

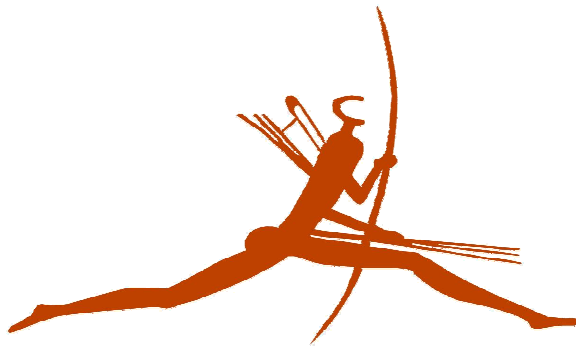
Scoping Archaeological Impact Assessment

**Proposed Lunsklip Wind Farm on Portion 135 of Farm
Melkhoutfontein 480, Portions 2 and 3 of Farm 630, Remainder Farm
630, Remainder Portion 7 of Farm Luins Klip 472, Portion 1 of Farm
635, Portions 2 and 25 of Farm Luins Klip 472 and Farm 626,
Stilbaai, Western Cape Province**

prepared for

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2070, George, 6530, Tel: 044 874 0365, Fax: 044 874 0432, and **Bergwind Energy (Pty)
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by



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18 July 2012

Executive Summary

This study forms part of the Heritage Impact Assessment undertaken by Perception Heritage Planning and the broader Environmental Impact Assessment being carried out by Cape Environmental Assessment Practitioners(Pty) Ltd. The Scoping Archaeological Impact Assessment was conducted on 10 and 11 July 2012 with the aim of determining the archaeological sensitivity of the affected areas in order to inform the way forward for further archaeological assessment and mitigation. The study focused on proposed wind turbine localities within the five development areas.

The study area is situated N to NE of Stilbaai and consists mostly of gently undulating ancient dunes with steeper slopes of ravines occurring in the west. Although alien vegetation is common in the western part of the study area, the eastern part contains pristine indigenous coastal and limestone Fynbos. Surface geological sediments comprise ancient dune sands and outcrops of calcrete. No other hard rock geological sediments were seen. Archaeological visibility is variable, but sufficient ground surfaces are visible for assessment.

There were no limitations to the archaeological investigation and the bulk of the study area was accessible on foot and open to inspection and assessment. Material remains of the historic period include dwellings, kraals and water collection structures/features. Only five isolated stone artefacts of Stone Age origin were identified and these are considered to be of no archaeological significance.

Apart from a few historic remains, the affected area is not archaeologically sensitive and therefore any of the three proposed turbine layouts is acceptable. Provided that the below recommendations are considered and/or implemented, there are no objections to the proposed development.

Based on results from the current study it is recommended that;

- Identified and existing historic structures - particularly the water collection structures - that are older than 60 years should be avoided (30m to 50m buffer), but if they will be altered or damaged by the development then this will require a permit application in terms of Section 34 of the National Heritage Resources Act (Act 25 of 1999) and*
- A comprehensive Archaeological Impact Assessment is not necessary, but in order to avoid or minimize negative impact on potential subsurface archaeological resources, it is recommended that part time archaeological monitoring should be conducted by a professional archaeologist during earthmoving activities.*

Note that;

- In the event that vegetation clearing and earthmoving activities expose archaeological materials, such activities must stop and Heritage Western Cape must be notified immediately.*

- *If archaeological materials are exposed during vegetation clearing and/or earth moving activities, then they must be dealt with in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer.*
- *In the event of exposing human remains during construction, the matter will fall into the domain of Heritage Western Cape (021 483 9685) or the South African Heritage Resources Agency (021 462 4502) and will require a professional archaeologist to undertake mitigation if needed.*

Name, Expertise and Declaration

I, Peter Nilssen (PhD in archaeology), herewith confirm that I am a Professional member - in good standing - of the Association of South African Professional Archaeologists (ASAPA), including the Cultural Resource Management section of the same association.

As the appointed independent specialist (archaeologist) for this project hereby declare that I:

- act as an independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct;
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R. 543) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543.



Signature of the specialist:

Date: **18 July 2012**

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1. Introduction

1.1 Background

In accordance with Section 38 of the National Heritage Resources Act (Act 25 of 1999), an integrated Heritage Impact Assessment (HIA) for the proposed activity is being conducted by Perception Heritage Planning, which forms part of the Environmental Impact Assessment process undertaken by Cape Environmental Assessment Practitioners(Pty) Ltd (*Cape-EAPrac*). The Scoping Archaeological Impact Assessment (SAIA) reported here was commissioned by Bergwind Energy (Pty) Ltd and forms part of the broader HIA. The SAIA's purpose is to determine the archaeological sensitivity of the affected areas so as to inform the way forward for further archaeological assessment and mitigation where needed.

Bergwind Energy (Pty) Ltd is proposing a wind energy installation – Lunsklip Wind Farm – near Stilbaai on the Cape South Coast that will include the following (Figure 1; below information courtesy of *Cape-EAPrac*):

- A wind farm with a maximum generation capacity of 20MW (up to a maximum of 10 wind turbines)
- Crane area - a cleared, compacted area (approx. 22m x 45m) for the crane next to each turbine foundation for turbine assembly, maintenance and decommissioning
- Temporary lay down areas for the placement of the turbine equipment during construction and decommissioning
- A 66kV overhead transmission power line to the Substation on the western side of Stilbaai
- Access road & permanent internal road network to turbines

The final specifications, scope and layout of the activity and its associated structures, services and facilities will be determined by incoming wind data as well as input from various specialist studies and public participation processes. Updated information regarding the proposed development may be obtained from *Cape-EAPrac* (contact details on title page).

Five areas are proposed for development and at present there are three alternative layout plans for the placement of wind turbines (Figures 2 & 3). Figure 4 shows boundary point names for the five areas as well as a composite of proposed wind turbine localities. Coordinate data for boundary points of the affected areas as well as turbine localities are given in Table 1. Note that certain turbine localities are used in two or three of the proposed layouts and hence the overlaps in Figure 4.

Development activities will include large-scale earthmoving operations that could have a permanent negative impact on archaeological and tangible heritage related resources.

1.2. Purpose and Scope of the Study

Objectives of the Scoping Archaeological Impact Assessment are:

- To assess an adequate portion of the study area for traces of archaeological resources to determine the archaeological sensitivity of the proposed development areas;
- To identify options for archaeological mitigation and further assessment in order to minimize potential negative impacts; and

- To make recommendations for archaeological mitigation where necessary and the way forward for the archaeological component of the EIA process;

Terms of Reference (ToR):

- a) Locate boundaries and extent of the study areas.
- b) Conduct a survey of a portion of the study areas to identify and record archaeological resources.
- c) Assess the impact of the proposed development on above-named resources.
- d) Recommend mitigation measures and additional assessment where necessary.
- e) Prepare and submit a report to the client that meets standards required by Heritage Western Cape in terms of the National Heritage Resources Act, No. 25 of 1999

1.3 Study Area

The affected properties include Portion 135 of Farm Melkhoutfontein 480, Portions 2 and 3 of Farm 630, Remainder Farm 630, Remainder Portion 7 of Farm Luins Klip 472, Portion 1 of Farm 635, Portions 2 and 25 of Farm Luins Klip 472 and Farm 626. The five proposed development areas – a total of some 365ha in extent - are portions of the above-named properties and are situated east of the R305 and about 7km N to NE of Stilbaai, Western Cape Province (Figures 1 through 4 and Table 1). Examples of the surrounding environment, topography, vegetation cover, exposed surfaces and so on are shown in Figure 4 and Plates 1 through 4.

The study area was accessed by vehicle by taking the Stilbaai turnoff from the N2 and following the R305 for 17km, at which point a gravel road to the left leads to the affected properties (see black directional arrows in Figure 1).

The study area consists mostly of gentle to moderately undulating ancient dunes with steeper slopes of ravines occurring in the west. Although alien vegetation is common in the western part of the study area, the eastern part contains pristine indigenous coastal and limestone Fynbos. A detailed botanical study is underway and will be available from *Cape-EAPrac*.

Surface geological sediments comprise ancient dune sands and outcrops of calcrete. No other hard rock geological sediments were seen. The palaeontological and agricultural studies will include detailed information about the geology of the area and these reports will be available from *Cape-EAPrac*.

The surrounding land use is rural and agricultural, but no evidence of recent ploughing was seen. The area is used for its thatch reed, wild flowers (proteas), bee keeping and small scale grazing. Evidence for recent human activities includes structures, roads, vehicle tracks, a 66kV overhead line, wind mills and fencing. Numerous mole heaps produced by dune mole rats and other mole species were noted across most of the affected area.

Table 1. Coordinate data for boundary points of the five proposed development areas and three alternative wind turbine localities (see Figure 4)

Name	Description	Datum: WGS 84 Lat/Lon dec.degrees	Datum: WGS 84 SA National	Grid:
1A	area 1 boundary point	S34.30934 E21.39645	21 Y-036492 X3798047	
1B	area 1 boundary point	S34.29821 E21.40696	21 Y-037466 X3796815	
1C	area 1 boundary point	S34.30012 E21.41224	21 Y-037950 X3797030	
2A	area 2 boundary point	S34.29674 E21.43481	21 Y-040029 X3796663	
2B	area 2 boundary point	S34.29120 E21.45567	21 Y-041953 X3796057	
2C	area 2 boundary point	S34.29155 E21.46564	21 Y-042871 X3796100	
2D	area 2 boundary point	S34.29963 E21.46528	21 Y-042834 X3796996	
2E	area 2 boundary point	S34.29916 E21.45396	21 Y-041791 X3796939	
3A	area 3 boundary point	S34.29125 E21.48005	21 Y-044198 X3796073	
3B	area 3 boundary point	S34.29287 E21.51007	21 Y-046961 X3796266	
3C	area 3 boundary point	S34.29487 E21.50860	21 Y-046824 X3796486	
3D	area 3 boundary point	S34.29426 E21.48006	21 Y-044197 X3796407	
4A	area 4 boundary point	S34.30379 E21.45211	21 Y-041619 X3797452	
4B	area 4 boundary point	S34.30366 E21.46837	21 Y-043116 X3797444	
4C	area 4 boundary point	S34.30845 E21.47039	21 Y-043299 X3797976	
5A	area 5 boundary point	S34.30420 E21.48611	21 Y-044749 X3797511	
5B	area 5 boundary point	S34.30056 E21.50397	21 Y-046395 X3797117	
5C	area 5 boundary point	S34.30336 E21.50123	21 Y-046141 X3797425	
5D	area 5 boundary point	S34.30666 E21.48730	21 Y-044856 X3797785	
A1	Lunsklip Alternative One (A) - turbine locality	S34.30364 E21.40568	21 Y-037345 X3797417	
A2	Lunsklip Alternative One (A) - turbine locality	S34.29654 E21.43766	21 Y-040292 X3796642	
A3	Lunsklip Alternative One (A) - turbine locality	S34.29351 E21.45581	21 Y-041965 X3796314	
A4	Lunsklip Alternative One (A) - turbine locality	S34.30461 E21.46740	21 Y-043026 X3797549	
A5	Lunsklip Alternative One (A) - turbine locality	S34.30438 E21.48904	21 Y-045018 X3797533	
A6	Lunsklip Alternative One (A) - turbine locality	S34.30245 E21.49944	21 Y-045976 X3797324	
B1	Lunsklip Alternative Two (B) - turbine locality	S34.30364 E21.40568	21 Y-037345 X3797417	
B10	Lunsklip Alternative Two (B) - turbine locality	S34.30245 E21.49944	21 Y-045976 X3797324	
B2	Lunsklip Alternative Two (B) - turbine locality	S34.30017 E21.41213	21 Y-037940 X3797035	
B3	Lunsklip Alternative Two (B) - turbine locality	S34.29654 E21.43766	21 Y-040292 X3796642	
B4	Lunsklip Alternative Two (B) - turbine locality	S34.29369 E21.45019	21 Y-041448 X3796331	
B5	Lunsklip Alternative Two (B) - turbine locality	S34.30445 E21.46058	21 Y-042398 X3797529	
B6	Lunsklip Alternative Two (B) - turbine locality	S34.30461 E21.46740	21 Y-043026 X3797549	
B7	Lunsklip Alternative Two (B) - turbine locality	S34.29262 E21.48405	21 Y-044565 X3796226	
B8	Lunsklip Alternative Two (B) - turbine locality	S34.30467 E21.49256	21 Y-045342 X3797567	
B9	Lunsklip Alternative Two (B) - turbine locality	S34.29360 E21.49709	21 Y-045765 X3796341	
C1	Lunsklip Alternative Three (C) - turbine locality	S34.30017 E21.41213	21 Y-037940 X3797035	
C2	Lunsklip Alternative Three (C) - turbine locality	S34.30364 E21.40568	21 Y-037345 X3797417	
C3	Lunsklip Alternative Three (C) - turbine locality	S34.29369 E21.45019	21 Y-041448 X3796331	
C4	Lunsklip Alternative Three (C) - turbine locality	S34.30461 E21.46740	21 Y-043026 X3797549	
C5	Lunsklip Alternative Three (C) - turbine locality	S34.29251 E21.45635	21 Y-042015 X3796202	
C6	Lunsklip Alternative Three (C) - turbine locality	S34.29262 E21.48405	21 Y-044565 X3796226	

1.4 Approach to the Study

Reports of previous studies in the area were obtained from the SAHRA APM Unit – Report Mapping Project - and reviewed as part of the desktop study. Note that reports are available up to and including 2009, and the author is not aware of more recent archaeological studies on or in the immediate surroundings of the affected properties.

On behalf of Bergwind Energy (Pty) Ltd, *Cape-EAPrac* provided background information, a locality map of the proposed development areas, three alternative wind turbine layout plans and coordinate data for turbine localities (Figures 2 & 3 and Table 1). The site was first visited with Mr Jacques van Rensburg who indicated vehicle access routes to all the proposed turbine localities and also pointed out the old ruins and water collection structures. Mr van Rensburg knows the affected properties very well and has made sure that the placement of wind turbines and anticipated roads, structures and facilities associated with the development will not have a negative impact on known historic remains. After visiting the site with Mr van Rensburg the study was conducted independently. The fieldwork consisted of a combination of vehicle and foot survey. Most of the study area is accessible on foot and although archaeological visibility is variable, sufficient ground surfaces were open to inspection for the purpose of this assessment. There were no limitations to the archaeological investigation.

Exposed ground surfaces in and adjacent to the gravel road and single vehicle tracks were inspected from the vehicle while travelling very slowly while areas with archaeological potential were examined on foot. All proposed wind turbine localities were inspected on foot and several transects were walked to determine the overall archaeological sensitivity of the proposed development areas. Steeper slopes in the western part of the study area were inspected for potential caves or rock shelters.

Survey tracks were fixed with a hand held Garmin Camo GPS to record the search area and photo localities were also recorded by GPS (Figure 5, Plates 1 through 4 and Table 2, a gpx tracking file is available from the author). The positions of identified archaeological occurrences were fixed by GPS (Figure 6, Plates 5 through 10 and Table 2). Digital audio notes and a comprehensive, high quality digital photographic record were also made (full data set available from the author). In this report, localities of archaeological occurrences and photographs are established by matching the numbers on photographs with those of waypoints in Figures 5 & 6. Directions of views are indicated on photos with compass bearing names like E is east; WSW is west south west, and so on. Bearing names on panoramic views indicate the bearing at the position of the label on the photograph.

2. Results

Stone Age, pastoralist and historic archaeological sites do occur in the Stilbaai area, but apart from a historic structure at Melkhoutfontein, no significant archaeological resources have been recorded inland between Stilbaai and the affected properties investigated here (Deacon H.J. 2008, Halkett 2007 & 2008, HWC 2011 and Nilssen 2012).

Fieldwork was conducted on 10 and 11 July 2012 and covered an area of about 70ha, of which an average of at least 50% provided good archaeological visibility (Figure 5 and Plates 1 through 4). Apart from a few small areas containing impenetrable vegetation (mainly Rooikranz), there were no restrictions to the study. Although mole activity is common and widespread, no archaeological materials were seen in any mole heaps and no caves or rock shelters were found.

2.1. Historic Water Collection Structures/Features

Old, disused water collection structures/features are located at **waypoints 12, 43 and 56** (Figure 6 and Plates 5, 6 & 7). It appears that the circled feature to the west of waypoint 12, as seen on the Google Earth image in Plate 5, is also a water collection structure, but it was not known of or visible during field work. Typically, these features consist of exposed calcrete surfaces that are enclosed with calcrete walling, and according to Mr van Rensburg, the latter serve to keep animals out. Towards the lower lying parts of these walled areas at waypoints 12 and 43 are natural or partly man-made pools that, in places, are lined with plaster (Plate 6). The plaster would render the pools more watertight or seal natural cracks in the calcrete. At waypoint 56, the water collection mode is via a man-made dam (Plate 7). Although still functional, the above features are not currently used or maintained. A restored water collection structure, similar to those described above, is situated at **waypoint 45** where a roofed dam houses collected water (Figure 6 and Plate 8). All these features function in the same way; rain or surface water drains down slope atop the calcrete surfaces and then collects in natural, modified or man-made reservoirs.

Significance and Recommendation:

Although the author has not seen or heard of the above features, they may have been recorded elsewhere. Key to their existence is the presence of sloped, exposed and continuous calcrete surfaces, and therefore, their frequency and distribution is likely to be limited. Through the use of naturally occurring calcrete surfaces and sometimes natural pools, historic and likely earlier inhabitants of the area harvested potable water. Even though they cannot be dated directly, it is likely that some of these features are older than 60 years since two are associated with a ruined structure at waypoint 13 that was occupied early in the 1900s (Mr van Rensburg pers. comm., see Plate 9). The water collection structures/features are considered to be worthy of preservation, but because they lie outside the proposed development area no further archaeological work or mitigation is required. In the event that they will be altered or damaged by the development then this will require a permit application in terms of Section 34 of the National Heritage Resources Act (Act 25 of 1999).

2.2. Historic Ruins

The ruins of an old dwelling are located at **waypoint 13** and according to Mr van Rensburg this dwelling was occupied in the early 20th century (Figure 6 and Plates 5 & 9). Associated with this structure are two water collection structures/features to the NE and a garage/store and kraal to the W and WSW respectively (Plates 5 & 9). All the walls of these structures are made of calcrete, and mortar and plaster is clearly not modern (Plate 9). Measured on the outside, the dwelling is about 14m long by some 6m wide and consists of two rooms with separate external doorways. It is evident that the original structure consisted of only one room - with a fire place and chimney at one end – and that the second room was added later on. Remains of a wooden framework for the roof and the absence of other roofing materials suggest that the structure had a roof of thatch reed. *Restia* species are plentiful in the area. Like the second room, the garage/store and kraal seem to be of later construction. No artefacts of the historic period were seen in the area, but these may be covered by vegetation and/or soft surface sediments.

Significance and Recommendation:

Although the ruins are considered to be of low significance, they are older than 60 years and are protected by heritage legislation. The structures lie outside the proposed development area and do not require further archaeological work or mitigation. However, if they will be altered or damaged by the development then this will require a permit application in terms of Section 34 of the National Heritage Resources Act (Act 25 of 1999).

2.3. Stone Age Artefacts

Five isolated stone artefacts of Stone Age origin were identified at waypoints **31, 36, 38, 41 and 42** (Figure 6 and Plate 10). Apart from one, which was found on surface sands, all specimens were found at calcrete outcrops. All artefacts are in quartzite and include two flakes, two flaked pieces and one small core. The latter is likely of Later Stone Age origin while the remainder are nondescript, and based on their heavily weathered surfaces and one faceted platform; they are probably of the Middle Stone Age period.

Significance and Recommendation:

These occurrences are considered to be of no archaeological significance and require no further archaeological recording or mitigation. It cannot be ruled out, however,

that sub surface archaeological resources occur in the development areas. It is recommended, therefore, that part time archaeological monitoring should be conducted by a professional archaeologist during earthmoving activities so as to avoid or minimize negative impact on potential subsurface archaeological resources. Due to the low probability of the latter occurring, it is recommended that full time monitoring is not necessary, but rather, that an archaeologist conducts periodic site inspections during the earthmoving phase of the development.

Table 2. Coordinate and descriptive data for photo localities and archaeological occurrences (see Figures 5 & 6 and Plates 1 through 10).

Point Name	Description img=image snd=sound	Datum: WGS 84 Lat/Lon dec.degrees	Datum: WGS 84 SA National	Grid:	meters above sea level
10	img6254 snd6254 - turbine B9	S34.29359 E21.49703	21 Y-045760 X3796340		187 m
11	img6255 snd6255 - E to turbine C6	S34.29254 E21.48288	21 Y-044457 X3796217		187 m
12	water collection structure - img6256-61 snd6261 & img6353-55 snd6355	S34.29176 E21.47715	21 Y-043930 X3796127		180 m
13	ruins - img6262 snd6262 & img6329-48 snd6348	S34.29235 E21.47785	21 Y-043994 X3796194		178 m
17	img6263-4 snd6264 - E to turbine C1	S34.29997 E21.41124	21 Y-037858 X3797012		171 m
18	img6265 snd6264 - E to turbine C1	S34.30015 E21.41199	21 Y-037927 X3797032		170 m
19	img6266-9 snd6269 - panorama mid SSW	S34.30134 E21.40728	21 Y-037494 X3797163		161 m
20	img6270 snd6270 - W	S34.30264 E21.40821	21 Y-037578 X3797308		154 m
21	img6271 snd6271 - near turbine C2	S34.30314 E21.40589	21 Y-037364 X3797362		159 m
22	img6272-5 snd6275 - panorama mid N	S34.30332 E21.40544	21 Y-037323 X3797382		159 m
23	img6276 snd6276 - W to turbine C2	S34.30361 E21.40544	21 Y-037323 X3797413		162 m
24	img6277 snd6277 - W	S34.29706 E21.43302	21 Y-039865 X3796698		191 m
25	img6278 snd6278 - S to turbine B3	S34.29654 E21.43753	21 Y-040280 X3796642		191 m
26	img6279 snd6279 - E	S34.29488 E21.44399	21 Y-040876 X3796461		190 m
27	img6280 snd6280 - E	S34.29457 E21.44684	21 Y-041138 X3796427		190 m
28	img6281-4 snd6284 - panorama turbine C3 - mid E	S34.29371 E21.45012	21 Y-041441 X3796333		192 m
29	img6285 snd6285 - W	S34.29579 E21.44628	21 Y-041086 X3796562		188 m
30	img6286 snd6286 - W	S34.29728 E21.43955	21 Y-040466 X3796725		186 m
31	Stone Age - isolated stone artefact - img6287-91 snd6291	S34.29767 E21.43745	21 Y-040272 X3796767		186 m
32	img6292 snd6292 - SSE to turbine C5	S34.29241 E21.45630	21 Y-042010 X3796191		180 m
33	img6293 snd6293 - SSW to turbine A3	S34.29326 E21.45598	21 Y-041980 X3796285		181 m
34	img6294 snd6294 - dense vegetation	S34.30317 E21.45817	21 Y-042177 X3797385		181 m
35	img6295 snd6295	S34.30372 E21.45851	21 Y-042208 X3797447		184 m
36	Stone Age - isolated stone artefact - img6296-6302 snd6302	S34.30403 E21.45927	21 Y-042278 X3797482		184 m
37	img6303-4 snd6304 - S to turbine B5	S34.30432 E21.46054	21 Y-042395 X3797514		185 m
38	Stone Age - isolated stone artefact - img6305-11 snd6311	S34.30437 E21.45876	21 Y-042231 X3797519		185 m
39	img6312-5 snd6315 - E to wind mast & excavated calcrete	S34.30350 E21.46653	21 Y-042947 X3797425		197 m
40	img6316 snd6316 - E to turbine C4	S34.30462 E21.46730	21 Y-043017 X3797550		194 m
41	Stone Age - isolated stone artefact - img6317-22 snd6322	S34.30493 E21.46739	21 Y-043025 X3797585		194 m
42	Stone Age - isolated stone artefact - img6323-8 snd6328	S34.30419 E21.46621	21 Y-042916 X3797502		196 m
43	water collecton structure - img6349-52 snd6352	S34.29211 E21.47753	21 Y-043965 X3796167		176 m
44	img6356 snd6356 - S to potential turbine site	S34.29886 E21.47365	21 Y-043604 X3796914		184 m
45	restored water collection structure - img6357 snd6357	S34.30809 E21.48514	21 Y-044658 X3797943		172 m
46	img6359-60 snd6360 - WSW to turbine A5	S34.30433 E21.48912	21 Y-045026 X3797528		183 m
47	img6361 snd6361 - ESE to turbine B8	S34.30461 E21.49237	21 Y-045324 X3797560		191 m
48	img6362 snd6362 - E	S34.30271 E21.49495	21 Y-045564 X3797350		186 m
49	img6363 snd6363 - W to trig beacon	S34.30253 E21.50098	21 Y-046118 X3797334		198 m
50	img6364 snd6364 - W to turbine B10	S34.30247 E21.49956	21 Y-045988 X3797326		198 m
51	img6365 snd6365 - N to turbine C6	S34.29278 E21.48398	21 Y-044558 X3796244		185 m
52	img6366 snd6366 - E	S34.29276 E21.48624	21 Y-044767 X3796243		184 m
53	img6367 snd6367 - E	S34.29355 E21.49187	21 Y-045285 X3796332		182 m
54	img6368-9 snd6369 - E to turbine B9	S34.29350 E21.49657	21 Y-045717 X3796330		186 m
55	img6370 snd6370 - E	S34.30268 E21.48750	21 Y-044878 X3797344		164 m
56	water collection structure - img6371-6 snd6375	S34.30017 E21.50288	21 Y-046294 X3797073		176 m

3. Sources of Risk, Impact Identification and Assessment

The proposed development will involve large-scale earthmoving activities that could have a permanent negative impact on archaeological resources in the study area. Historic remains fall outside the proposed development areas, but recommendations are made in the event that they are endangered by development activities. The affected area is not archaeologically sensitive and therefore a comprehensive Archaeological Impact Assessment is not warranted. Nevertheless, to avoid or minimize potential damage to sub

surface archaeological resources, recommendations are made for part time monitoring by a professional archaeologist.

Apart from a few historic remains, the affected area is not archaeologically sensitive and therefore any of the three proposed turbine layouts is acceptable. Provided that the recommended mitigation measures - as approved by Heritage Western Cape - are considered and/or implemented, there are no objections to the authorization of the proposed Lunsklip Wind Farm. Table 3 summarizes the potential impact of the proposed development on archaeological resources with and without mitigation.

Table 3. Potential impact on and loss of archaeological resources.

	With Mitigation	Without Mitigation
Extent	Local	Local
Duration	Permanent	Permanent
Intensity	Low	Low to Unknown
Probability	Low	Low to Unknown
Significance	Low	Low to Unknown
Status	Low to Unknown	Low to Unknown
Confidence	High	High

4. Required and Recommended Mitigation Measures

Recommended mitigation measures:

- Identified and existing historic structures - particularly the water collection structures - that are older than 60 years should be avoided (30m to 50m buffer), but if they will be altered or damaged by the development then this will require a permit application in terms of Section 34 of the National Heritage Resources Act (Act 25 of 1999) and
- A comprehensive Archaeological Impact Assessment is not necessary, but in order to avoid or minimize negative impact on potential subsurface archaeological resources, it is recommended that part time archaeological monitoring should be conducted by a professional archaeologist during earthmoving activities.

Required mitigation measures:

- In the event that vegetation clearing and earthmoving activities expose archaeological materials, such activities must stop and Heritage Western Cape must be notified immediately.
- If archaeological materials are exposed during vegetation clearing and/or earth moving activities, then they must be dealt with in accordance with the National Heritage Resources Act (No. 25 of 1999) and at the expense of the developer.
- In the event of exposing human remains during construction, the matter will fall into the domain of Heritage Western Cape (021 483 9685) or the South African Heritage Resources Agency (021 462 4502) and will require a professional archaeologist to undertake mitigation if needed.

5. References

Deacon, H.J. 2008. Archaeological Impact Assessment: Proposed Stilbaai-West 66 kV Line and 66/11 kV Substation. An unpublished report on file at SAHRA as: 2008-SAHRA-0011.

Halkett, D.J. 2008. Heritage Statement for a Proposed Pipeline on the Farms Masterstok 488/8, Duinekroon 591, Fisantkraal 567 and Platte Bosch 485/30, Stilbaai, Riversdale Magisterial District. An unpublished report by the Archaeology Contracts Office on file at SAHRA as: 2008-SAHRA-0483.

Halkett, D. 2007. Heritage Statement for Proposed Development on Farm 619, Stilbaai-Wes.

Heritage Western Cape 2011. Final Decision – NID and AIA: Proposed Development of Farm Plattebosch 485, Portion 30 (HWC Case No: 1398, Unique ID: 1298, Enquiries: Jenna Lavin)

Nilssen, P. 2012. Scoping Archaeological Impact Assessment: Proposed Western Bypass–Still Bay Ring Road – alignment around Still Bay West to Jongensfontein, various properties, Still Bay, Western Cape Province

Figures and Plates (on following pages)

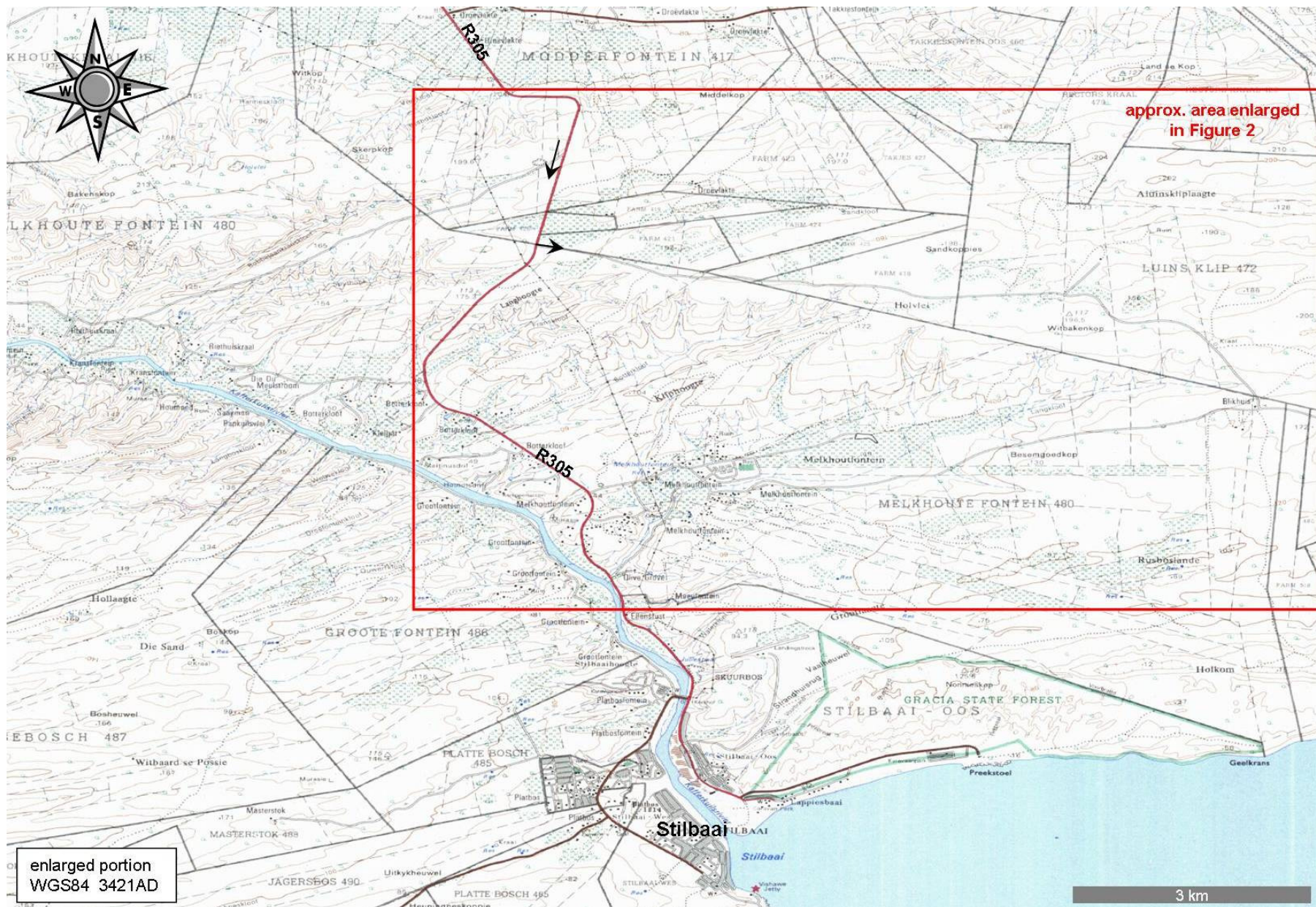


Figure 1. Location of study area relative to Stilbaai, Western Cape Province. (Map courtesy of The Chief Directorate, Surveys & Mapping, Mowbray).

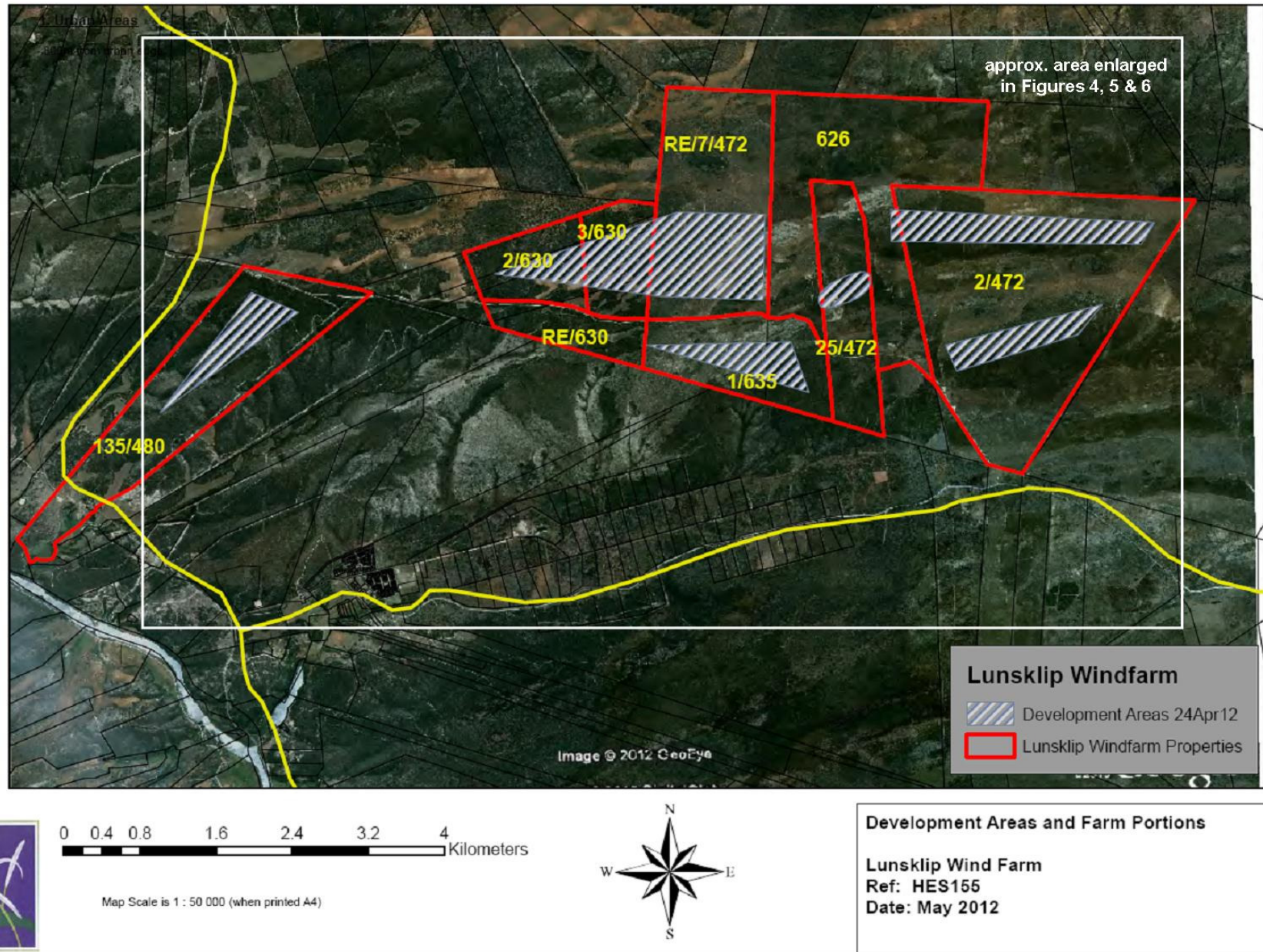


Figure 2. Enlarged from Fig. 1. Development areas and Farm Portions. (Figure provided by Cape Environmental Assessment Practitioners (Pty) Ltd).



Figure 3. Three alternative layouts for wind turbine placement (courtesy of Cape Environmental Assessment Practitioners (Pty) Ltd).



Figure 4. Enlarged area as indicated in Figure 2 showing the five proposed development areas and a composite of turbine localities as are shown in the alternative layouts in Figure 3. Coordinate data for boundary points of development areas and turbine localities are given in Table 1.



Figure 5. Enlarged area as indicated in Figure 2 showing survey tracks in white, photo localities (camera icons) and wind turbine sites. Coordinate data for photo localities are given in Table 2 (see Plates 1 through 4).



Figure 6. Enlarged area as indicated in Figure 2 showing survey tracks in white, archaeological occurrences (red dots) and wind turbine sites. Coordinate data for photo localities are given in Table 2 (see Plates 5 through 10).

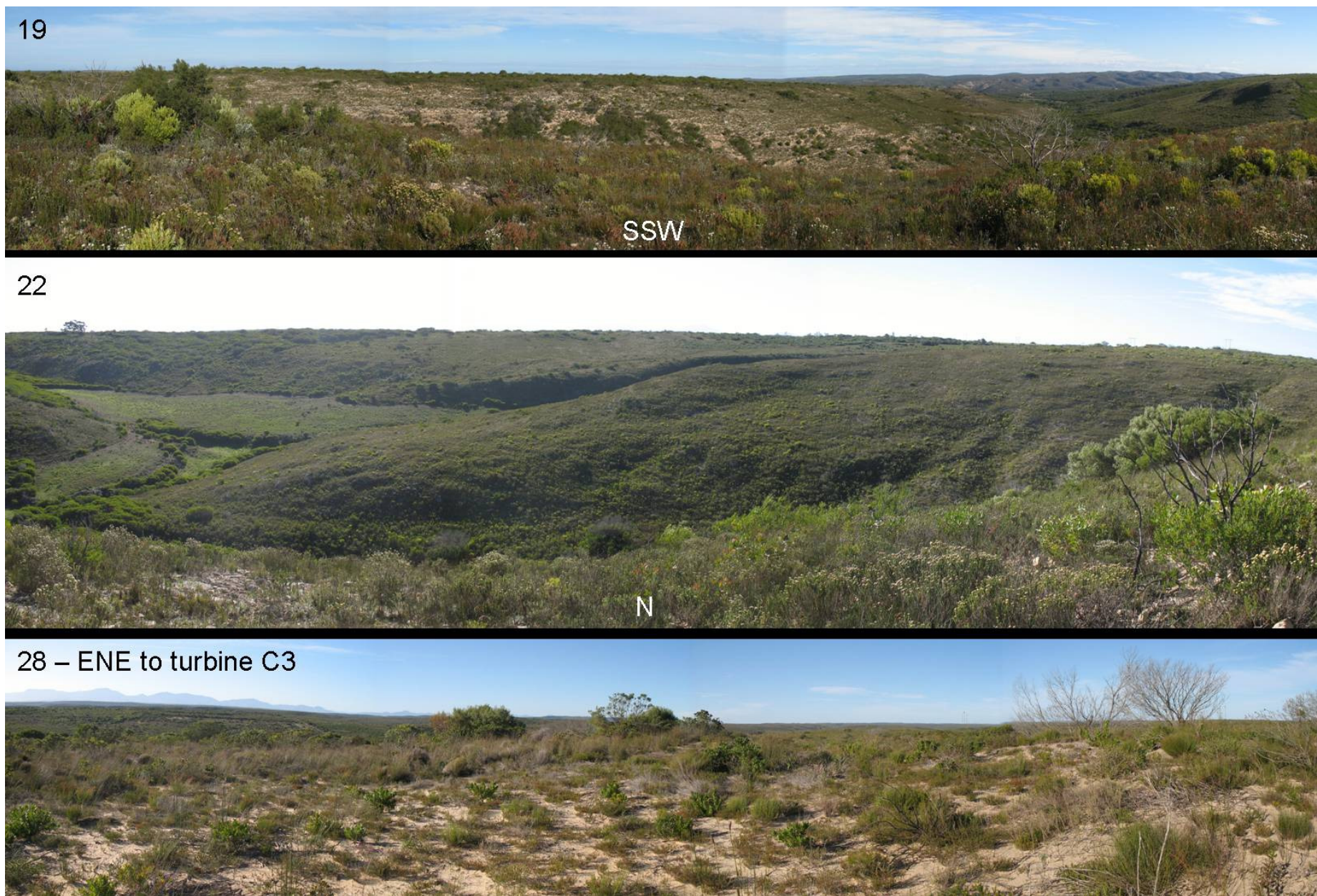


Plate 1. Examples of the surrounding environment, exposures, topography and vegetation cover (see Figure 5 and Table 2).

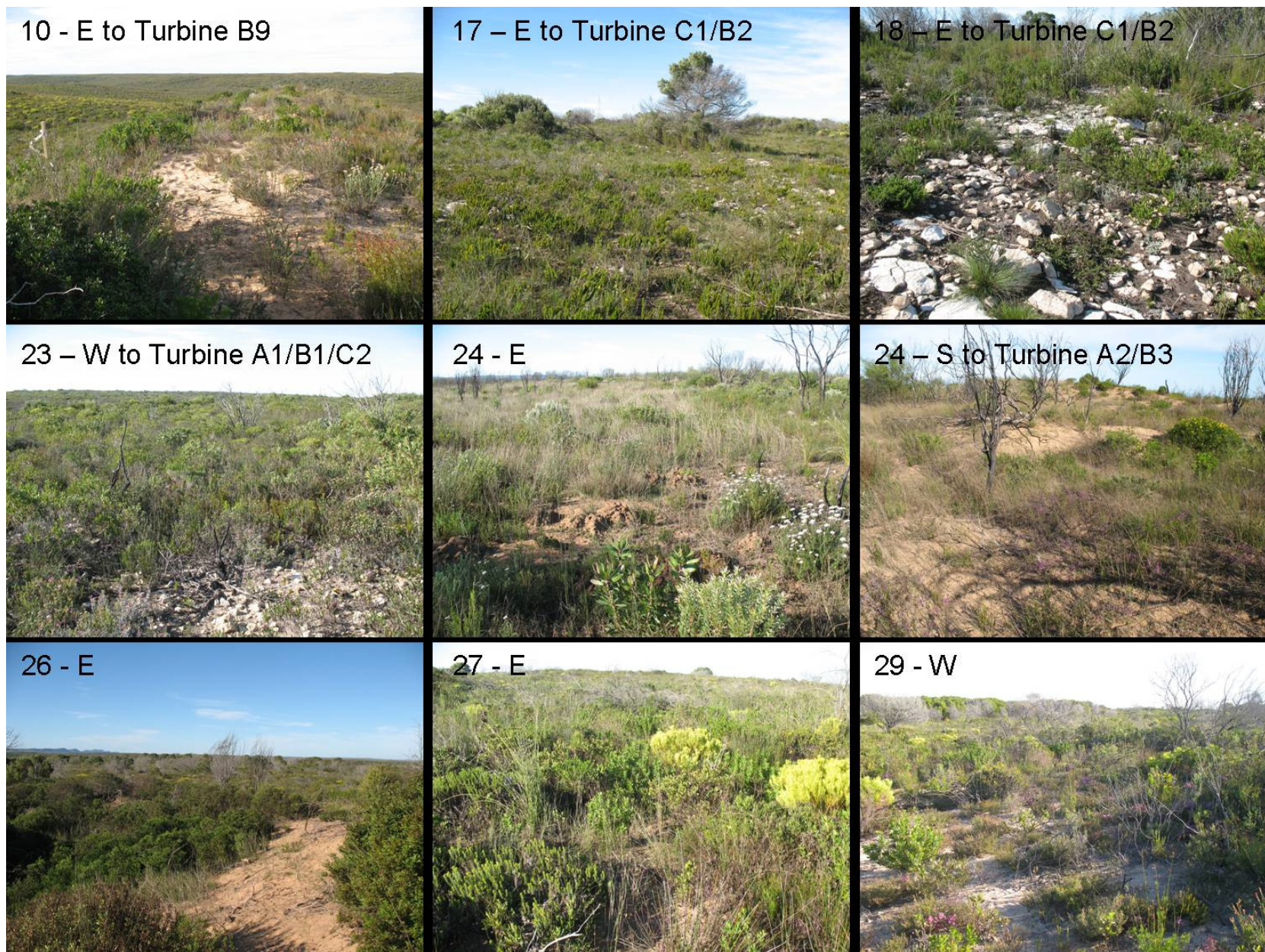


Plate 2. Examples of the surrounding environment, exposed sands and calcrete, topography and vegetation cover (see Figure 5 and Table 2).

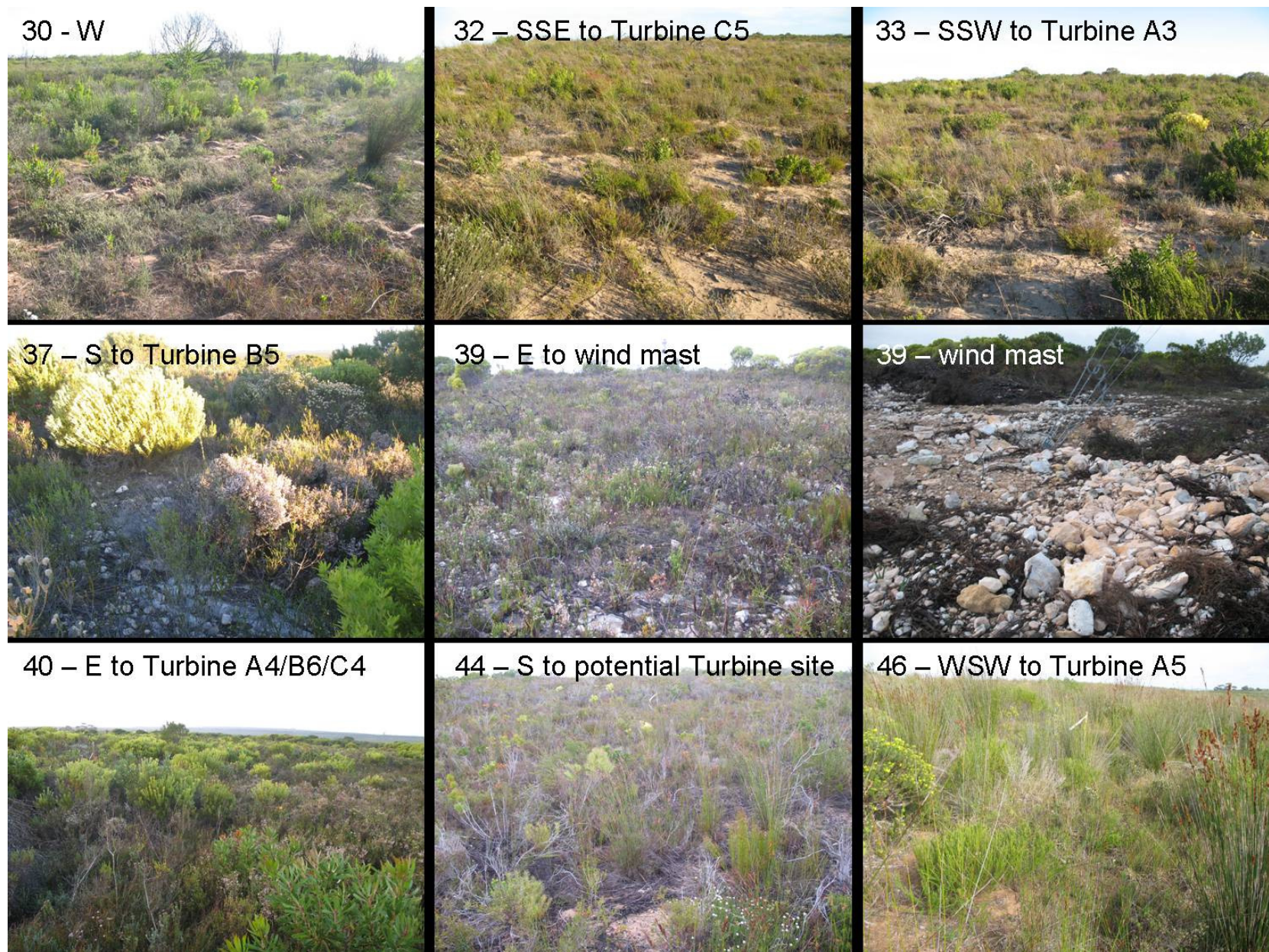


Plate 3. Examples of the environment at wind turbine localities and the existing wind mast (see Figure 5 and Table 2).

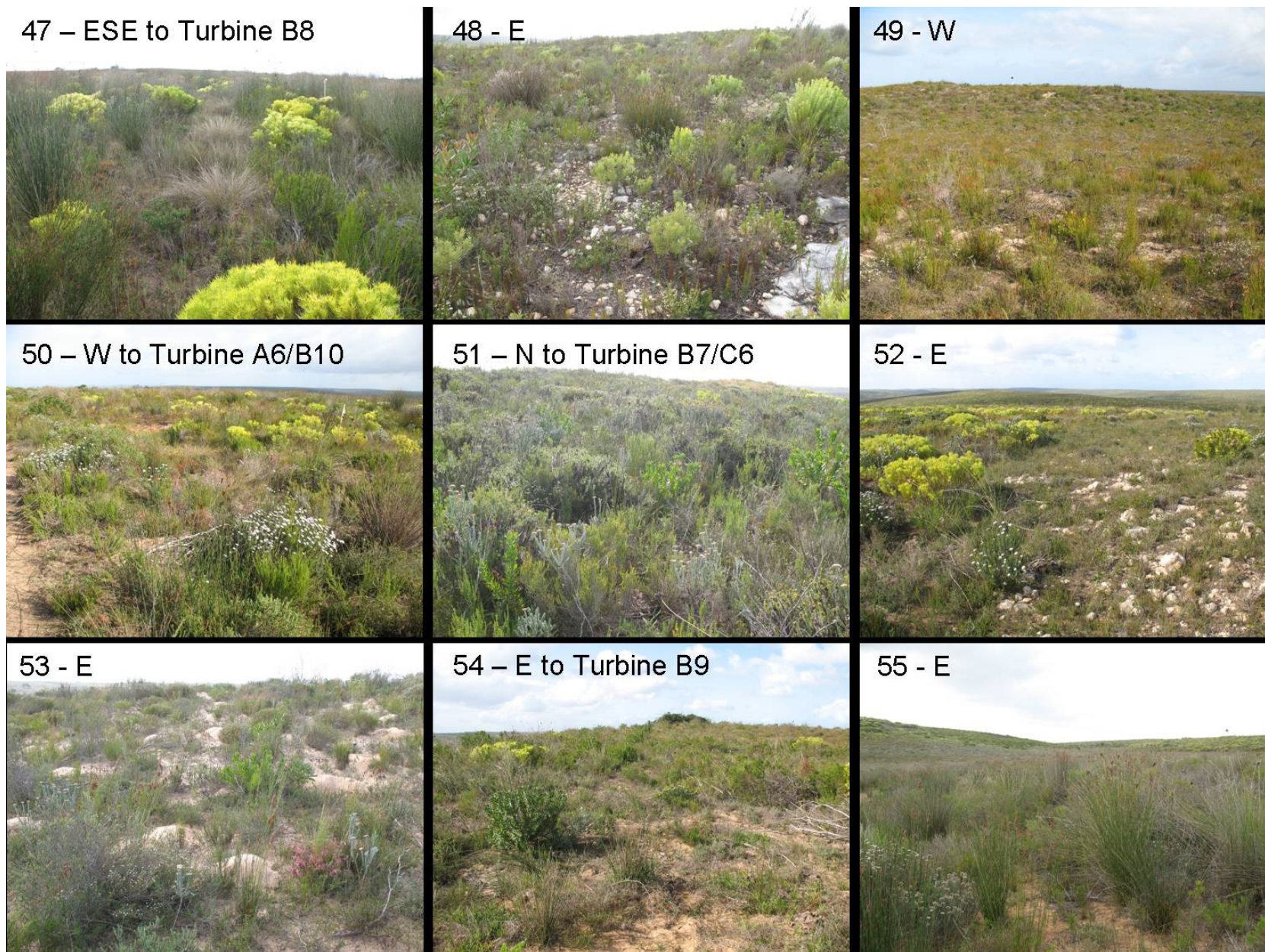


Plate 4. Examples of the surrounding environment and at various wind turbine localities (see Figure 5 and Table 2).

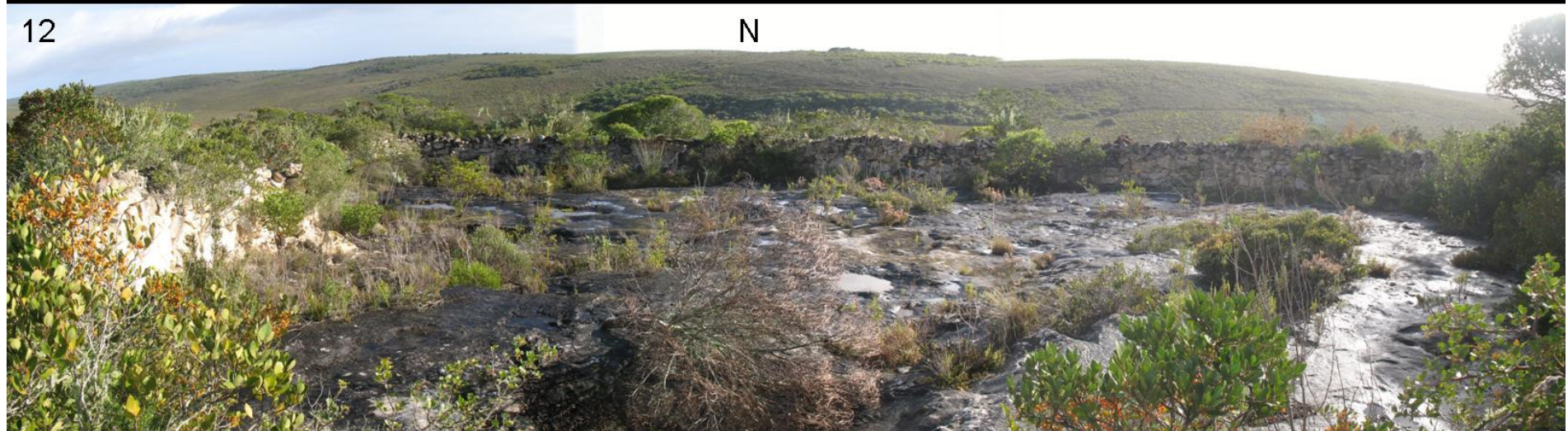


Plate 5. Top – water collection features (12 & 43), ruins and kraal (13) and probable water collection feature circled in white. Bottom – calcrete surface and walling at water collection feature (Figure 6 and Table 2).



Plate 6. Top – water collection feature showing exposed calcrete surfaces, walling and natural or modified pools that are plastered in places. Bottom – calcrete surface and walling at water collection feature (Figure 6 and Table 2).

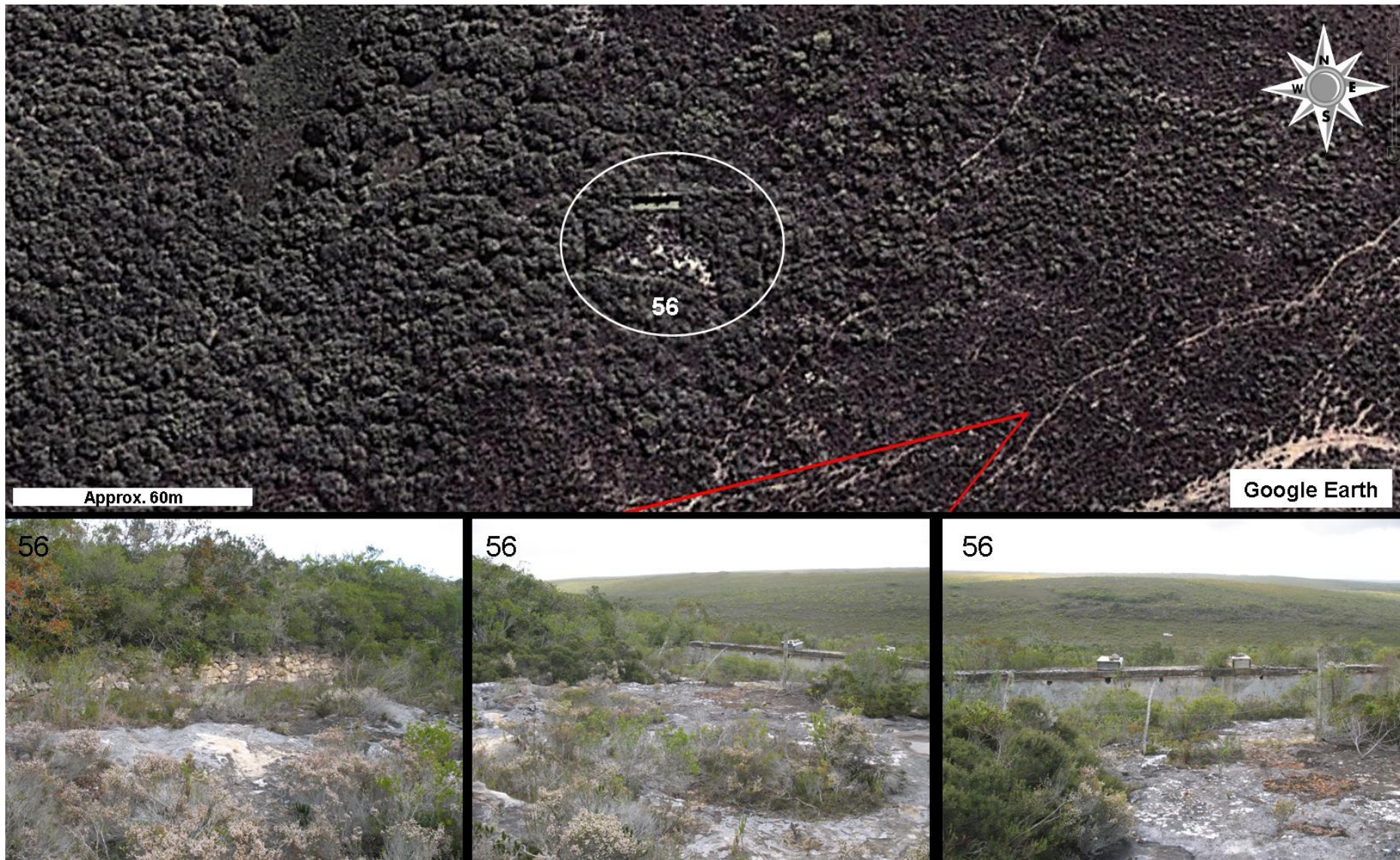


Plate 7. Water collection feature at waypoint 56 showing exposed calcrete surfaces, walling and man-made dam (Figure 6 and Table 2).



45 - SE



Plate 8. Restored and functional water collection feature at waypoint 45 (Figure 6 and Table 2).



Plate 9. Ruins at waypoint 13 – dwelling, kraal and garage/store (Figure 6 and Table 2).



Plate 10. Contexts and archaeological stone artefacts – flakes, flaked pieces/cores and a small core (Figure 6 and Table 2).