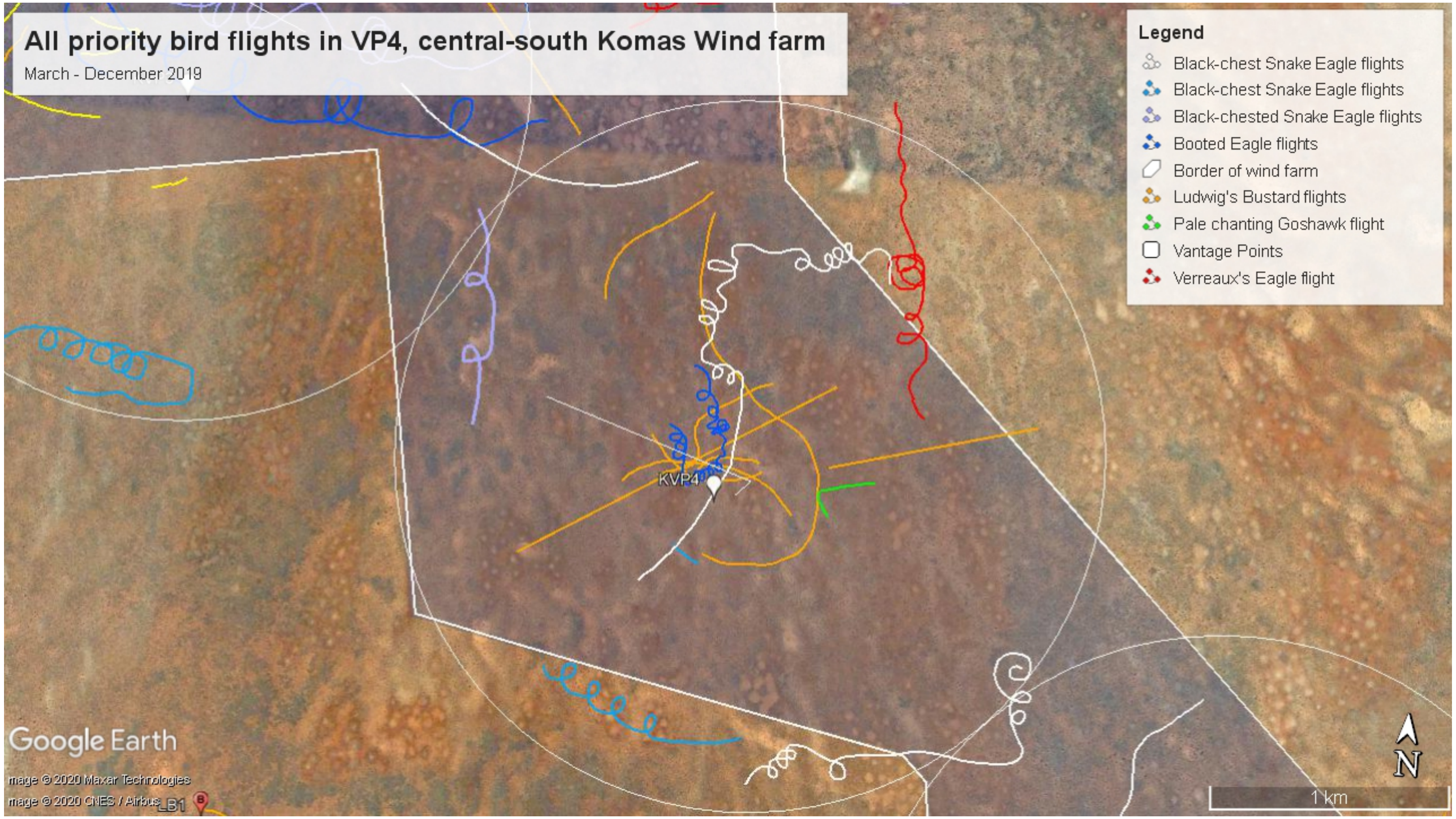


Figure B.29: All priority bird flights in VP4 (KVP4 = white balloon) in the central-south section of the proposed Komas WEF site. Our VP on high ground is shown. Priority species flights were again dominated by Vulnerable Ludwig's Bustards (= orange lines) and Least Concern Black-chested Snake Eagles (= pale blue and white lines). Vulnerable Verreaux's Eagles (= red lines) ventured once into this area. Pale Chanting Goshawks were infrequent visitors (= green line). The overall Passage Rate of these species was medium at 0.30 birds/hour and dominated by the bustards (0.17 birds/hour).

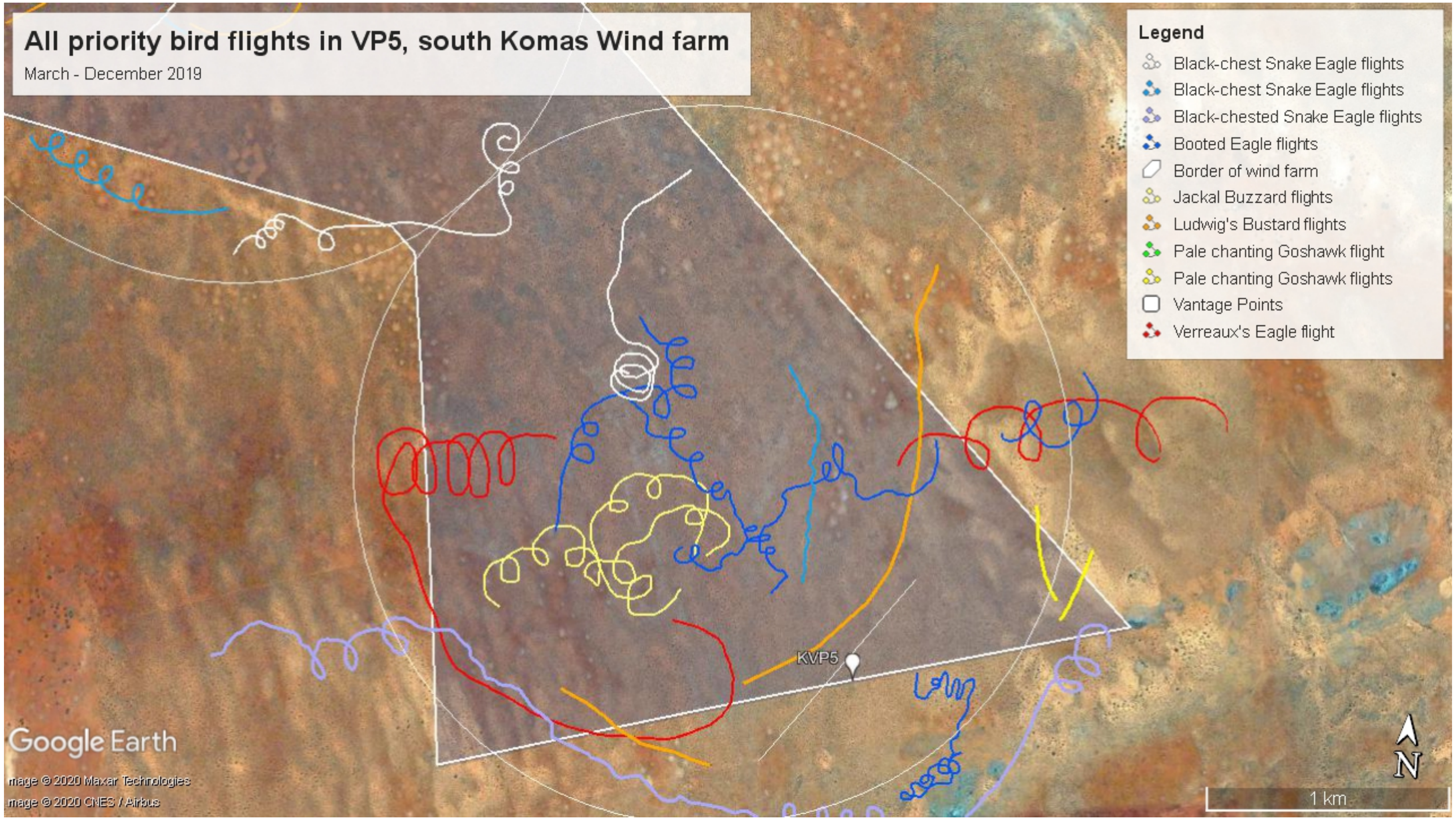


Figure B.30: All priority bird flights in VP5 in the most-southern section of the proposed Komas WEF site. Our VP on high ground is shown (KVP5 = white balloon). Priority species flights were dominated by Least Concern Black-chested Snake Eagles (= pale blue and white lines). Vulnerable Ludwig's Bustards (= orange lines) and Vulnerable Verreaux's Eagles (= red lines) were also present in this area together with Jackal Buzzards (= pale yellow line). The overall Passage Rate of these species was medium at 0.33 birds/hour with no species dominating.

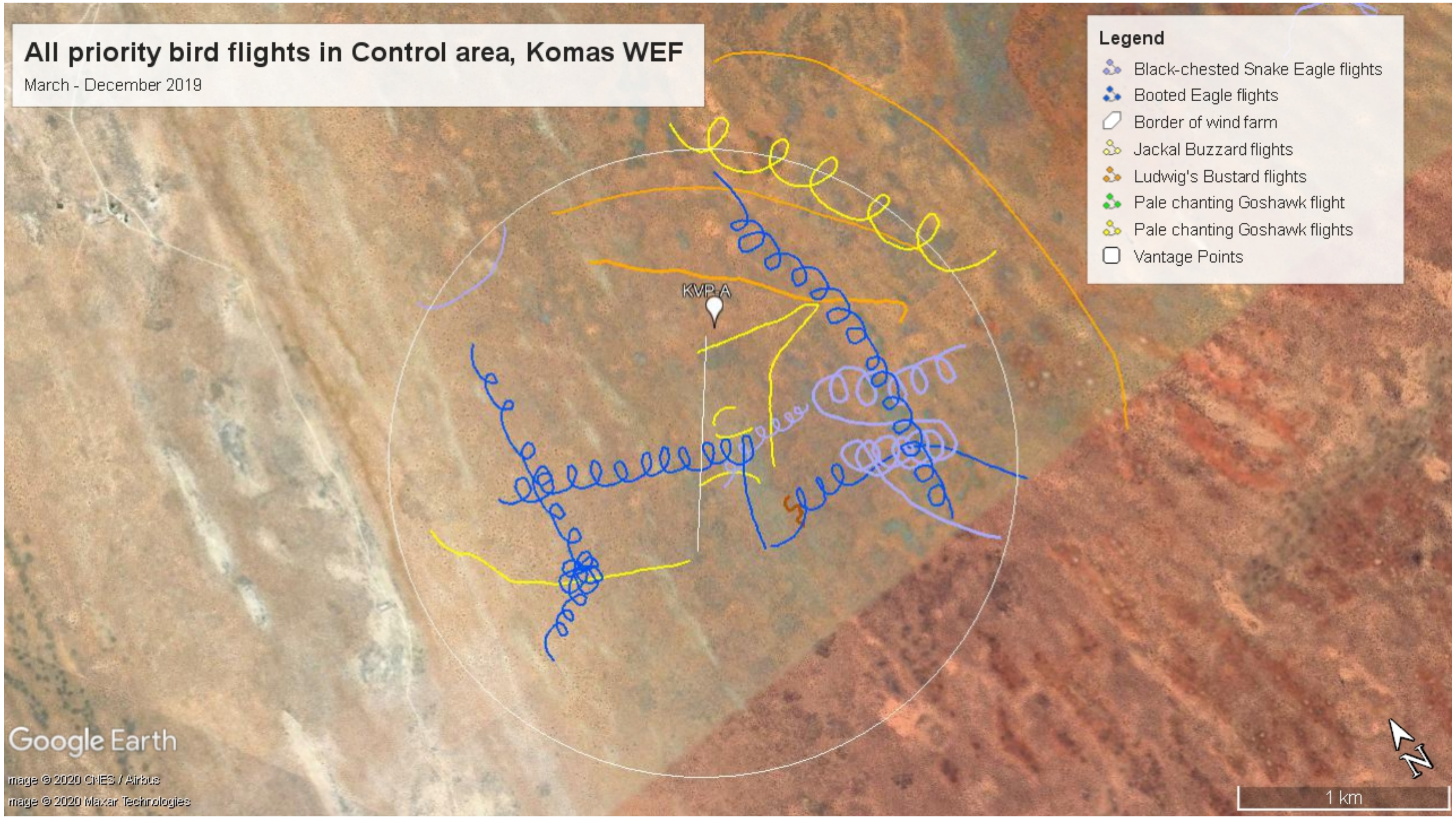


Figure B.31: All priority bird flights in the Control site south-west of the proposed Komas WEF site. The VP on high ground is shown (KVPA = white balloon). Priority species flights were dominated by Least Concern Black-chested Snake Eagles (= pale blue lines). Vulnerable Ludwig's Bustards (=orange lines) were also present in this area together with Jackal Buzzards (= pale yellow line). The overall Passage Rate of these species was medium at 0.28 birds/hour with no species dominating.

B.9.4 Flying Heights, Paths and Risks

Flying heights are possibly a better estimate than Passage Rates of the risk that the collision-prone species face on site (Whitfield & Madders 2006, Band et al. 2007). This arises because any species spending large proportions of time at the rotor-swept heights of 100 m to 300 m (200 m HH with 100 m blades) is more likely to be at risk of being hit by turbine blades, than those passing at low (or high) altitudes (Smallwood et al. 2009). By recording flight-height every 15-seconds for focal birds, we determined the proportion of time spent in the rotor-swept zone by all Red Data species, as a gauge of risk.

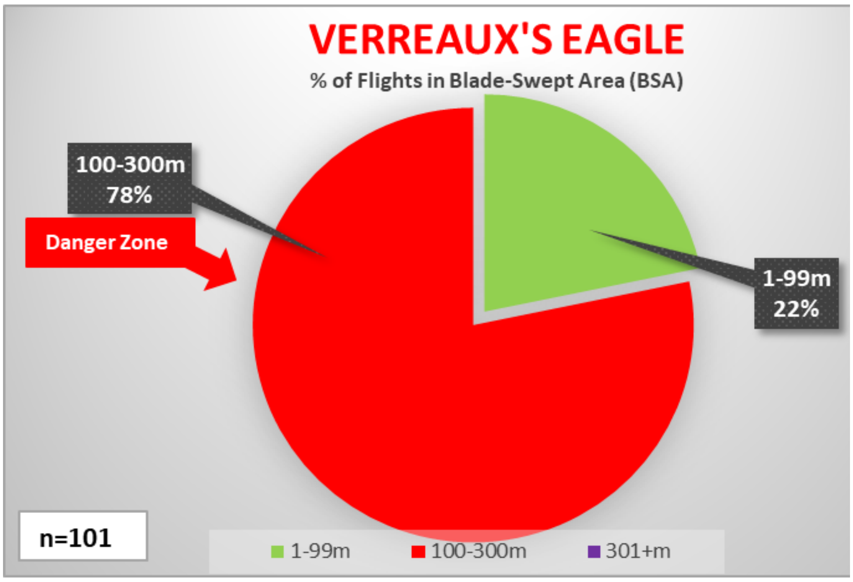


Figure B.32: Flying heights of the two main Red Data species (Verreaux's Eagle and Ludwig's Bustards) present in the proposed Komas WEF area.

The eagles flew for 78% of the time in the blade-swept area (BSA) "Danger Zone" of 100 m – 300 m for the turbines, with 200 m HH. Data were collected throughout the year from March to Dec 2019 – comprising 25 minutes of observation.

The flight heights recorded (Figures B.32) indicate that where Verreaux's Eagles occur in the wind farm site they are potentially at risk for 78% of their flights. No other Red Data species was at risk so often.

Vulnerable Ludwig's Bustards (Photo 1) were never seen to fly within the BSA in 155 observations (for 39 minutes of observation). The maximum heights recorded were 40 m, with the majority at 10 – 20 m, well below the lower tip height of 100 m.

This suggests that these Red Data species would not face the same dangers from tall turbines as the eagles and may be relatively immune from impacts with turbine blades.

For Black-chested Snake Eagles, flight risk was low at 40% (Figure B.33).

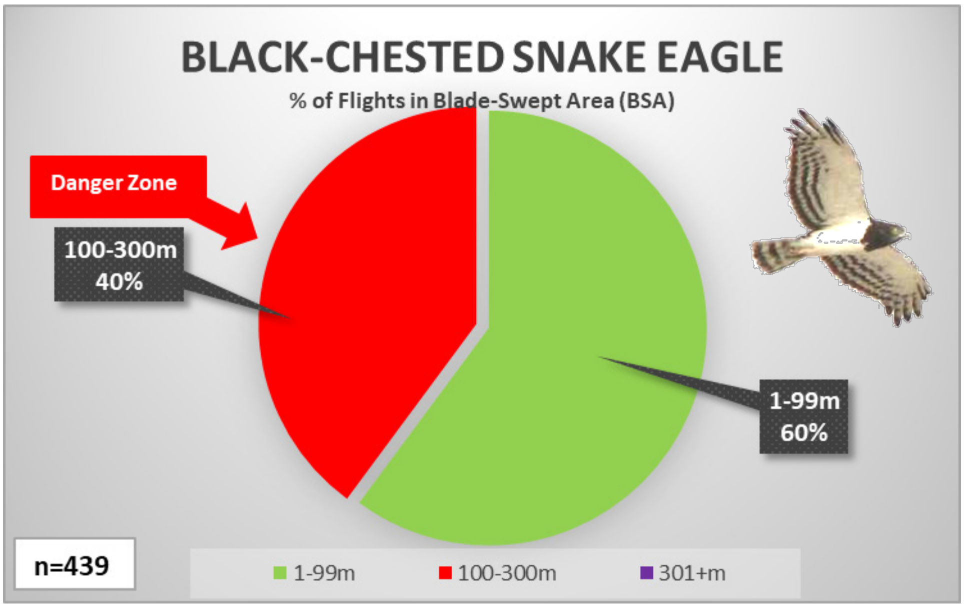


Figure B.33: Flying heights of the Black-chested Snake Eagle (left) present in the proposed Komas WEF area. The eagles flew in the blade-swept area "Danger Zone" of 100 m – 300 m, 40% of the time. Data were collected throughout the year – March to December 2019 comprising 110 minutes of observation.

Booted Eagles would also be at risk over 60% of the time when they are flying in the WEF (Figure B.34; Photo 2).

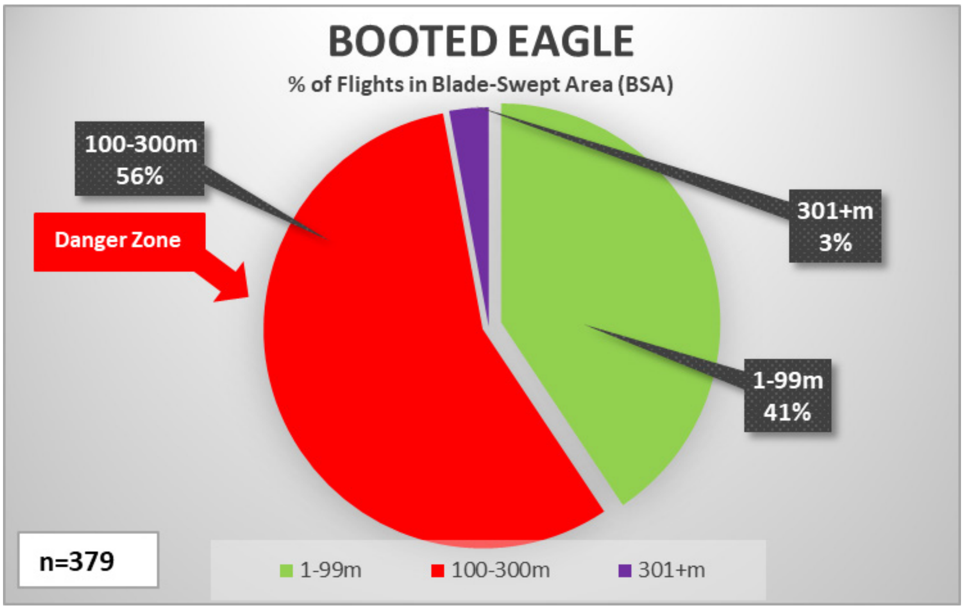
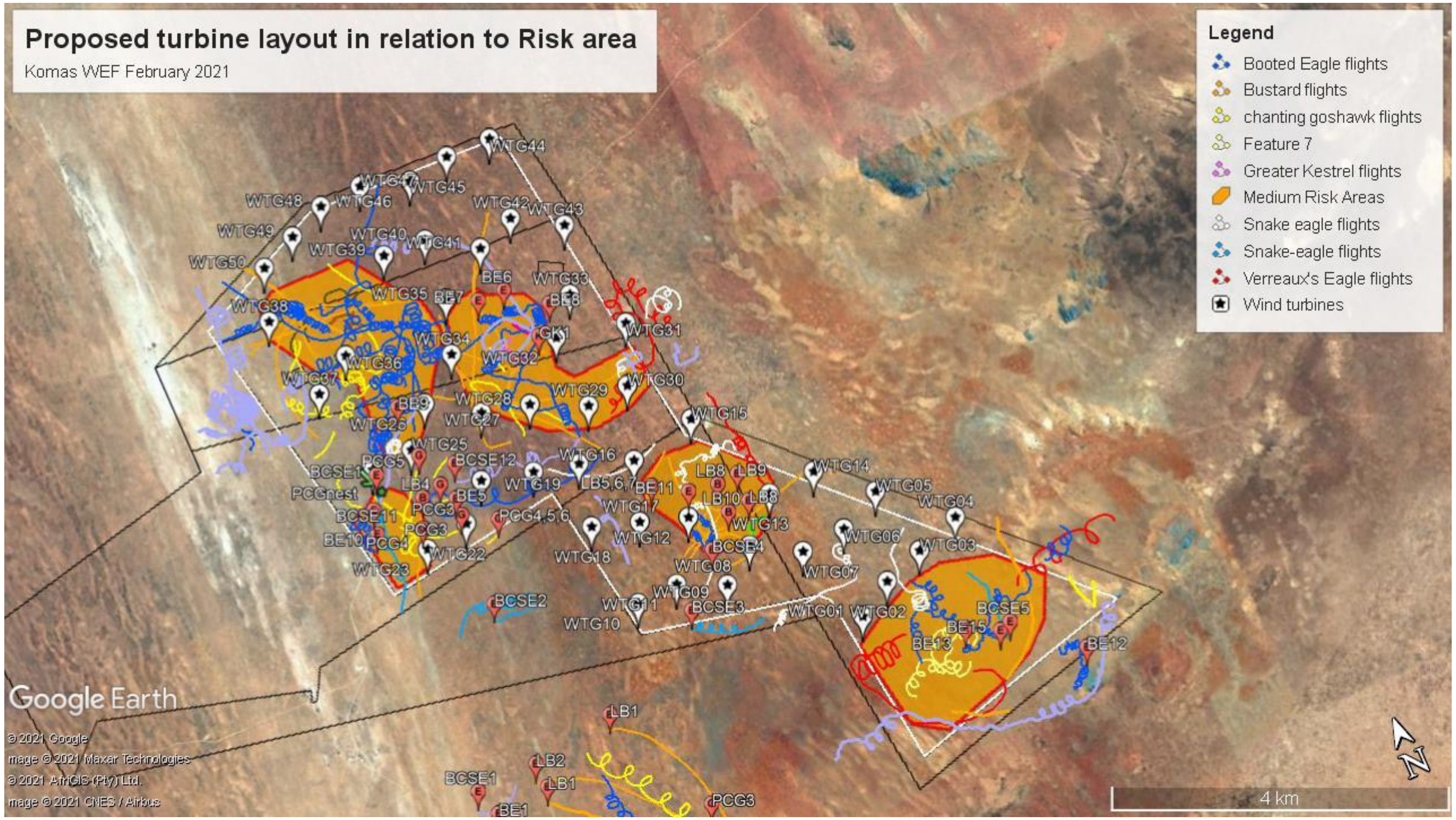


Figure B.34: Flying heights of the Booted Eagles present in the proposed Komas WEF area. The eagles flew almost 56% of the time in the blade-swept area "Danger Zone" of 100 m – 300 m. Data comprised 95 minutes of observation.

These two measures of risk within the proposed Komas WEF site allowed the specialist to determine high- and medium-risk areas based on the frequency of flights for the most at-risk species.

No high-risk areas were identified on the proposed Komas WEF site. The only avian risk area identified on site is the **medium risk area** (see Figure B.35).



FigureB.35: All medium-risk areas for birds in the proposed Komas WEF site. __Medium-risk__ areas (= orange polygons) are areas of overlap of two or more non-threatened priority species (typically Snake eagles and Booted eagles). Some areas where Red Data Ludwig's Bustards (= orange lines) or Verreaux's Eagles (= red lines) occurred were also designated as medium-risk because either no flights occurred in the blade swept area (Ludwig's Bustards) or flights were infrequent (Verreaux's Eagle). The Passage Rates for all Priority species was highest in the top north-west corner at 0.72 birds/hour (of five priority species). All other areas supported Passage Rates of 0.30 to 0.38 birds/hour

B.10 Bats

The Bat Impact Assessment (Appendix C.4 of the BA Report) undertaken for the proposed project includes detailed feedback on bat species encountered during the pre-construction site monitoring. The information provided in this section is extracted from the Bat Impact Assessment (Appendix C.4 of the BA Report).

B.10.1Species Diversity on Site

The extent to which bats may be affected by the proposed wind farm will depend on the extent to which the proposed development area is used as a foraging site or as a flight path by local bats.

B.10.1.1 Bat Species Diversity of the Local Area

A summary of bat species distribution in the local area, their feeding behaviour, preferred roosting habitat, and conservation status are presented in Table B.4. The bats included in Table B.4 have distribution ranges covering the proposed Komas WEF development area and bats that had been confirmed up to now on the site itself or other wind farms in the area, are marked as such. The proposed Komas WEF falls within the distributional ranges of six bat families and approximately 12 bat species. Table B.4 follows the most recent distribution maps of Monadjem et al. (2010). It should be noted that this table will be adapted during post construction monitoring.

Of the 12 bat species which have distribution ranges overlapping with the proposed development area, four have a conservation status of Near Threatened in South Africa and one vulnerable, while three have a global conservation status of Near Threatened. *Eptesicus hottentotus* (the Long-tailed serotine) and *Cistugo seabrae* (the Angolan wing-gland bat) are endemic to Southern Africa, mainly due to agricultural activities and have limited remaining suitable habitat (Monadjem, 2010). Note that *Cistugo seabrae* had been observed just north east of Kleinsee by the bat specialist, which confirms its presence in the wider area.

According to the likelihood of fatality risk, as indicated by the latest Pre-Construction Bat Guidelines (Sowler, et al. 2017), two species, namely *Tadarida aegyptiaca* (Egyptian free-tailed) and *Sauromy petrophilus* (Roberts's flat-headed bat), have a high risk of fatality due to its foraging habitat at high altitudes. Five more species, *Miniopterus natalensis* (Natal long-fingered bat), *Neoromicia capensis* (Cape serotine) and *Myotis tricolor* (*Temminck's myotis* bat), and the two fruit bat species, *Eidolon helvum* (African straw-coloured fruit bat) and *Rousettus aegyptiacus* (Egyptian rousette), have a medium to high risk of fatality. Fruit bats were not considered a risk in the dry Kleinsee area, but due to the droppings found at the dwelling at Rooivlei Farm, have now become a risk species in the area.

Table B.4: Potential bat species occurrence at the proposed Komas WEF site (Monadjem, et al. 2010; IUCN, 2017). Highlighted yellow cells indicate confirmed presence of bat species at the proposed Komas development site. The likelihood of fatality risk is indicated by the Pre-Construction Guidelines (Sowler, et al. 2017).

Family	Species	Common Name	SA conservation status	Global conservation status (IUCN)	Roosting habitat	Functional group (type of forager)	Migratory behaviour	Likelihood of fatality risk*	Bats confirmed on site or close vicinity
PTEROPODIDAE	*Eidolon helvum*	African straw-coloured fruit bat	Not evaluated	Least Concern	Little known about roosting behavior.	Broad wings adapted for clutter. Studies outside of South Africa list fruit and flowers in its diet.	Migrater. Recorded migration up to 2 518 km in 149 days, and 370 km in one night.	Medium-High	✓Most likely the bat droppings found at Zonnekwa farm dwelling
	Rousettus aegyptiacus	Egyptian rousette	Least Concern	Least Concern	Caves	Broad wings adapted for clutter. Fruit, known for eating Ficus species.	Seasonal migration up to 500 km recorded. Daily migration of 24 km recorded.	Medium-High	
MINIOPTERIDAE	*Miniopterus natalensis*	Natal long-fingered bat	Near Threatened	Near Threatened	Caves	Clutter-edge, insectivorous	Seasonal, up to 150 km	Medium-High	✓
NYCTERIDAE	*Nycteris thebaica*	Egyptian flit-faced bat	Least Concern	Least Concern	Cave, Aardvark burrows, road culverts, hollow trees. Known to make use of night roosts.	Clutter, insectivorous, avoid open grassland, but might be found in drainage lines	Not known	Low	✓

Family	Species	Common Name	SA conservation status	Global conservation status (IUCN)	Roosting habitat	Functional group (type of forager)	Migratory behaviour	Likelihood of fatality risk*	Bats confirmed on site or close vicinity
MOLISSIDAE	*Tadarida aegyptiaca*	Egyptian free-tailed bat	Least Concern	Least Concern	Roofs of houses, caves, rock crevices, under exfoliating rocks, hollow trees.	Open-air, insectivorous	Not known	High	✓
	Sauromys petrophilus	Robert's Flat-faced	Least Concern	Least Concern	Narrow cracks, under exfoliating of rocks, crevices.	Open-air, insectivorous		High	✓
On RHINOLOPHIDAE	*Rhinolophus capensis*	Cape horseshoe bat (endemic)	Near Threatened	Near Threatened	Caves, old mines. Night roosts used	Clutter, insectivorous	Not known	Low	
	Rhinolophus clivosus	Geoffroy's horseshoe bat	Near Threatened	Least Concern	Caves, old mines. Night roosts used.	Clutter, insectivorous		Low	✓
VESPERTILIONIDAE	*Neoromicia capensis**	Cape serotine	Least Concern	Least Concern	Roofs of houses, under bark of trees, at basis of aloes.	Clutter-edge, insectivorous	Not known	Medium-High	✓

Family	Species	Common Name	SA conservation status	Global conservation status (IUCN)	Roosting habitat	Functional group (type of forager)	Migratory behaviour	Likelihood of fatality risk*	Bats confirmed on site or close vicinity
	Myotis tricolor	Temminck's myotis	Near Threatened	Least Concern	Roosts in caves, but also in crevices in rock faces, culverts and manmade hollows.	Limited information available	Not known	Medium-High	
	Eptesicus hottentotus	Long-tailed serotine (endemic)	Least Concern	Least Concern	Caves, rock crevices, rocky outcrops.	Clutter-edge, insectivorous	Not known	Medium	✓
	Cistugo seabrae	Angolan wing-gland bat (endemic)	Vulnerable	Near Threatened	Possibly buildings, but no further information.	Clutter-edge, insectivorous	Not known	Low	

*Note that there has been a re-classification of *Neoromicia capensis,* but for the purpose of this study, the species is still classified within the *Vespertilionidae* family.

B.10.1.2 Features conducive for bats at the proposed Komas WEF site

Bats are dependent on suitable roosting sites provided mainly by human structures, vegetation, exfoliating rock, rocky outcrops, derelict mines, aardvark holes and caves (Monadjem *et al*. 2010). The foraging potential of a site is further determined by the availability of water and food. Thus, the vegetation, geomorphology and geology of an area are important predictors of bat species diversity and activity levels.

B.10.1.3 Roosting opportunities

a) Vegetation

Although some bush cover occurs at the proposed Komas WEF development terrain, hardly any trees are growing at the site. For those bats that might prefer roosting in vegetation or under the bark of trees, the sparse trees and dense bushes could provide roosting opportunities, see Figure B.36.

Figure B.36: Sparsely situated trees at the southern border of the proposed Komas WEF site.

b) Rock formations and rock faces

Large parts of the development terrain are covered by sandy soils, but boulders and rock formations along Byneskop in the south, provide ample roosting space for bats. Figure B.37 depicts these rock formations with bat rests found at some of the crevices.

Figure B.37: Byeneskop at the southern border: Left, boulders at the rocky outcrops, and right, bat droppings found at some crevices in the rock formations.

c) Human dwellings

Where roofs are not sealed off, human dwellings could provide roosting space for some bat species. The Zonnekwa farmhouse, where more than one bat roost was found, is situated approximately 1,77 km from the closest proposed Komas WEF site border and there is a likelihood of daily migration between the house and the proposed Komas WEF site. Due to the bat conducive features, such as water and trees, at the farm dwelling, a point source was installed during the night of 25 October 2019. 157 bat passes were recorded, with most calls like *Neoromicia capensis (92%), Tadarida aegyptiaca* (6%), *Eptesicus hottentotus* (2%) and *Miniopterus Natalensis*, see Figure B.38. These are all medium-high risk species, with *T. aegyptiaca* as a high-risk species. As depicted by data from the monitoring stations at the proposed Komas WEF site, bats were mostly active four hours after sunset, see Figure B.39. This is the period when they emerge from their roost to drink water and forage. The point source was not situated at the proposed Komas WEF site itself, and it is interesting that the majority of bat calls are similar to that of *N. capensis*. Limited activity of this species was recorded on site, although the Bat Impact Assessment that was undertaken as part of the EIA for the proposed Kap Vley WEF indicates that *N. capensis* was the predominant species during the bat monitoring that was undertaken by the bat specialist for that EIA (CSIR, 2018).

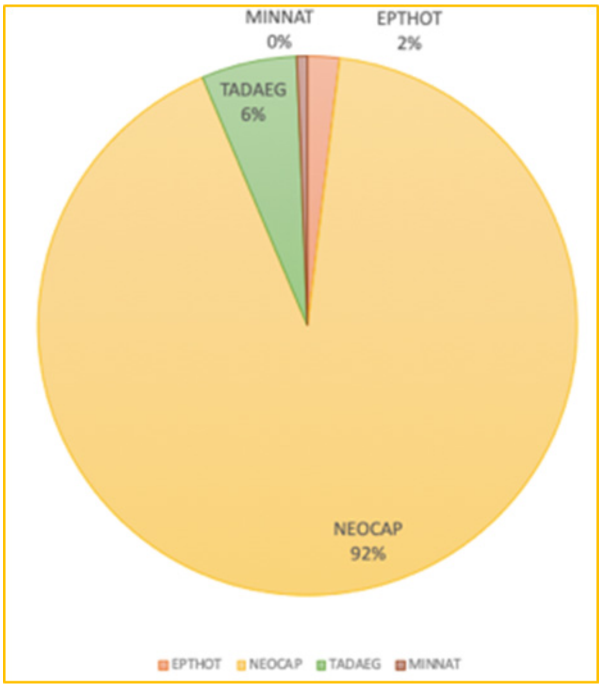


Figure B.38: Bat species recorded at the point source at Zonnekwa farm dwelling

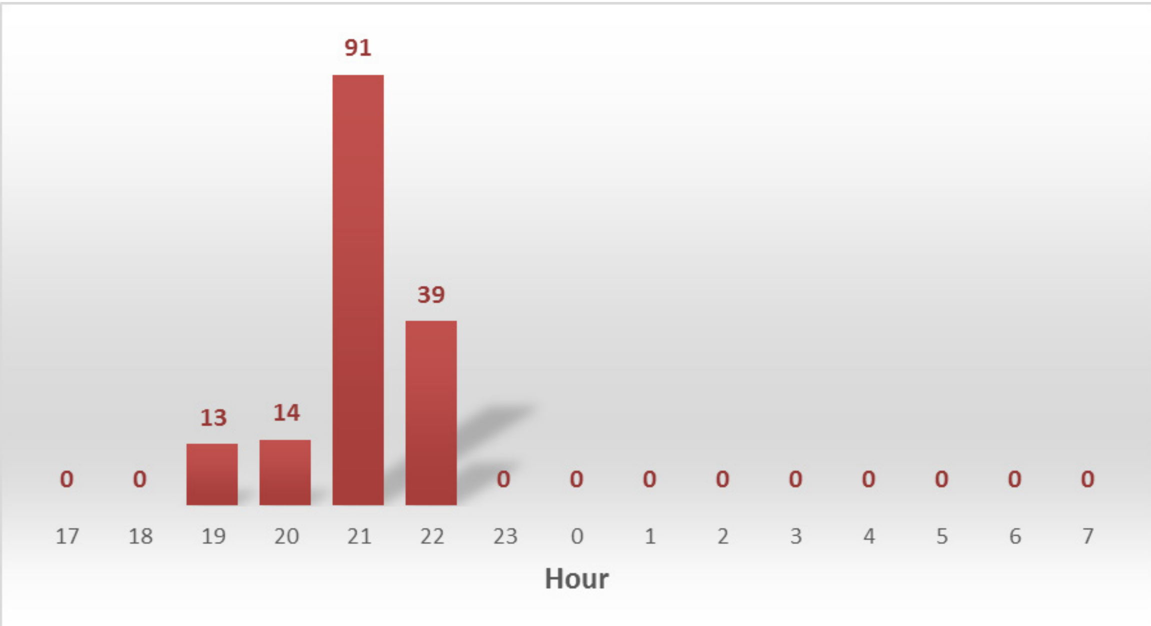


Figure B.39: Hourly bat passes at Zonnekwa farm dwelling on 25 October 2019

Clear evidence of the presence of insectivorous bats had been found at the Rooivlei farm dwelling, situated 1,45 km from the nearest border of the proposed Komas WEF site. Up to now no day roosts could be established, but bats use the dwellings as night roosts.

Surprisingly, fresh fruit bat droppings were found at one of the buildings at the Zonnekwa farm dwelling, see Figure B.40. This indicates that fruit bats either migrate through the area or that there is a fruit bat roost somewhere in the vicinity of the proposed Komas WEF site. The Rooivlei farm dwelling does not contain any fruit trees within the farm area, and as a result the bats are likely to feed on wild fruit and flowers in the veld. The bats may potentially be migrating through the area. The most likely species that might occur in the area is *Eidolon helvum*. *Rousettus aegyptiaca* is also modeled to occur in the area, but has not been found in the proposed Komas WEF vicinity up to now.

Figure B.40: Fruit bat droppings found at the Zonnekwa farm dwelling

d) Open Water Sources

Water troughs for the livestock and associated open cement reservoirs provide permanent, open water sources for bats through-out the year.

e) Food Sources

During few spells of rain, stagnant water that usually collects in small pans and dry ditches could serve as breeding ground for insects which could serve as food for bats. High insect activity could result in higher bat presence after sporadic rainy periods. Livestock is also an attraction to flies, which in turn could serve as a food source for bats.

B.11 Visual Aspects and Sensitive Receptors

The VIA is included in Appendix C.5 of the BA Report, and includes details on landscape and sensitive receptors. The information provided in this section is extracted from the VIA (Appendix C.5 of the BA Report).

The VIA provides information on landscape, geology, and vegetation, as described above, as well as other aspects such as land use and sensitive visual receptors.

Although the study area has a largely natural, untransformed visual character with some elements of rural / pastoral infrastructure, it is not typically valued or utilised for its tourism significance. The study area has however seen very limited transformation or disturbance and is considered largely natural. As such the proposed Komas WEF development is expected to alter the visual character of the area and contrast significantly with the typical land use and / or pattern and form of human elements present.

A broad-scale assessment of landscape sensitivity, based on the physical characteristics of the study area, economic activities and land use that predominates, determined that the area would have a low to moderate visual sensitivity. However, an important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs.

Preliminary desktop assessment of the study area found no tourism or nature-based facilities within the study area. The nearest nature-based facility is the Namaqua National Park to the south-east of the study area, some 16 kms from nearest turbine placement on the Komas WEF development site. It has been noted that although the WEF is outside the Viewshed Protection Area as defined in the Namaqua National Park Management Plan, the proposed development is partially within the National Park Buffer and the proposed Park Expansion Footprint. It is not possible to assess the visual impacts of the proposed Komas WEF on the proposed expansion area without more detailed information regarding the proposed use zones within this area. Considering the fact however that the approved Kap Vley WEF project is partially located within this expansion area, the construction of this WEF will introduce a more industrial character into the area, thus altering the inherent sense of place within the expansion area and reducing the significance of visual impacts resulting from the proposed Komas WEF.

The VIA identified thirteen potentially sensitive receptors in the study area, all of which are farmsteads. These farmsteads are regarded as potentially sensitive visual receptors as they are located within a mostly natural setting and the proposed Komas WEF development will likely alter natural vistas experienced from these dwellings. The VIA determined that the proposed development will have a high level of impact on three (3) of these receptors. Four of these receptors are farmsteads located in relatively close proximity to the proposed Komas WEF development area and this factor, in conjunction with the relatively flat terrain in the area and the lack of screening vegetation, gives rise to a high impact rating. None of these receptors are tourism-related facilities however, and as such they are not considered to be Sensitive Receptors. In addition, it should be noted that three of these receptors, namely R12, R14 and R15, are located on the application site for the proposed Kap Vley WEF and as such it is possible that residents at these locations may not perceive the proposed Komas WEF in a negative light. The potentially sensitive receptor locations are shown in Figure B.41 and the photomontage viewpoints are shown in Figure B.42.

Seven (7) of the remaining receptor locations would be subjected to moderate levels of visual impact as a result of the proposed development and the remaining three (3) receptors would only experience negligible levels of visual impact.

Several renewable energy developments are being proposed within a 50 km radius of the proposed Komas WEF application site. These renewable energy developments have the potential to cause large scale visual impacts and the location of several such developments in close proximity to each other, could significantly alter the sense of place and visual character in the broader region. It was however determined, that only five of these would have any significant impact on the landscape within the study area, these being; the proposed Gromis WEF which is subject to a separate BA process which is also currently being undertaken, the proposed Kleinzee WEF and the proposed Kap Vley, Namas and Zonnequa WEFs which have received EAs on 25 October 2018, 18 February 2019 and 25 February 2019 respectively. All of these projects are in close proximity to one another and to the proposed Komas WEF development area and it is anticipated that this concentration of WEFs will alter the inherent sense of place and introduce an increasingly industrial character into a largely rural area. This will result in significant cumulative impacts, rated as having negative impacts of moderate significance during both construction and operation phases of the project. It is however anticipated that these impacts could be mitigated to acceptable levels with the implementation of the recommendations and mitigation measures stipulated for each of these developments by the visual specialists.

It should be noted that the study area is located within the Springbok REDZ (REDZ 8), and thus the relevant authorities support the concentration of renewable energy developments in this area. In addition, it is possible that the three WEFs in close proximity to each other could be seen as one large WEF rather than three separate developments. Although this will not necessarily reduce impacts on the visual character of the area, it could potentially reduce the cumulative impacts on the landscape.

MAP 8: Potentially Sensitive Receptor Locations

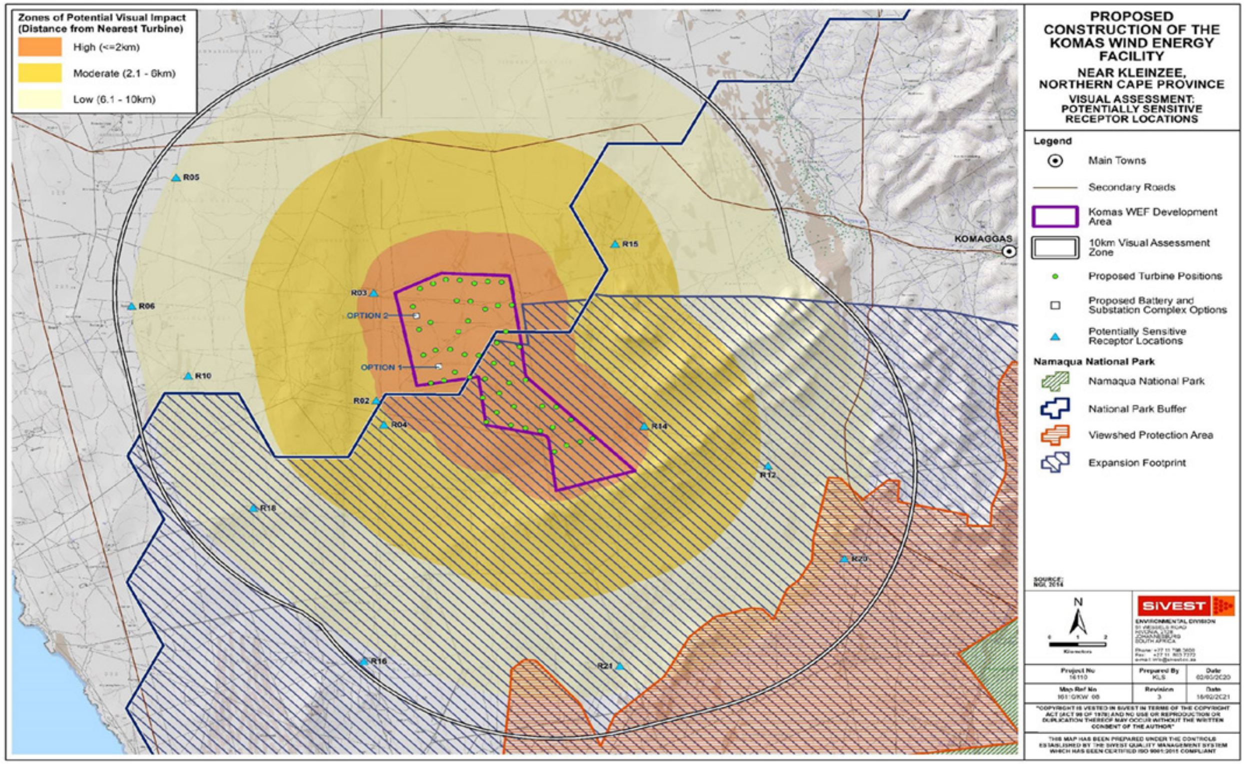


Figure B.41: Potentially sensitive receptor locations within the proposed Komas WEF study area

MAP 11: Photomontage View Points

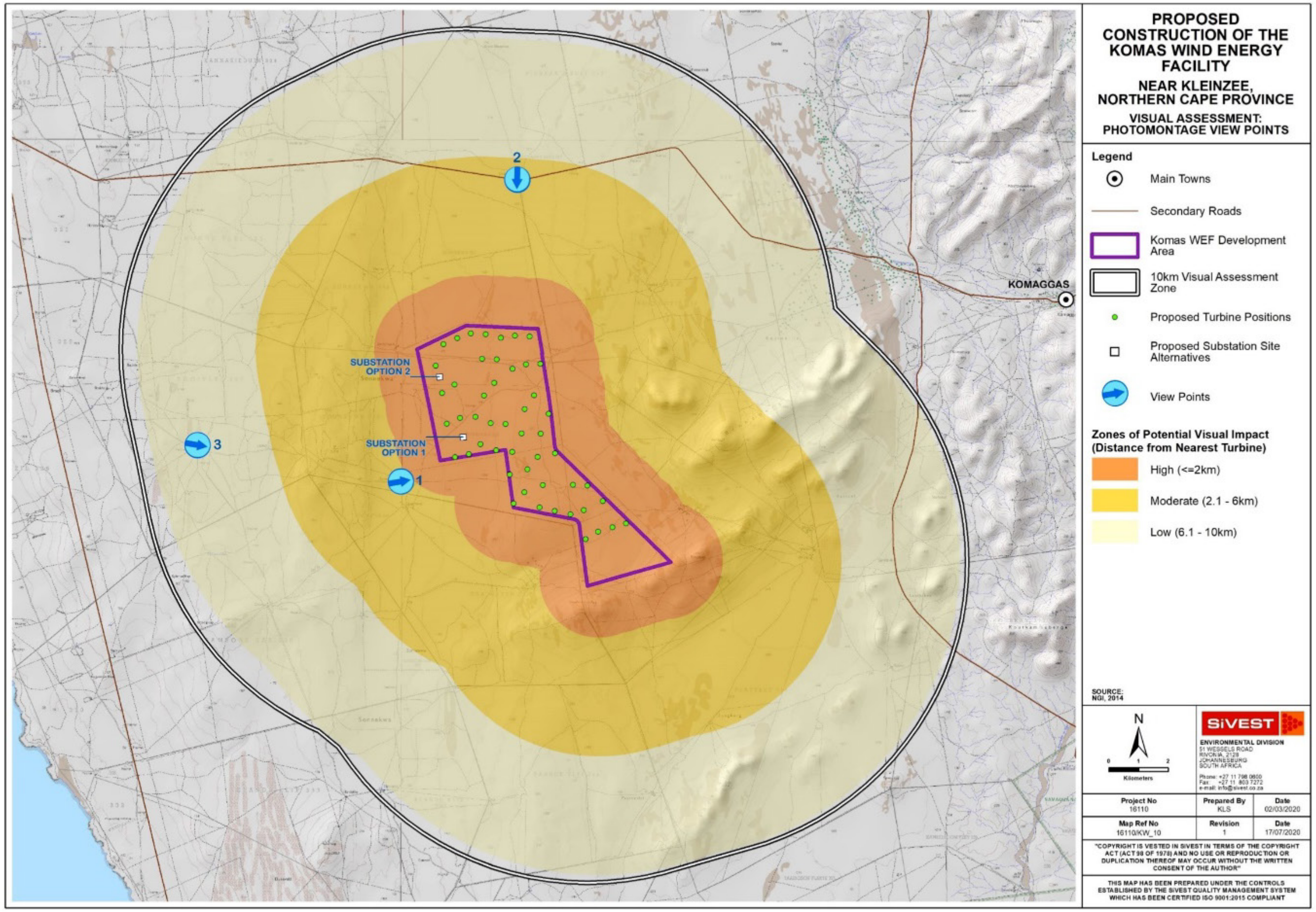


Figure B.42: Photomontage view points at the proposed Komas WEF study area.

B.12 Heritage: Archaeology and Cultural Landscape

A detailed description of the archaeological features and cultural landscape within the proposed Komas WEF study area is included in the HIA (Archaeology, Cultural Landscape and Palaeontology), which is included in Appendix C.6 of this BA Report. The information presented in this section is extracted from the HIA.

B.12.1 Site context

The site is in a rural area and is serviced only by gravel roads and infrastructure aside from farm buildings and occasional power lines is lacking (Figure B.16). The main land use in the area is small stock grazing, but along the coast to the west and northwest and along the Buffels River to the north mining for diamonds has occurred for nearly a century. The Komaggas Communal Reserve lies a short distance to the east of the study area.

B.12.2 Site description

The study area is largely an undulating sandy plain – the Namaqualand Sandveld – but has several distinct dune ridges that run south to north, especially in the western part of the site. The dunes are covered in vegetation, but many open spaces and some deflation hollows are present. An elongated low-lying area, referred to here as the Zonnekwa Valley, runs between two of these dune ridges through the western part of the overall site but just outside the western edge of the study area. The extreme south-eastern edge of the site and study area just encroach on the (at this point) low ridge of Byneskop and Graafwater se Kop. This ridge extends north-eastwards away from the study area to eventually join the far taller Brandberg, a rocky hill that has been surmounted by wind-blown dune sand. Figures B.43 to B.48 show views of the proposed Komas WEF study area, highlighting its features.

Figure B.43: View towards the south across the northern part of the study area showing the undulating sandy plain with a deflated area in the foreground.

Figure B.44: View towards the southeast showing an example of a dune that has a deflation hollow on its crest.

Figure B.45: View towards the southeast through the eastern part of the study area. The Graafwater se Kop ridge forms part of the skyline with the more distant Langberg rising behind it in mid-picture.

Figure B.46: View towards the east showing a prominent dune with a deflation hollow on its crest. Byneskop rises in the background to the left (outside the study area).

Figure B.47: View towards the northeast from a deflation hollow on the slopes of Graafwater se Kop. Byneskop and Brandberg lie in the distance.

Figure B.48: View towards the west in the northern part of the study area showing a large dune cordon west of the site (skyline). The shallow calcrete-floored valley (arrowed) lies just below this ridge.

B.12.3 Findings of the Heritage Study

This section describes the heritage resources recorded in the study area during the course of the assessment.

B.12.3.1 Archaeology

B.12.3.1.1 Desktop study

Early Stone Age (ESA) materials in Namaqualand have mostly been found fairly close to the coastline and are often found in the same contexts as Middle Stone Age (MSA) artefacts. Halkett (2002) reported a large scatter of ESA artefacts from Kleinsee, while Orton and Webley (2012b) found ESA and MSA artefacts associated with fossil bones on the high ground to the north of the Buffels River, northeast of Kleinsee. Much further south, in the Western Cape, Hart and Halkett (1994) excavated an ESA sample adjacent to a quarried silcrete outcrop, while not far away Orton (2017) found extensive scatters of ESA material – including abundant handaxes – at the interface of the dorbank and aeolian cover sands. Some 20 km north of Kleinsee, Orton and Halkett (2006) described an extensive silcrete outcrop that displayed evidence of quarrying. There were scatters of ESA and MSA artefacts located across the outcrop. Further inland, to the southeast of the present study area, Morris and Webley (2004) reported scatters of ESA artefacts, including handaxes, amongst sand dunes on the coastal plain and around pans.

Middle Stone Age material is generally more commonly reported, but further inland, probably only because the landscape is less eroded and deflated there, it tends to occur as isolated artefacts or as very ephemeral scatters. To the northwest of Komaggas Dreyer (2002) reported MSA artefacts on quartzite and hornfels associated with river gravel about 1 km from the Buffels River. Van Pletzen-Vos and Rust (2011) found MSA quartz artefacts on the western and northern outskirts of Komaggas. In the Kamiesberg Mountains, Howieson's Poort-type implements belonging to the MSA were found in Keurbos Cave some 15 km north-east of Garies (Webley 1992), while MSA implements were found in excavations at a small rock shelter called Wolfkraal close to Kharkams (Webley 1984). Near Garies in central Namaqualand, Webley and Halkett (2010) reported on an MSA factory site on Swartkop, an outcrop of dark, fine-grained rock which appears to have been targeted by prehistoric populations. Closer to the coast Orton and Halkett (2005) found some Howieson's Poort bifacial points associated with shell in a dunefield to the southwest of the present study area, but the relationship between the shell and artefacts might be spurious. Halkett and Hart (1997) and Jerardino et al. (1992) reported scatters of MSA artefacts north of Kleinsee and at the Groen River Mouth respectively.

Later Stone Age material is regularly found throughout Namaqualand. The coastal and near-coastal areas, however, have by far the greatest number of reported sites (Dewar 2008; Orton 2012). Many thousands of shell middens and scatters occur along the coast, some of them preserving rich assemblages of cultural materials and food remains. While these focus on the area within about 2 km to 3 km of the coast, shell scatters have been found along the Buffels River up to 10 km inland (Orton & Webley 2012b) as well as immediately to the west of the present study area and some 12 km from the coastline (Orton 2019). Almost all sites are open sites with just one coastal rock shelter known to contain LSA deposits (Webley 1992. 2002). Other sites on the coastal plain are often deflation hollows of varying size (Orton 2019a, 2019b, 2019c, 2019d). Orton (own data) has observed many sites in the white dunefield known as Witduin located 5 km east of the south-eastern corner of the study area. Inland the best sites tend to be rock shelters with the majority of other sites being relatively ephemeral open artefact scatters. Most work in the inland region has been done by Webley (1986, 1992, 2007) with a focus on rock shelters. Although not common, rock art has been recorded at various locations in the central part of Namaqualand (Orton 2013; Morris & Webley 2004). Orton (2013) ascribes the geometric rock art designs to Khoekhoe herders. Southeast of the present study area, in the Namaqualand National Park, both representational and geometric rock art sites were recorded (Morris & Webley 2004).

The last 2000 years are especially important for archaeological research in Namaqualand. Archaeological sites from this period with pottery are reported from a number of sites and are believed to be associated with the introduction of herding and/or pastoralism to the region some 2000 years ago. The region is known to be important in terms of the beginnings of herding, but the details of how it happened are still highly contested (Orton 2015). The archaeology supports the historic information that pastoralist groups (the ancestors of the Little Namaqua Khoekhoen) were occupying this area at and before the time of colonial contact.

Several other surveys have been conducted away from the coastline and in close proximity to the present study area. Magoma's (2016) linear survey passing the western edge of the study area yielded only isolated artefacts, while further to the west and closer to the coast Orton and Webley (2012a) found large numbers of LSA sites spread across the landscape. To the east of the present study area, Orton (2018) found a number of LSA sites on the ridges of the inselberg formed by Brandberg, Byneskop and Graafwater se Kop. The sites consisted only of stone artefacts. Finally, Orton's (2019c, 2019d) surveys just north and west of the study area yielded many small LSA sites with their size, density and shell content generally reducing towards the east. The sites were strongly focused on dune ridges. Figure B.49 shows the distribution of archaeological sites known to the author in the vicinity of the wind farm site.

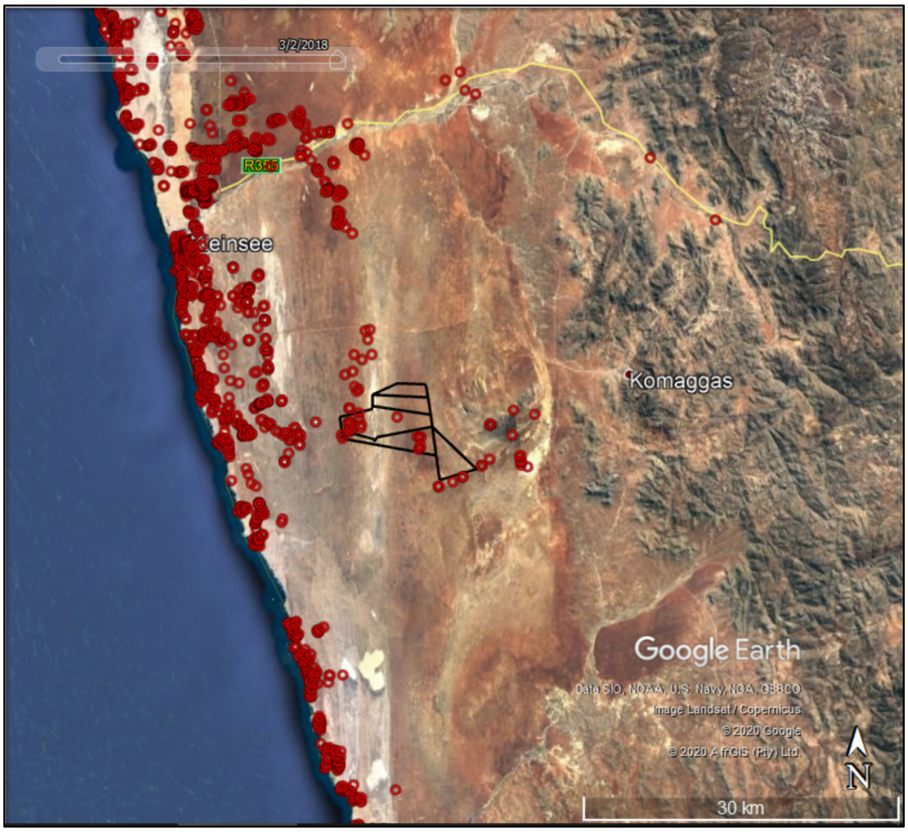


Figure B.49: Map showing the distribution of local archaeological sites known to the heritage specialist (Dr. Jayson Orton). The proposed Komas WEF site is shown by the black polygon.

B.12.4 Site visit

A site visit was undertaken by the heritage specialist, Dr. Orton, in January 2020. The survey revealed many archaeological sites scattered throughout the study area but clearly located in some areas and absent from others (Figure B.50). The low-lying Zonnekwa Valley lacks sites, but a few deflation hollows due occur in dunes along its eastern periphery. The vast majority of sites were located in deflation hollows or deflating areas on the crests of dunes. Table B.5 lists the sites and descriptions, and illustrations of some of the sites follow.

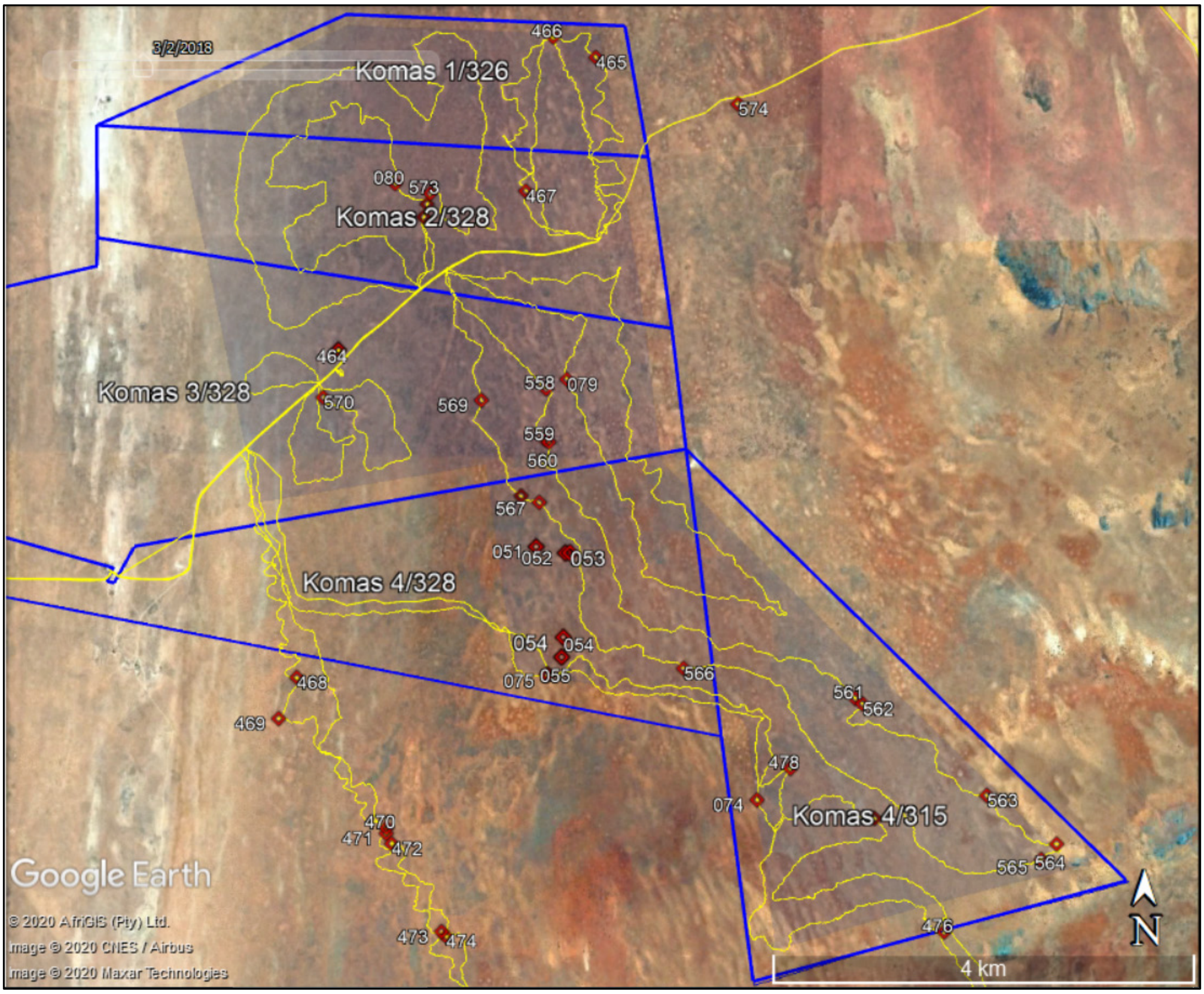


Figure B. 50: Aerial view of the proposed Komas WEF study area showing all sites recorded during the survey (numbered red symbols). A few sites from earlier work by the specialist (Dr. Orton) are also included where these fall within the present study area. The blue shaded area denotes the proposed Komas WEF study area, while the blue polygons are the farm portion boundaries. The yellow lines are the survey tracks.

Table B.5: List of archaeological sites recorded during the survey (includes some sites from earlier work). General Protection' (GP) and rated as GPA (high/medium significance, requires mitigation), GP B (medium significance, requires recording) or GPC (low significance, requires no further action).

Way point	Site name	GPS co-ordinates	Description	Significance / Grade	Mitigation requirement
051	ZN2018/014	S29 51 04.2 E17 17 28.4	A deflation hollow with a light artefact scatter in the eastern side and only very ephemeral artefacts over the rest. It has quartz and CCS artefacts. Recorded (but not reported) in 2018.	Low-medium GPB	2 hours
052	ZN2018/015	S29 51 06.1 E17 17 38.8	A deflation hollow with a light artefact scatter over most of its floor but one moderate density patch. It includes artefacts in quartz and CCS and also a quartzite anvil. Recorded (but not reported) in 2018.	Low-medium GPB	2 hours
053	ZN2018/016	S29 51 06.0 E17 17 40.5	A deflation hollow with a light artefact of quartz, CCS and quartzite as well as a grooved lower grindstone. Also some glass present. Recorded (but not reported) in 2018.	Low-medium GPB	2 hours
054	ZN2018/017	S29 51 32.1 E17 17 38.1	A deflation hollow with a light quartz scatter over most of its floor but with one moderate density path in the eastern side. Recorded (but not reported) in 2018.	Low-medium GPB	2 hours
055	ZN2018/018	S29 51 38.2 E17 17 37.5	A small deflation hollow with an ephemeral quartz scatter in it. Recorded (but not reported) in 2018.	Low GPC	---
074	KAP2020/00 1	S29 52 22.1 E17 18 47.1	Deflation hollow of 15 x 40 m. Light scatter of quartz flaked artefacts and quartzite manuports. Recorded (but not reported) in 2018.	Very low GPC	---
075	ZN2018/019	S29 51 43.5 E17 17 33.2	Deflation hollow of 50 x 70m. Light scatter of quartz, CCS, quartzite, 'other' faked artefacts and some quartzite manuports. There is a grooved lower grindstone with two very short grooves on one face and one very short groove on the back. Also a hammerstone/single platform core. Recorded (but not reported) in 2018.	Low-Medium GPB	4 hours
079	ZN2020/001	S29 50 12.5 E17 17 39.2	Deflation hollow of 15 x 20 m. Scatter of quartz and CCS flaked artefacts, ostrich eggshell and some glass.	Low GPC	---
080	ZN2020/002	S29 49 11.9 E17 16 37.8	A deflating area on a dune top with a scatter of quartz flaked artefacts and some quartzite manuports. Also a shotgun cartridge.	Very low GPC	---

Way point	Site name	GPS co-ordinates	Description	Significance / Grade	Mitigation requirement
464	ZN2018/013	S29 50 03.4 E17 16 17.6	Deflation hollow of 15 x 30 m. Scatter with LSA and historical materials including quartz and CCS flaked artefacts, some Cymbula granatina shell (minimal), ostrich eggshell, granite manuports, glass, wire, bullet cartridges and bone.	Low-Medium GPB	4 hours
465	ZK2020/001	S29 48 33.1 E17 17 49.4	Deflated area of 10 x 15 m on a dune ridge. Scatter of quartz and CCS flaked artefacts, quartzite manuports, ostrich eggshell and Aulacomya ater shell (looks quite fresh, probably just one shell and located at north end of the site). There is a brown Talana bottle on the ridge about 10 m off the site.	Low-Medium GPB	2 hours
466	ZK2020/002	S29 48 26.7 E17 17 34.2	Deflation hollow of 30 x 40 m. Scatter of quartz, CCS (x1), silcrete (x1) flaked artefacts, a quartzite hammerstone/upper grindstone and some quartzite manuports.	Low-Medium GPB	2 hours
467	ZN2020/003	S29 49 14.4 E17 17 24.5	Deflation hollow of 25 x 40 m. Light scatter of quartz, quartzite (x1) and CCS (x5) flaked artefacts. There are two subscatters: quartz in the west of the hollow and quartz and CCS in the southeast.	Low GPC	---
477	KAP2020/004	S29 52 27.1 E17 19 28.3	Two isolated potsherds on a low dune ridge.	Very low GPC	---
478	KAP2020/005	S29 52 12.1 E17 18 58.8	Small scatter of historical wine bottle fragments (x5).	Very low GPC	---
558	ZN2020/004	S29 50 15.4 E17 17 31.9	Deflation hollow of 20 x 40 m. Scatter of quartz and CCS flaked artefacts as well as quartzite manuports and ostrich eggshell fragments over a wide area.	Low-Medium GPB	4 hours
559	ZN2020/005	S29 50 31.2 E17 17 31.7	A light ostrich eggshell scatter but one fragment is burnt showing anthropogenic involvement (i.e. a camp fire).	Very low GPC	---
560	ZN2020/006	S29 50 31.9 E17 17 32.9	Deflation hollow of 20 x 40 m. Scatter of quartz and CCS flaked artefacts as well as quartzite manuports, a hammer stone/upper grindstone and plenty of ostrich eggshell fragments.	Low-Medium GPB	6 hours
561	KAP2020/006	S29 51 50.4 E17 19 21.5	Deflation hollow of 15 x 20 m. Scatter of quartz and CCS flaked artefacts as well as quartzite manuports.	Low-Medium GPB	6 hours

Way point	Site name	GPS co-ordinates	Description	Significance / Grade	Mitigation requirement
562	KAP2020/007	S29 51 52.1 E17 19 24.1	Deflation hollow of 15 x 25 m. Ephemeral scatter of quartz flaked artefacts.	Very low GPC	---
563	KAP2020/008	S29 52 19.6 E17 20 07.4	Deflation hollow of 20 x 25 m. Scatter of quartz and CCS flaked artefacts as well as quartzite manuports.	Low-Medium GPB	2 hours
564	KAP2020/009	S29 52 34.1 E17 20 31.5	Deflation hollow of 40 x 80 m. Scatter of quartz and CCS flaked artefacts as well as quartzite manuports. There are three clusters in the northern end of the deflation hollow with minimal artefacts in the southern end.	Low-Medium GPB	2 hours
565	KAP2020/010	S29 52 38.9 E17 20 26.2	Deflation hollow of 10 x 15 m. Ephemeral scatter of quartz flaked artefacts.	Very low GPC	---
566	ZN2020/007	S29 51 41.5 E17 18 20.8	Deflation hollow of 30 x 40 m. Scatter of quartz and CCS flaked artefacts as well as quartzite manuports.	Low-Medium GPB	8 hours
567	ZN2020/008	S29 50 50.5 E17 17 29.5	Deflation hollow of 15 x 15 m. Ephemeral scatter of quartz flaked artefacts.	Very low GPC	---
568	ZN2020/009	S29 50 48.4 E17 17 23.0	Deflation hollow of 25 x 40 m. Ephemeral scatter of quartz and CCS flaked artefacts. There are two quartzite manuports, one silcrete flake and one pot sherd just over the northern crest of the deflation hollow.	Very low GPC	---
569	ZN2020/010	S29 50 18.9 E17 17 08.8	Deflation hollow of 25 x 40 m. Ephemeral scatter of quartz flaked artefacts.	Very low GPC	---
570	ZN2020/011	S29 50 18.1 E17 16 12.1	Deflation hollow of 8 x 30 m. Ephemeral scatter of quartz and CCS flaked artefacts.	Very low GPC	---
571	ZN2020/012	S29 49 22.3 E17 16 48.1	Deflation hollow of 30 x 100 m. Light quartz flaked artefact scatter throughout the southern part of the deflation hollow. Also a hammer stone/upper grindstone, a lower grindstone with a groove on both sides and a piece of 'fishing club' quartzite (outcrop known to occur at the Kleinsee Angling Club). The middle part of the deflation hollow has a scatter of quartz, CCS and silcrete flaked stone	Low-Medium GPB	8 hours

Way point	Site name	GPS co-ordinates	Description	Significance / Grade	Mitigation requirement
			artefacts.		
572	ZN2020/013	S29 49 18.3 E17 16 49.2	The northern end of the above deflation hollow has a scatter of quartz and CCS flaked stone artefacts, two quartzite lower grindstones with hollows on both sides (one on a sub-rounded block, one on a beach cobble), a hammer stone ('sausage-shaped stone') and some ostrich eggshell fragments.		
573	ZN2020/014	S29 49 15.0 E17 16 50.4	Deflation hollow of 10 x 15 m. Ephemeral scatter of quartz flaked artefacts.	Very low GPC	---
574	KOU2020/001	S29 48 47.7 E17 18 39.9	Deflation hollow of 15 x 10 m. Ephemeral scatter of quartz flaked artefacts.	Very low GPC	---

All the sites consisted of scatters of stone artefacts, sometimes with a few other items as well. The vast majority were LSA occurrences in deflation hollows. Figures B.51 to B.62 show examples of these deflation hollow sites and some of the finds they contain. None of the hollows were especially dense (compared to deflation hollows in other areas). Aside from stone artefacts, some sites contained ostrich eggshell fragments in variable quantities. Pottery, bone and marine shells were very rare, each being recorded in only one or two instances. In places there were also some historical items such as ceramics, glass and pieces of metal (Figures B.61 and B.62). All of these were no older than the late 19th century and some were likely early 20th century in age and likely relate to shepherds using the landscape.

Figure B.51: A large deflation hollow at ZK2020/002 (waypoint 466) in the far north.

Figure B.52: Marine shell fragments on the surface of ZN2018/013 (waypoint 464).

Figure B.53: View of the dune top on which the deflation hollow at ZN2020/004 (waypoint 558) lies.

Figure B.54: The surface of the ZN2020/004 (waypoint 558) deflation showing flaked stone artefacts and ostrich eggshell fragments.

Figure B.55: The deflation hollow at ZN2020/006 (waypoint 560).

Figure B.56: A hammerstone/upper grindstone with very heavily worn ends from ZN2020/006 (waypoint 560). Scale in cm.

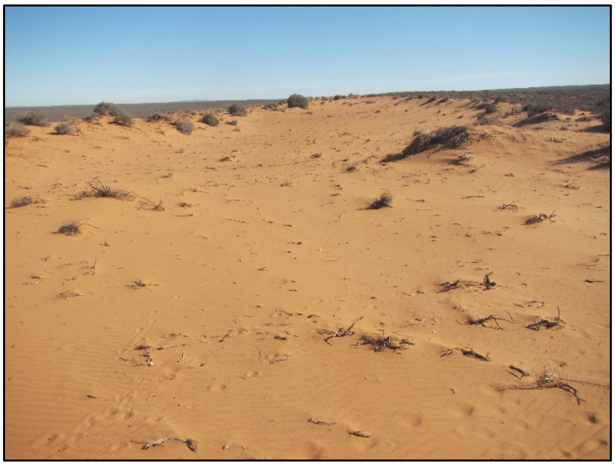


Figure B.57: The deflation hollow at ZN2020/012 (waypoint 571) which contained multiple components.

Figure B.58: One face of a broken lower grindstone with a prominent groove on it. The reverse face has a shallower groove. Scale in cm.

Figure B.59: Lower grindstone with two grooves on one face and another on the opposite face from ZN2018/019 (waypoint 075).

Figure B.60: Two small pot sherds from KAP2020/004 (waypoint 477). Scale in cm.

Figure B.61: Historical wine bottle fragments from KAP2020/005 (waypoint 478). Scale in cm.

Figure B.62: Isolated glass medicine bottle from the southern part of the study area.

B.12.5 Graves

No graves were seen anywhere in the study area but a single modern grave is known to occur just outside the study area near its north-western corner. It is not a heritage resource. Unmarked precolonial graves can occur almost anywhere and their locations cannot be predicted.

B.13 Palaeontology

Pether (2020:i) notes that "the affected surficial formations include Holocene dunes of the Hardevlei Formation and earlier late Quaternary coversands of the Koekenaap Formation. Beneath these unconsolidated sands are compact, pedogenically-altered aeolianites termed the Dorbank Formation which are fossil dune plumes of later mid-Quaternary age." Between two large dune ridges in the western part of the site (but just outside the study area) is a low-lying, calcrete-floored non-depositional area – referred to as the Zonnekwa Valley. The bedrocks (only exposed in the extreme southeast of the study area) are very altered ancient quartzites and schists of the Springbok Formation and are entirely unfossiliferous.

The aeolian formations (Hardevlei and Koekenaap) are assumed to contain the typical fossil content seen in similar deposits elsewhere. The most common fossils are related to the ambient fossil content of dune sands, i.e. land snails, tortoise shells and mole bones. The bones of larger animals (e.g. antelopes, zebra, rhinos) are sparse, but occur more often on the palaeosurfaces between the major formations where they are enclosed in palaeosols and pedocretes. They can also occur on less easily visible palaeosurfaces within formations and particularly within the dorbank. The calcrete-floored Zonnekwa Valley likely hosted pans during wetter periods and some pan deposits – or fossil bones eroded from such deposits – may still be present in places. Large caches of bones can be found in old burrows and were collected by hyaenas (Pether 2020).

Although Pether (2020) considers fossil finds to be unlikely, he does note that any finds made could be scientifically significant in the interpretation of the local geological stratigraphy.

B.14 Historical aspects and the Built environment

B.14.1 Desktop study

Namaqualand is quite remote, poorly watered and relatively unproductive from an agricultural point of view. As a result, it does not have as deep a history as many other parts of South Africa. Although the little settlement of Grootmis just inland of Kleinsee and the mission station at Komaggas date back into the 19th century, the larger towns of Kleinsee and Koingnaas – both originally developed as 'company towns' – relate to 20th century diamond mining.

Grootmis was historically important because it had water. An annotation on a 1907 British Military map states that Grootmis had an unlimited water supply (Source: Pietermaritzburg Archives). The very large number of shell scatters found in the area by Orton and Webley (2012b) suggests that this water source had been available for some time. It probably stopped yielding water when De Beers dammed the river and commenced with the abstraction of water.

Komaggas (Camaggas) is first mentioned by Gordon in 1779. Komaggas (the farm is spelled Kamaggas, a form that also appears on some early maps) received a Certificate of Occupation on 9 November 1843, granting the Cloete family the right of occupation on the land.

There are various oral accounts of the relationship between Ryk Jasper Cloete and the Nama kaptein kXurib who used the Komaggas Fountain as his main water source. Bregman (2010) suggests that Cloete acquired the land through his marriage to the kaptein's daughter. Jasper Cloete utilised land up to the Orange River to graze his stock. A mission station of the London Missionary Society (LMS) was set up at Komaggas in 1829 and the farm was surveyed in 1831. It became a station of the Rhenish Missionary Society in 1843 and then the N.G. Church from 1936 (Raper n.d.).

Bregman (2010) provides a list of the farms surrounding and in the vicinity of Komaggas, including the date that they were first registered. Farms to the west of Komaggas were granted to colonists under quitrent title only after 1855. Mining companies were seeking land in the area because of the commencement of copper mining. Closer to the coast, the dry plains between the Swartlintjies and Buffels Rivers were left open as Crown Land – this is the zone in which the present study area lies. Despite the increasing private ownership of farms in the area over time, herders from Komaggas were still able to access grazing lands outside of the reserve because the farms were not completely fenced and access was gained at certain places. However, they had no formal title to the land.

In 1925 diamonds were discovered on the farm Oubeep, south of Port Nolloth, and in 1926 at Kleyne Zee, both by Jack Carstens. Mining commenced at the latter in 1927 and the town of Kleinsee was soon established (Rebelo 2003). Much of the coastline was then bought up for diamond mining and access for grazing was closed.

B.14.2 Site visit

The site visit undertaken by the heritage specialist, Dr. Orton, in January 2020 showed the site to be in a very remote area with little infrastructure. The study area lacks any sign of development aside from the gravel road passing through its northern part, although some recent/historical materials (see above) did betray a historical presence on the land. Four farmsteads occur in the vicinity, but none are within the study area. One lies just outside the site (700 m from the edge of the study area) to the northwest, two lie to the west of the study area (1.5 and 1.9 km from the study area) with one of these being inside the site and the last is east of the site some 1.5 km outside the study area. They have been considered during other assessments and, while some structures have been found from aerial photography to be greater than 60 years of age, it is clear that none of them are of much heritage significance (Orton 2019c, 2019d). Two are shown in Figures B.63 and B.64.

Figure B.63: Farm house on Farm 128/4 to the west of the site (photographed in 2018).

Figure B.64: One of the houses on Farm 326/0 to the northwest of the site (photographed in 2018).

About 9 km and more to the east of the site, many small stock posts occur in the Komaggas Reserve. They generally have temporary structures, and sometimes caravans, as well as wire stock pens. Although these sites are modern, they are reminders of an important historical way of life practised by local Nama herders for at least the last two centuries since missionaries encouraged settlement. This effectively makes the Komaggas Reserve a living heritage site. Prior to this, the people would have been far more mobile and would likely have moved over greater distances.

B.15 Cultural landscapes and scenic routes

The site is situated in a remote location and, being only very minimally developed, the cultural landscape is largely considered a natural landscape rather than a rural one. The exception, of course, is the mining landscape located along the coast where the human imprint is far greater. Natural heritage also requires consideration because of the visual amenity provided by aesthetically pleasing landscapes. Aside from rare structures, the only other anthropogenic features on the landscape are farm tracks/roads and fences, along with occasional borrows pits alongside the larger gravel roads. The landscape conveys a sense of remoteness and inhospitability that is a result of the very frequent strong winds, the low scrubby vegetation and seemingly endless sand flats and dunes. While most of the broader landscape is fairly flat with the tallest anthropogenic features being wind pumps (aside from the mine dumps further afield), inselbergs occur to the east and southeast of the site forming a long ridge (the southern limit of the project will be about 1.8 km from this ridge). Another prominent inselberg (Langberg) lies several kilometres to the southeast. The escarpment edge lies further to the east with these inselbergs effectively being outlying hills at the base of the escarpment.

The archaeological cultural landscape should also be considered, although it is not typically visible to the lay person. This cultural landscape consists of a multitude of individual archaeological sites classifiable as a Type 3 precolonial cultural landscape (Orton 2016). Figure B.65 shows another view of Figure B.49, but with the newly reported sites (identified during the site visit) added onto it. It is clear that with wider survey this landscape would be shown to host many more sites, although densities would naturally reduce away from the sea. The obvious exception here is Witduin 6 km to the east which, because of its water supply, contains an extremely high density of archaeological sites.

It is important to note that the study area lies within a REDZ and that REFs are therefore expected to be focused in this area. A number of REFs are proposed and authorised within 50 km of the proposed Komas WEF site (see the list of projects in Table D.1 and Figure D.1 of the cumulative impact section in Section D) and with construction, would add a new 'layer' to the cultural landscape which will intensify the presence of industry and infrastructure development in the area. Also, the 400 kV Eskom power line has been authorised and will be constructed in the near future.

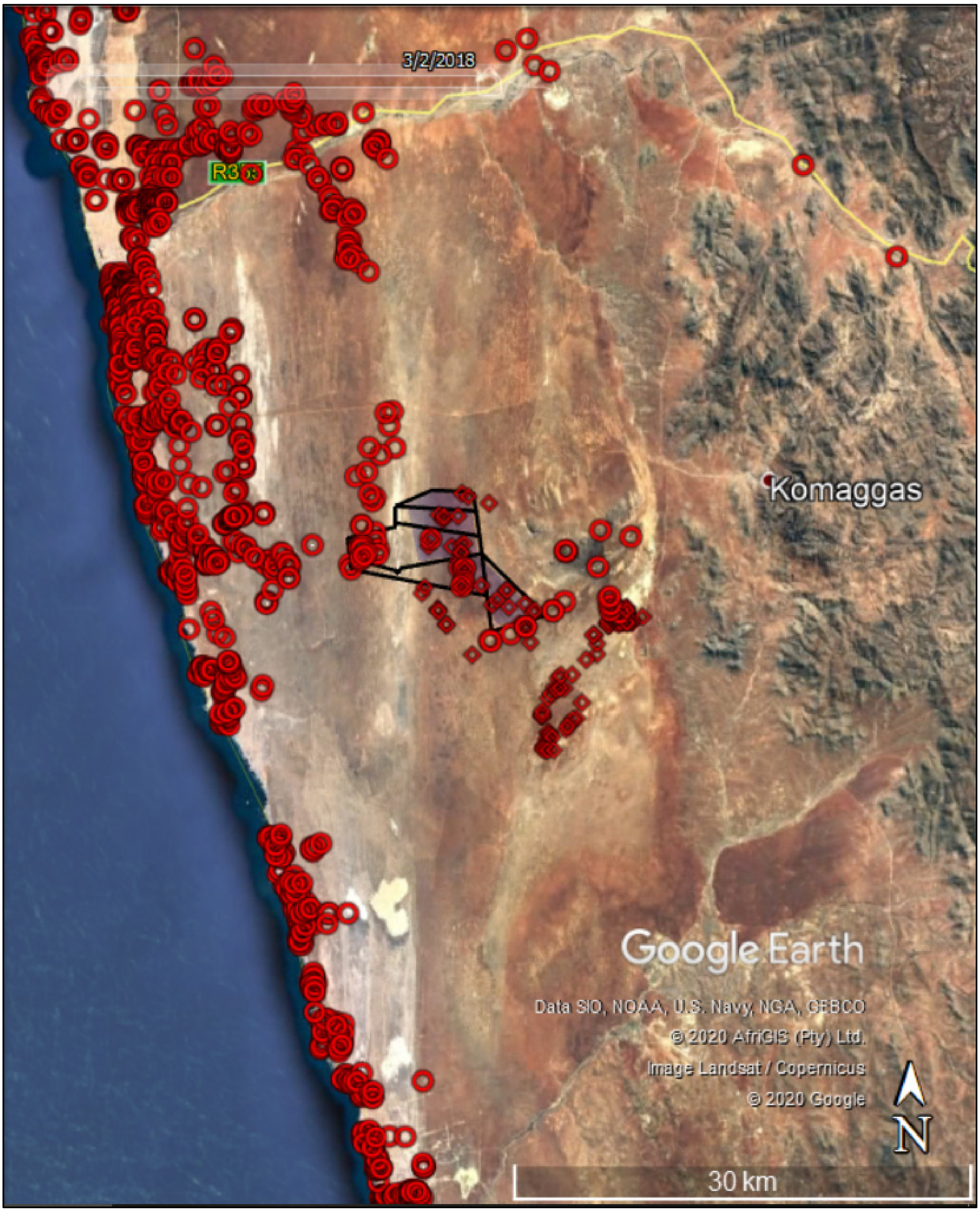


Figure B.65: Aerial view of the study area and wider surroundings showing previously known archaeological resources (red circles) as well as those discovered during the survey (including finds in another wind farm site and the power line corridor which will be reported on separately).

B.16 Screening Tool Description and Site Verification (Archaeology and Cultural Landscape)

Figure B.66 indicates the archaeological and heritage sensitivity as captured on the Screening Tool. The archaeological survey and the site sensitivity verification showed that archaeological sites were located in very specific locations which meant that the site sensitivity is restricted to very small pockets (effectively the buffers around the culturally significant sites). While medium sensitivity is appropriate, this rating only applies to these small areas and they are spread more widely than the single patch of medium sensitivity than indicated by the Screening Tool. The Screening Tool sensitivity is thus largely correct (i.e. mostly low) but is inaccurate in the central part of the site where many small areas of sensitivity occur along a dune cordon. The data supporting this conclusion are presented in Section 5 of the HIA (Appendix C.6 of this BA Report).

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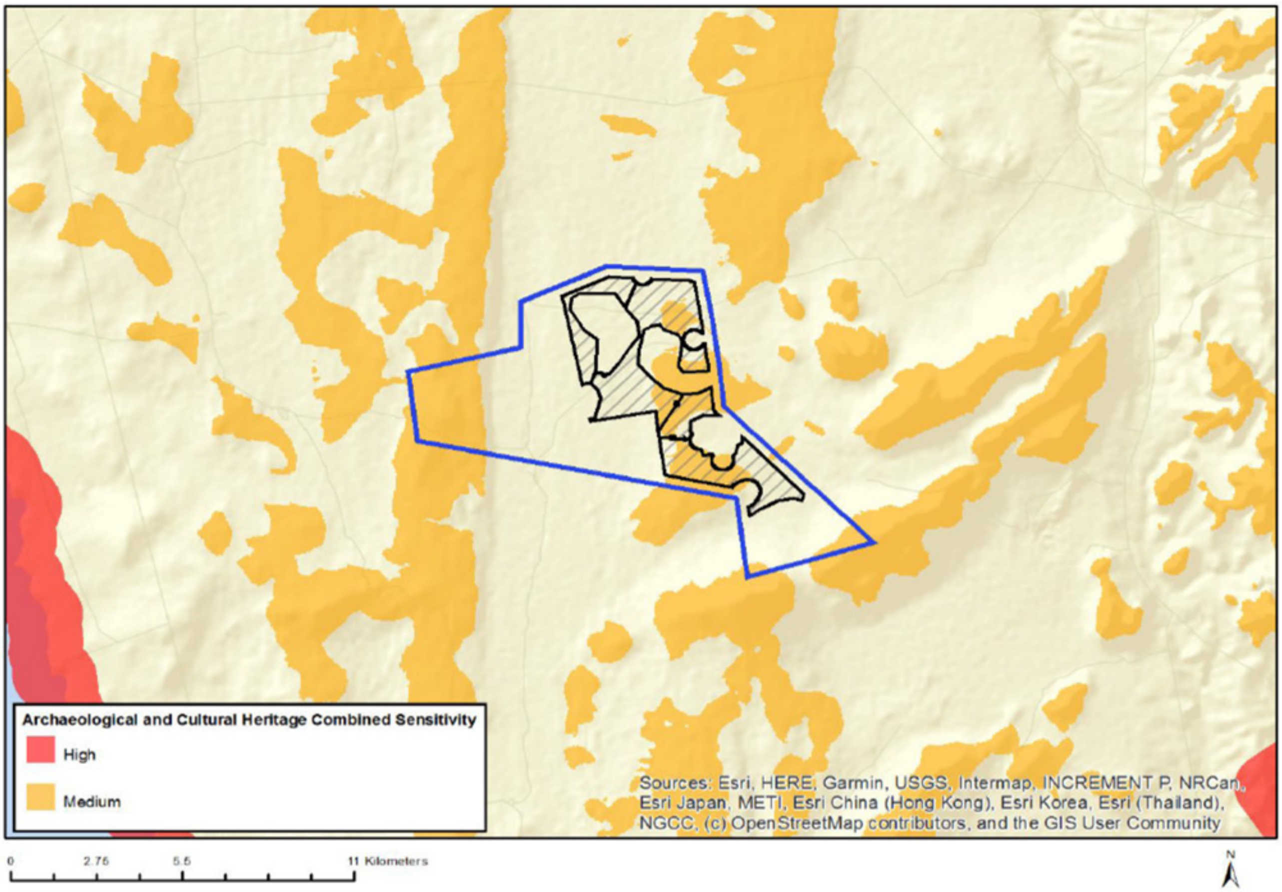

Figure B.66. Screening Tool map showing the site to be of medium to low 'archaeological and cultural heritage' sensitivity.

B.17 Palaeontology

A detailed description of the palaeontological features within the study area is included in the Palaeontology Impact Assessment, which is included in Appendix 4 of the HIA (Appendix C.6 of this BA Report). The information presented in this section is extracted from the Palaeontology Assessment.

Pether (2020:i) notes that "the affected surficial formations include Holocene dunes of the Hardevlei Formation and earlier late Quaternary coversands of the Koekenaap Formation. Beneath these unconsolidated sands are compact, pedogenically-altered aeolianites termed the Dorbank Formation which are fossil dune plumes of later mid-Quaternary age." Between two large dune ridges in the western part of the site (but just outside the study area) is a low-lying, calcrete-floored non-depositional area – referred to as the Zonnekwa Valley. The bedrocks (only exposed in the extreme southeast of the study area) are very altered ancient quartzites and schists of the Springbok Formation and are entirely unfossiliferous.

The aeolian formations (Hardevlei and Koekenaap) are assumed to contain the typical fossil content seen in similar deposits elsewhere. The most common fossils are related to the ambient fossil content of dune sands, i.e. land snails, tortoise shells and mole bones. The bones of larger animals (e.g. antelopes, zebra, rhinos) are sparse, but occur more often on the palaeosurfaces between the major formations where they are enclosed in palaeosols and pedocretes. They can also occur on less easily visible palaeosurfaces within formations and particularly within the dorbank. The calcrete-floored Zonnekwa Valley likely hosted pans during wetter periods and some pan deposits – or fossil bones eroded from such deposits – may still be present in places. Large caches of bones can be found in old burrows and were collected by hyaenas (Pether 2020).

Although Pether (2020) considers fossil finds to be unlikely, he does note that any finds made could be scientifically significant in the interpretation of the local geological stratigraphy.

<u>Affected Formations</u>

The affected surficial formations include Holocene dunes of the **Hardevlei Formation** and earlier late Quaternary coversands of the **Koekenaap Formation**. Beneath these unconsolidated sands are compact, pedogenically-altered aeolianites termed the **Dorbank Formation** which are fossil dune plumes of later mid-Quaternary age. Between the fossil dune plume ridges is a non-depositional area (Zonnekwa Valley) which is closely underlain by pale calcrete pedocrete which is likely to have formed within the upper part of an older aeolianite formation such as correlates of the Olifantsrivier or Graauw Duinen formations.

<u>Palaeontological Resources</u>

The fossil content of the aeolian formations is presumed to be typical of that observed in correlative formations in the wider area. Fossil material most commonly seen is the ambient fossil content of dune sands: land snails, tortoise shells and mole bones. The bones of larger animals (*e.g.* antelopes, zebra, rhinos) are sparse, but are more persistently present along palaeosurfaces which separate the major aeolianite formations where they are enclosed in palaeosols and pedocretes, and also occur on cryptic palaeosurfaces within formations. Rare large caches of bones in large burrows are due to the bone-collecting behaviour of hyaenas (Figure B.67).

<u>Anticipated Impact</u>

The primary palaeontological concern is the fossil bones that are sparsely distributed in these aeolian deposits. In the Hardevlei and Koekenaap formations the fossil bone and marine shell material that may occur is likely to be in an archaeological context. Both artefacts and fossil bones are most often found on the compact palaeosurface of the Dorbank Formation beneath the surficial sands. The fossil bone material would be of late Quaternary age and comprised mainly of extant species (modern fauna), but could include species that did not historically occur in the region.