIVERSITY INDICATORS

South Africa's policy and legislative framework for biodiversity is well developed, providing a strong basis for the conservation and sustainable use of biodiversity. South Africa is one of the few countries in the world to have a Biodiversity Act and a National Biodiversity Institute.

Key components of the national policy and legislative framework for biodiversity include:

- The White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity (1997);
- The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA);
- NEMBA List of Ecosystems in need of Protection;
- NEMBA List of Threatened or Protected Species;
- NEMBA List of Alien Invasive Species;
- The National Environmental Management: Protected Areas Act (Act 57 of 2003) (NEMPAA);
- The National Biodiversity Strategy and Action Plan (NBSAP) (2015);
- The National Spatial Biodiversity Assessment (2004, currently being reviewed and updated) (NSBA);
- The National Biodiversity Framework (2008) (NBF);
- The National Protected Area Expansion Strategy (2008) (NPAES); and
- Important Bird Areas (2015) (IBA).

In addition to national legislation, some of South Africa's nine provinces have their own provincial biodiversity legislation, as nature conservation is a concurrent function of national and provincial government in terms of the Constitution (Act 108 of 1996). The Eastern Cape Biodiversity Conservation Plan (ECBCP) covers the entire Eastern Cape Province.

5.6.1 Eastern Cape Biodiversity Conservation Plan

The Eastern Cape Biodiversity Conservation Plan (ECBCP) is a first attempt at detailed, low-level, conservation mapping for land-use planning purposes. Specifically, the aims of the ECBCP were to map critical biodiversity areas (CBAs) through a systematic conservation planning process. The current biodiversity plan includes the mapping of priority aquatic features, land-use pressures, and critical biodiversity areas and develops guidelines for land and resource-use planning and decision-making.

The main outputs of the ECBCP, the CBAs, which are allocated the following management categories:

- CBA 1 = Maintain in a natural state
- CBA 2 = Maintain in a near-natural state
- CBA 3 = Other natural areas: Functional landscapes



The ECBCP is regarded as a systematic biodiversity plan for the Eastern Cape. According to the ECBCP spatial planning tool, the project area occurs within an area classified as a Terrestrial and an Aquatic CBA 1 (Figure 5.7 and 5.8). This is confirmed by the results generated from the DEA screening tool.

Areas classified as a Terrestrial CBA 1 are considered as near-natural landscapes and biodiversity must be maintained in as natural a state as possible to prevent the future loss of biodiversity. Aquatic CBA 1 areas are regarded as critically important river sub-catchments and similarly to Terrestrial CBA 1 areas, should be maintained in a natural state.

The management requirements of CBAs 1 and 2 are as follows (taken from the ECBCP 2007 Handbook):

CBA area	Management requirements
CBA 1	These areas are considered as natural landscapes and biodiversity must be maintained in an as natural state as possible so that there is no future biodiversity loss.
CBA 2	These areas are considered as natural or near-natural landscapes and biodiversity must be managed for minimal loss of ecosystem integrity. No transformation of natural habitat should be permitted.

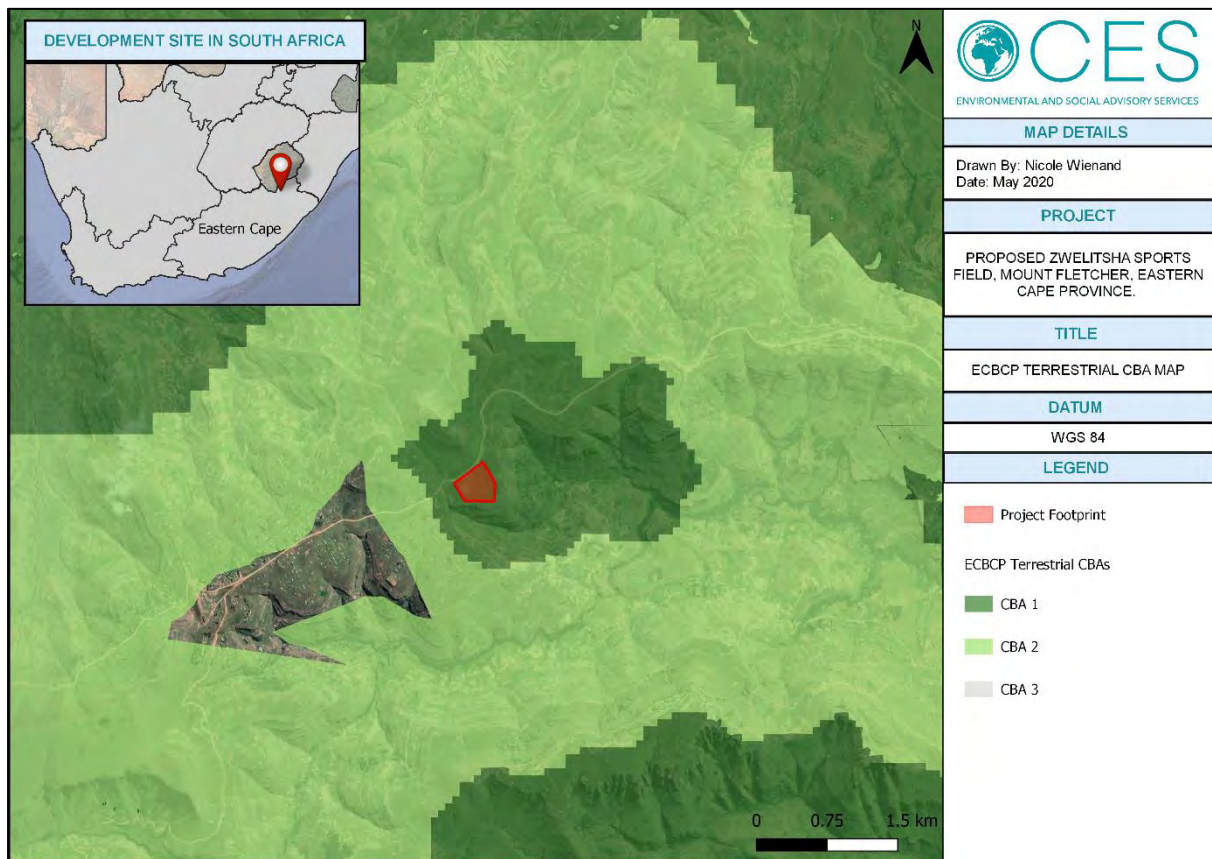


Figure 5.7: ECBCP (2007) Terrestrial CBA Map of the project area.

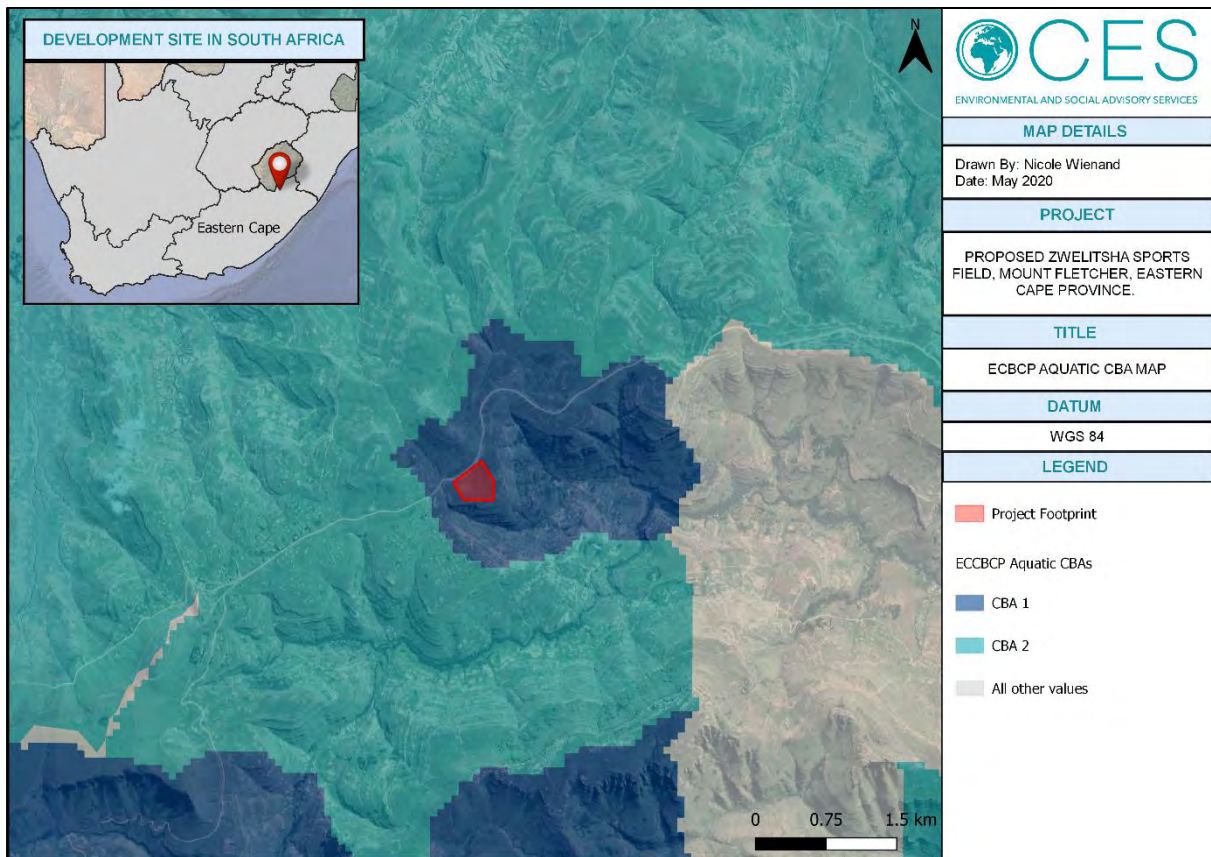


Figure 5.8: ECBCP (2007) Terrestrial CBA Map of the project area.

5.6.3 Threatened Ecosystems

The National Environmental Management: Biodiversity Act, (Act No. 10 OF 2004) (NEM:BA) provides a National List of Ecosystems that are Threatened and in Need of Protection – GN 1002 of 2011. According to the NEM:BA (2011) List of Ecosystems that are Threatened and in Need of Protection – GN 1002 of 2011, there are no threatened ecosystems within or surrounding the project area. The nearest threatened ecosystem is situated approximately 21 km south west of the project area (the Eastern Temperate Freshwater Wetlands).

These results are in line with the findings of the Terrestrial Ecosystem Threat Status Assessment conducted as part of the National Biodiversity Assessment (SANBI, 2018), which classified the Southern Drakensberg Highland Grassland as Least Concern (Skowno *et al.*, 2019) based on the IUCN thresholds for classifying Red List of Ecosystems.

5.6.4 Protected areas

The National Protected Areas Expansion Strategy (NPAES, 2008) was developed to “achieve cost-effective protected area expansion for ecological sustainability and increased resilience to climate change.” The NPAES originated as Government recognised the importance of protected areas in maintaining biodiversity and critical ecological process. The NPAES sets targets for expanding South Africa’s protected area network, placing emphasis on those ecosystems that are least protected.

The study site is not situated within any protected area, however the study site is situated within 10 km of the Southern Berg Griqualand NPAES Focus Area (Figure 5.9).

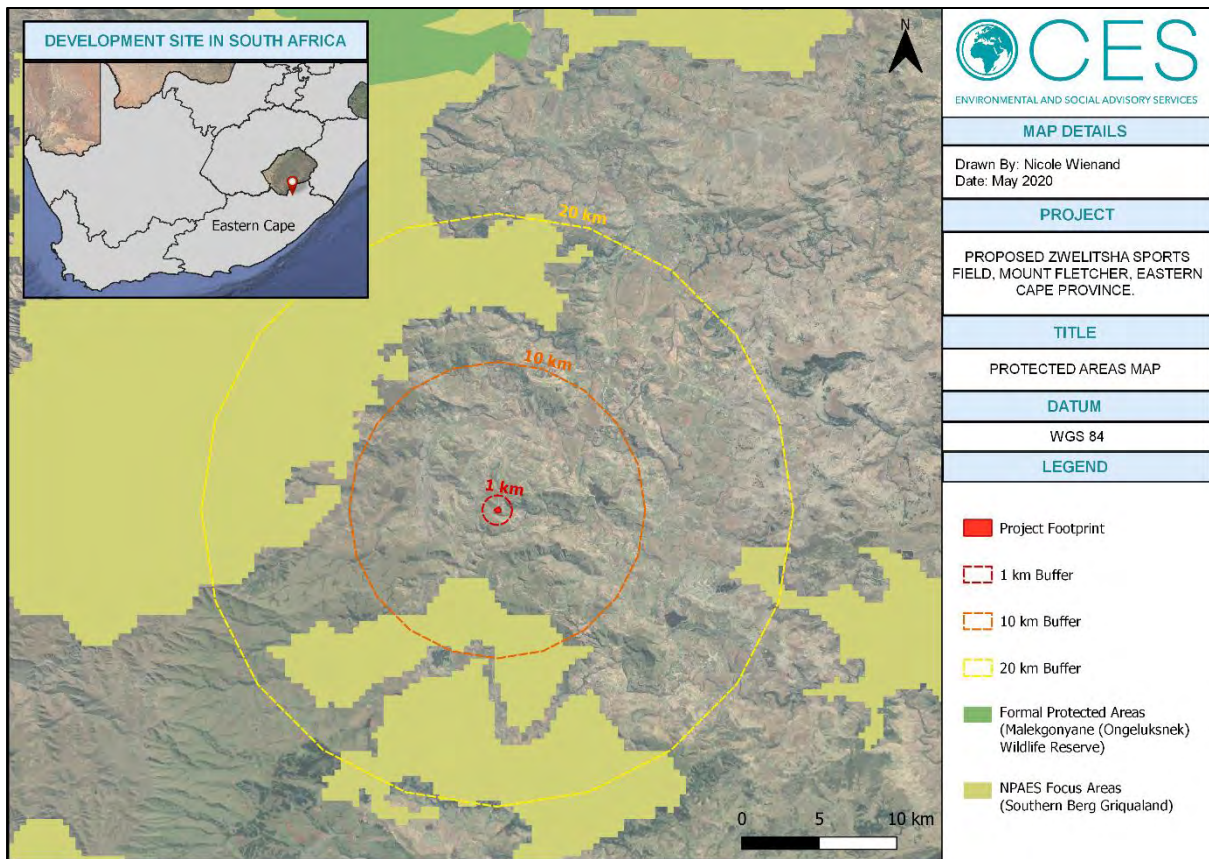


Figure 5.9: Protected Areas Map of the project area.

5.6.5 Floristics

Plant species of conservation concern comprise those species that are either threatened (Critically Endangered, Endangered, Vulnerable), rare or declining. The South African National Biodiversity Institute (SANBI) Plants of Southern Africa (POSA) plant database (<http://posa.sanbi.org>) and the list of important taxa common to Southern Drakensberg Highland Grassland was consulted, along with the categories indicated in the SANBI Threatened Species Programme website (<http://redlist.sanbi.org/species.php?species>) to identify potential species of conservation concern within the proposed development footprint (Table 5.2).

The following list of plant SCC that may **potentially** be found within the development footprint has been derived from current literature for possible vegetation found in the area as well as the South African Red Data List, DAFF protected trees, the Provincial Nature Conservation Ordinance (PNCO), NEM:BA List of Critically Endangered, Endangered, Vulnerable and Protected Species, and Mucina *et al.*, List of Endemic Taxa. A full list of plant species that were identified during the site survey can be found in Section 6.2 while the full list of the potential species that could occur within the project area are listed in Appendix A.

Table 5.2: Species of Conservation Concern that may occur within the proposed development footprint.

FAMILY	SPECIES	ECOLOGY	Conservation status	Presence confirmed
Orchidaceae	<i>Pterygodium alticola</i>	Not endemic to South Africa	Rare	NO
Orchidaceae	<i>Schizochilus bulbinella</i>	Not endemic to South Africa	Rare	NO



Apiaceae	<i>Alepidea insculpta</i>	South African endemic	Rare	NO
Asteraceae	<i>Afroaster confertifolius</i>	South African endemic	Rare	NO
Asteraceae	<i>Helichrysum longinquum</i>	South African endemic	Rare	Possibly
Asteraceae	<i>Osteospermum attenuatum</i>	South African endemic	Rare	NO
Apocynaceae	<i>Aspidonepsis cognata</i>	South African endemic	Near Threatened	NO
Asphodelaceae	<i>Trachyandra smalliana</i>	South African endemic	Endangered	NO
Ericaceae	<i>Erica anomala</i>	South African endemic	Rare	NO
Ericaceae	<i>Erica hillburtii</i>	South African endemic	Critically Endangered	NO
Fabaceae	<i>Lotononis minor</i>	South African endemic	Rare	NO

5.7 FAUNA

According to the DEA Screening Report compiled for the site, the animal species sensitivity of the site is classified as MEDIUM sensitivity. The identified sensitive features contributing to the animal species sensitivity rating is the presence of *Ourebia ourebi* (Oribi) within the area. This species is classified as Least Concern in terms of the IUCN global status but in South Africa this species is considered Endangered.

In South Africa, Oribi inhabit savannah woodlands, floodplains and other open grasslands at altitudes of around 2,200 m above sea level in the Mpumalanga Province, where they generally occur in association with other larger grazers. Population densities are greatest on floodplains and moist tropical grasslands in good condition and characterised by a mosaic of short and long grass for feeding and shelter. Oribi are selective feeders and focus primarily on grasses, including *Themeda triandra*, *Hyparrhenia hirta*, *Panicum natalense* and *Andropogon chinensis*, and therefore most commonly occur in vegetation types including Northern Kwazulu-Natal Moist Grassland, Income Sandy Grassland and Midlands Mistbelt Grassland (Shrader *et al.*, 2016). Oribi are typically shy and vigilant creatures and are therefore unlikely to occur in close proximity to human settlements (Tekalign and Bekele, 2016). Based on their habitat requirements and behaviour of Oribi, it is therefore assumed that the project site is unlikely to be an important feeding or breeding ground for this species.

5.7.1 Birds

According to Avibase, approximately 286 bird species are likely to occur within the broader area (Clements, 2019). Of these, fifteen (15) are globally threatened species. Thirteen (13) species are endemic to the country/region, nine (9) are Vulnerable, thirteen (13) are Near Threatened, four (4) are Endangered, and two (2) are Critically Endangered. A list of all bird species, including potential SCC, likely to occur in the project area is included in Appendix B of this report. It should be noted that due to the high level of human activity on the site, it is unlikely that the project site is utilised as a breeding or foraging ground. Additionally, extensive areas of similar habitat type surround the Zwelitsha and Refele Villages, providing sufficient breeding and foraging grounds for these species.



5.7.2 Mammals

According to the historical records for the QDS 3028CB, there are eight (8) species of mammals likely to occur within the project area, all of which are classified as Least Concern except for *Mystromys albicaudatus* (African White-tailed Rat) which is classified as Vulnerable (FitzPatrick Institute of African Ornithology, 2020) (Table 5.3).

M. albicaudatus are endemic to South Africa and Lesotho and typically found to be primarily associated with grasslands but have also been observed in the Succulent Karoo and Fynbos biome. In South Africa, *M. albicaudatus* has been recorded in southern Mpumalanga, Free State, High lying areas of KwaZulu-Natal, Eastern Cape, south-eastern North West, and marginally into the Northern Cape Province. Little is known about their ecology, social and reproductive behaviour, habitat requirements and diet in the wild, however they have never been found on soft, sandy substrate, rocks, wetlands or riverbanks. Records indicate that this species can occur in disturbed areas and sparse grassland. In the Maclear District of the Eastern Cape Province, *M. albicaudatus* has been found on crests and ridges and trapped in bare patches with sparse vegetation cover (Avent *et al.*, 2016). It should be noted that this species could occur within the project area, however it is likely to move away from the site due to noise and extensive foot traffic.

Table 5.3: Mammal species likely to occur within the project area.

FAMILY	SPECIES	COMMON NAME	CONSERVATION STATUS
Muridae	<i>Aethomys ineptus</i>	Tete Veld Aethomys	Least Concern (2016)
Muridae	<i>Aethomys namaquensis</i>	Namaqua Rock Mouse	Least Concern
Muridae	<i>Mastomys coucha</i>	Southern African Mastomys	Least Concern (2016)
Muridae	<i>Otomys sloggetti</i>	Sloggett's Rat	Least Concern (2016)
Muridae	<i>Rhabdomys pumilio</i>	Xeric Four-striped Grass Rat	Least Concern (2016)
Nesomyidae	<i>Mystromys albicaudatus</i>	African White-tailed Rat	Vulnerable (2016)
Rhinolophidae	<i>Rhinolophus clivosus</i>	Geoffroy's Horseshoe Bat	Least Concern (2016)
Vespertilionidae	<i>Neoromicia capensis</i>	Cape Serotine	Least Concern (2016)

5.7.3 Reptiles

According to the historical records for QDS 3028 CB, *Trachylepis punctatissima* (Speckled Rock Skink) is likely to occur within the project area (FitzPatrick Institute of African Ornithology, 2020). This species is classified as Least Concern. Based on the historical records for the neighbouring QDS 3028 CD, five (5) reptile species are likely to occur within the project area, all of which are classified as Least Concern (Table 5.4).

Table 5.4: Reptile species likely to occur within the project area.

FAMILY	SCIENTIFIC NAME	COMMON NAME	RED LIST CATEGORY
Agamidae	<i>Agama atra</i>	Southern Rock Agama	Least Concern (SARCA 2014)
Colubridae	<i>Philothamnus occidentalis</i>	Western Natal Green Snake	Least Concern (SARCA 2014)
Lacertidae	<i>Pedioplanis burchelli</i>	Burchell's Sand Lizard	Least Concern (SARCA 2014)
Lamprophiidae	<i>Psammophylax rhombeatus</i>	Spotted Grass Snake	Least Concern (SARCA 2014)
Scincidae	<i>Trachylepis varia sensu lato</i>	Common Variable Skink Complex	Least Concern (SARCA 2014)



5.7.4 Amphibians

According to the FitzPatrick Institute of African Ornithology (2020), five (5) species of amphibians are likely to occur within the project area, all of which are classified as Least Concern (Table 5.5).

Table 5.5: Amphibians likely to occur within the project area.

FAMILY	SPECIES	COMMON NAME	CONSERVATION STATUS
Bufonidae	<i>Sclerophrys capensis</i>	Raucous Toad	Least Concern
Hyperoliidae	<i>Semnodactylus wealii</i>	Rattling Frog	Least Concern
Pipidae	<i>Xenopus laevis</i>	Common Platanna	Least Concern
Pyxicephalidae	<i>Cacosternum boettgeri</i>	Common Caco	Least Concern (2013)
Pyxicephalidae	<i>Cacosternum nanum</i>	Bronze Caco	Least Concern (2013)

5.8 AQUATIC ENVIRONMENT

The aim of this assessment is to identify the aquatic importance of the rivers affected by the project and to evaluate the sensitivity of these features.

A desktop assessment of the project area was conducted in terms of current surface water classifications and biodiversity programmes and plans. This included the consideration of:

- Eastern Cape Biodiversity Conservation Plan (2011);
- DWS Desktop Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) Model (2014);
- Department of Water Affairs and Forestry: Level 2 River Ecoregional Classification System for South Africa, Lesotho and Swaziland (2005);
- The National Freshwater Ecosystem Priority Areas (NFEPA) project (2011 - 2014); and
- National Spatial Biodiversity Assessment (NSBA) – River Ecosystems (2004).

5.8.1 Quaternary Catchment and Water Management Area

The study area falls within quaternary catchments T34D within Water Management Area 7 (Mzimvubu to Tsitsikamma) (Figure 5.10). Based on the results of the DEFF Screening Report, the aquatic biodiversity sensitivity of the site is classified as VERY HIGH as the site forms part of a strategic water source area.

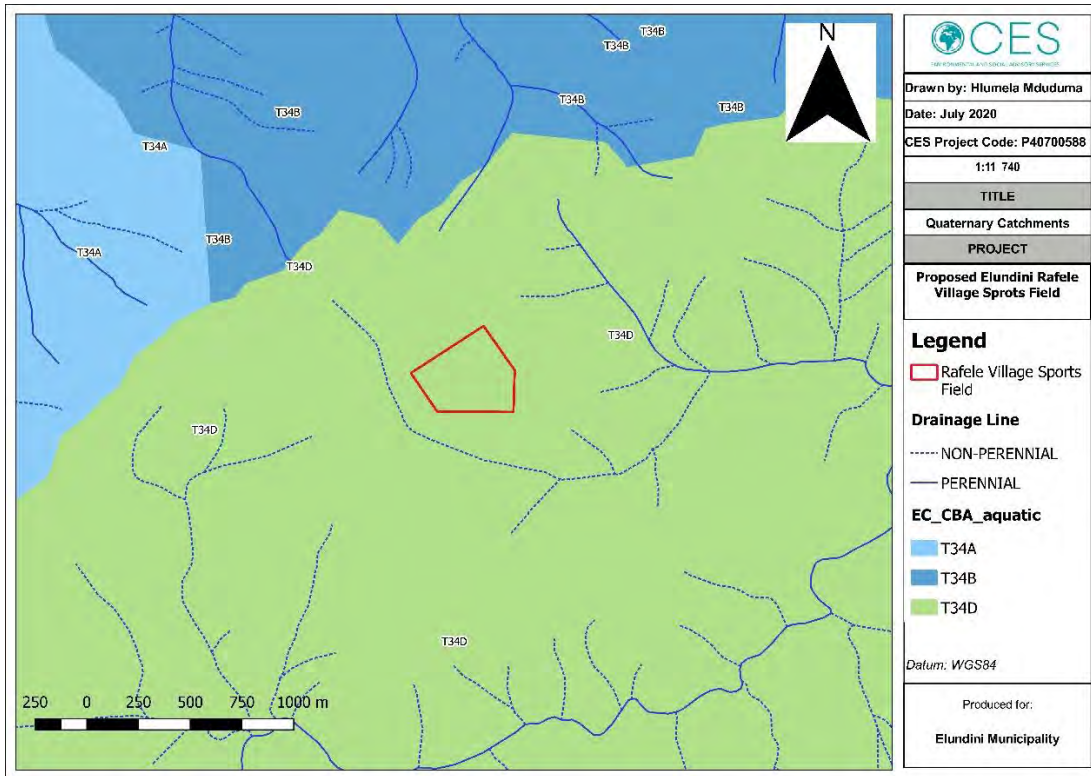


Figure 5.10: Quaternary Catchments locality.

5.8.2 Rivers

There are a number of non-perennial rivers surrounding the development area. One unnamed perennial river runs about 500m east of the proposed site which drains into the Tokwana River. Due to the area's sparse rainfall patterns, it is dominated by non-perennial streams which are dry for most parts of the year, the development will not have any direct impact on any of these watercourses.

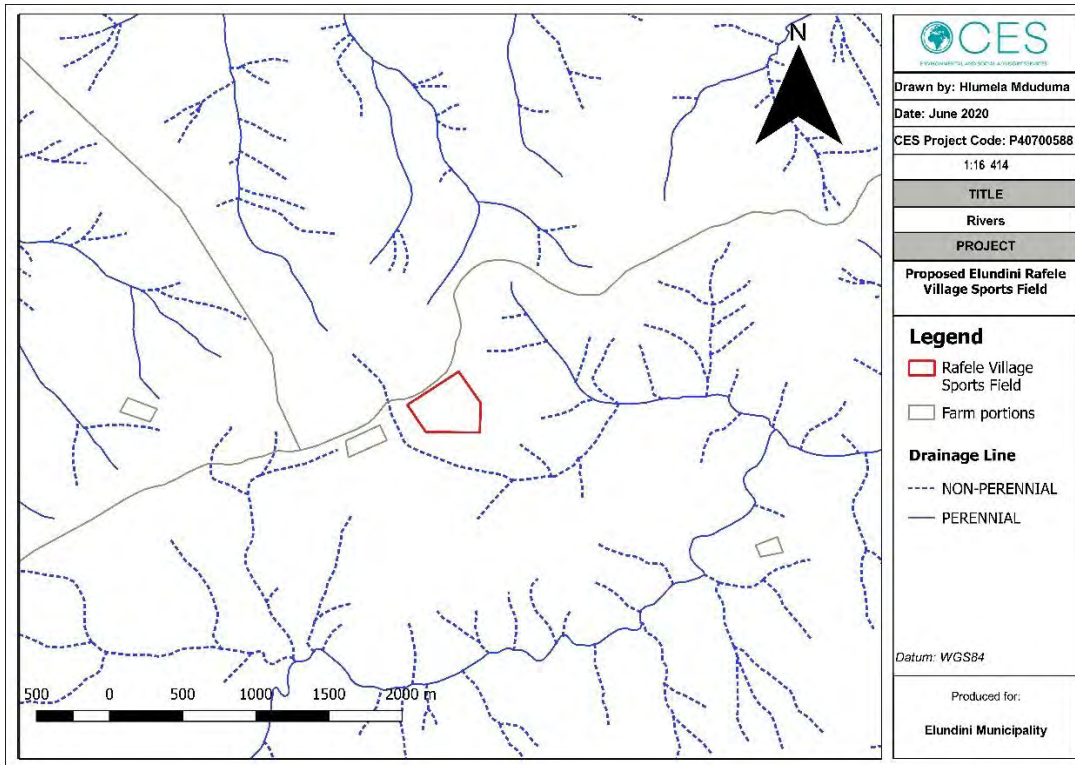


Figure 5.11: Rivers Map of the Development site.

i. The National Spatial Biodiversity Assessment (2004)

The National Spatial Biodiversity Assessment of 2004 is a framework document within which fine-scale conservation planning in identified priority areas should occur. The NSBA integrates terrestrial, river, marine, estuarine and wetland ecosystems using available spatial data, relevant conservation planning software and a series of expert and stakeholder workshops. It is important to note that the NSBA was conducted at a national scale (1:250 000), and thus can only provide a general context for biodiversity assessments at a local level.

An important tool used in the NSBA is conservation status. Conservation status aims at identifying threatened ecosystems and is based on the classification scheme developed by the IUCN to categorise species. Of the 120 rivers in South Africa that have been classified using this categorisation, 44 % are critically endangered, 27 % are endangered, 11 % are vulnerable and 18 % are least threatened.

The Tokwana River (south of the study site) is listed as **ENDANGERED** in terms of NSBA (2004). Endangered ecosystems are ecosystem types that are close to becoming critically endangered. Any further loss of natural habitat or deterioration of condition in these ecosystem types should be avoided, and the remaining healthy examples should be the focus of conservation action.

It should be noted that the Tokwana River is unlikely to be affected by the development which is 1.5 km away. There were no other NSBA classified rivers within the study area and likely to be affected by the development proposals.

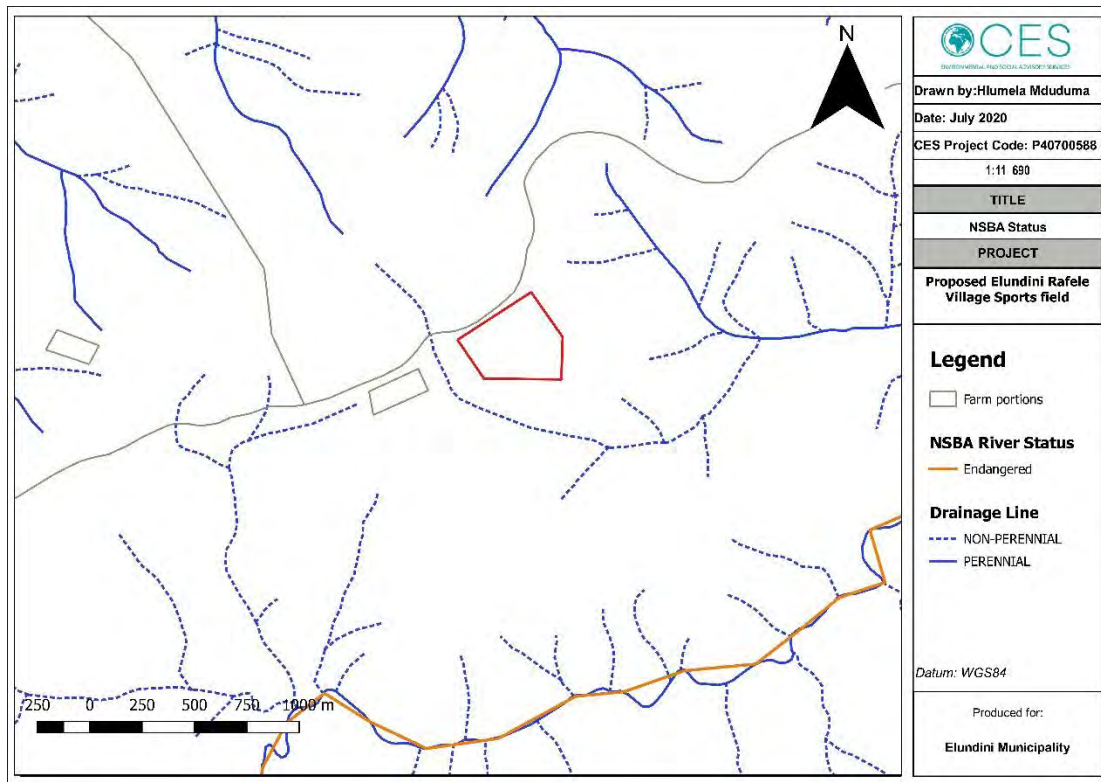


Figure 5.12 NSBA Conservation status of rivers within the development area.

ii. National Freshwater Ecosystem Priority Areas (NFEPA), 2011-2014

The National Freshwater Ecosystem Priority Areas (NFEPA) project provides strategic spatial priorities for conserving South Africa's freshwater ecosystems and supports sustainable use of water resources. These priority areas are called Freshwater Ecosystem Priority Areas, or 'FEPAs'.

FEPAs were identified based on:

- Representation of ecosystem types and flagship free-flowing rivers;
- Maintenance of water supply areas in areas with high water yield;
- Identification of connected ecosystems;
- Representation of threatened and near-threatened fish species and associated migration corridors; and
- Preferential identification of FEPAs that overlapped with:
 - Any free-flowing river;
 - Priority estuaries identified in the National Biodiversity Assessment 2011; and
 - Existing protected areas and focus areas for protected area expansion identified in the National Protected Area Expansion Strategy.

The Tokwana River has not been assigned a classification in the subquaternary catchments within close proximity to the development (Figure 5.13).

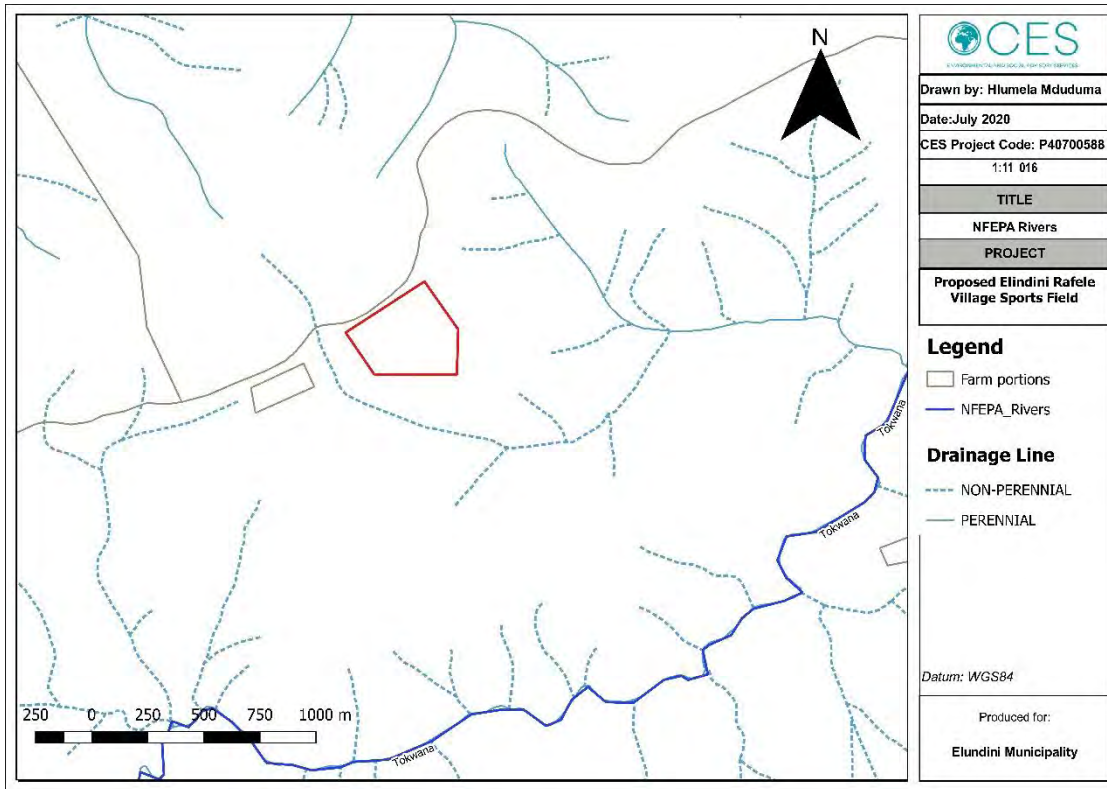


Figure 5.13 Freshwater Ecosystem Priority Area status of rivers in the study area.

iii. Present Ecological State

There is no DWS PESEIS (2014) data available for the reaches/tributaries likely to be affected by the development proposals.

5.8.3 Ecoregions

South Africa is a geologically, geomorphologically, climatically and ecologically complex country, and this has resulted in a diverse range of ecosystems, including rivers. River ecoregional classification or typing allows the grouping of rivers according to similarities based on a top-down nested hierarchy. The principle of river typing is that rivers grouped together at a particular level of the typing hierarchy will be more similar to one another than rivers in other groups. Ecological regions are regions within which there is relative similarity in the mosaic of ecosystems and ecosystem components (biotic and abiotic, aquatic and terrestrial).

According to DWS (2005) Level 2 River Ecoregional Classification System, the study area falls within **Level 1 Ecoregion 16: South Eastern Uplands** and **Level 2 Ecoregion 16.06: South-Eastern Uplands**

This Level 1 Ecoregion has the following characteristics:

- Mean annual precipitation: Generally high.
- Coefficient of variation of annual precipitation: Mostly moderate to low.
- Drainage density: Medium in the north, tending towards low in the south.
- Stream frequency: Low to medium in the south, tending towards medium high in the north.
- Slopes <5%: <20% (central areas), 20-50% (northern areas) and 50-80% (southern areas).
- Median annual simulated runoff: Moderate to high.
- Mean annual temperature: Moderate to moderately high

**Table 5.6. Attributes of the Level 2 Ecoregion South Eastern Uplands.**

Main Attributes	South-Eastern Uplands 16.06
Terrain Morphology: Broad division	Lowlands, Hills; moderate and high relief, Closed Hills, mountains; moderate and high relief.
Terrain Morphology	Irregular undulating lowlands with hills, Low mountains.
Vegetation types (dominant types in bold) (Primary)	Moist Upland Grassland, Valley Thicket, Eastern Thorn Bushveld, Afromontane Forest
Altitude (m a.m.s.l.)	0 - 1300
MAP (mm)	500 - 800
Coefficient of variation (% of annual precipitation)	<20 - 30
Rainfall concentration index	30 -50
Rainfall seasonality	Later Summer, Mid Summer, Early Summer
Mean annual temp (°C)	14 - 18
Mean daily max temp (°C) February	24 - 28
Mean daily max temp (°C) July	16 - 20
Mean daily min temp (°C) February	12 - 18
Mean daily min temp (°C) July	2 - 8
Median annual simulated runoff (mm) for quaternary catchment	20 - 250

5.8.4 Wetlands

Wetlands in South Africa have been mapped on a broad-scale by various stakeholders and have been included in NFEPA (2011-2014). Due to the broad-scale nature of the NFEPA map it is not spatially accurate and therefore some error is expected. The location of NFEPA wetlands was derived from the National Land Cover 2000 (Van Den Berg et al., 2008) and inland water features from the Department of Land Affairs' Chief Directorate: Surveys and Mapping (DLA-CDSM). All wetlands are classified as either 'natural' or 'artificial' water bodies.

The NFEPA wetland map identifies important or sensitive wetlands and wetland clusters. A wetland cluster is a group of wetlands all within 1 km of each other and which are surrounded by relatively natural vegetation. Wetland clusters allow for important ecological processes such as the migration of insects and frogs between the wetlands.

There are no wetland clusters or NFEPA wetlands within 500m of the study area.



6 SITE INVESTIGATION

6.1 GENERAL SITE CHARACTERISTICS

According to SANBI’s (2013) *Grasslands Ecosystem Guidelines*, the key indicators of a healthy grassland ecosystem include:

- High basal cover, which binds the soil and prevents erosion;
- A high diversity of growth forms (e.g. soft-leaved herbaceous plants – or forbs, bulbs etc in addition to grasses);
- A high diversity of grass species, rather than dominance by any single species;
- Intact topsoil, rich in organic matter and uncompacted with evidence of soil turning by animals;
- An even grass sward, rather than tussocked veld – tussocked veld is an indicator that all the palatable species have been eaten, leaving tufts of unpalatable species;
- An absence of invasive alien plants or areas of heavy bush encroachment.

The Southern Drakensberg Highland Grassland vegetation of the study site can be described as a highly tussocked with a low diversity of grass species and moderate to low basal cover. Grass species dominated with very few other growth forms observed on site. The site is currently utilised by the surrounding villagers for recreational activities and intense grazing by livestock was evident. As per SANBI’s key indicators for healthy grassland ecosystems and observations made on site, the study site has been classified as degraded. It should be noted that the grassland vegetation of the study site was also very dry at the time of the site visit, most likely due to the timing of the study (winter- dry season) and lack of rainfall in the area (please refer to the site photographs in Table 6.1 below).

Table 6.1: Site photographs.





Southern Drakensberg Highland Grassland of the study site.



Goal post (left) and livestock grazing (right) observed on site.

6.2 VEGETATION SURVEY

The general vegetation of the study site, as determined by the desktop analysis, is Southern Drakensberg Highland Grassland. Mucina *et al* (2006) lists the important taxa of Southern Drakensberg highland Grassland that may be affected by the proposed development (Table 6.2).

Table 6.2: List of important taxa common to Southern Drakensberg Highland Grassland.

Category	Dominant species
Graminoids	<i>Alloteropsis semialata</i> , <i>Aristida junciformis</i> , <i>Catalepis gracilis</i> , <i>Diheteropogon filifolius</i> , <i>Eragrostis caesia</i> , <i>E. chloromelas</i> , <i>E. planiculmis</i> , <i>E. racemosa</i> , <i>Festuca caprina</i> , <i>Microchloa caffra</i> , <i>Monocymbium cereisiiforme</i> , <i>Pennisetum sphacelatum</i> , <i>Rendlia altera</i> , <i>Themeda triandra</i> , <i>Trachypogon spicatus</i> , <i>Tristachya leucothrix</i> , <i>Agrostis lachnantha</i> , <i>Andropogon appendiculatus</i> , <i>Aristida diffusa</i> , <i>Cymbopogon pospichilii</i> , <i>Elionurus muticus</i> , <i>Eragrostis capensis</i> , <i>E. curvula</i> , <i>E. plana</i> , <i>Festuca scabra</i> , <i>Fingerhuthia sesleriiformis</i> , <i>Harpochloa falx</i> , <i>Helictotrichon turgidulum</i> , <i>Heteropogon contortus</i> , <i>Juncus exsertus</i> , <i>Koeleria capensis</i> , <i>Pentaschistic cirrhulosa</i> , <i>P. microphylla</i> , <i>Poa binate</i> , <i>Schoenoxiphium sparteum</i> , <i>Sporobolus centrifugus</i>
Herbs	<i>Ajuga ophrydis</i> , <i>Aster bakerianus</i> , <i>Euphorbia epicyparisiias</i> , <i>Galium capense</i> , <i>Gazania Krebsiana</i> , <i>Haplocarpha scapose</i> , <i>Hebenstretia dentata</i> , <i>Helichrysum chionosphaerum</i> , <i>H. nudifolium</i> , <i>H. rugulosum</i> , <i>H. umbraculigerum</i> , <i>Kohautia amatymbica</i> , <i>Lactuca inermis</i> , <i>Lasiospermum binnatum</i> , <i>Lobelia erinus</i> , <i>L. flaccida</i> , <i>L. vanreenensis</i> , <i>Pentanisia prunelloides</i> , <i>Psammotropha mucronata</i> , <i>Rumex lanceolatus</i> , <i>Salvia stenophylla</i> , <i>Selago densiflora</i> , <i>S. galpinii</i> , <i>Senecio</i>



	<i>asperulus</i> , <i>S. erubescens</i> , <i>Tolpis capensis</i> , <i>Trifolium burchellianum</i> , <i>Wahlenbergia cuspidate</i> , <i>W. stellarioides</i>
Geophytic Herbs	<i>Cheilanthes hirta</i> , <i>Corycium dracomontanum</i> , <i>Disa fragrans</i> , <i>Disperis oxyglossa</i> , <i>Drimia macrocentra</i> , <i>Eriospermum ornithogaloides</i> , <i>Geum capense</i> , <i>Hypoxis rigidula</i>
Herbaceous Climber	<i>Rhynchosia totta</i>
Low shrubs	<i>Chrysocoma ciliata</i> , <i>Erica caffrorum</i> , <i>Euryops candollei</i> , <i>Felicia filifolia</i> , <i>F. muricate</i> , <i>Helichrysum asperum</i> , <i>H. splendidum</i> , <i>H. trilineatum</i> , <i>Passerina montivagus</i> , <i>Pentzia cooperi</i> , <i>Rubus ludiwigii</i> , <i>Selago albida</i> , <i>S. saxatilis</i> , <i>Senecio burchellii</i>
Biogeographically Important Taxa (Drakensberg endemic)	
Graminoides	<i>Pentaschistis airoides</i> , <i>Polevansia rigida</i> , <i>Restio galpinii</i>
Herbs	<i>Aster anathocladus</i> , <i>Berkheya multijuga</i> , <i>Diascia integerrima</i> , <i>Wahlenbergia polytrichifolia</i>
Geophytic herbs	<i>Corycium alticola</i> , <i>Merwillia dracomnontana</i> , <i>Rhodohypoxis rubella</i> , <i>Schizochilus bulbinella</i>
Low Shrubs	<i>Erica aestival</i> , <i>E. algida</i> , <i>E. dominans</i> , <i>E. dracomontana</i> , <i>E. frigida</i> , <i>E. schlechterii</i> , <i>E. wyliei</i> , <i>Helichrysum glaciale</i> <i>Relhania acerosa</i>
Tall Shrub	<i>Lotononis lotononoides</i>
Endemic Taxa	
Graminoid	<i>Festuca vulpioides</i>
Herbs	<i>Alepidea insculpta</i> , <i>Aster confertifolius</i> , <i>Diascia megathura</i> , <i>Felicia caespitose</i> , <i>Helichrysum longinquum</i> , <i>Osteospermum attenuatum</i> , <i>Selago leptothrix</i> , <i>Wahlenbergia appressifolia</i>
Geophytic Herbs	<i>Aspidonepsis cognata</i> , <i>Disa nivea</i> , <i>Trachyandra smalliana</i>
Low Shrubs	<i>Erica anomala</i> , <i>E. caffrorum</i> , <i>E. hillburtii</i> , <i>Lotonis jacottetii</i> , <i>L. minor</i>



The botanical survey aimed to identify common and dominant species, as well as species of conservation concern, occurring within the development footprint and aimed to describe the general characteristics of the vegetation on site.

6.2.1 Plant Species Observed



Approximately thirteen (13) plant species, which will be affected by the proposed Refele Village Sports Facility, were identified during the site survey. It must be noted that the site survey was undertaken in winter (dry season) and that a number of species observed on site were unidentifiable due to the lack of morphological features, such a flowers. The flowering times of certain species may have been missed. The plants observed within the study site are illustrated in Table 6.3 below. An additional list of plant species that may occur in the broader area can be found in Appendix 1.





Table 6.3: Plant species observed on site.

PHOTOGRAPH FROM SITE	FAMILY	COMMON NAME	SPECIES NAME	SANBI RED LIST	NCO	TOPS
INDIGENOUS PLANT SPECIES						
	Poaceae	Red Grass	<i>Themeda triandra</i>	Least Concern	-	-
	Asteraceae	-	<i>Helichrysum sp.</i>	Least Concern	-	-





PHOTOGRAPH FROM SITE	FAMILY	COMMON NAME	SPECIES NAME	SANBI RED LIST	NCO	TOPS
	Asteraceae	Woolly Umbrellas	cf <i>Helichrysum umbraculigerum</i>	Least Concern	-	-
	Asteraceae	-	<i>Helichrysum sp.</i>	Least Concern	-	-





PHOTOGRAPH FROM SITE	FAMILY	COMMON NAME	SPECIES NAME	SANBI RED LIST	NCO	TOPS
	Asteraceae	-	<i>Senecio sp.</i>	Least Concern	-	-
	Poaceae	Wire Lemongrass	<i>Elionurus muticus</i>	Least Concern	-	-




PHOTOGRAPH FROM SITE	FAMILY	COMMON NAME	SPECIES NAME	SANBI RED LIST	NCO	TOPS
	Poaceae	-	<i>Eragrostis sp.</i>	Least Concern	-	-
	Asteraceae	Bitterbos	cf <i>Chrysocoma ciliata</i>	Least Concern	-	-




PHOTOGRAPH FROM SITE	FAMILY	COMMON NAME	SPECIES NAME	SANBI RED LIST	NCO	TOPS
	Asteraceae	-	<i>Helichrysum sp.</i>	Uncertain	-	-
	Asteraceae	-	<i>Helichrysum sp.</i>	Least Concern	-	-




PHOTOGRAPH FROM SITE	FAMILY	COMMON NAME	SPECIES NAME	SANBI RED LIST	NCO	TOPS
	Poaceae	Ngongoni	<i>cf. Aristida junciformis</i>	Least Concern	-	-



PHOTOGRAPH FROM SITE	FAMILY	COMMON NAME	SPECIES NAME	SANBI RED LIST	NCO	TOPS
	Poaceae	-	<i>Aristida sp.</i>	Uncertain	-	-



PHOTOGRAPH FROM SITE	FAMILY	COMMON NAME	SPECIES NAME	SANBI RED LIST	NCO	TOPS
	Poaceae	-	<i>Alloteropsis semialata</i>	Least Concern	-	-



7 SENSITIVITY ASSESSMENT

7.1 CONSERVATION AND SPATIAL PLANNING TOOLS

In order to identify any potential site sensitivities or ecologically important areas during the early stages of a development, the conservation planning tools available for a particular area should be consulted. This could potentially assist with the fine-tuning of plans and infrastructure layouts.

The following relevant conservation planning tools were consulted for this assessment:

- SANBI Vegetation Threat Status;
- NEMBA Threatened Ecosystems;
- ECBCP Critical Biodiversity Areas (Terrestrial and Aquatic); and
- Nature and Environmental Conservation Ordinance No. 19 of 1974.

According to the National Environmental Management: Biodiversity Act (NEM:BA) National List of Ecosystems that are Threatened and in Need of Protection, as well as the Terrestrial Ecosystem Threat Status Assessment conducted as part of the National Biodiversity Assessment (SANBI, 2018), the study site does not occur within a threatened ecosystem. However, the study site is situated within a Terrestrial CBA 1 and an Aquatic CBA 1 in terms of the ECBCP (2007). Southern Drakensberg Highland Grassland, the vegetation type of the study site, is classified as Least Concern (Skowno et al., 2019) with a conservation target of 27%. As of 2006, approximately 9% of this vegetation type was statutorily conserved in uKhahlamba Drakensberg Park.

7.2 SENSITIVITY ALLOCATION

The proposed site has been mapped in terms of the ecological sensitivity (Figure 7.1). The sensitivity ratings and reasons therefore have been provided below. The recommended mitigations measures that need to be implemented in order to minimise the ecological impacts of the development are described in Chapter 8.

Low Sensitivity

Although Southern Drakensberg Highlands Vegetation was found on site, this was characterised by a high degree of degradation and disturbance, a low biodiversity and low ecological function as there were no ecological corridors or niche habitats. Although rehabilitation of the site is possible, there would be some degree of difficulty achieving this given its close location to nearby settlements and its use for grazing cattle. As such, this vegetation type at the site has been classified as low sensitivity.

Mitigation measures and best practises as identified in this report shall apply to construction activities within this zone, but do not prohibit development. Vegetation clearance must be kept to the minimum footprint required for the purpose of constructing the sports facility.

Moderate and High Sensitivity

Although not within the boundaries of proposed development, the surrounding drainage lines, as well as the surrounding 100 m drainage buffer, has been delineated and classified as HIGH



and MODERATE sensitivity respectively. The purpose for this, is to highlight the importance of the surrounding aquatic habitats. Care must be taken that construction activities do not impact these areas, whether directly or indirectly.

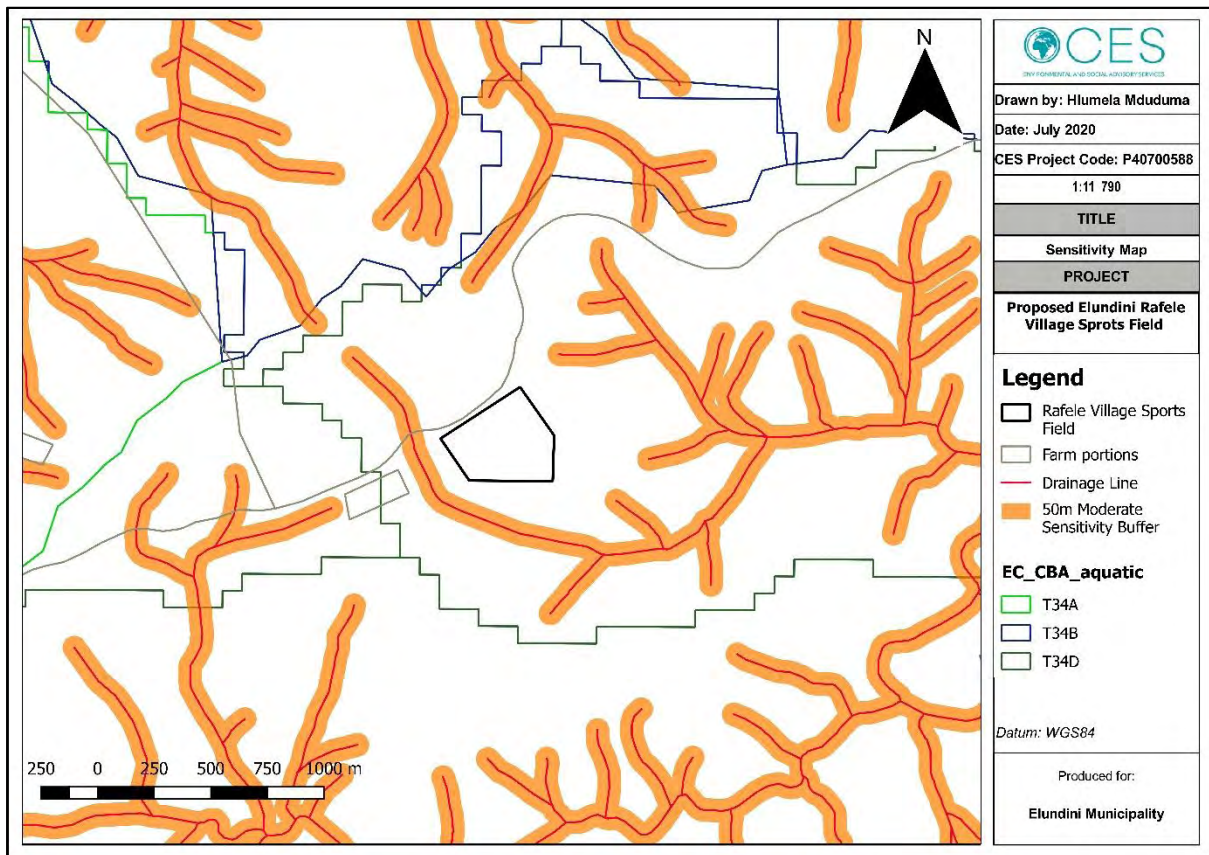


Figure 7.1: Sensitivity map of the proposed site for the Rafele Sports Facility.



8 IMPACT IDENTIFICATION AND ASSESSMENT

The study that has been undertaken provides the necessary information in order to assess the impacts of the proposed development on the ecology of the area at the appropriate spatial and temporal scales. The impacts identified and described in Section 8.1 below have been assessed in terms of the criteria described Appendix D of this report.



8.1 IMPACT ASSESSMENT

Table 8.1: Description and assessment of impacts related to the Refele Village Sports Facility for all phases of the proposed development.

POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
PLANNING AND DESIGN PHASE													
Legal and Policy Compliance	Failure to obtain and adhere to the necessary permits and/or authorisations, as well as failure to adhere to existing policies and legal obligations relating to the ecological environment, could lead to the project conflicting with local, provincial and national policies, legislation, etc. This could result in lack of institutional support for the project, overall project failure and undue disturbance to the natural environment.	Negative	Direct	Severe	Regional/National	Long-Term	Possible	Irreversible	Resource could be lost	Achievable	HIGH	<ul style="list-style-type: none"> All necessary permitting and authorisations must be obtained prior to the commencement of any construction activities; A suitably qualified Environmental Control Officer (ECO) must be appointed prior to the commencement of the construction phase; Ensure that all relevant legislation and policy is consulted and further ensure that the project is compliant with such legislation and policy; and Planning for the construction and operation of the proposed development should consider available best practice guidelines. 	LOW
AQUATIC ENVIRONMENT													



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Stormwater management	During the planning and design phase inappropriate design of stormwater structure may result in increased levels of erosion, sedimentation and pollution of the watercourses as a result of stormwater flows from the development.	Negative	Direct	Severe	Study area	Long-term	Possible	Reversible	Resource will not be lost	Achievable	High	<ul style="list-style-type: none"> Appropriate stormwater structures must be designed to minimise erosion and sedimentation of watercourses. All road sections situated on slopes must incorporate stormwater diversion. Stormwater design must be in line with DWS requirements.	Low
BOTANICAL ENVIRONMENT													
Natural vegetation	During the planning and design phase the inappropriate design of the project infrastructure and demarcation of project boundaries will lead to the unnecessary loss of natural vegetation and habitat supporting other taxonomic groups.	Negative	Direct, Indirect, Cumulative	Severe	Localised	Permanent	Possible	Irreversible	Resource will be lost	Easily Achievable	Moderate	During the planning and design phase, the development footprint must be clearly demarcated and must be designed to avoid the loss -of indigenous vegetation as far as possible.	LOW



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Floral biodiversity	During the planning and design phase the inappropriate design of the project infrastructure and demarcation of project boundaries may lead to the unnecessary loss the already disturbed floral biodiversity of the riparian vegetation.	Negative	Direct, Indirect, Cumulative	Severe	Localised	Permanent	Possible	Irreversible	Resource will be lost	Easily Achievable	MODERATE		LOW
Establishment of alien vegetation	During the planning and design phase the failure to plan for the removal and management of alien vegetation could result in the invasion of alien vegetation in sensitive areas during the construction and operational phases. However, there are currently no alien species present on the site.	Negative	Indirect	Severe	Study area	Long-term	Probable	Reversible	Resource will not be lost	Easily Achievable	MODERATE	<ul style="list-style-type: none"> The ECO must monitor the site for Alien Invasive species, specifically <i>Acacia dealbata</i>. If species are found to occur on site these must be immediately removed, and an Alien Vegetation Management Plan drafted. 	LOW



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
	During the planning and design phase, the failure to plan for the rehabilitation of impacted areas may lead to the establishment of alien vegetation.	Negative	Indirect	Moderate	Study area	Long-term	Possible	Reversible	Resource will not be lost	Easily Achievable	MODERATE		LOW
Inadequate rehabilitation and maintenance	During the planning and design phase, inadequate planning for rehabilitation and maintenance of disturbed areas may result in alien vegetation establishment and the degradation of the study area and surrounding areas.	Negative	Direct, Indirect	Moderate	Study area	Medium-term	Possible	Reversible	Resource will be partly lost	Easily Achievable	MODERATE	<ul style="list-style-type: none"> During the planning and design phase, a Rehabilitation Plan must be developed and implemented during construction and operation phases. Regular monitoring of implementation of this plan for the rehabilitation of disturbed areas must be conducted.	LOW
	During the planning and design phase, the failure to plan for the rehabilitation of impacted areas may lead to erosion of disturbed areas and unnecessary loss of soil and sedimentation of watercourses.	Negative	Indirect, Cumulative	Severe	Study area	Long-term	Probable	Reversible	Resource will be partly lost	Easily Achievable	MODERATE		LOW



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
CONSTRUCTION PHASE													
AQUATIC ENVIRONMENT													
Stormwater management	During the construction phase the inappropriate routing of stormwater runoff may lead to construction debris entering watercourses and sedimentation and erosion of surrounding watercourses, adversely affecting the aquatic environment.	Negative	Direct	Moderate	Study Area	Short-term	Possible	Reversible	Resource will not be lost	Achievable	Moderate	Stormwater must be managed effectively to minimize the ingress of construction debris and sediment-laden stormwater into surrounding watercourses.	Low
Material stockpiling	During the construction phase, stockpiling of construction materials (eg. sabunga, building sand, cement etc) within moderate sensitivity areas identified in Figure 6.2 could result in erosion and mobilisation of the materials into the nearby watercourses, resulting in sedimentation and a decrease in water quality and aquatic habitat.	Negative	Direct, Indirect	Moderate	Study Area	Medium-term	Possible	Reversible	Resource will not be lost	Achievable	Moderate	<ul style="list-style-type: none"> No construction material must be stored within the moderate sensitivity area indicated in Figure 6.2. Stockpiles should not be placed within the moderate sensitivity area indicated in Figure 6.2. Stockpiles must be monitored for erosion and mobilisation of materials towards watercourses. If this is noted by an ECO, suitable cut-off drains or berms must be placed between the stockpile area and the nearest watercourse. Stockpiles should not exceed 1.5 m in height. Stockpiles should be covered during windy periods.	Low



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Disturbance of aquatic vegetation and habitat	During the construction phase indiscriminate removal or unnecessary encroachment into riparian and wetland vegetation may lead to disturbance of the aquatic ecosystem.	Negative	Direct, Indirect	Severe	Study area	Medium-term	Possible	Reversible	Resource will not be lost	Achievable	High	<ul style="list-style-type: none"> Removal of alien vegetation should be prioritised. Construction vehicles and machinery should not encroach into areas outside the project footprint. Damage to bed and banks of the watercourses must be avoided other than to complete specific works within the watercourse.	Low
Erosion and sedimentation	During the construction phase, vegetation clearance and lack of implementation of erosion control measures may result in deterioration of the surrounding habitat as a result of erosion of banks, slopes and bed of watercourse and resultant sedimentation.	Negative	Indirect, Cumulative	Severe	Study area	Long-term	Probable	Reversible	Resource will not be lost	Achievable	High	<ul style="list-style-type: none"> Vegetation clearing must be kept to a minimum and only to the site footprint. Erosion controls and sediment trapping measures must be put in place. All trenches/excavations must be backfilled and all disturbed areas backfilled, compacted and revegetated. Disturbed areas must be constantly monitored for erosion channels and these must be rehabilitated immediately.	Low



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Water quality	During the construction phase, accidental spillages of wet concrete and chemical/hazardous substances in the vicinity of watercourse may result in water pollution, adversely affecting the aquatic ecosystem.	Negative	Direct, indirect	Severe	Study area	Short-term	Possible	Reversible	Resource will not be lost	Achievable	High	<ul style="list-style-type: none"> No concrete mixing must take place within 32m of any watercourse. No machinery must be parked overnight within 50 m of the rivers/wetlands. All stationary machinery must be equipped with a drip tray to retain any oil leaks. Chemicals used for construction must be stored safely on bunded surfaces in the construction site camp. Emergency plans must be in place in case of spillages onto road surfaces or within water courses. No ablution facilities should be located within 50 m of any river or wetland system. Chemical toilets must be regularly maintained/ serviced to prevent ground or surface water pollution. Any hazardous substances/waste must be stored in impermeable bunded areas or secondary containers 110% the volume of the contents within it. All general waste and refuse must be removed from site and disposed and windproof temporary storage area before being disposed of at a registered landfill site. 	Low
BOTANICAL ENVIREMNT													



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Damage to Surface Water Features	Soil exposure during vegetation clearance for the construction of the proposed sporting facility could result in the erosion and runoff and the subsequent sedimentation or contamination of the surrounding drainage lines.	Negative	Direct	Severe	Study site	Long-Term	Possible	Irreversible	Resource could be lost	Achievable	HIGH	<ul style="list-style-type: none"> The construction site must be managed in a manner that prevents the contamination or sedimentation of the surrounding drainage lines; and Additional erosion control measures, such as silt traps, etc, should be utilised if erosion is observed on site. 	LOW
Loss of Indigenous Vegetation	Vegetation clearance for the sporting facility and vehicle movement will result in the direct loss of Southern Drakensberg Grassland Vegetation. Such vegetation loss represents permanent vegetation and habitat loss from naturally vegetated areas and as such the significance of the impact will remain moderate even after mitigation measures are implemented.	Negative	Direct	Moderate	Study Site	Permanent	Definite	Irreversible	Resource will be lost	Achievable	MODERATE	<ul style="list-style-type: none"> The clearance of vegetation at any given time should be kept to a minimum; Employees must be prohibited from making fires and harvesting plants; Any alien vegetation which establishes during the construction phase should be removed from site and disposed of at a registered waste disposal site. Continuous monitoring for alien plant seedlings should take place throughout the construction phase; 	MODERATE



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Loss of Biodiversity	During the construction phase, uncontrolled construction activities i.e. vegetation clearing, soil excavation, etc., could lead to unnecessary damage to and removal of natural vegetation, loss of faunal habitat, and potential SCC within the proposed site boundaries.	Negative	Direct	Low	Study site	Permanent	Definite	Irreversible	Resource will be lost	Achievable	LOW	<ul style="list-style-type: none"> Only indigenous species must be used for rehabilitation purposes; As far as practically possible, existing roads should be utilised; and An alien vegetation management plan or method statement must be compiled (for implementation during the phases that follow). 	LOW



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Loss of Critical Biodiversity Area	The proposed development of the Refele Village Sports Facility will result in the loss of a portion of an area classified as a terrestrial and Aquatic CBA 1 (ECBCP, 2007). This classification was driven by the vegetation type, threat status and the established national conservation target. Even though a site is considered degraded and systematic biodiversity planning algorithm will still select a site to ensure that the target is satisfied, recommending that degraded areas of CBAs are rehabilitated. The planning process, however, does not take in account the capability of the ecosystem to recover once disturbed. In this case, Southern Drakensberg Highland Grassland vegetation has been significantly degraded and it is unlikely that any future efforts to restore the ecosystem will be successful.	Negative	Direct	Moderate	Localised	Permanent	Definite	Irreversible	Resource will be lost	Achievable	MODERATE	<ul style="list-style-type: none"> None identified 	MODERATE



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Establishment of Alien Plant Species	The removal of existing natural vegetation creates 'open' habitats which favours the establishment of undesirable vegetation in areas that are typically very difficult to eradicate and could pose a threat to surrounding ecosystems.	Negative	Direct	Moderate	Study site	Long-term	Possible	Reversible	Resource could be lost	Achievable	MODERATE	<ul style="list-style-type: none"> Since no Alien Invasive Plant species were recorded on site, a method statement must be developed and implemented to prevent the establishment and spread of undesirable alien plant species during all phases of development. However, if the site becomes infested with undesirable species then an Alien Vegetation Management Plan must be developed; and Any alien vegetation which establishes during the construction phase should be removed from site and disposed of at a registered waste disposal site. Continuous monitoring for alien plant seedlings should take place throughout the construction phase. 	LOW
Habitat Loss/Fragmentation	During the construction phase, the loss of vegetation coincides with the loss of faunal habitat, reducing breeding and rearing locales. Faunal populations could become locally extinct or diminish in size.	Negative	Direct	Moderate	Study site	Long-Term	Definite	Irreversible	Resource will not be lost	Achievable	MODERATE	<ul style="list-style-type: none"> The clearance of vegetation at any given time should be kept to a minimum; Employees must not trap, hunt, handle or remove any faunal species from the site; As far as practically possible, existing roads must be utilized. 	LOW



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Wildlife Mortalities	During the construction phase, vehicles, crew and materials may increase animal fatalities through opportunistic hunting, collisions, accidents or baiting and trapping.	Negative	Direct	Moderate	Localised	Permanent	Possible	Irreversible	Resource could be lost	Achievable	MODERATE	<ul style="list-style-type: none"> All faunal species, including livestock, must be removed from site prior to vegetation clearance. Vehicle speed must be limited to 30km/hr to reduce faunal collision mortality; Train all staff on site regarding the proper management and response should animals be encountered; Search and clear the construction region prior to work commencing, relocating animals where found; No animal shall be killed or hurt; and No hunting, baiting or trapping shall be allowed. 	LOW
Inadequate Rehabilitation and Maintenance of Disturbed Areas	During the construction phase, failure to implement rehabilitation measures could lead to the erosion of- and permanent loss of valuable soil, the unnecessary loss of indigenous vegetation and the establishment of alien invasive vegetation.	Negative	Direct	High	Study site	Long-Term	Unlikely	Reversible	Resource could be lost	Achievable	MODERATE	<ul style="list-style-type: none"> A Rehabilitation Plan must be developed and implemented during and post-construction; All temporary disturbed areas that do not form part of the sports facility, must be rehabilitated using only indigenous vegetation; and All impacted areas must be restored as per the EMP requirements. 	LOW
OPERATIONAL PHASE													



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Erosion	Failure to rehabilitate temporary areas, which were impacted during the construction phase, could lead to the erosion of- and permanent loss of valuable topsoil.	Negative	Direct	Moderate	Localised	Long-Term	Possible	Reversible	Resource could be lost	Achievable	MODERATE	<ul style="list-style-type: none"> Stormwater control must be undertaken to prevent soil loss from the site; All erosion control mechanisms, such as silt traps, must be regularly maintained; Natural vegetation must be retained where possible to avoid soil erosion; Any cleared areas, which are not used, should be rehabilitated post-construction using only indigenous plant species; 	LOW
Damage to Surface Water Features	During the operational phase, runoff from the proposed sports facility could result in the subsequent sedimentation and/or contamination of surrounding drainage lines.	Negative	Direct	Moderate	Localised	Long-Term	Possible	Reversible	Resource could be lost	Achievable	MODERATE		LOW



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Establishment of Alien Plant Species	<p>During the operational phase, failure to remove and manage alien vegetation during construction could result in the permanent establishment of alien vegetation in the study area.</p> <p>During the Operational phase, the poor rehabilitation of disturbed areas may lead to the permanent degradation of ecosystems as well as allow alien vegetation species to spread.</p>	Negative	Direct	Moderately severe	Localised	Long-Term	Possible	Reversible	Resource could be lost	Achievable	MODERATE	<ul style="list-style-type: none"> Monitoring of the establishment of alien plant seedlings should continue throughout the operational phase. Any alien seedlings should be removed and disposed of at a registered landfill or treated with an appropriate herbicide. If the site becomes infested with undesirable species then an Alien Vegetation Management Plan must be developed. 	LOW
Inadequate Rehabilitation and Maintenance of Disturbed Areas	<p>During the operational phase, failure to rehabilitate temporary areas, which were impacted during the construction phase, could lead to the erosion of- and permanent loss of valuable soil, the degradation of the surrounding indigenous vegetation, and the establishment of alien invasive vegetation.</p>	Negative	Direct	Moderate severe	Localised	Long-Term	Possible	Reversible	Resource could be lost	Achievable	MODERATE	<ul style="list-style-type: none"> All erosion control mechanisms must be regularly maintained; Vegetation must be retained where possible to avoid soil erosion; Any cleared/disturbed areas, which will not form part of the sports facility, should be rehabilitated post-construction using only indigenous plant species. 	LOW
NO-GO ALTERNATIVE													



POTENTIAL ISSUES	SOURCE OF ISSUE	Nature	Type	Consequence	Extent	Duration	Probability	Reversibility	Irreplaceable loss	MITIGATION POTENTIAL	SIGNIFICANCE WITHOUT MITIGATION	MITIGATION MEASURES	SIGNIFICANCE WITH MITIGATION
Should the proposed development not proceed then the current land use will remain the same. In this instance, the likelihood of the potential disturbance of the site is reduced, however degradation due to livestock grazing and recreational activities is likely to continue. (Status quo to remain as is – no development on the proposed site)		Positive/Negative	Indirect	Moderate	Study site	Long-Term	Definite	N/A	Resources may be lost	N/A	Low	<ul style="list-style-type: none"> N/A 	Low



9 IMPACT STATEMENT, RECOMMENDATIONS AND CONCLUSION

9.1 IMPACT STATEMENT

Approximately thirteen (13) plant species were identified within the boundaries of the proposed site for the Refele Village Sports Facility. The proposed Sports Facility is situated within one (1) vegetation type – Southern Drakensberg Highland Grassland classified as **Least Concern** (Skowno *et al.*, 2019). Southern Drakensberg Highland Grassland covers a relatively extensive area within the Eastern Cape and KwaZulu Natal Provinces, on steeply sloping mountainous areas on and below the summit of the Great Escarpment supporting dense tussock grassland. The conservation target of this vegetation type is 27%, with approximately 9% of this vegetation type statutorily conserved in uKhahlamba Drakensberg Park and Malekgonyane (Ongeluksnek) Wildlife Reserve. However, more than 5% has been transformed for cultivation.

The Southern Drakensberg Highland Vegetation of the study site was significantly degraded, indicated by the low number of species and diversity of life forms, most likely due to intense grazing by livestock and utilization as a recreational sporting area by surrounding local villagers. It should be noted that the vegetation of the study site was also very dry at the time of the site visit and it is possible that additional species may have gone undetected. No alien invasive species were identified during the site visit. However, Southern Drakensberg Highland Grassland is prone to invasion by *Acacia dealbata* (NEMBA Category 2; CARA Category 2).

Analysis of the layout for the proposed Refele Village Sports Facility indicated that approximately 11.8 ha of vegetation will be cleared for the establishment and construction of the Sports Facility. It is recommended that the clearance of vegetation be restricted to that which is necessary for the proposed development.

Although the site is degraded and probably does not meet the criteria used for classifying the area as a CBA 1 in terms of the ECBCP (2007) neither now NOR will be able to in the future (due to poor ecosystem regeneration and rehabilitation), the loss of this site does signify the loss of potential sites to achieve the national target for this ecosystem.

Animal species recorded during the site visit was limited to livestock (sheep) belonging to the surrounding village. However, it should be noted that a detailed survey was not conducted, and it is likely that reptiles, insects and birds are present or utilise the area.

Table 9.1 below summarises the change in impact significance between pre- to post-mitigation during all phases of the proposed development. The majority of the impacts were classified as moderate negative and will be reduced to a low negative significance if the mitigation measures as proposed in this report, are implemented and adhered to. The impacts identified were not deemed insurmountable provided the mitigation measures identified in this report are implemented.

Table 9.1: Summary of impacts identified for the proposed Refele Village Sports Facility.

IMPACT	PRIOR TO MITIGATION	POST-MITIGATION	NO-GO ALTERNATIVE
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PLANNING AND DESIGN PHASE			
Impact 1: Legal and Policy Compliance	HIGH (-)	LOW (-)	N/A
Impact 2: Stormwater Management	HIGH (-)	LOW (-)	N/A
Impact 3: Natural Vegetation	MODERATE (-)	LOW (-)	N/A
Impact 4: Floral Diversity	MODERATE (-)	LOW (-)	N/A
Impact 5: Establishment of Alien Vegetation	MODERATE (-)	LOW (-)	N/A
Impact 6: Inadequate Rehabilitation and Maintenance	MODERATE (-)	LOW (-)	N/A
	MODERATE (-)	LOW (-)	N/A
CONSTRUCTION PHASE			
Impact 7: Stormwater Management	MODERATE (-)	LOW (-)	N/A
Impact 8: Material Stockpiling	MODERATE (-)	LOW (-)	N/A
Impact 9: Disturbance to aquatic vegetation and habitat	HIGH (-)	LOW (-)	N/A
Impact 10: Erosion and Sedimentation	HIGH (-)	LOW (-)	N/A
Impact 11: Water Quality	HIGH (-)	LOW (-)	N/A
Impact 12: Damage to surface water features	HIGH (-)	LOW (-)	N/A
Impact 13: Loss of Indigenous vegetation	MODERATE (-)	MODERATE (-)	N/A
Impact 14: Loss of Biodiversity	LOW (-)	LOW (-)	N/A
Impact 15: Loss of Critical Biodiversity Area	MODERATE (-)	MODERATE (-)	N/A
Impact 16: Establishment of Alien Plant Species	MODERATE (-)	LOW (-)	N/A
Impact 17: Habitat loss/Fragmentation	MODERATE (-)	LOW (-)	N/A
Impact 18: Wildlife Mortalities	MODERATE (-)	LOW (-)	N/A
Impact 19: Inadequate Rehabilitation and Maintenance of Disturbed Areas	MODERATE (-)	LOW (-)	N/A
OPERATIONAL PHASE			
Impact 20: Erosion	MODERATE (-)	LOW (-)	N/A
Impact 21: Damage to Surface Water Features	MODERATE (-)	LOW (-)	N/A
Impact 22: Establishment of Alien Plant Species	MODERATE (-)	LOW (-)	N/A
Impact 23: Inadequate Rehabilitation and Maintenance of Disturbed Areas	MODERATE (-)	LOW (-)	N/A

9.1.1 Existing Impacts

A baseline analysis of the present condition of the study site indicated that the Southern Drakensberg Highland Grassland of the site has been degraded, most likely due to intense



livestock grazing and utilization as a recreational sporting area by surrounding local villagers. Consequently, the vegetation now represents a tussocked grassland characterised by low biodiversity and a low diversity of life forms. As such the following existing impacts have been identified:

- Loss of indigenous vegetation;
- Loss of biodiversity,
- Loss of faunal habitat;
- Habitat loss/fragmentation; and
- Loss of faunal habitat.

9.1.2 Cumulative Impacts

Cumulative impacts are defined as those *“that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impact identification process is conducted.”*

The following cumulative impacts were identified as a result of the proposed Refele Village Sports Facility:

Aspect	Description of Impact
Loss of Indigenous Vegetation (Southern Drakensberg Highland Grassland)	Vegetation clearance for the establishment and construction of the proposed Refele Village Sports Facility will result in the cumulative loss of Southern Drakensberg Highland Grassland applying further pressure on the ecosystem and possibly increasing the threat status. It will also impact on cumulative biodiversity loss associated with the loss of habitats and habitat fragmentation.

9.1.3 No-go Areas

Although no no-go area have been identified within the boundary of the proposed site for the Refele Village Sports Facility, it is critical that vegetation clearance and construction activities associated with the proposed development are restricted to the delineated boundaries of the development footprint as indicated on Figure 9.1 below. It is recommended that the boundaries of the development footprint be clearly demarcated prior to the clearing of vegetation to prevent the encroachment of activities into the surrounding natural areas.

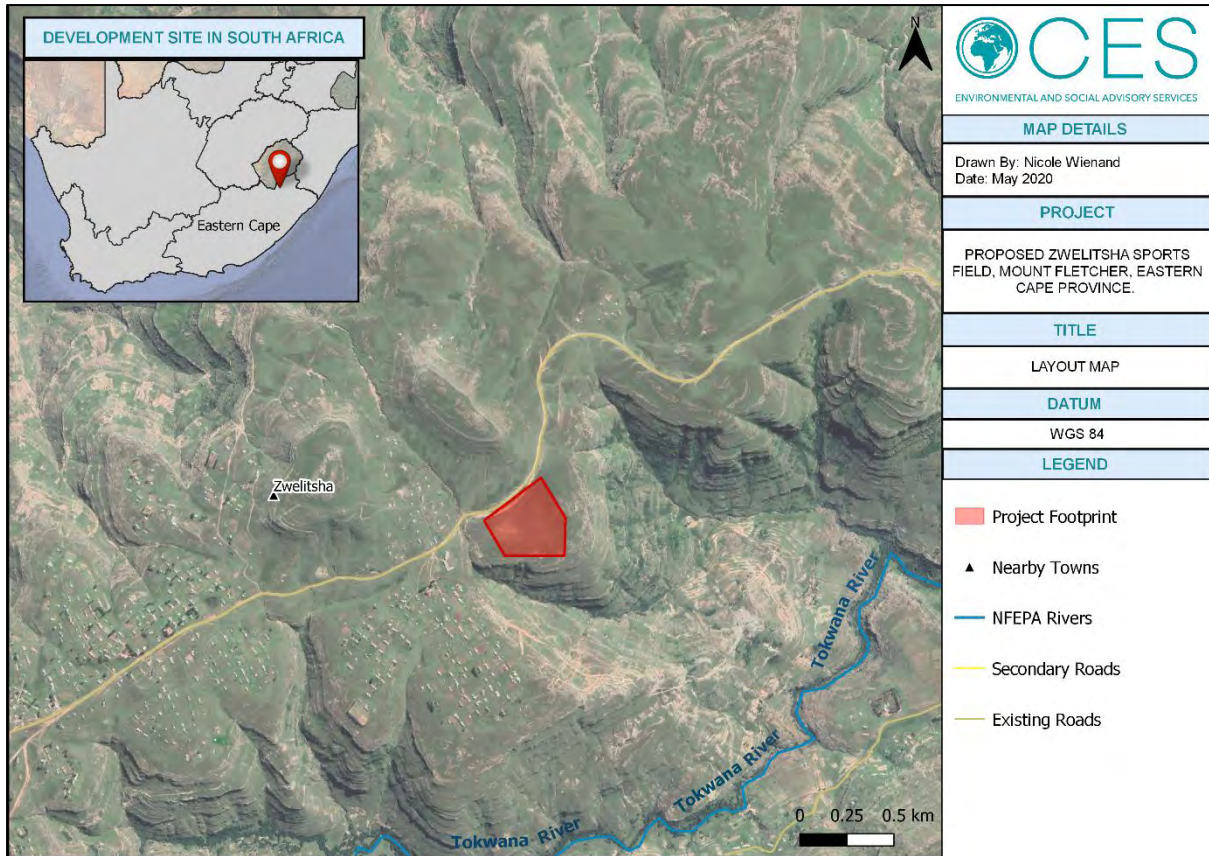


Figure 9.1: Layout map and development footprint of the proposed Refele Village Sports Facility.

9.2 CONDITIONS OF AUTHORISATION

The following recommendations must be included in the Final EMP and as well as the conditions of the Environmental Authorisation (EA), if granted:

- All necessary permitting and authorisations must be obtained prior to the commencement of any construction activities;
- A suitably qualified ECO must be appointed prior to the commencement of the construction phase;
- An Erosion Management Plan or method statement indicating how erosion will be prevented and controlled must be developed prior to the commencement of construction activities in order to mitigate the unnecessary loss of topsoil and runoff;
- An Alien Vegetation Management plan or method statement should be compiled and implemented during all stages of the proposed development; and
- A Rehabilitation Plan must be developed and implemented during construction and operation phases.

9.2.1 Mitigation Measures

All mitigation measures identified for the impacts associated with the proposed development must be implemented during the relevant phases of the proposed Refele Village Sports Facility (please refer to Section 8.1 above for the recommended mitigation measures associated with each impact).



9.3 ECOLOGICAL STATEMENT AND OPINION OF THE SPECIALIST

The ecological impacts of all aspects of the proposed Refele Village Sports Facility were assessed and considered to be ecological acceptable, provided the mitigation measures outlined in this report are implemented. The majority of the impacts were identified during the construction phase of the proposed development and were rated as moderately negative. Therefore, the implementation of the recommended mitigation measures and monitoring, especially during construction is critical to ensure a development that is environmentally sound.

Although the sensitivity of the site was classified as LOW, the implementation of the appropriate mitigation measures is of critical importance for maintaining the integrity of the environment and in order to ensure a development which is environmentally appropriate. Specific mitigation measures, including the relocation of any animal species (including livestock) to the nearest appropriate habitat, must be implemented and adhered to.

Loss of CBA 1 areas mean that less area of a close to irreplaceable ecosystem is available to meet national conservation targets. Conservation of this specific site would then assume that, if left untouched, that the area would recover and revert to Southern Drakensberg Highland Grassland. This is highly unlikely, as the site is currently utilised by surrounding local villagers for livestock grazing and recreational activities. As such, it is unlikely that active restoration of the site will be undertaken.

The development footprint of the proposed Sports Facility must be demarcated to prevent any encroachment of construction or operational activities into surrounding natural areas and vegetation clearance must be kept to the minimum footprint required for the establishment and construction of the Refele Village Sports Facility. Minor location deviations from the proposed works is deemed acceptable but the footprint may not be made larger.

The proposed Refele Village Sports Facility is **NOT considered to be Fatally Flawed**.

The no-go option refers to the proposed Sports Facility not being construction. This option will have a moderately positive outcome for the indigenous vegetation and surrounding natural environment relative to the proposed development, but the existing disturbed areas will remain, and the benefits associated with the Sports Facility will be lost.



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APPENDIX A – LIST OF POSSIBLE PLANT SPECIES

The following list of plant species may occur within the project area of the proposed Refele Village Sports Facility (source: <http://posa.sanbi.org/sanbi/Explore>).

FAMILY	SPECIES	IUCN CONSERVATION STATUS	ECOLOGY
Lobeliaceae	<i>Cyphia longifolia</i>	LC	Indigenous; Endemic
Poaceae	<i>Eragrostis curvula</i>	LC	Indigenous
Poaceae	<i>Eragrostis gummiflua</i>	LC	Indigenous
Ranunculaceae	<i>Ranunculus multifidus</i>	LC	Indigenous
Asteraceae	<i>Helichrysum chionosphaerum</i>	LC	Indigenous
Poaceae	<i>Brachiaria serrata</i>	LC	Indigenous
Poaceae	<i>Digitaria flaccida</i>	LC	Indigenous
Poaceae	<i>Sporobolus africanus</i>	LC	Indigenous
Asteraceae	<i>Osteospermum imbricatum</i>	NE	Indigenous; Endemic
Poaceae	<i>Andropogon ravus</i>	LC	Indigenous
Oliniaceae	<i>Olinia emarginata</i>	LC	Indigenous
Orchidaceae	<i>Habenaria tridens</i>	LC	Indigenous
Lamiaceae	<i>Salvia repens</i>	DD	Indigenous; Endemic
Asphodelaceae	<i>Bulbine mesembryanthoides</i>	LC	Indigenous; Endemic
Asteraceae	<i>Helichrysum platypterum</i>	LC	Indigenous
Hyacinthaceae	<i>Schizocarphus nervosus</i>	LC	Indigenous
Asteraceae	<i>Nolletia ciliaris</i>	LC	Indigenous
Poaceae	<i>Digitaria diagonalis</i>	LC	Indigenous
Poaceae	<i>Melinis nerviglumis</i>	LC	Indigenous
Poaceae	<i>Setaria sphacelata</i>	LC	Indigenous
Poaceae	<i>Chloris gayana</i>	LC	Indigenous
Fabaceae	<i>Indigofera hedyantha</i>	LC	Indigenous
Fabaceae	<i>Argyrolobium stipulaceum</i>	LC	Indigenous
Thymelaeaceae	<i>Gnidia gymnostachya</i>	LC	Indigenous
Poaceae	<i>Aristida junciformis</i>	LC	Indigenous
Poaceae	<i>Setaria nigrirostris</i>	LC	Indigenous
Asteraceae	<i>Felicia filifolia</i>	LC	Indigenous
Scrophulariaceae	<i>Nemesia sp.</i>		



APPENDIX B – LIST OF POSSIBLE BIRD SPECIES

The following lists of bird species may occur within the project area of the proposed Refele Village Sports Facility.

ANSERIFORMES: Anatidae		
White-faced Whistling-Duck	<i>Dendrocygna viduata</i>	
White-backed Duck	<i>Thalassornis leuconotus</i>	
Egyptian Goose	<i>Alopochen aegyptiaca</i>	
South African Shelduck	<i>Tadorna cana</i>	
Spur-winged Goose	<i>Plectropterus gambensis</i>	
Hottentot Teal	<i>Spatula hottentota</i>	
Cape Shoveler	<i>Spatula smithii</i>	
African Black Duck	<i>Anas sparsa</i>	
Yellow-billed Duck	<i>Anas undulata</i>	
Cape Teal	<i>Anas capensis</i>	
Red-billed Duck	<i>Anas erythrorhyncha</i>	
Southern Pochard	<i>Netta erythrophthalma</i>	
Maccoa Duck	<i>Oxyura maccoa</i>	Vulnerable
GALLIFORMES: Numididae		
Helmeted Guineafowl	<i>Numida meleagris</i>	
GALLIFORMES: Phasianidae		
Common Quail	<i>Coturnix coturnix</i>	
Natal Francolin	<i>Pternistis natalensis</i>	
Red-winged Francolin	<i>Scleroptila levaillantii</i>	
Gray-winged Francolin	<i>Scleroptila afra</i>	Endemic (country/region)
PHOENICOPTERIFORMES: Phoenicopteridae		
Greater Flamingo	<i>Phoenicopterus roseus</i>	
Lesser Flamingo	<i>Phoeniconaias minor</i>	Near-threatened
PODICIPEDIFORMES: Podicipedidae		
Little Grebe	<i>Tachybaptus ruficollis</i>	
Great Crested Grebe	<i>Podiceps cristatus</i>	
COLUMBIFORMES: Columbidae		
Speckled Pigeon	<i>Columba guinea</i>	
Rameron Pigeon	<i>Columba arquatrix</i>	
Red-eyed Dove	<i>Streptopelia semitorquata</i>	
Ring-necked Dove	<i>Streptopelia capicola</i>	
Laughing Dove	<i>Streptopelia senegalensis</i>	
Namaqua Dove	<i>Oena capensis</i>	
African Green-Pigeon	<i>Treron calvus</i>	
OTIDIFORMES: Otidae		
Denham's Bustard	<i>Neotis denhami</i>	Near-threatened
White-bellied Bustard	<i>Eupodotis senegalensis</i>	
Blue Bustard	<i>Eupodotis caerulescens</i>	Endemic (country/region) Near-threatened
MUSOPHAGIFORMES: Musophagidae		
Knysna Turaco	<i>Tauraco corythaix</i>	



CUCULIFORMES: Cuculidae		
White-browed Coucal	<i>Centropus superciliosus</i>	
Great Spotted Cuckoo	<i>Clamator glandarius</i>	
Pied Cuckoo	<i>Clamator jacobinus</i>	
Dideric Cuckoo	<i>Chrysococcyx caprius</i>	
African Emerald Cuckoo	<i>Chrysococcyx cupreus</i>	
Red-chested Cuckoo	<i>Cuculus solitarius</i>	
Common Cuckoo	<i>Cuculus canorus</i>	
CAPRIMULGIFORMES: Caprimulgidae		
Eurasian Nightjar	<i>Caprimulgus europaeus</i>	
CAPRIMULGIFORMES: Apodidae		
Alpine Swift	<i>Apus melba</i>	
Common Swift	<i>Apus apus</i>	
African Swift	<i>Apus barbatus</i>	
Little Swift	<i>Apus affinis</i>	
Horus Swift	<i>Apus horus</i>	
White-rumped Swift	<i>Apus caffer</i>	
GRUIFORMES: Sarothruridae		
Buff-spotted Flufftail	<i>Sarothrura elegans</i>	
Red-chested Flufftail	<i>Sarothrura rufa</i>	
Striped Flufftail	<i>Sarothrura affinis</i>	
GRUIFORMES: Rallidae		
African Rail	<i>Rallus caerulescens</i>	
Eurasian Moorhen	<i>Gallinula chloropus</i>	
Red-knobbed Coot	<i>Fulica cristata</i>	
African Swamphen	<i>Porphyrio madagascariensis</i>	
Black Crake	<i>Zapornia flavirostra</i>	
GRUIFORMES: Gruidae		
Gray Crowned-Crane	<i>Balearica regulorum</i>	Endangered
Blue Crane	<i>Anthropoides paradiseus</i>	Vulnerable
Wattled Crane	<i>Bugeranus carunculatus</i>	Vulnerable
CHARADRIIFORMES: Burhinidae		
Spotted Thick-knee	<i>Burhinus capensis</i>	
CHARADRIIFORMES: Recurvirostridae		
Black-winged Stilt	<i>Himantopus himantopus</i>	
Pied Avocet	<i>Recurvirostra avosetta</i>	
CHARADRIIFORMES: Charadriidae		
Blacksmith Lapwing	<i>Vanellus armatus</i>	
Black-winged Lapwing	<i>Vanellus melanopterus</i>	
Crowned Lapwing	<i>Vanellus coronatus</i>	
Kittlitz's Plover	<i>Charadrius pecuarius</i>	
Common Ringed Plover	<i>Charadrius hiaticula</i>	
Three-banded Plover	<i>Charadrius tricollaris</i>	
White-fronted Plover	<i>Charadrius marginatus</i>	



CHARADRIIFORMES: Rostratulidae		
Greater Painted-Snipe	<i>Rostratula benghalensis</i>	
CHARADRIIFORMES: Jacanidae		
African Jacana	<i>Actophilornis africanus</i>	
CHARADRIIFORMES: Scolopacidae		
Eurasian Curlew	<i>Numenius arquata</i>	Near-threatened
Ruff	<i>Calidris pugnax</i>	
Curlew Sandpiper	<i>Calidris ferruginea</i>	Near-threatened
Little Stint	<i>Calidris minuta</i>	
African Snipe	<i>Gallinago nigripennis</i>	
Common Sandpiper	<i>Actitis hypoleucos</i>	
Common Greenshank	<i>Tringa nebularia</i>	
Marsh Sandpiper	<i>Tringa stagnatilis</i>	
Wood Sandpiper	<i>Tringa glareola</i>	
CHARADRIIFORMES: Laridae		
Gray-hooded Gull	<i>Chroicocephalus cirrocephalus</i>	
White-winged Tern	<i>Chlidonias leucopterus</i>	
Whiskered Tern	<i>Chlidonias hybrida</i>	
CICONIIFORMES: Ciconiidae		
Black Stork	<i>Ciconia nigra</i>	
White Stork	<i>Ciconia ciconia</i>	
SULIFORMES: Anhingidae		
African Darter	<i>Anhinga rufa</i>	
SULIFORMES: Phalacrocoracidae		
Long-tailed Cormorant	<i>Microcarbo africanus</i>	
Great Cormorant	<i>Phalacrocorax carbo</i>	
PELECANIFORMES: Scopidae		
Hamerkop	<i>Scopus umbretta</i>	
PELECANIFORMES: Ardeidae		
Little Bittern	<i>Ixobrychus minutus</i>	
Gray Heron	<i>Ardea cinerea</i>	
Black-headed Heron	<i>Ardea melanocephala</i>	
Goliath Heron	<i>Ardea goliath</i>	
Purple Heron	<i>Ardea purpurea</i>	
Great Egret	<i>Ardea alba</i>	
Intermediate Egret	<i>Ardea intermedia</i>	
Little Egret	<i>Egretta garzetta</i>	
Cattle Egret	<i>Bubulcus ibis</i>	
Squacco Heron	<i>Ardeola ralloides</i>	
Striated Heron	<i>Butorides striata</i>	
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	
PELECANIFORMES: Threskiornithidae		
Glossy Ibis	<i>Plegadis falcinellus</i>	
African Sacred Ibis	<i>Threskiornis aethiopicus</i>	



Hadada Ibis	<i>Bostrychia hagedash</i>	
African Spoonbill	<i>Platalea alba</i>	
ACCIPITRIFORMES: Sagittariidae		
Secretarybird	<i>Sagittarius serpentarius</i>	Vulnerable
ACCIPITRIFORMES: Pandionidae		
Osprey	<i>Pandion haliaetus</i>	
ACCIPITRIFORMES: Accipitridae		
Black-winged Kite	<i>Elanus caeruleus</i>	
African Harrier-Hawk	<i>Polyboroides typus</i>	
Bearded Vulture	<i>Gypaetus barbatus</i>	Near-threatened
African Cuckoo-Hawk	<i>Aviceda cuculoides</i>	
Lappet-faced Vulture	<i>Torgos tracheliotos</i>	Endangered
Hooded Vulture	<i>Necrosyrtes monachus</i>	Critically endangered
White-backed Vulture	<i>Gyps africanus</i>	Critically endangered
Cape Griffon	<i>Gyps coprotheres</i>	Endangered
Black-chested Snake-Eagle	<i>Circaetus pectoralis</i>	
Crowned Eagle	<i>Stephanoaetus coronatus</i>	Near-threatened
Martial Eagle	<i>Polemaetus bellicosus</i>	Vulnerable
Long-crested Eagle	<i>Lophaetus occipitalis</i>	
Verreaux's Eagle	<i>Aquila verreauxii</i>	
African Marsh-Harrier	<i>Circus ranivorus</i>	
Black Harrier	<i>Circus maurus</i>	Endangered
Rufous-breasted Sparrowhawk	<i>Accipiter rufiventris</i>	
Black Goshawk	<i>Accipiter melanoleucus</i>	
African Fish-Eagle	<i>Haliaeetus vocifer</i>	
Common Buzzard	<i>Buteo buteo</i>	
Jackal Buzzard	<i>Buteo rufofuscus</i>	
STRIGIFORMES: Tytonidae		
African Grass-Owl	<i>Tyto capensis</i>	
Barn Owl	<i>Tyto alba</i>	
STRIGIFORMES: Strigidae		
African Scops-Owl	<i>Otus senegalensis</i>	
Cape Eagle-Owl	<i>Bubo capensis</i>	
Spotted Eagle-Owl	<i>Bubo africanus</i>	
African Wood-Owl	<i>Strix woodfordii</i>	
Marsh Owl	<i>Asio capensis</i>	
COLIIFORMES: Coliidae		
Speckled Mousebird	<i>Colius striatus</i>	
Red-faced Mousebird	<i>Urocolius indicus</i>	
TROGONIFORMES: Trogonidae		
Narina Trogon	<i>Apaloderma narina</i>	
BUCEROTIFORMES: Upupidae		
Eurasian Hoopoe	<i>Upupa epops</i>	
BUCEROTIFORMES: Phoeniculidae		
Green Woodhoopoe	<i>Phoeniculus purpureus</i>	



BUCEROTIFORMES: Bucorvidae		
Southern Ground-Hornbill	<i>Bucorvus leadbeateri</i>	Vulnerable
CORACIIFORMES: Alcedinidae		
Malachite Kingfisher	<i>Corythornis cristatus</i>	
Giant Kingfisher	<i>Megaceryle maxima</i>	
Pied Kingfisher	<i>Ceryle rudis</i>	
CORACIIFORMES: Coraciidae		
European Roller	<i>Coracias garrulus</i>	
PICIFORMES: Lybiidae		
Red-fronted Tinkerbird	<i>Pogoniulus pusillus</i>	
Pied Barbet	<i>Tricholaema leucomelas</i>	
Black-collared Barbet	<i>Lybius torquatus</i>	
PICIFORMES: Indicatoridae		
Wahlberg's Honeyguide	<i>Prodotiscus regulus</i>	
Lesser Honeyguide	<i>Indicator minor</i>	
Greater Honeyguide	<i>Indicator indicator</i>	
PICIFORMES: Picidae		
Rufous-necked Wryneck	<i>Jynx ruficollis</i>	
Cardinal Woodpecker	<i>Chloropicus fuscescens</i>	
Olive Woodpecker	<i>Chloropicus griseocephalus</i>	
Ground Woodpecker	<i>Geocolaptes olivaceus</i>	Endemic (country/region) Near-threatened
FALCONIFORMES: Falconidae		
Lesser Kestrel	<i>Falco naumanni</i>	
Rock Kestrel	<i>Falco rupicolus</i>	
Amur Falcon	<i>Falco amurensis</i>	
Lanner Falcon	<i>Falco biarmicus</i>	
Peregrine Falcon	<i>Falco peregrinus</i>	
PSITTACIFORMES: Psittacidae		
Cape Parrot	<i>Poicephalus robustus</i>	Vulnerable
PASSERIFORMES: Oriolidae		
Eurasian Golden Oriole	<i>Oriolus oriolus</i>	
African Black-headed Oriole	<i>Oriolus larvatus</i>	
PASSERIFORMES: Malaconotidae		
Black-backed Puffback	<i>Dryoscopus cubla</i>	
Southern Boubou	<i>Laniarius ferrugineus</i>	
Bokmakierie	<i>Telophorus zeylonus</i>	
Olive Bushshrike	<i>Telophorus olivaceus</i>	
PASSERIFORMES: Dicruridae		
Fork-tailed Drongo	<i>Dicrurus adsimilis</i>	
PASSERIFORMES: Monarchidae		
African Paradise-Flycatcher	<i>Terpsiphone viridis</i>	



PASSERIFORMES: Laniidae		
Red-backed Shrike	<i>Lanius collurio</i>	
Southern Fiscal	<i>Lanius collaris</i>	
PASSERIFORMES: Corvidae		
Cape Crow	<i>Corvus capensis</i>	
Pied Crow	<i>Corvus albus</i>	
White-necked Raven	<i>Corvus albicollis</i>	
PASSERIFORMES: Chaetopidae		
Drakensberg Rockjumper	<i>Chaetops aurantius</i>	Endemic (country/region) Near-threatened
PASSERIFORMES: Stenostiridae		
Fairy Flycatcher	<i>Stenostira scita</i>	
PASSERIFORMES: Paridae		
Gray Tit	<i>Melaniparus afer</i>	
PASSERIFORMES: Alaudidae		
Spike-heeled Lark	<i>Chersomanes albofasciata</i>	
Eastern Long-billed Lark	<i>Certhilauda semitorquata</i>	Endemic (country/region)
Rufous-naped Lark	<i>Mirafra africana</i>	
Red-capped Lark	<i>Calandrella cinerea</i>	
Large-billed Lark	<i>Galerida magnirostris</i>	
PASSERIFORMES: Macrosphenidae		
Cape Grassbird	<i>Sphenoeacus afer</i>	
PASSERIFORMES: Cisticolidae		
Bar-throated Apalis	<i>Apalis thoracica</i>	
Yellow-breasted Apalis	<i>Apalis flavida</i>	
Karoo Prinia	<i>Prinia maculosa</i>	
Drakensberg Prinia	<i>Prinia hypoxantha</i>	Endemic (country/region)
Rock-loving Cisticola	<i>Cisticola aberrans</i>	
Wailing Cisticola	<i>Cisticola lais</i>	
Levaillant's Cisticola	<i>Cisticola tinniens</i>	
Croaking Cisticola	<i>Cisticola natalensis</i>	
Piping Cisticola	<i>Cisticola fulvicapilla</i>	
Zitting Cisticola	<i>Cisticola juncidis</i>	
Cloud Cisticola	<i>Cisticola textrix</i>	
Pale-crowned Cisticola	<i>Cisticola cinnamomeus</i>	
Wing-snapping Cisticola	<i>Cisticola ayresii</i>	
PASSERIFORMES: Acrocephalidae		
African Yellow-Warbler	<i>Iduna natalensis</i>	
Marsh Warbler	<i>Acrocephalus palustris</i>	
African Reed Warbler	<i>Acrocephalus baeticatus</i>	
Lesser Swamp Warbler	<i>Acrocephalus gracilirostris</i>	
PASSERIFORMES: Locustellidae		
Barratt's Warbler	<i>Bradypterus barratti</i>	
Little Rush-Warbler	<i>Bradypterus baboecala</i>	



PASSERIFORMES: Hirundinidae		
Plain Martin	<i>Riparia paludicola</i>	
Banded Martin	<i>Riparia cincta</i>	
Rock Martin	<i>Ptyonoprogne fuligula</i>	
Barn Swallow	<i>Hirundo rustica</i>	
White-throated Swallow	<i>Hirundo albigularis</i>	
Greater Striped Swallow	<i>Cecropis cucullata</i>	
Lesser Striped Swallow	<i>Cecropis abyssinica</i>	
South African Swallow	<i>Petrochelidon spilodera</i>	
Common House-Martin	<i>Delichon urbicum</i>	
Black Sawwing	<i>Psalidoprocne pristoptera</i>	
PASSERIFORMES: Pycnonotidae		
Sombre Greenbul	<i>Andropadus importunus</i>	
Terrestrial Brownbul	<i>Phyllastrephus terrestris</i>	
Common Bulbul	<i>Pycnonotus barbatus</i>	
Black-fronted Bulbul	<i>Pycnonotus nigricans</i>	
PASSERIFORMES: Phylloscopidae		
Willow Warbler	<i>Phylloscopus trochilus</i>	
PASSERIFORMES: Sylviidae		
Bush Blackcap	<i>Sylvia nigricapillus</i>	Vulnerable
Layard's Warbler	<i>Sylvia layardi</i>	
PASSERIFORMES: Sturnidae		
European Starling	<i>Sturnus vulgaris</i>	Introduced species
Wattled Starling	<i>Creatophora cinerea</i>	
Red-winged Starling	<i>Onychognathus morio</i>	
African Pied Starling	<i>Lamprotornis bicolor</i>	Endemic (country/region)
Cape Starling	<i>Lamprotornis nitens</i>	
PASSERIFORMES: Turdidae		
Orange Ground-Thrush	<i>Geokichla gurneyi</i>	
Olive Thrush	<i>Turdus olivaceus</i>	
PASSERIFORMES: Muscicapidae		
African Dusky Flycatcher	<i>Muscicapa adusta</i>	
Spotted Flycatcher	<i>Muscicapa striata</i>	
Ashy Flycatcher	<i>Fraseria caerulescens</i>	
Fiscal Flycatcher	<i>Melaenornis silens</i>	
Red-backed Scrub-Robin	<i>Cercotrichas leucophrys</i>	
Cape Robin-Chat	<i>Cossypha caffra</i>	
Chorister Robin-Chat	<i>Cossypha dichroa</i>	
White-starred Robin	<i>Pogonocichla stellata</i>	
Sentinel Rock-Thrush	<i>Monticola explorator</i>	Near-threatened
Cape Rock-Thrush	<i>Monticola rupestris</i>	Endemic (country/region)
African Stonechat	<i>Saxicola torquatus</i>	
Buff-streaked Chat	<i>Campicoloides bifasciatus</i>	
Sickle-winged Chat	<i>Emarginata sinuata</i>	
Karoo Chat	<i>Emarginata schlegelii</i>	
Southern Anteat-Chat	<i>Myrmecocichla formicivora</i>	
Mountain Wheatear	<i>Myrmecocichla monticola</i>	
Familiar Chat	<i>Oenanthe familiaris</i>	



PASSERIFORMES: Promeropidae		
Gurney's Sugarbird	<i>Promerops gurneyi</i>	Near-threatened
PASSERIFORMES: Nectariniidae		
Collared Sunbird	<i>Hedydipna collaris</i>	
Amethyst Sunbird	<i>Chalcomitra amethystina</i>	
Malachite Sunbird	<i>Nectarinia famosa</i>	
Greater Double-collared Sunbird	<i>Cinnyris afer</i>	
PASSERIFORMES: Ploceidae		
Cape Weaver	<i>Ploceus capensis</i>	Endemic (country/region)
Southern Masked-Weaver	<i>Ploceus velatus</i>	
Red-billed Quelea	<i>Quelea quelea</i>	
Southern Red Bishop	<i>Euplectes orix</i>	
Yellow-crowned Bishop	<i>Euplectes afer</i>	
Yellow Bishop	<i>Euplectes capensis</i>	
Red-collared Widowbird	<i>Euplectes ardens</i>	
Fan-tailed Widowbird	<i>Euplectes axillaris</i>	
Long-tailed Widowbird	<i>Euplectes progne</i>	
PASSERIFORMES: Estrildidae		
Sweet Waxbill	<i>Coccygia melanotis</i>	
Common Waxbill	<i>Estrilda astrild</i>	
African Firefinch	<i>Lagonosticta rubricata</i>	
Red-headed Finch	<i>Amadina erythrocephala</i>	
Zebra Waxbill	<i>Sporaeginthus subflavus</i>	
Quailfinch	<i>Ortygospiza atricollis</i>	
Bronze Mannikin	<i>Spermestes cucullata</i>	
PASSERIFORMES: Viduidae		
Pin-tailed Whydah	<i>Vidua macroura</i>	
Variable Indigobird	<i>Vidua funerea</i>	
PASSERIFORMES: Passeridae		
House Sparrow	<i>Passer domesticus</i>	Introduced species
Cape Sparrow	<i>Passer melanurus</i>	
Southern Gray-headed Sparrow	<i>Passer diffusus</i>	
Yellow-throated Bush Sparrow	<i>Gymnoris superciliaris</i>	
PASSERIFORMES: Motacillidae		
Cape Wagtail	<i>Motacilla capensis</i>	
Mountain Pipit	<i>Anthus hoeschi</i>	Near-threatened
Long-billed Pipit	<i>Anthus similis</i>	
Plain-backed Pipit	<i>Anthus leucophrys</i>	
Buffy Pipit	<i>Anthus vaalensis</i>	
Yellow-tufted Pipit	<i>Anthus crenatus</i>	Endemic (country/region) Near-threatened
Yellow-breasted Pipit	<i>Hemimacronyx chloris</i>	Endemic (country/region) Vulnerable
Orange-throated Longclaw	<i>Macronyx capensis</i>	
PASSERIFORMES: Fringillidae		
Yellow-fronted Canary	<i>Crithagra mozambica</i>	



Forest Canary	<i>Crithagra scotops</i>	Endemic (country/region)
Black-throated Canary	<i>Crithagra atrogularis</i>	
Yellow Canary	<i>Crithagra flaviventris</i>	
Drakensberg Siskin	<i>Crithagra symonsi</i>	Endemic (country/region)
Cape Canary	<i>Serinus canicollis</i>	
Black-headed Canary	<i>Serinus alario</i>	
PASSERIFORMES: Emberizidae		
Golden-breasted Bunting	<i>Emberiza flaviventris</i>	
Cape Bunting	<i>Emberiza capensis</i>	
Cinnamon-breasted Bunting	<i>Emberiza tahapisi</i>	



APPENDIX C – IMPACT RATING METHODOLOGY

Impact significance pre-mitigation

This rating scale adopts six key factors to determine the overall significance of the impact prior to mitigation:

1. **Nature of impact:** Defines whether the impact has a negative or positive effect on the receiving environment.
2. **Type of impact:** Defines whether the impact has a direct, indirect or cumulative effect on the environment.
3. **Duration:** defines the relationship of the impact to temporal scales. The temporal scale defines the significance of the impact at various time scales as an indication of the duration of the impact. This may extend from the short-term (less than 5 years, equivalent to the construction phase) to permanent. Generally, the longer the impact occurs the greater the significance of any given impact.
4. **Extent:** describes the relationship of the impact to spatial scales i.e. the physical extent of the impact. This may extend from the local area to an impact that crosses international boundaries. The wider the spatial scale the impact extends, the more significant the impact is considered to be.
5. **Probability:** refers to the likelihood (risk or chance) of the impact occurring. While many impacts generally do occur, there is considerable uncertainty in terms of others. The scale varies from unlikely to definite, with the overall impact significance increasing as the likelihood increases.
6. **Severity or benefits:** the severity/beneficial scale is used in order to scientifically evaluate how severe negative impacts would be, or how beneficial positive impacts would be on the receiving environment. The severity of an impact can be evaluated prior and post mitigation to demonstrate the seriousness of the impact if it is not mitigated, as well as the effectiveness of the mitigation measures. The word 'mitigation' does not only refer to 'compensation', but also includes concepts of containment and remedy. For beneficial impacts, optimization refers to any measure that can enhance the benefits. Both mitigation or optimization should be practical, technically feasible and economically viable.

For each impact, the duration, extent and probability are ranked and assigned a score. These scores are combined and used to determine the overall impact significance prior to mitigation. They must then be considered against the severity rating to determine the overall significance of an activity. This is because the severity of the impact is far more important than the other three criteria. The overall significance is either negative or positive (Criterion 1) and direct, indirect or cumulative (Criterion 2).

Table C1: Evaluation Criteria.

<i>Duration (Temporal Scale)</i>	
<i>Short term</i>	<i>Less than 5 years</i>
<i>Medium term</i>	<i>Between 5-20 years</i>
<i>Long term</i>	<i>Between 20 and 40 years (a generation) and from a human perspective also permanent</i>
<i>Permanent</i>	<i>Over 40 years and resulting in a permanent and lasting change that will always be there</i>



Extent (Spatial Scale)		
<i>Localised</i>	<i>At localised scale and a few hectares in extent</i>	
<i>Study Area</i>	<i>The proposed site and its immediate environs</i>	
<i>Regional</i>	<i>District and Provincial level</i>	
<i>National</i>	<i>Country</i>	
<i>International</i>	<i>Internationally</i>	
Probability (Likelihood)		
<i>Unlikely</i>	<i>The likelihood of these impacts occurring is slight</i>	
<i>May Occur</i>	<i>The likelihood of these impacts occurring is possible</i>	
<i>Probable</i>	<i>The likelihood of these impacts occurring is probable</i>	
<i>Definite</i>	<i>The likelihood is that this impact will definitely occur</i>	
Severity Scale	Severity	Benefit
<i>Very Severe/ Beneficial</i>	An irreversible and permanent change to the affected system(s) or party(ies) which cannot be mitigated.	A permanent and very substantial benefit to the affected system(s) or party(ies), with no real alternative to achieving this benefit.
<i>Severe/ Beneficial</i>	Long term impacts on the affected system(s) or party(ies) that could be mitigated. However, this mitigation would be difficult, expensive or time consuming, or some combination of these.	A long-term impact and substantial benefit to the affected system(s) or party(ies). Alternative ways of achieving this benefit would be difficult, expensive or time consuming, or some combination of these.
<i>Moderately severe/Beneficial</i>	Medium to long term impacts on the affected system(s) or party(ies), which could be mitigated.	A medium to long term impact of real benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are equally difficult, expensive and time consuming (or some combination of these), as achieving them in this way.
<i>Slight</i>	Medium- or short-term impacts on the affected system(s) or party(ies). Mitigation is very easy, cheap, less time consuming or not necessary.	A short to medium term impact and negligible benefit to the affected system(s) or party(ies). Other ways of optimising the beneficial effects are easier, cheaper and quicker, or some combination of these.
<i>No effect/don't or can't know</i>	The system(s) or party(ies) is not affected by the proposed development.	In certain cases, it may not be possible to determine the severity of an impact.

** In certain cases, it may not be possible to determine the severity of an impact thus it may be determined: Don't know/Can't know.*

Table C2: Description of Overall Significance Rating

Significance Rate	Description
Don't Know	<i>In certain cases, it may not be possible to determine the significance of an impact. For example, the primary or secondary impacts on the social or natural environment given the available information.</i>



NO SIGNIFICANCE		<i>There are no primary or secondary effects at all that are important to scientists or the public.</i>
LOW NEGATIVE	LOW POSITIVE	<i>Impacts of low significance are typically acceptable impacts for which mitigation is desirable but not essential. The impact by itself is insufficient, even in combination with other low impacts, to prevent the development being approved. These impacts will result in negative medium to short term effects on the natural environment or on social systems.</i>
MODERATE NEGATIVE	MODERATE POSITIVE	<i>Impacts of moderate significance are impacts that require mitigation. The impact is insufficient by itself to prevent the implementation of the project but in conjunction with other impacts may prevent its implementation. These impacts will usually result in a negative medium to long-term effect on the natural environment or on social systems.</i>
HIGH NEGATIVE	HIGH POSITIVE	<i>Impacts that are rated as being high are serious impacts and may prevent the implementation of the project if no mitigation measures are implemented, or the impact is very difficult to mitigate. These impacts would be considered by society as constituting a major and usually long-term change to the environment or social systems and result in severe effects.</i>
VERY HIGH NEGATIVE	VERY HIGH POSITIVE	<i>Impacts that are rated as very high are very serious impact which may be sufficient by itself to prevent the implementation of the project. The impact may result in permanent change. Very often these impacts are unmitigable and usually result in very severe effects or very beneficial effects.</i>

Impact significance post-mitigation

Once mitigation measures are proposed, the following three factors are then considered to determine the overall significance of the impact after mitigation.

- 1. Reversibility Scale:** This scale defines the degree to which an environment can be returned to its original/partially original state.
- 2. Irreplaceable loss Scale:** This scale defines the degree of loss which an impact may cause.
- 3. Mitigation potential Scale:** This scale defines the degree of difficulty of reversing and/or mitigating the various impacts ranges from very difficult to easily achievable. Both the practical feasibility of the measure, the potential cost and the potential effectiveness is taken into consideration when determining the appropriate degree of difficulty.

Table C3: Post-mitigation Evaluation Criteria.

Reversibility	
<i>Reversible</i>	<i>The activity will lead to an impact that can be reversed provided appropriate mitigation measures are implemented.</i>
<i>Irreversible</i>	<i>The activity will lead to an impact that is permanent regardless of the implementation of mitigation measures.</i>
Irreplaceable loss	
<i>Resource will not be lost</i>	<i>The resource will not be lost/destroyed provided mitigation measures are implemented.</i>
<i>Resource will be</i>	<i>The resource will be partially destroyed even though mitigation</i>



<i>partly lost</i>	<i>measures are implemented.</i>
<i>Resource will be lost</i>	<i>The resource will be lost despite the implementation of mitigation measures.</i>
Mitigation potential	
<i>Easily achievable</i>	<i>The impact can be easily, effectively and cost effectively mitigated/reversed.</i>
<i>Achievable</i>	<i>The impact can be effectively mitigated/reversed without much difficulty or cost.</i>
<i>Difficult</i>	<i>The impact could be mitigated/reversed but there will be some difficulty in ensuring effectiveness and/or implementation, and significant costs.</i>
<i>Very Difficult</i>	<i>The impact could be mitigated/reversed but it would be very difficult to ensure effectiveness, technically very challenging and financially very costly.</i>

The following assumptions and limitations are inherent in the rating methodology:

- Value Judgements: Although this scale attempts to provide a balance and rigor to assessing the significance of impacts, the evaluation relies heavily on the values of the person making the judgment.
- Cumulative Impacts: These affect the significance ranking of an impact because it considers the impact in terms of both on-site and off-site sources. This is particularly problematic in terms of impacts beyond the scope of the proposed development. For this reason, it is important to consider impacts in terms of their cumulative nature.
- Seasonality: Certain impacts will vary in significance based on seasonal change. Thus, it is difficult to provide a static assessment. Seasonality will need to be implicit in the temporal scale, with management measures being imposed accordingly (e.g. dust suppression measures being implemented during the dry season).



APPENDIX D – CURRICULUM VITAE



DETAILS OF EAP AND DECLARATION OF INTEREST IN TERMS OF REGULATIONS 12 AND 13 OF THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED.

(For official use only)

File Reference Number:

NEAS Reference Number:

Date Received:

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

PROJECT TITLE

PROPOSED DEVELOPMENT OF THE REFELE VILLAGE SPORTS FACILITY, MOUNT FLETCHER WITHIN ELUNDINI LOCAL MUNICIPALITY OF THE EASTERN CAPE PROVINCE.

Specialist:	Tarryn Martin		
Contact person:	Tarryn Martin		
Postal address:	30 Chudleigh Road, Plumstead, Cape Town		
Postal code:	7800	Cell:	
Telephone:	+27 (21) 045 0900	Fax:	+27 (46) 622 6564
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Professional affiliation(s) (if any)	SACNASP (400018/14) SAAB: Member of the South African Association of Botanists IAIASa: Member of the International Association for Impact Assessments South Africa		
Project Consultant:			
Contact person:			
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	
E-mail:			



4.2 The specialist appointed in terms of the Regulations_

I, Tarryn Martin , declare that

General declaration:

- 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 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

CES

Name of company (if applicable):

3 November 2020

Date:

Signature of the Commissioner of Oaths:

03rd November 2020

Date:

Commissioner of Oaths

Designation:

Official stamp (below)

Version 1 of April 2017

LYNN SMIT
COMMISSIONER OF OATHS
REFERENCE NUMBER: 9/1/8/2 EAST LONDON
25 TECOMA STREET, BEREA
EAST LONDON, 5214

PALAEONTOLOGICAL HERITAGE: LETTER OF EXEMPTION FROM FURTHER STUDIES & MITIGATION

Proposed new playing field and track at Refele Village near Mount Fletcher, Elundini Local Municipality, Eastern Cape

John E. Almond PhD (Cantab.)
Natura Viva cc,
PO Box 12410 Mill Street,
Cape Town 8010, RSA

August 2020

EXECUTIVE SUMMARY

Elundini Local Municipality is proposing to construct a sports field and track on Farm 621 at Refele Village, c. 14.6 km WNW of Mount Fletcher in the Elundini Local Municipality (Joe Gqabi District Municipality), Eastern Cape Province. The small, partially disturbed project area overlies Late Triassic sandstones of the Molteno Formation (Stormberg Group, Karoo Supergroup) with a probable thin veneer of Pleistocene or younger slope deposits (Masotcheni Formation) and soils.

The palaeontological heritage impact significance of the proposed Refele sports field and track development is assessed as VERY LOW because:

- The project footprint is small and disturbed, while substantial bedrock excavations are not envisaged here;
- Fossil plant-rich beds of the underlying Late Triassic Molteno Formation are unlikely to be exposed at or near-surface here;
- The overlying Pleistocene or younger colluvial deposits of the Masotcheni Formation and soils are generally of low palaeontological sensitivity.

Given the very low impact significance of this development in terms of palaeontological heritage resources, no recommendations for specialist palaeontological monitoring or mitigation are made, pending the potential discovery of significant new fossils (*e.g.* plant-rich beds, mammalian remains) during development. A protocol for Chance Fossil Finds is appended to this report.

1. Project outline and brief

Nako Iliso, on behalf of the Elundini Local Municipality, is proposing to construct a sports field and track on Farm 621 at Refele Village, c. 14.6 km WNW of Mount Fletcher in the Elundini Local Municipality (Joe Gqabi District Municipality), Eastern Cape Province.

The present palaeontological heritage comment has been commissioned as part of a broader heritage impact assessment of the proposed development by CES, East London (Contact details: Ms Robyn Thompson. CES - Environmental and social advisory services. 6 Stewart Drive, Baysville 5241 East London. Tel: 087 830 9806. Fax: 086 410 7822. E-mail: r.thomson@cesnet.co.za).

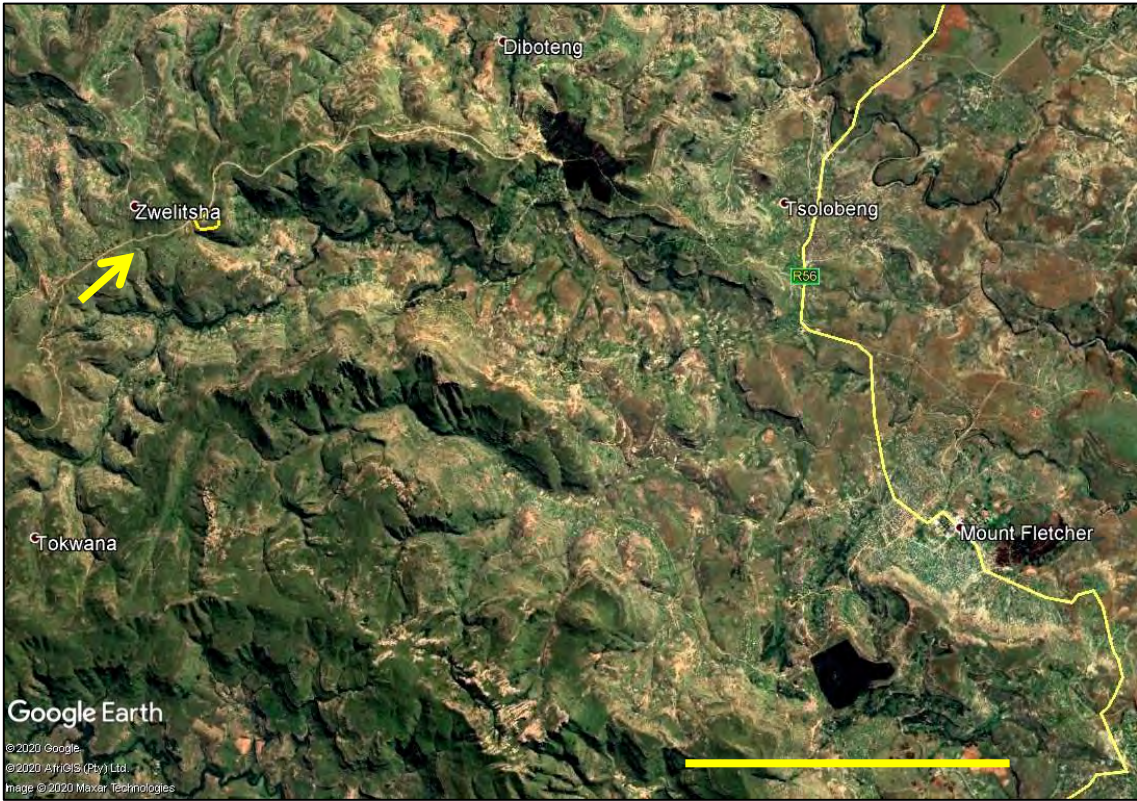


Figure 1: Google Earth© satellite image showing the location of the proposed new sports field on Farm 621 at Refele Village, c. 14.6 km WNW of Mount Fletcher in the Elundini Local Municipality (Joe Gqabi District Municipality), Eastern Cape Province (yellow polygon, arrowed). Scale bar = 6 km. N towards the top of the image.



Figure 2: Figure 1: Google Earth© satellite image showing a close-up of the Refele Village sports field project area (yellow polygon). Scale bar = 1 km. N towards the top of the image.

2. Geological setting

The Refele Village sports field and track project area near Mount Fletcher is situated on flat to gently-sloping terrain at an elevation of between 1820-1850 m amsl in the highly-dissected foothills of the southeast-facing Drakensberg Escarpment of the Eastern Cape (Fig. 1). The project area lies on the lip of a steep, stepped escarpment which borders the deeply-incised Tokwana River Valley (Fig. 2). The terrain here is grassy and in part already disturbed by footpaths *etc.*

The geology of the project area is shown on 1: 250 000 geological sheet 3028 Kokstad (Council for Geoscience, Pretoria) with a short sheet explanation by De Decker (1981) (Fig. 3). The area is underlain by Late Triassic fluvial sediments of the Stormberg Group (Karoo Supergroup), close to the contact between the **Molteno Formation** (TRm, pale orange in Fig. 3) and the **Elliot Formation** (TRe, dark orange in Fig. 3). The Stormberg beds are intruded regionally by a few thin, NW-SE trending dolerite dykes (red lines in Fig. 3). Gullied hillslopes just to the north and outside of the project area are probably mantled by semi-consolidated colluvial (slope) deposits of the **Masotcheni Formation** of Quaternary or younger age which are not separately mapped here. The Lower Elliot mudrocks and subordinate sandstones underlie gentle hillslopes to the north of the project area whereas the latter more or less directly overlies the top of the sandstone packages of the Molteno Formation (clearly seen in the stepped face of the escarpment below), probably with a thin veneer of downwasted sandy soils and gravels broadly equivalent to Masotcheni Formation.

The Molteno Formation is a stratigraphically complex wedge of perennial braided alluvial sediments of estimated Late Triassic age that crops out around the margins of the Stormberg Group outcrop area centred on the Drakensberg highlands (Johnson *et al.* 2006, Almond 2018 and refs. therein). At its thickest, in the south, the formation reaches 600-650 m and has been subdivided into a series of five members but it tapers rapidly towards the north (Note that thicknesses of 450 to 200 m are reported from SW to NE in the Kokstad sheet area by De Decker 1981). The sandstone-rich Molteno succession is more resistant-weathering than the underlying and overlying rocks (Burgersdorp and Elliot Formations respectively) and therefore tends to form a pronounced, stepped topographic escarpment. Useful short geological accounts of the Molteno Formation are given by Dingle *et al.* (1983), Visser (1984), Smith *et al.* (1998), Hancox (2000) and Johnson *et al.* (2006), while a brief description of these rocks in the Kokstad 1: 250 000 geology sheet area is provided by De Decker (1981). Key technical papers include those by Turner (1975, 1983), Eriksson (1984), Christie (1981), Dingle *et al.* (1983), Cairncross *et al.* (1995), Anderson *et al.* (1998) and Hancox (1998). Fuller geological references are provided by Hancox (2000).

Thick (up to 10 m or more), extensively-gullied wedges or prisms of sandy to gravelly colluvial deposits encountered below the base of the Molteno escarpment as well as overlying major sandstone benches along the escarpment are assigned to the Masotcheni Formation (Almond 2018). This stratigraphic unit of probable Pleistocene to Holocene age usually contains well-developed, calcretised palaeosols, occurs widely within the northern KZN – Free State – Eastern Cape region and is often well-exposed within deep erosion gullies or *dongas* overlying Karoo sedimentary bedrocks (*cf* Botha *et al.* 1990, Botha 1992, Johnson & Verster 1994, Lindström 1981, Partridge *et al.* 2006, Evans 2015).

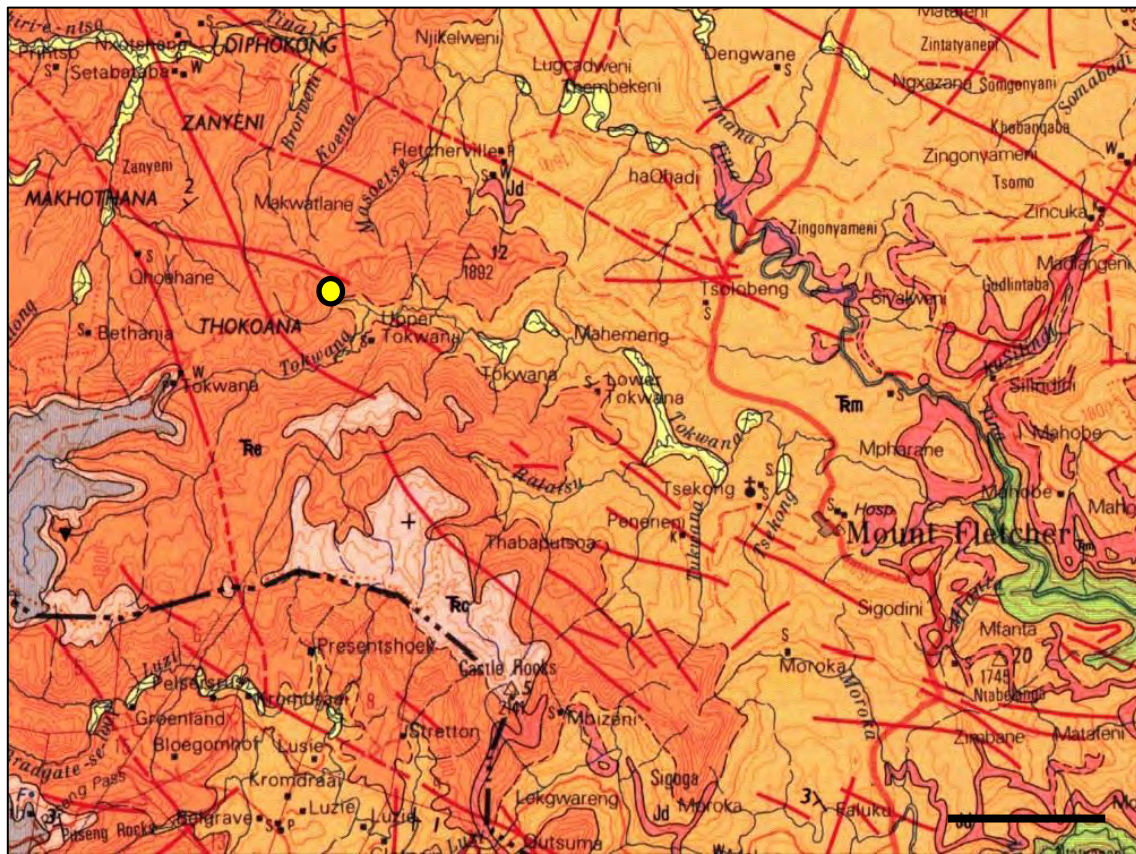


Figure 3: Extract from 1: 250 000 geological sheet 3028 Kokstad (Council for Geoscience, Pretoria) showing the geology of the region to the NW of Mount Fletcher, Eastern Cape (Scale bar = 4 km, N towards the top of the image). The Refele Village project area is approximately indicated by the yellow circle. The project footprint is underlain by Late Triassic fluvial sediments of the Stormberg Group (Karoo Supergroup), close to the contact between the Molteno Formation (TRm, pale orange) and the Elliot Formation (TRe, dark orange). The Stormberg beds are intruded regionally by a few thin, NW-SE trending dolerite dykes (red lines). Gullied hillslopes just to the north and outside of the project area are probably mantled by semi-consolidated colluvial deposits of the Masotcheni Formation of Quaternary or younger age which are not separately mapped here.

3. Palaeontological heritage

In terms of plant and insect fossils - but not vertebrates or traces - the Late Triassic **Molteno Formation** is one of the most productive rock units within the Main Karoo Basin. Indeed, it has produced the richest known floras of Triassic age anywhere in the world and its palaeontological sensitivity towards development is correspondingly high (Almond & Pether 2008, Almond 2018). Excellent reviews of the Molteno fossil biota have been provided by Cairncross *et al.* (1995), Anderson *et al.* (1998), Anderson and Anderson *in* MacRae (1999), Hancox (2000) and Anderson (2001). Several key systematic and synthetic papers on the Molteno palaeoflora published by John and Heidi Anderson are listed in the references to this report. The Molteno plant fossil assemblages are associated with readily-weathered carbonaceous interbeds that are unlikely to be exposed or preserved directly beneath the present project area, however.

The Pleistocene to Holocene **Masotcheni Formation** may contain concentrations of petrified fossil wood reworked from the Karoo Supergroup bedrocks as well as calcretised trace fossils (*e.g.* root

casts / rhizoliths, termitaria), charcoal fragments, rare mammalian bones and teeth as well as Early to Middle Stone Age stone artefacts. However, its palaeontological sensitivity is generally low.

4. Conclusions and recommendations

The palaeontological heritage impact significance of the proposed Refele sportsfield and track development is assessed as VERY LOW because:

- The project footprint is small and disturbed, while substantial bedrock excavations are not envisaged here;
- Fossil plant-rich beds of the underlying Late Triassic Molteno Formation are unlikely to be exposed at or near-surface here;
- The overlying Pleistocene or younger colluvial deposits of the Masotcheni Formation and soils are generally of low palaeontological sensitivity.

Given the very low impact significance of this development in terms of palaeontological heritage resources, no recommendations for specialist palaeontological monitoring or mitigation are made, pending the potential discovery of significant new fossils (e.g. plant-rich beds, mammalian remains) during development. A protocol for Chance Fossil Finds is appended to this report.

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APPENDIX - CHANCE FOSSIL FINDS PROCEDURE: Playing field and track at Refele Village near Mount Fletcher,	
Province & region:	EASTERN CAPE: Elundini Local Municipality (Joe Gqabi District Municipality)
Responsible Heritage Resources Authority	ECPHRA (Contact details: Mr Sello Mokhanya, 74 Alexander Road, King Williams Town 5600; smokhanya@ecphra.org.za)
Rock unit(s)	Molteno Formation (Late Triassic), Masotcheni Formation (Pleistocene – Holocene)
Potential fossils	Plant-rich horizons (e.g. carbonaceous mudrocks) with associated insects in Molteno Formation. Fossil teeth, bones and horn cores of mammals, calcretised trace fossils in Pleistocene and younger colluvial and alluvial deposits.
ECO protocol	1. Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately (<i>N.B.</i> safety first!), safeguard site with security tape / fence / sand bags if necessary.
	2. Record key data while fossil remains are still <i>in situ</i> : <ul style="list-style-type: none"> • Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo • Context – describe position of fossils within stratigraphy (rock layering), depth below surface • Photograph fossil(s) <i>in situ</i> with scale, from different angles, including images showing context (e.g. rock layering)
	3. If feasible to leave fossils <i>in situ</i> : <ul style="list-style-type: none"> • Alert Heritage Resources Authority and project palaeontologist (if any) who will advise on any necessary mitigation • Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Authority for work to resume
	3. If <i>not</i> feasible to leave fossils <i>in situ</i> (emergency procedure only): <ul style="list-style-type: none"> • <i>Carefully</i> remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock) • Photograph fossils against a plain, level background, with scale • Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags • Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist • Alert Heritage Resources Authority and project palaeontologist (if any) who will advise on any necessary mitigation
	4. If required by Heritage Resources Authority, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.
5. Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Authority	
Specialist palaeontologist	Record, describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy). Ensure that fossils are curated in an approved repository (e.g. museum / university / Council for Geoscience collection) together with full collection data. Submit Palaeontological Mitigation report to Heritage Resources Authority. Adhere to best international practice for palaeontological fieldwork and Heritage Resources Authority minimum standards.



DETAILS OF EAP AND DECLARATION OF INTEREST IN TERMS OF REGULATIONS 12 AND 13 OF THE AMENDMENTS TO THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 AS AMENDED.

(For official use only)

File Reference Number:

NEAS Reference Number:

Date Received:

(For official use only)

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

PROJECT TITLE

Sports Facility at Rafele Village within the Elundini Local Municipality, Eastern Cape

Specialist:	Dr John Edward Almond		
Contact person:	As above		
Postal address:	PO Box 12410 Mill Street, CAPE TOWN		
Postal code:	8010	Cell:	N/A
Telephone:	021 462 3622	Fax:	N/A
E-mail:	naturaviva@universe.co.za		
Professional affiliation(s) (if any)	Palaeontological Society of Southern Africa, Association of Professional Heritage Practitioners (W Cape)		
Project Consultant:			
Contact person:			
Postal address:			
Postal code:		Cell:	
Telephone:		Fax:	



E-mail:

4.2 The specialist appointed in terms of the Regulations_

I, **Dr John Edward Almond** declare that

General declaration:

- 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 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

John E Almond

Name of company (if applicable):

NATURA VIVA CC

23 July 2020

Date:

KLAS
MISBULLU

Signature of the Commissioner of Oaths:

2020-07-23

Date:

CAPE TOWN

Designation:

Official stamp (below)

Version 1 of April 2017

