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For the attention of: Ms Lelethu Booi/ Nondwe Mdekazi

Eastern Cape Department of Environmental Affairs and Development Planning (DEDEAT)

Komani Office Park, Block E

Komani

Dear Ms Booi/ Mdekazi

SITE SENSITIVITY VERIFICATION: PROPOSED IKHEPHU CATTLE FEEDLOT DEVELOPMENT ON ERF1 OF ELLIOT, KHOWA, SAKHISIZWE LOCAL MUNICIPALITY, EASTERN CAPE

1. Sensitivity of the Proposed Sites

A Screening Report, for the Current and Alternative Site, were generated from the National Web-Based Environmental Screening Tool. The findings of the Screening Reports are as depicted in **Table 1** regarding sensitivity of the sites, the specialist studies identified based on the sensitivities before verification are listed thereafter.

As per Government Notice No. 320 and 1150 of 2020 enacted in terms of Section 24(5)(a) and (h) including Section 44 of the National Environmental Management Act, 1998 (Act 107 of 1998) as amended (NEMA), prior to undertaking any specialist studies or assessments a Site Sensitivity Verification (SSV) for each theme must be undertaken to confirm or dispute the findings of the Screening Report.

Table 1: Site Sensitivity

Theme	Current Site Sensitivity	Preferred Site Sensitivity
Agriculture	High	High
Animal Species	High	High
Aquatic Biodiversity	Very High	Low
Archaeological and Cultural Heritage	Low	Low
Civil Aviation	High	High
Defence	Low	Low
Palaeontology	Very High	Very High
Plant Species	Moderate	Moderate
Terrestrial Biodiversity	Very High	Very High

The specialist studies or assessments identified as per the Screening Reports, prior to verification, are:

- Aquatic Biodiversity;
- Animal Species;
- Archaeological and Cultural Heritage;
- Hydrology;
- ~~Landscape/Visual~~;
- Palaeontology;
- Plant Species;
- ~~Socio-Economic~~; and
- Terrestrial Biodiversity.

SSVs were undertaken for the above listed themes, except for those struck through as these were waived by the DEDEAT during a virtual meeting held on 08 February 2022. The Landscape/ Visual and Socio-Economic Assessments were also waived by the DEDEAT during this meeting.

2. Site Sensitivity Verification

2.1. Terrestrial Biodiversity (including Animal and Plant Species)

An SSV was undertaken by Cossypha on 23 March 2022, refer to Appendix D1 of the Draft Basic Assessment Report (BAR).

The study area is located within the Grassland Biome, in the Sub-Escarpment Grassland Bioregion. The sites fall within the Drakensberg Foothill Moist Grassland vegetation type (**Figure 1**, below), classified as Least Concern according to Cossypha (2022). To date, about 30% of the vegetation type has been transformed mainly for cultivation, plantations, and urban development (**Figure 2**, below), with alien plant infestations also becoming problematic (Cossypha, 2022).

According to the Eastern Cape Biodiversity Conservation Plan (2019), the Current Site is predominantly an Ecological Support Area 1 (ESA1), while the Alternative Site only has patches of ESA1 (**Figure 3**, below). The vegetation of the Alternative Site is currently covered with secondary vegetation, grasses and herbaceous species including encroacher shrub with low plant species diversity and indicative of disturbed soils and overgrazing (Cossypha, 2022). Alien trees (Wattle *Acacia mearnsii*), according to Cossypha (2022) have also invaded the Alternative Site, with dense concentrations in majority of the northern half and western sections with some bare soil to the north-eastern side coupled with invasive alien plant species. The Alternative Site, therefore, no longer represents the Drakensberg Foothill Moist Grassland (natural vegetation type). No species of conservation concern, both fauna or flora, were recorded on the Alternative Site.

In terms of regional biodiversity, the Alternative Site is small, largely in a modified state, and isolated from the surrounding vegetation due to the fence. It is therefore not considered a representative portion of the vegetation type or ecosystem and is not considered important for reaching biodiversity targets due to the small size.

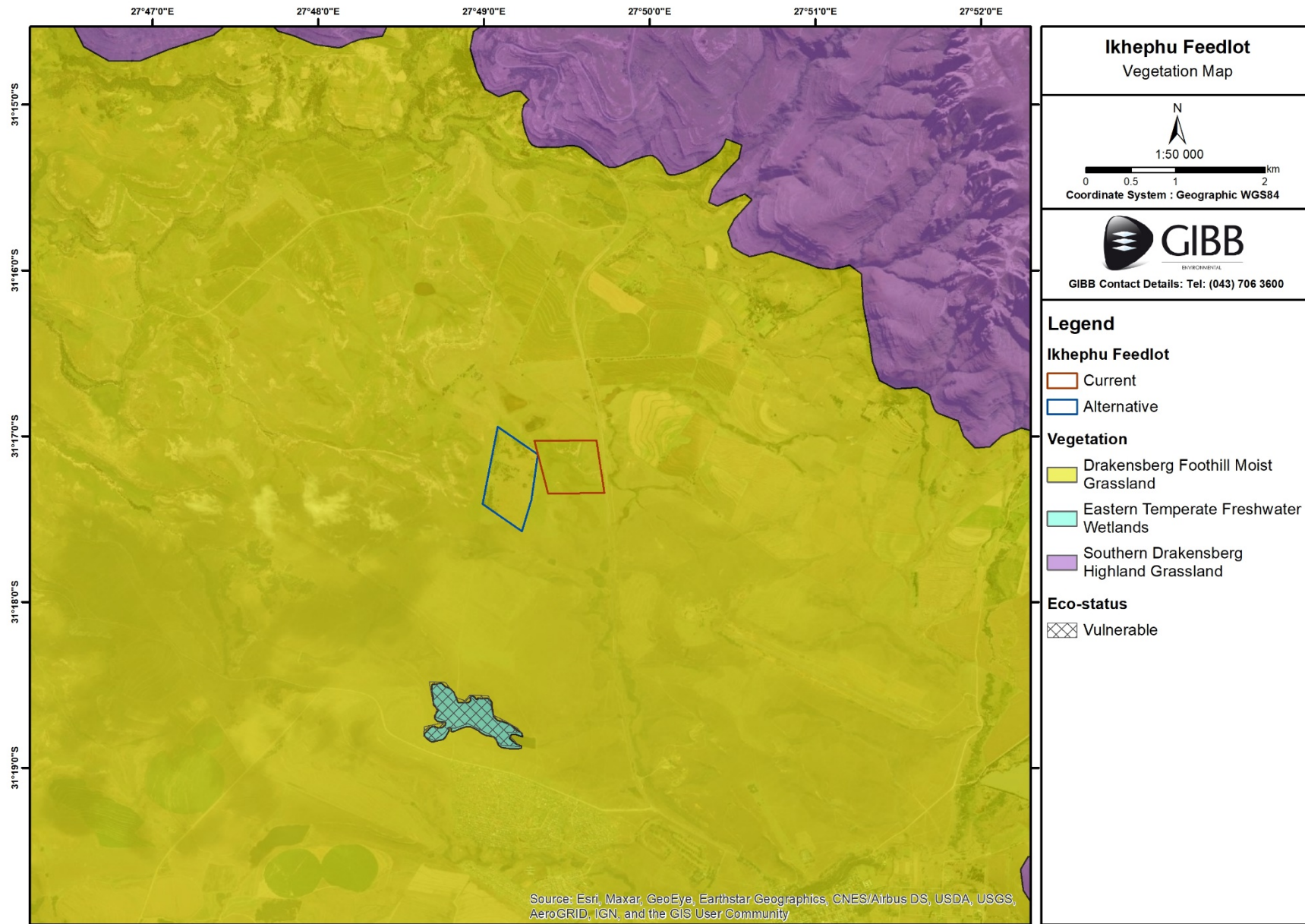


Figure 1: Vegetation type associated with the proposed development

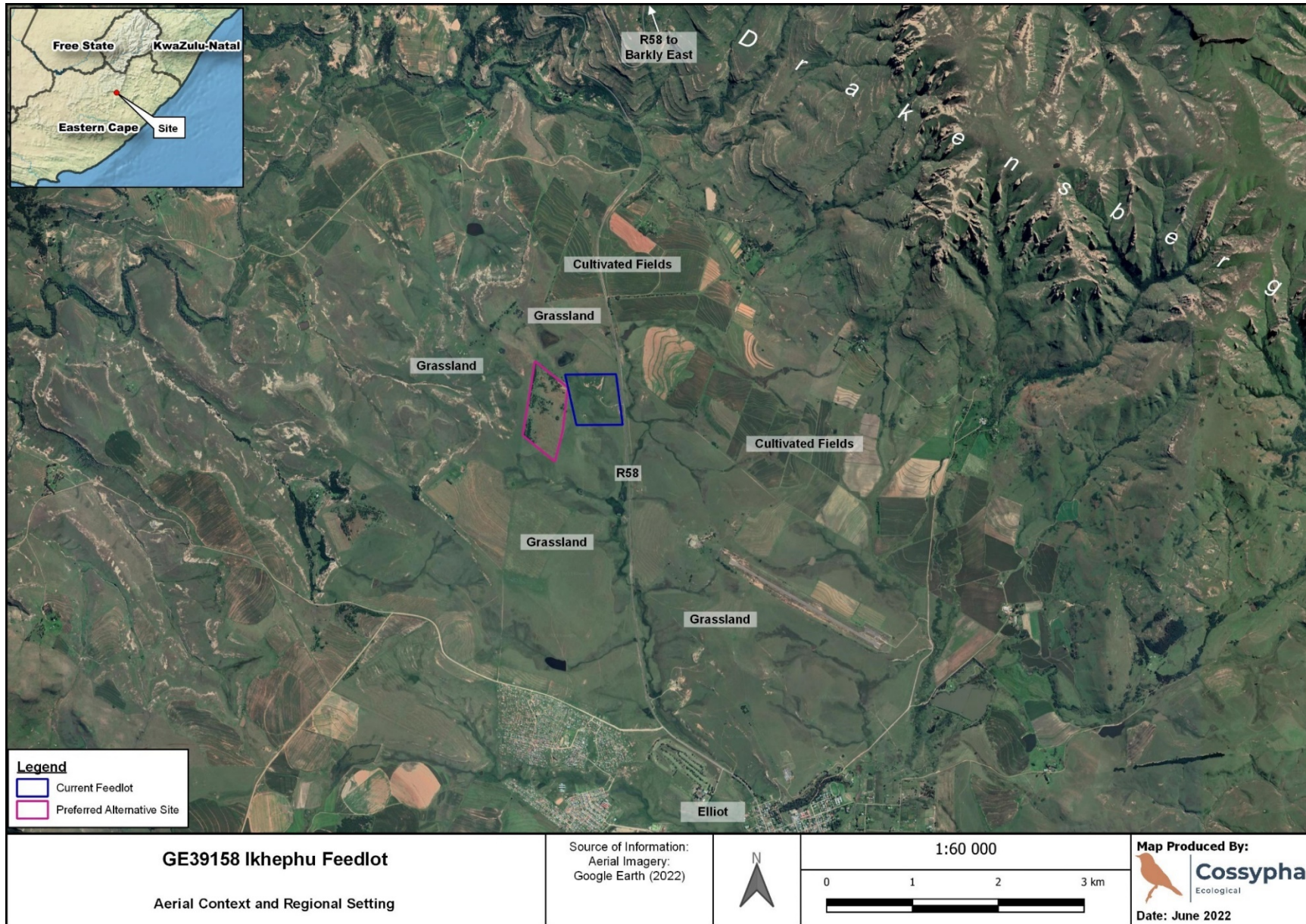


Figure 2: Existing landuse associated with the development area

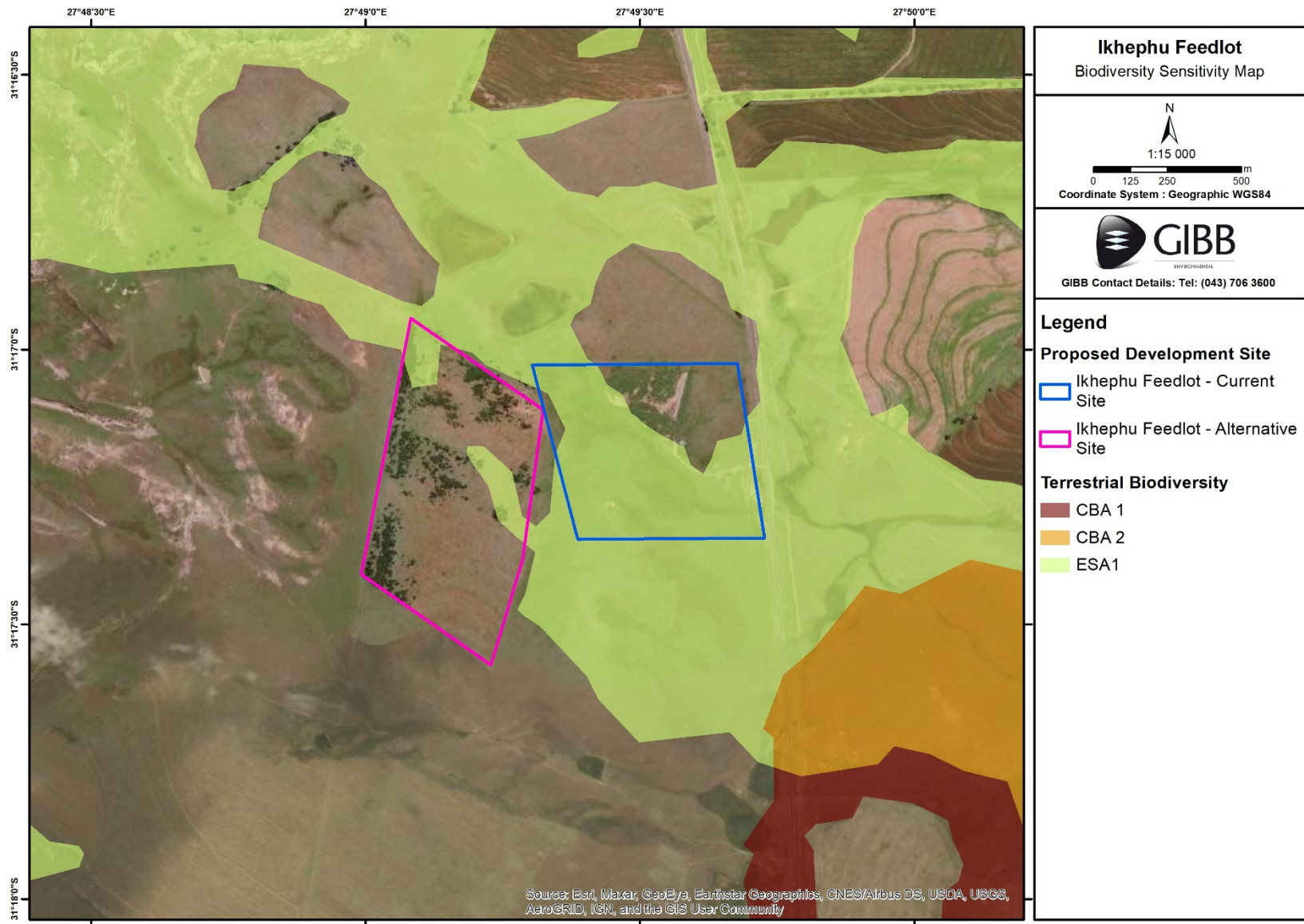


Figure 3: Terrestrial Ecological Support Area associated with the proposed development

The Very High terrestrial biodiversity, High animal species and Moderate plant species sensitivity are therefore disputed, the site inspection conducted by the Ecologist confirmed that the Alternative Site is in a modified state and highly disturbed in places. This indicated that the ecological sensitivity for terrestrial biodiversity (including flora and fauna) is Low, a Compliance Statement in this regard was compiled and is appended to the Draft BAR (refer to **Appendix D1**).

2.2. Aquatic Biodiversity (including Hydrology)

According to ETL (2021), the proposed development falls in the South-Eastern Uplands (16) Level 1 Ecoregion. Level 1 ecoregions are derived primarily from terrain and vegetation, along with altitude, rainfall, runoff variability, air temperature, geology, and soil. This region has the Swartkops, Gamtoos and Keurbooms Rivers flow through it. The proposed development falls within the Mzimvubu to Tsitsikamma Water Management Area in the quaternary catchment T11A. At a desktop level, the Current and Alternative Site constitute aquatic Critical Biodiversity Area 1 (CBA1), refer to **Figure 4** below.

An Unchanelled Valley Bottom (UVB01) and Seep (Seep01) wetlands were delineated on the Current Site (**Figure 5**, below), however, no wetland occurs within the Alternative Site. Additionally, no wetlands categorised as National Freshwater Ecosystem Priority Areas (NFEPA) occur on the study area (**Figure 6**, below). As per ETL (2021) it was noted that the wetland systems on site (particularly UVB01) were significantly transformed by the creation of dams (Figure 5). Areas that were previously natural wetland systems and exhibited clear wetland characteristics were excavated and dammed to create water sources for agricultural use.

The vegetation associated with the wetlands was found to be transformed due to anthropogenic changes namely, farming, dirt and tar roads (ETL, 2021). Landuses which have an impact on the hydrology of the wetlands within the Current Site include the presence of alien vegetation and hardened surfaces. As per ETL (2021), within the entire assessed area it was confirmed that the presence of alien vegetation within the wetlands and catchment was low to moderate.

Furthermore, the wetlands are impacted by impeding roads (including the track connecting the Current Site to the Alternative Site) and other surrounding infrastructure, which inhibits the natural diffuse flow at the surface of the wetlands.

The extent of hardened surfaces within the site additionally have had a high impact on the hydrology of the wetlands. It was determined, by the wetland specialist, that within the wetlands catchment there was a moderate percentage of hardened surfaces present in the form of roads and agriculture related infrastructure. Hardened surfaces increase the flow velocity during rainy events, lower the infiltration rate of stormwater, and thereby increase the surface runoff and occurrence of flood peaks. The impact of hardened surfaces can create areas of bare soil, which may lead to extensive erosion.

In addition to the above, the presence of artificial dams has led to the reduction of water flowing into the wetlands.

The dams located in the wetland's catchment have the ability of retaining water which is then subject to evaporation and delayed releases. The greater the combined surface area of the dams, the greater the area subjected to evaporation and therefore the greater the reduction of water inputs to the wetlands.

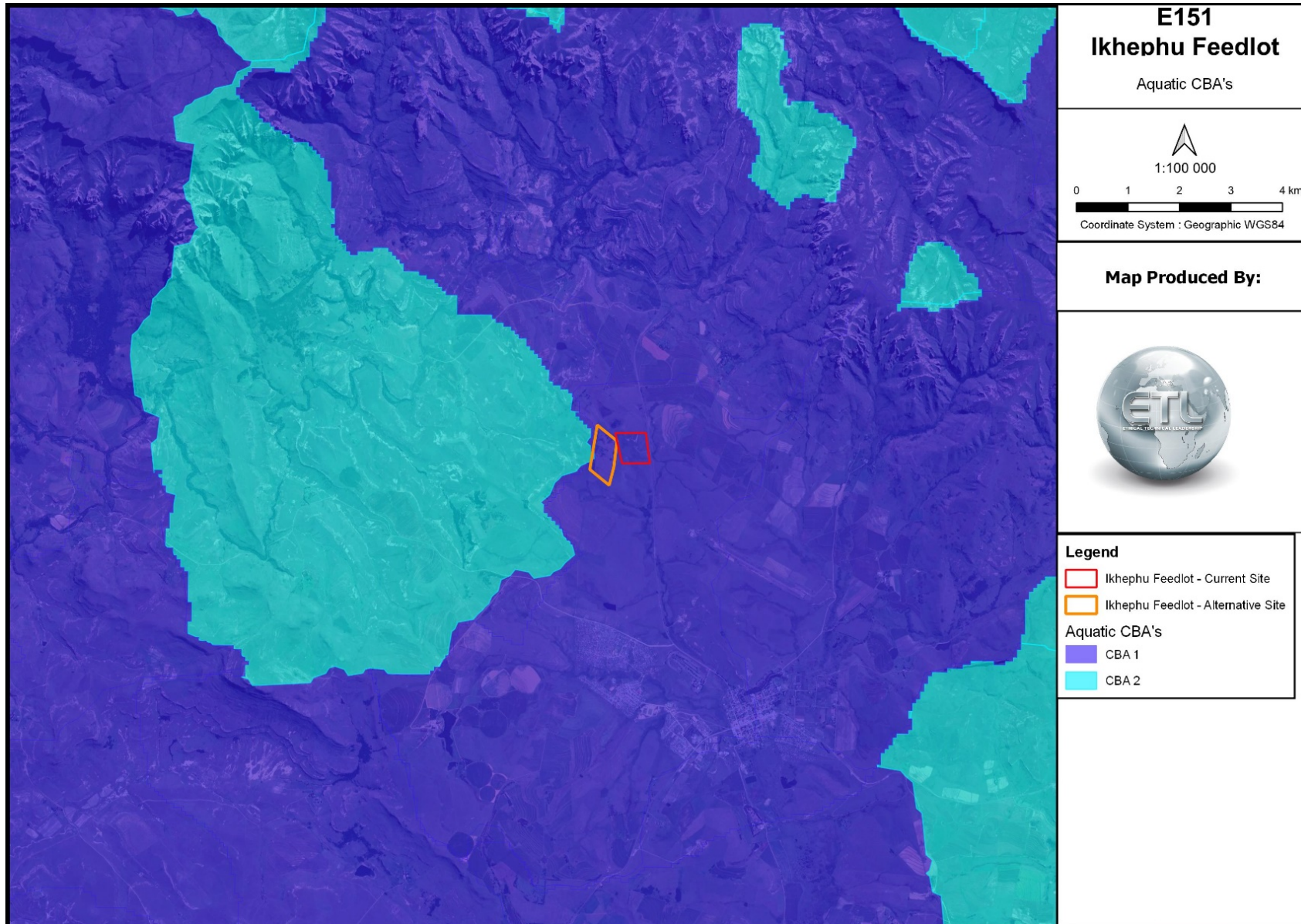


Figure 4: Aquatic Critical Biodiversity Area associated with the proposed development

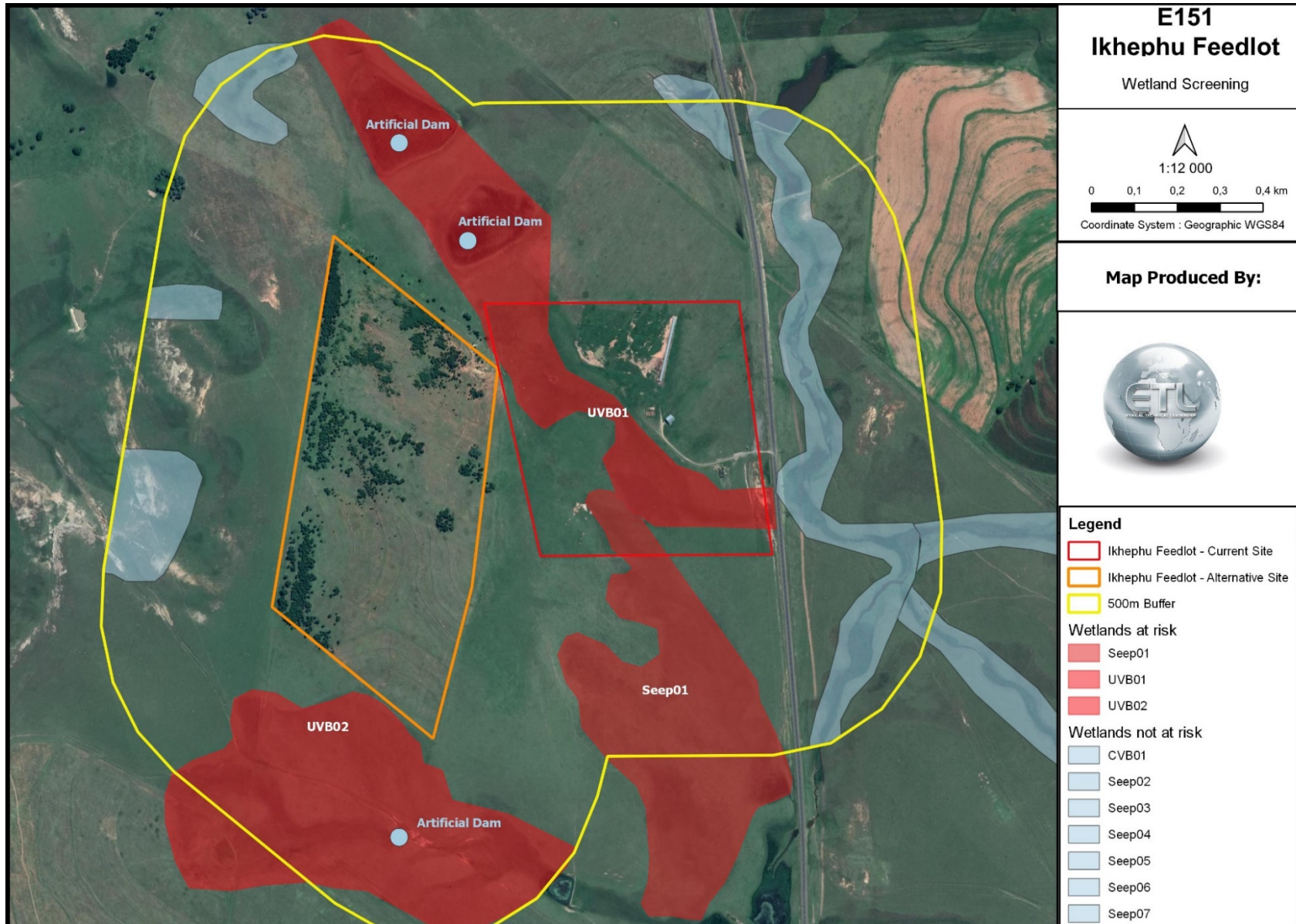


Figure 5: Delineated Wetlands

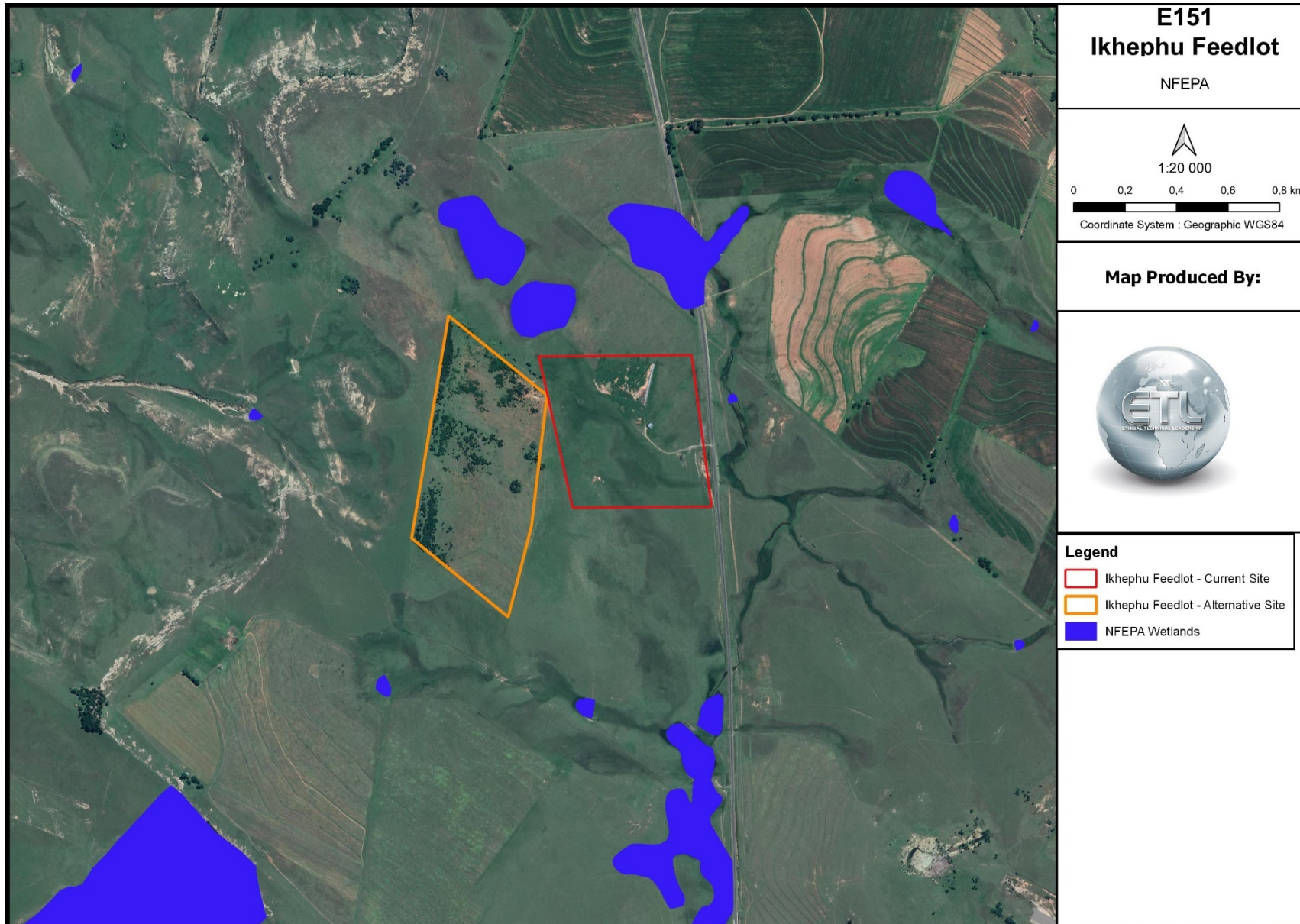


Figure 6: NFEPA wetlands outside the study site

Most of the study area was determined to be transformed. The alterations to the vegetation occurred as a result of overgrazing. The biodiversity importance of the delineated wetlands was determined to be nonexistence or marginal, while the wetlands were determined to be moderately to largely modified.

The Ecological Importance and Sensitivity was considered low as this system was determined to have limited functionality and poor habitat quality for harbouring sensitive species of fauna. As per ETL (2021), the ecological services (mainly food for livestock) provided by both UVB01 and Seep01 were determined to be moderate to very low. The hydro functional importance of the wetlands was determined to be low due to its poor ability to attenuate floods, regulate stream flows, trap sediment, and assimilate phosphates (PO₄), nitrates (NO₃), toxicants and erosion control. Although these services are the foremost ecological services provided by the seep wetlands, it was determined to be low.

The Wetland Delineation, Functional, Impact and Risk Assessment report is attached under **Appendix D2** of the Draft BAR.

2.3. Archaeological and Cultural Heritage

An SSV was undertaken for the Archaeological and Cultural Heritage theme.

According to ArchaeoMaps (2022) the overall study site terrain is characterised by a low presence of Earlier Stone Age, the Middle and Later Stone Age (LSA) are more ample including macro and micro-lithic LSA. The LSA lithic record is complemented by a shelter rock art site, testimony at least in part, to the rich rock art record typifying the southern Drakensberg. No Earlier or Middle Iron Age sites are reported on but the Later Iron Age (LIA) is well represented and constitute the dominant type site recorded, including LIA settlement sites in cases associated with cemeteries/ grave sites, and in other cases not as well as stand-alone LIA cemetery/ grave sites (ArchaeoMaps, 2022). The Colonial Period is fairly poorly represented, with a notably high propensity of trading post sites. A single proposed development from the greater terrain, by the amaHala community, represents a living heritage development. As per ArchaeoMaps (2022), no declared Provincial Heritage Sites (PHS) are recorded within a 5km radius of the study site, and with the nearest PHSs being situated some 40km from said site.

The current is characterised by recent Ikhephu feedlot development structures, none of which are older than 60 years or of any other heritage significance, and by implication not formally protected in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999) as amended (NHRA). Neither were any other protected heritage resources (aside from the khowa/ mushroom described below) identified within the Current Site (ArchaeoMaps, 2022).

According to ArchaeoMaps (2022), two archaeological and cultural heritage resources were recorded within the site. These constitute partial Colonial Period kraal mound remains and Living Heritage (khowa habitat). The kraal remains are of no scientific or heritage conservation significance and it is recommended that these remains be destroyed without having to apply for site destruction permit from the Eastern Cape Provincial Heritage Resources Authority (ECPHRA). The presence of the khowa is of High Local Significance.

The Low archaeological and cultural heritage sensitivity associated with the Current Site is confirmed, and that of the Alternative Site disputed and a High significance assigned. To this end, an Archaeological and Cultural Heritage Impact Assessment was undertaken and is appended to the Draft BAR (**Appendix D3**).

2.4. Palaeontology

An SSV was undertaken by Banzai Environmental, the western margin of the Alternative Site is mostly underlain by Jurassic dolerite while the eastern is underlain by the Late Triassic Molteno Formation (Stormberg Group, Karoo Supergroup) as well as a very small portion of Quaternary alluvium. On a desktop level the Palaeontological Sensitivity of Quaternary alluvium is Moderate, that of Jurassic dolerite is Zero as it is igneous in origin, while that of the Molteno Formation is Very High (**Figure 7**, below).

The Quaternary superficial deposits are the youngest geological deposits formed during the most recent geological period, approximately 2.6 million years ago (Mya). Most of the superficial deposits are unconsolidated sediments and consist of clay, gravel, sand, and silt that form relatively thin, discontinuous patches of sediments. These sediments comprise of channel, floodplain and stream deposits. Quaternary deposits are very important as palaeoclimatic changes are reflected in the different geological formations (Banzai Environmental, 2022).

During the climate fluctuations in the Cenozoic Era most geomorphologic features in southern Africa were formed, Banzai Environmental (2022) indicated that various warming and cooling events occurred in the Cenozoic but states that climatic changes during the Quaternary Period, specifically the last 1.8Mya, were the most drastic climate changes relative to all climate variations in the past. Climate variations that occurred in the Quaternary Period were both drier and wetter than the present and resulted in changes in river flow patterns, sedimentation processes and vegetation variation.

Quaternary fossil assemblages are generally rare and low in diversity and occur over a wide-range geographic area. These fossil assemblages may in some cases occur in extensive alluvial and colluvial deposits cut by dongas and resemble modern animals and may comprise of mammalian teeth, bones and horn cores, reptile skeletons and fragments of ostrich eggs. Microfossils, non-marine mollusc shells are also known from Quaternary deposits.

Plant material such as foliage, wood, pollens and peats are recovered as well as trace fossils like vertebrate tracks, burrows, termitaria (termite heaps/ mounds) and rhizoliths (root casts).

The proposed development area is extensively intruded by dolerite dikes and sills of the Karoo Dolerite of the Karoo Igneous Province. This Province in southern Africa is a classic continental flood basalt province that was formed during the Early Jurassic Period, occurs over a comprehensive area and comprises a widespread system well developed igneous bodies (dykes, sills) that invaded the sediments of the Main Karoo Basin.

The Molteno Formation of the Stormberg Group is Late Triassic in age. In its most southern outcrop this formation is about 600m thick and can be divided into five members namely (oldest bottom to youngest top); Bamboesberg, Indwe, Mayaputi, Qiba and Tsomo Members (Banzai Environmental, 2022). This Formation becomes thinner and reaches 10m in the far north. The Molteno Formation consists of alternating coarse to medium grained sandstones and grey mudrocks. The characteristic “glittering” look of this Formation is caused by secondary quartz overgrowths. This Formation is known for well-preserved insect and plant fossils with coal seams in places.

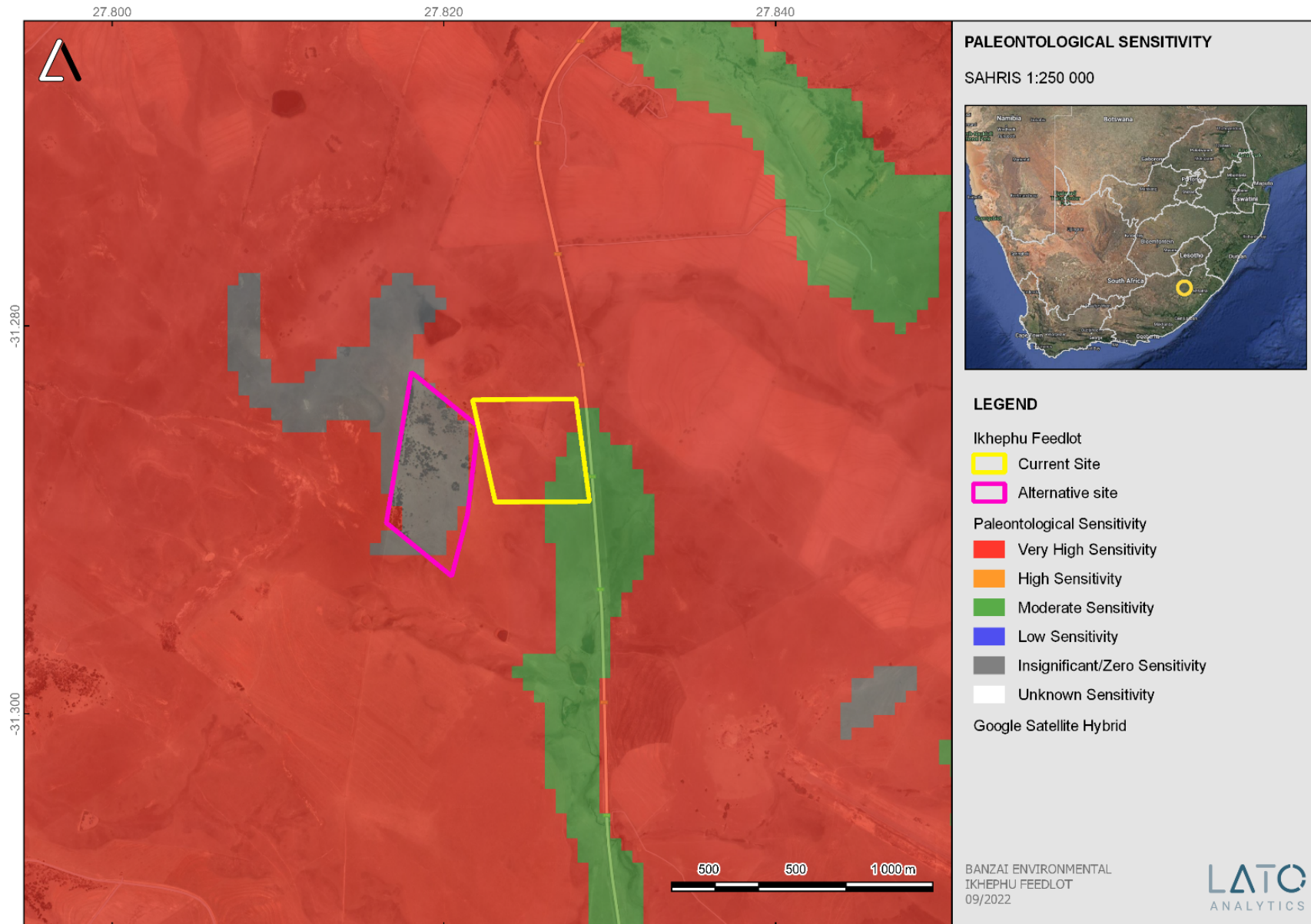


Figure 7: Palaeontological sensitivity associated with the study site

As per Banzai Environmental (2022), the Dicroidium Flora of Gondwana preserved in the Molteno Formation is known for the richest plant fossils in the world comprising of diverse vascular plant fossils, insect groups as well as dinosaur trackways. Other fossils include bivalves, conchostracans, fish as well as invertebrate trace fossils. This Formation is not known to contain vertebrate fossils.

A site-specific field survey of the development footprint was conducted on 10 September 2022 by a Palaeontologist, no fossiliferous outcrop was detected in the Current or Alternative Site. The apparent rarity of fossil heritage in the study site footprint suggests that the impact of the development will be of a Low significance in palaeontological terms (Banzai Environmental, 2022).

The Very High archaeological sensitivity is therefore disputed for both the Current and Alternative Site and a Low assigned, however a Palaeontology Impact Assessment report (**Appendix D4** of the Draft BAR) was still compiled to fulfil the requirements of the NHRA.

2.5. Agriculture

An SSV was undertaken by Mzansi Agriculture. The Current and Alternative Site are categorised as C4/C5 (moderately restricted growing season due to low temperatures and severe frost and/or moisture stress) in terms of Climatic Capability Class/ Category as per Mzansi Agriculture (2022). The climatic data indicates that the preferred site is suitable for both livestock and arable crops (Mansi Agriculture, 2022). The soil types occurring on the current and preferred site are Clovelly (greyish-brown topsoil over yellow-brown sands to friable non-striated clay typically to a depth of about 900mm, thus providing good moisture absorption and moisture holding qualities for crop production) and Kroonstad (topsoil comprising grey sandy loam to clay loam typically to a depth of approximately 300mm. Bleached grey sandy soils are found below as a result of sideways leaching on gentle slopes over long periods of time. This soil form is usually found in close proximity to wetlands, it may not be cultivated if the topsoil is less than 400mm in depth or is part of wetlands.).

The most important ecosystem service associated with the study area is a high and reliable rainfall. The soils with the Current Site are medium quality but the incidence of deep Clovelly soils on the alternative site is also a very important ecosystem service. The limiting factor is long cold nights during the late autumn, winter, and early spring. This results in having to plant a fast-growing maize variety which will give a marginally lower yield than long maturing varieties which in warmer climates can be planted in mid-September.

The Land Capability Class (LCC) of the Current and Alternative Site were determined to be LCC VI (non-arable land that can be used only for long-term crops due to steepness, soil depth, etc.) and VII (soils limited to domestic livestock and wild game), respectively. According to Mansi Agriculture (2022), only soils complying with LCC I to III are readily acceptable for arable crop cultivation, LCC IV soils may be cultivated under certain stringent and well managed conditions. The study area, as mentioned above, falls outside of these classes suitable for crop production.

The High agricultural sensitivity is therefore disputed and a Low assigned instead, however an Agricultural Impact Assessment was compiled in this regard and is attached as **Appendix D5** of the Draft BAR.

2.6. Civil Aviation

The proposed development site presents a High civil aviation sensitivity as per the Screening Report, this means a site situated within 15km of a civil aviation radar and/or between 8 and 15km from a major civil aviation aerodrome.

A desktop assessment and specific site investigation (28 February 2022) were undertaken for the Current and Alternative Site. Although the site is situated approximately 2km northwest of the Elliot Airfield (**Figure 8**, below), the facility is defunct and impossible to see from site as hidden by hills. Functional airports are situated in about 85 (Mthatha) and 190km (East London), in a straight line, from the proposed site. Thus, the proposed project will have non or very low impact to civil aviation. The High sensitivity is hereby argued and a Low sensitivity more applicable. Thus, no assessment or compliance statement requirement is applicable to this development.



Figure 8: Proximity of the proposed site to the defunct Elliot Airfield

3. Specialist Assessments/ Compliance Statements

Based on the above SSV findings the below assessments/ compliance statements were undertaken:

- Terrestrial Biodiversity (including Animal and Plant) Compliance Statement;
- Wetland Delineation, Functional, Impact and Risk Assessment;
- Archaeological and Cultural Heritage Assessment;
- Palaeontological Assessment; and
- Agricultural Assessment.

Yours faithfully

On behalf of GIBB Environmental (Pty) Ltd



Zikhona Wana

Registered Environmental Assessment Practitioner (2019/555)