ARCHAEOLOGICAL SPECIALIST STUDY

In terms of Section 38(8) of the NHRA for a

Proposed Development of the Pixley Park REF and associated infrastructure near De Aar

Prepared by

CTS HERITAGE

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EXECUTIVE SUMMARY

Mulilo is proposing the development of up to 4 x 100MW PV facilities on a site near de Aar. The projects will all connect to the new Vetlaagte Main Transmission Substation (MTS) via the Wag 'n Bietjie MTS. The 4 projects are referred to as Carolus PV, Fountain PV, Rietfontein PV and Wagt PV and will have a combined output of 700MW.

The overall archaeological sensitivity of the development area with regard to the preservation of Early, Middle and Later Stone Age archaeology as well as Khoe and San heritage, early colonial settlement is regarded as very high. Despite this, the field assessment conducted for this project has demonstrated that the specific area proposed for development has low sensitivity for impacts to significant archaeological heritage on the flat, grassy plains with higher sensitivities in the immediate areas on and surrounding the dolerite outcrops.

As indicated above, the results of this assessment align with the findings of other specialists such as Morris (2011) who notes that ephemeral MSA and LSA scatters are the dominant archaeological signature of the area and are therefore not archaeologically significant.

Recommendations

There is no objection to the proposed development in terms of impacts to archaeological heritage on condition that:

- Sites Pixley 012, 013 and 014 are given a 100m buffers and demarcated during the construction period if any infrastructure is planned near these sites.
- Sites Pixley 042 and 062 are given 50m buffers
- The site development plan of the PV laydown areas and roads should be set to avoid the sites identified above
- The dolerite outcrops spanning west-east along portions of Wag 'n Bietjie 5 as well as the outcrops in the far northern end near Carolus Poort should ideally be avoided for the location of the solar PV laydown area and access roads carefully planned to minimise the impact on any other dolerite outcrops. Site 062 lies on a small ridge on Riet Fountain 6 and roads or PV laydown areas should be placed on the level grassy plains and not on the ridges where archaeological material is concentrated.
- The construction of powerlines is far less impactful on archaeological sites and the siting of pylons can be made through most of the area without causing significant damage to archaeological sites.
- Should any buried archaeological resources or human remains or burials be uncovered during the course of development activities, work must cease in the vicinity of these finds. The South African Heritage Resources Agency (SAHRA) must be contacted immediately in order to determine an appropriate way forward.

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1. INTRODUCTION

1.1 Background Information on Project

Mulilo is proposing the development of up to 4 x PV facilities on a site near de Aar. The projects will all connect to the new Vetlaagte Main Transmission Substation (MTS) via the Wag ‘n Bietjie MTS. The grid connection infrastructure would include the following:

» Onsite 132kV switching station - 100m x 100m and 30m height
» 132kV Overhead Power Line (OHPL) – 30m height from the switching station to the MTS within a 200m grid corridor
» Extension of the 132kV Busbar at the MTS
» 132kV Feeder Bay at the MTS
» Extension of the 400kV Busbar at the MTS
» 400/132kV Transformer at the MTS
» Access Road to switching station and along the powerline route up to the MTS
» Generic electrical infrastructure EMPs

Property details are as follows:

» Farm Wag 'n Bietjie 5
» Portion 1 of Farm Riet Fountain 6
» Portion 3 & 4 of Farm Carolus Poort 3

The 4 projects are referred to as Carolus PV, Fountain PV, Rietfontein PV and Wagt PV and will have a combined output of 700MW.

1.2 Description of Property and Affected Environment

The four Pixley Park solar PV projects lie on three farms, Wag ‘n Bietjie 5, Riet Fountain 6 and Carolus Poort 3. These properties are to the east and north east of the Hydra substation which is roughly 10km south of De Aar in the Northern Cape. A number of renewable energy projects, particularly solar PV farms, have been proposed immediately surrounding this substation and three completed solar farms lie north and northwest such as De Aar Solar and Paarde Valley. A completed 144MW wind farm lies on the plateau north east of the development. Large 765kV powerlines traverse the area connecting up the grid to and from the Hydra substation. The northern boundary at Carolus Poort holds a prominent koppie while smaller dolerite outcrops run in a west to east line on Wag ‘n Bietjie 5. Another dolerite ridge lies on Riet Fountain 6 but much of the development footprint has been planned to avoid this rocky topography.

The designated areas for the solar PV farms mostly fall on flat grassland dotted with typical Karoo windmills, kraals and tanks for sheep and cattle farming.The vegetation is typical of the Karoo and the grassland was dense enough over much of the site to hamper visibility of archaeological material lying on the surface, especially due to the recent high rainfall this year.

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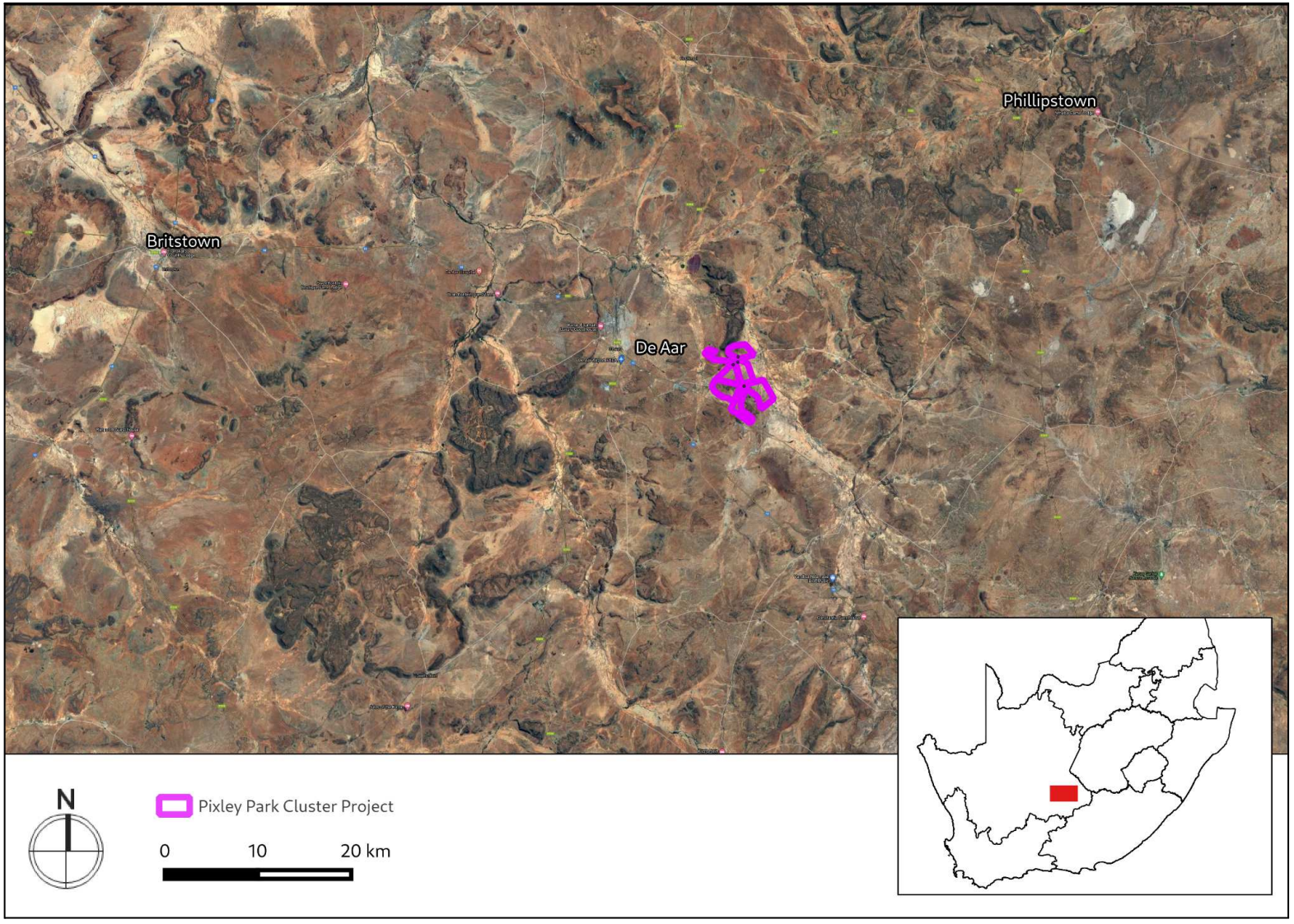

Figure 1.1: Close up satellite image indicating proposed location of study area

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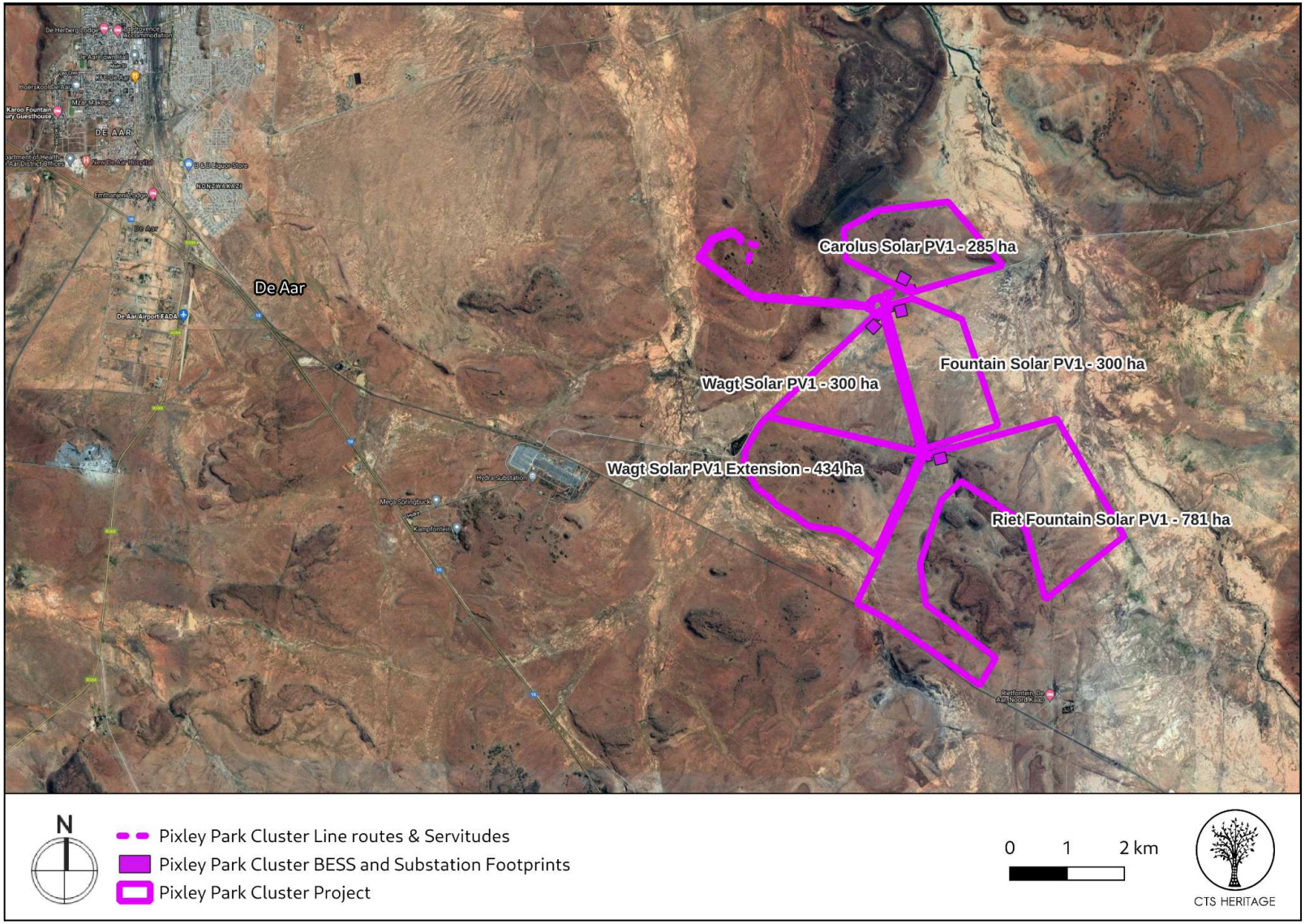

Figure 1.2: Study Area

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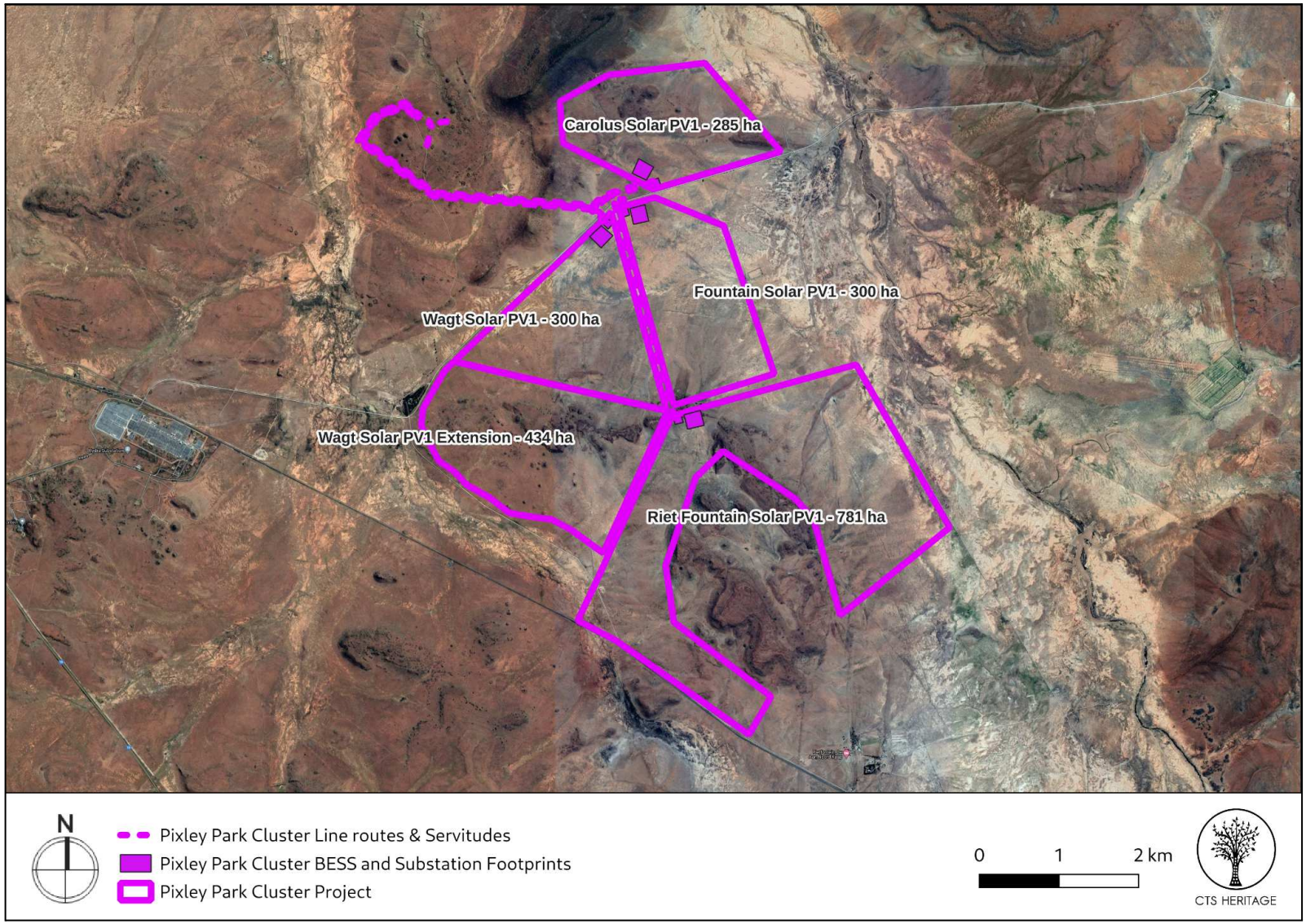

Figure 1.3: Study Area

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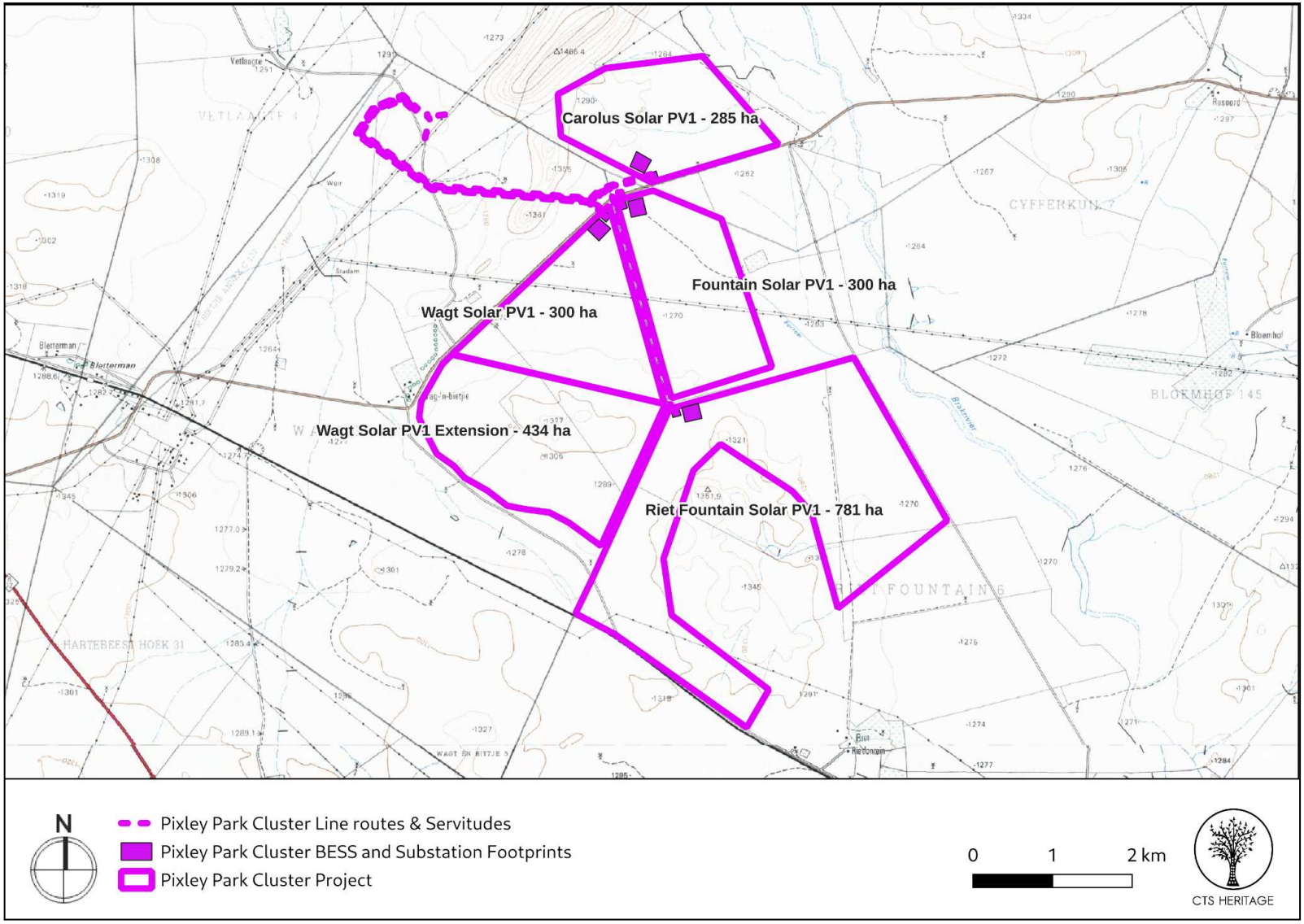

Figure 1.4: Study Area reflected on the 1:50 000 Topo Map

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2. METHODOLOGY

2.1 Purpose of Archaeological Study

The purpose of this archaeological study is to satisfy the requirements of section 38(8), and therefore section 38(3) of the National Heritage Resources Act (Act 25 of 1999) in terms of impacts to archaeological resources.

2.2 Summary of steps followed

- An archaeologist conducted a survey of the site and its environs on 7-11 February and 23-24 May 2022 to determine what archaeological resources are likely to be impacted by the proposed development.
- The study area was assessed on foot in transects, photographs of the context and finds were taken, and tracks were recorded using a GPS.
- The identified resources were assessed to evaluate their heritage significance in terms of the grading system outlined in section 3 of the NHRA (Act 25 of 1999).
- Alternatives and mitigation options were discussed with the Environmental Assessment Practitioner.

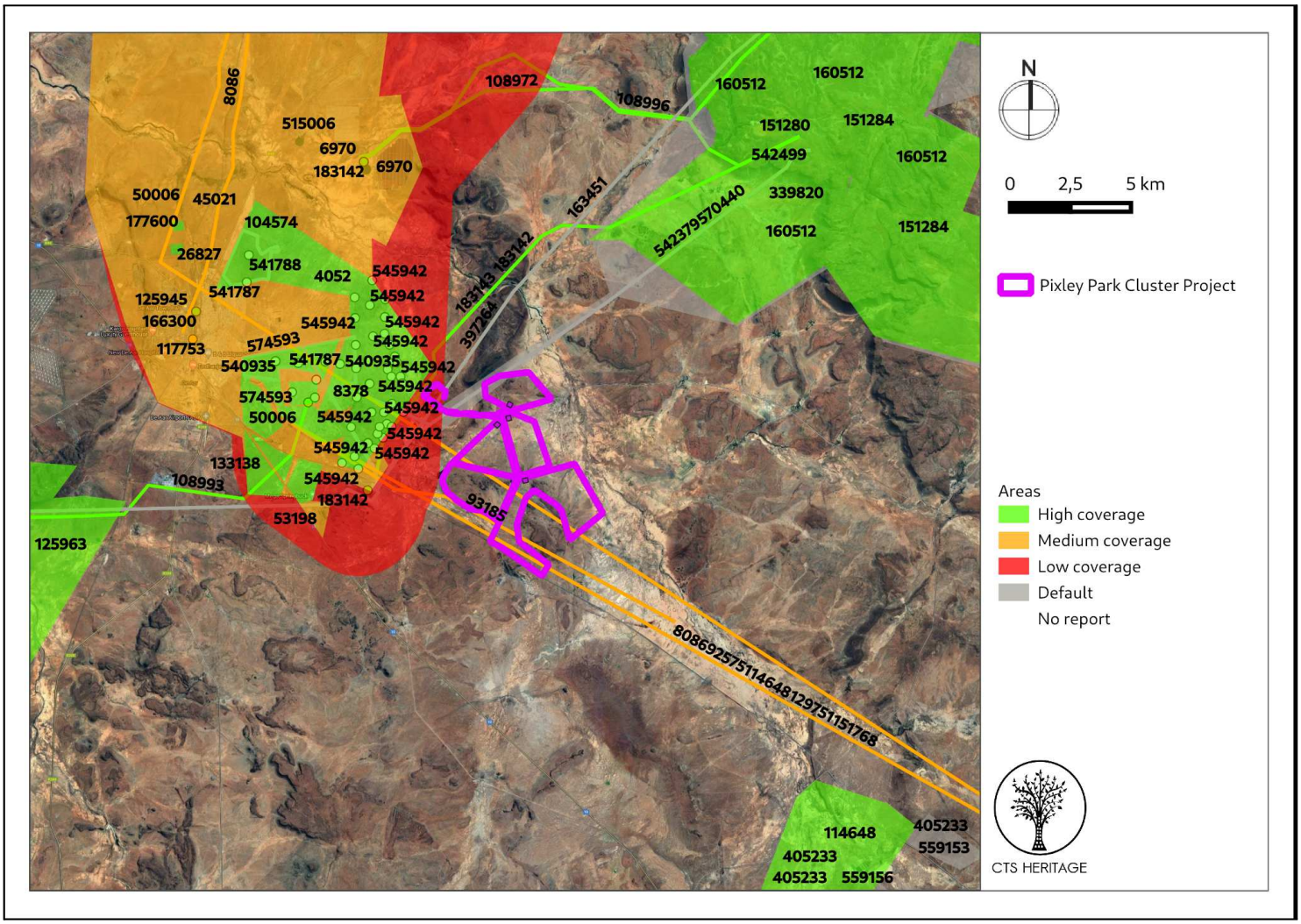

Figure 2: Close up satellite image indicating proposed location of the study area in relation to heritage studies previously conducted

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2.3 Constraints & Limitations

Recent good rains in the area had significantly elevated the vegetation density (mostly grassland) for the survey but sufficient open ground was found throughout the study area to properly document the archaeological material. Much of the project area is relatively flat and easily traversed which enabled very high survey coverage to be achieved. Archaeological visibility was very high in the areas on and immediately adjacent to the dolerite outcrops where most of the archaeological material is concentrated.

3. HISTORY AND EVOLUTION OF THE SITE AND CONTEXT

De Aar was originally established on the Farm "De Aar." The name means "the artery," a reference to its underground water supply. The Cape Government Railways were founded in 1872, and the route that the government chose for the line to connect the Kimberley diamond fields to Cape Town on the coast, ran directly through De Aar. Because of its central location, the government also selected the location for a junction between this first railway line, and the other Cape railway networks further east, in 1881. In 1899 two brothers who ran a trading store and hotel at the junction, Isaac and Wulf Friedlander, purchased the farm of De Aar. Following the Anglo Boer War, the Friedlander brothers surveyed the land for the establishment of a town. The municipality was created a year later in 1900.

Orton (2012) writes that “The colonial period history of the area is not that old. While the town of De Aar only dates back to 1903, just after the cessation of the 1899-1902 Anglo-Boer War, farms were given out and surveyed in the 1800s.” He goes on to note that “ The railway junction dates to 1881 when Cape Town and Kimberley were linked by rail after diamonds were discovered at the latter town. It was very important to the British during the Anglo-Boer War since railway lines from Cape Town and Port Elizabeth joined here and extended on through Kimberley to Mafikeng (AngloBoerWar.com 2011). De Aar was also the site of the first use of wireless telegraphy in South Africa where the British employed it to maintain communications between their various columns operating in the area. However, owing to the climatic conditions in the Karoo, the wireless sets, which were designed for shipboard use, could not perform properly and were soon withdrawn from inland service (Baker 1998). The town was laid out around the railway junction on the farm De Aar which was purchased in 1889 by Isaac and Wolf Friedlander, who ran a trading store and hotel at the railway junction. After the war, the brothers established the town.” Orton (2012) also notes that “Two Provincial Heritage Sites occur in De Aar. These are the “Olive Schreiner house” and the “St Paul’s Church”. At least one other building is listed (SAHRA, n.d.). Many of the older buildings in the town are early 20th century, including some art deco, but the majority of structures date to the mid- to late 20th century. De Aar is well known as one of the places where Olive Schreiner lived. She and her husband were there from 1907 to 1914.”

Kruger (2012) describes the development area as “characterised by flat undulating Karoo vegetation comprised of relatively sparse scrub and grasses, with dolerite hills in the surrounding landscape. Large portions of the land is currently devoted to livestock farming but a number of solar energy facilities are to be constructed on farms around De Aar. Shallow soils covers a combination of calcrete, shale and dolerite substrates, and large sections in the landscape are exposed to sheet erosion, specifically along low lying areas and drainage lines. Dolerite and sandstone is present, while exotic rocks occur in the gravel of the Orange River bed and terraces. These provided suitable material

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for stone tool production during the Earlier, Middle and Later Stone Ages."

Archaeology

As part of the 2012 process for approval of the Vetlaagte Solar Energy Facility located immediately adjacent to the proposed development area, Kruger conducted a detailed Heritage Impact Assessment of the area. According to Kruger (2012), "During the survey, widespread Middle Stone Age (MSA) material, including characteristic formal MSA stone tools such as points, blades and scrapers were documented in the survey area along a north-south oriented drainage on the (western) periphery of the property. The lithic remains occur in three large scatters and, almost without exception, in low lying areas along non-perennial drainage lines and wetland areas where precipitation and groundwater have exposed the stone tools, originally deposited on a decomposed calcrete rock layer approximately 30cm sub surface. Preliminary examinations of some of the lithics indicated that a number of flakes displayed facetted platforms, characteristic of the MSA." Part of the study area for the Wag 'n Bietjie development assessed in this report is located within the drainage described above. It is therefore likely that the proposed development will impact on significant MSA archaeology.

Kruger (2012) also documented historical period remains, "specifically the old Vetlaagte homestead with restored farmhouse, outbuildings, midden and labourers quarters, as well as a dilapidated dam wall constructed in the drainage line east of the farmstead are present on the property. The date of construction of the farm house is denoted by a year count ("1930") on the front gable of the structure. The entire farmstead is situated in an area excluded from the solar farm development. A small family graveyard, associated with the farmstead at Vetlaagte, also occurs in the exclusion zone about 100m north of the farm house."

In his assessment of areas adjacent to this proposed development, Orton (2012) found that "All the archaeological finds on Badenhorst Dam Farm were pre-colonial, but nevertheless, different types were present. This farm also had areas with artefacts best described as being 'background scatter'. The grass cover, however, meant that fewer such areas were identified. Most were in open, silty patches that clearly hold water in the rainy season…" Orton (2012) found LSA artefacts associated with the ridge running through the property that he assessed, and MSA artefacts from a pan-like area. He noted that "the artefacts in the flatter areas here appeared to be of much lower density and far fewer occurrences were recorded. However, stone artefact scatters with spatial integrity were more common. These were predominantly LSA and very much focused on the rocky ridges crossing the farm."

Orton (2012) noted that the spatially constrained scatters of artefacts that he identified "are almost certain to indicate places where people camped and the durable stone artefacts are now all that remains as evidence. It is also notable that their locations are not random – they are placed on level areas and saddles along the ridges. One of these LSA scatters, DAR2011/019 (#026) included a thumbnail scraper indicative of a mid- to late Holocene age. Some of the artefacts here were very black and shiny indicating recent flaking and deposition." Orton (2012) also identified a number of piled stone structures. These appeared to be concentrated on one particular dolerite ridge and, unlike those from elsewhere in the Karoo, only one may have been a kraal. He determined that these structures are likely to be

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pre-colonial in age as similar piles have been recorded in an almost certain pre-colonial context in the Seacow River valley (Hart 1989). Orton (2012) also identified a number of engraved rocks that date to the LSA and historical times. All of Orton's findings (2012) are mapped in Figure 3 and 3b. While these resources fall outside of this development area, they give an indication of the likely archaeological sensitivity of the development area under consideration in this assessment.

A recent field assessment on an adjacent farm conducted by CTS Heritage found that "The overall archaeological sensitivity of the development area with regard to the preservation of Early, Middle and Later Stone Age archaeology as well as Khoe and San heritage, early colonial settlement is regarded as very high. Despite this, the field assessment conducted for this project has demonstrated that the specific area proposed for development has low sensitivity for impacts to significant archaeological heritage." The report goes on to note that "Two sites warranted protection with an interesting scatter of Still Bay tools on top of a dolerite outcrop with excellent views of the surrounding area. It is highly unlikely this area will be developed and it is recommended that infrastructure is not placed on this outcrop. Another site was found warranting a IIIB rating with pottery, bone and an extensive stone tool assemblage amongst the dolerite outcrops on the eastern end of the property. Again, this site has been demarcated as sensitive and the project team has been advised to avoid this area when finalising the layouts. A minimum buffer of 100m is recommended from this site (Wag n Bietjie 014). The rest of the observations are typical of the area and are ubiquitously distributed in low densities of less than 5 artefacts per observation." Similar heritage resources are likely to be located within the area proposed for development.

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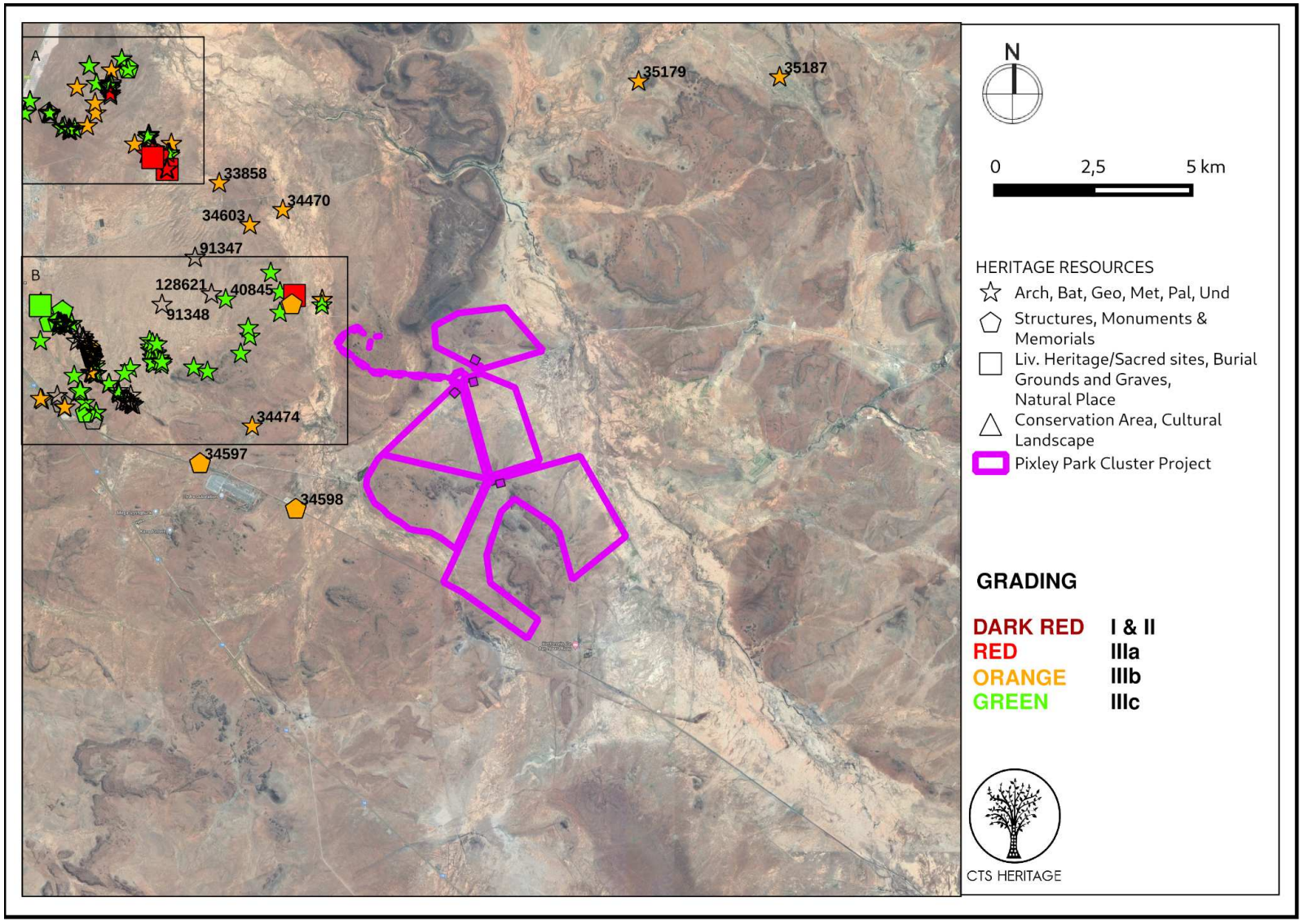

Figure 3. Heritage Resources Map. Heritage Resources previously identified in and near the study area, with SAHRIS Site IDs indicated

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4. IDENTIFICATION OF HERITAGE RESOURCES

4.1 Field Assessment

Over 79 archaeological observations were made during the survey. Hornfels dominated the assemblages with smaller numbers of flakes struck from siltstones. It is very likely that the main dolerite outcrop at Riet Fountain 6 surrounded by this development footprint will contain more sites with a wider range of imported stone such as CCS observed during surveys of Vetlaagte and the Castle WEF. While the vast majority of the scatters were made during the Middle Stone Age, there was also a relatively clear Later Stone Age presence in the study area. Many examples of blade forms were found which is typical of the Still Bay period (>70 000 years BP). Relatively dense Later Stone Age sites were found on the far eastern end of Wag 'n Bietjie and these date within the last 2000 years due to the presence of pottery in these sites.

Five archaeological sites are significant enough to require buffer zones around them to avoid negative impacts from solar PV panels, roads and other related infrastructure. Three of these are rock art sites with engravings on dolerite boulders that were graded with local medium significance (IIIB) and two LSA sites were identified with relatively dense scatters of stone tools. The rest of the observations do not warrant further study as they are typical of the area and are ubiquitously distributed in low densities of less than 5 artefacts per observation. Much of the archaeological material will be well conserved within a series of areas that can't be developed for the solar PV arrays while the flat, grassy vlaktes that are ideal for the solar PV farms are also the areas with the lowest archaeological sensitivity.

Figure 4.1: Contextual Images - view of Wag 'n Bietjie farmhouse complex along western end of study area and looking north towards the low koppies.

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Figure 4.2: Contextual Images - looking east from the western end of the study area - much of the ground is level with a low ridgeline.

Figure 4.3: Contextual Images - views of the open grassland in the eastern end of the study area showing small dolerite outcrops.

Figure 4.4: Contextual Images - view of some typical dolerite boulder outcrops.

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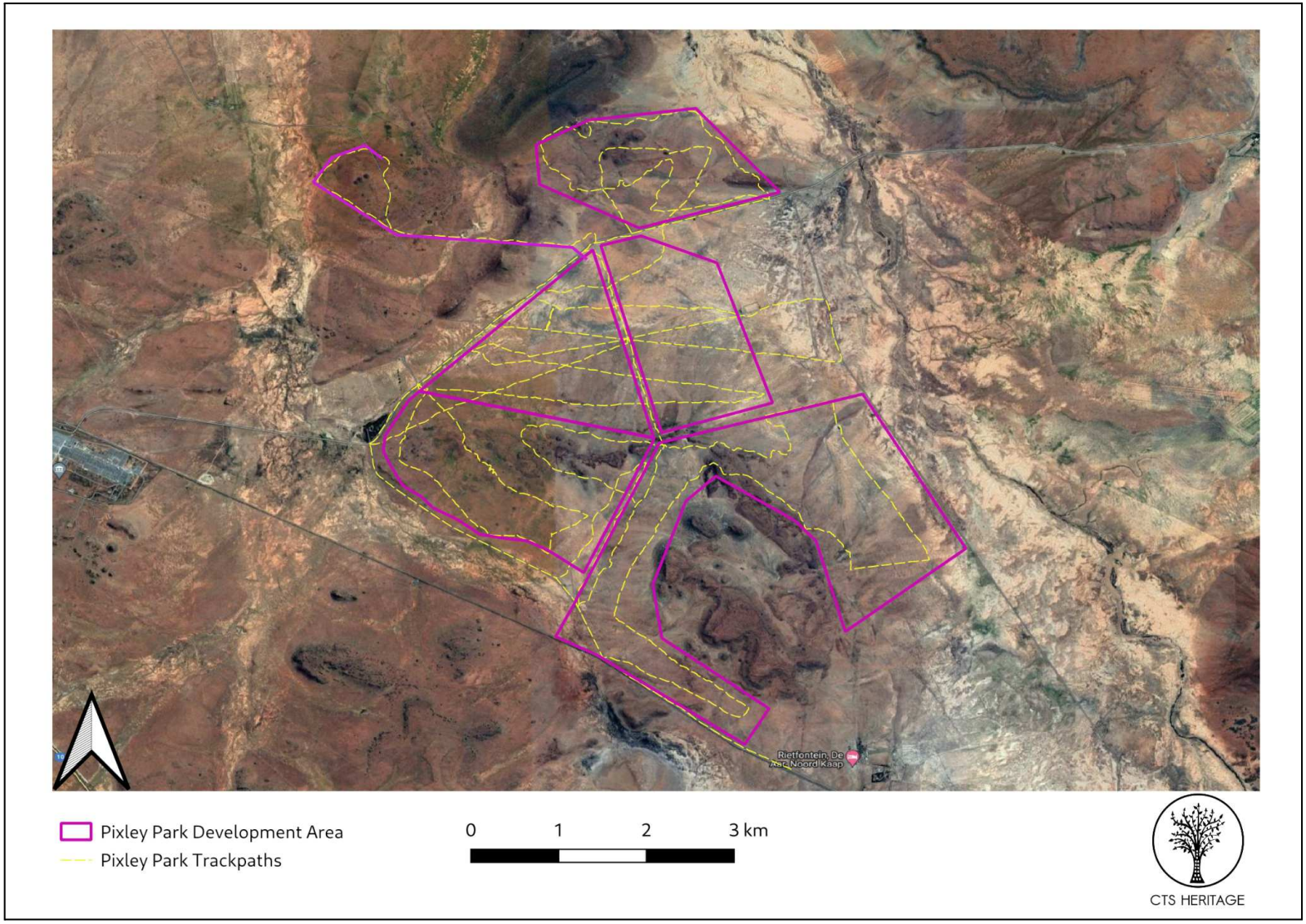

Figure 5.1: Overall track paths of foot survey

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4.2 Archaeological Resources identified

Table 2: Observations noted during the field assessment

Site No.	Site Name	Description	Density m2	Period	Co-ordinates		Grading	Mitigation
001	Wagt	Hornfels point, retouched patinated, hornfels core LSA	0 to 5	LSA+MSA	-30.70736	24.12672	NCW	NA
002	Wagt	Siltstone flake	0 to 5	MSA	-30.71072	24.12514	NCW	NA
003	Wagt	Very patinated hornfels flakes, bladelet forms dominant	5 to 10	MSA	-30.71371	24.12437	NCW	NA
004	Wagt	Hornfels chunk and thinned point flake	0 to 5	MSA	-30.71465	24.12452	NCW	NA
005	Wagt	Siltstone flake	0 to 5	MSA	-30.71877	24.13032	NCW	NA
006	Wagt	Blade struck retouched flake, patinated	0 to 5	MSA	-30.71987	24.13132	NCW	NA
007	Wagt	Siltstone cores with multiple flake scars, hornfels flakes, porcelain, metal sheet and wire	10 to 30	MSA, LSA, historic	-30.7223	24.13362	NCW	NA
008	Wagt	Patinated hornfels point	0 to 5	MSA	-30.72342	24.13787	NCW	NA
009	Wagt	Patinated hornfels flake	0 to 5	MSA	-30.72547	24.14207	NCW	NA
010	Wagt	Hornfels core, edge flaked	0 to 5	LSA	-30.72326	24.14242	NCW	NA
011	Wagt	Patinated hornfels flake	0 to 5	MSA	-30.71667	24.13618	NCW	NA
012	**Wagt**	**Engravings, roughly scratched, crude form of animal, for legs, crab like figure, ostrich eggshell**	**0 to 5**	**LSA**	**-30.71583**	**24.13549**	**IIIB**	**100m buffer**
013	**Wagt**	**Outlined scratched antelope engraving**		**LSA**	**-30.71555**	**24.13556**	**IIIB**	**100m buffer**
014	**Wagt**	**Engravings, also similar crudely scratched. Animal form, 2 long ostrich figures**		**LSA**	**-30.71528**	**24.13506**	**IIIB**	**100m buffer**
015	Wagt	Fine grained hornfels flakes, LSA and MSA, retouched	5 to 10	LSA+MSA	-30.7125	24.1319	NCW	NA
016	Wagt	Patinated hornfels flake	0 to 5	MSA	-30.70593	24.12877	NCW	NA
017	Wagt	Patinated hornfels flake	0 to 5	MSA	-30.70727	24.14252	NCW	NA
018	Wagt	Patinated hornfels flake	0 to 5	MSA	-30.70768	24.15075	NCW	NA
019	Wagt	Patinated hornfels flake	0 to 5	MSA	-30.70769	24.15317	NCW	NA
020	Fountain	Two patinated hornfels flakes	0 to 5	MSA	-30.70753	24.15583	NCW	NA
021	Fountain	Patinated hornfels flake	0 to 5	MSA	-30.70754	24.15995	NCW	NA
022	Fountain	Early MSA patinated hornfels flake	0 to 5	MSA	-30.70754	24.16425	NCW	NA
023	Fountain	Various patinated hornfels flakes and cores	5 to 10	MSA	-30.70621	24.16527	NCW	NA
024	Fountain	Patinated hornfels flake	0 to 5	MSA	-30.70543	24.16088	NCW	NA
025	Fountain	Chert core and hornfels flake	0 to 5	MSA	-30.70473	24.15455	NCW	NA
026	Wagt	Patinated hornfels point	0 to 5	MSA	-30.70357	24.14686	NCW	NA
027	Wagt	Hornfels core flake	0 to 5	MSA	-30.70283	24.14258	NCW	NA
028	Wagt	Thin hornfels points	0 to 5	MSA	-30.70139	24.14258	NCW	NA

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029	Wagt	Patinated hornfels flakes	0 to 5	MSA	-30.70071	24.14721	NCW	NA
030	Fountain	Patinated hornfels flake	0 to 5	MSA	-30.69968	24.15232	NCW	NA
031	Fountain	Various hornfels flakes	5 to 10	MSA	-30.69845	24.15833	NCW	NA
032	Fountain	Kraal, dam windmill	n/a	Modern	-30.69642	24.16576	NCW	NA
033	Fountain	Patinated hornfels flakes	0 to 5	MSA	-30.69665	24.16344	NCW	NA
034	Fountain	Patinated hornfels flakes	0 to 5	MSA	-30.69634	24.15944	NCW	NA
035	Fountain	Hornfels blade and point	0 to 5	LSA	-30.69602	24.15521	NCW	NA
036	Fountain	Very patinated hornfels flakes	0 to 5	MSA	-30.69598	24.15159	NCW	NA
037	Fountain	Hornfels core and flakes	0 to 5	MSA	-30.69342	24.14989	NCW	NA
038	Fountain	Various hornfels flakes	5 to 10	MSA	-30.69189	24.15262	NCW	NA
039	Fountain	Various hornfels flakes	5 to 10	MSA	-30.69127	24.15398	NCW	NA
040	Fountain	Very patinated hornfels flakes	0 to 5	MSA	-30.69006	24.15548	NCW	NA
041	Carolus	Unifacial point and hornfels flakes	0 to 5	MSA	-30.68516	24.15658	NCW	NA
042	**Carolus**	**Hornfels core, flakes, retouched, bladelet**	**30+**	**LSA**	**-30.68147**	**24.15974**	**IIIB**	**50m buffer**
043	Carolus	Early MSA cores and flakes	5 to 10	MSA	-30.67963	24.16045	NCW	NA
044	Carolus	Hornfels radial core	0 to 5	MSA	-30.67719	24.16139	NCW	NA
045	Carolus	Kraal and tank	n/a	Modern	-30.67257	24.15848	NCW	NA
046	Carolus	Various hornfels flakes edge retouched	0 to 5	MSA	-30.67744	24.1583	NCW	NA
047	Carolus	Hornfels core	0 to 5	MSA	-30.67723	24.15582	NCW	NA
048	Carolus	Hornfels core flake	0 to 5	MSA	-30.67722	24.15211	NCW	NA
049	Carolus	Hornfels core and flake	0 to 5	MSA	-30.67763	24.14843	NCW	NA
050	Carolus	Early MSA hornfels flakes, cores	10 to 30	MSA	-30.68001	24.14847	NCW	NA
051	Carolus	Fine grained hornfels flakes and cores	10 to 30	MSA	-30.68343	24.14963	NCW	NA
052	Riet Fountain	Patinated hornfels flake	0 to 5	MSA	-30.73148	24.14537	NCW	NA
053	Riet Fountain	Isolated hornfels flake	0 to 5	LSA	-30.73806	24.14971	NCW	NA
054	Riet Fountain	Quartzite flake	0 to 5	MSA	-30.74231	24.15942	NCW	NA
055	Riet Fountain	Retouched hornfels flakes	0 to 5	MSA	-30.7434	24.16153	NCW	NA
056	Riet Fountain	Retouched hornfels flakes	0 to 5	MSA	-30.74502	24.16462	NCW	NA
057	Riet Fountain	Hornfels flake with dented b. Percussion	0 to 5	MSA	-30.74397	24.16588	NCW	NA
058	Riet Fountain	Hornfels flake	0 to 5	MSA	-30.73311	24.14981	NCW	NA
059	Riet Fountain	Hornfels flake with pointed end	0 to 5	MSA	-30.72309	24.15471	NCW	NA
060	Riet Fountain	Siltstone early Msa flake	0 to 5	MSA	-30.71886	24.15737	NCW	NA
061	Riet Fountain	Hornfels retouched flake	0 to 5	LSA	-30.71497	24.16215	NCW	NA
062	**Riet Fountain**	**Various hornfels microliths on view point**	**30+**	**LSA**	**-30.71609**	**24.16361**	**IIIC**	**50m buffer**
063	Riet Fountain	Patinated hornfels flake core	0 to 5	MSA	-30.71804	24.16811	NCW	NA

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064	Riet Fountain	Patinated hornfels flake	0 to 5	MSA	-30.72058	24.17171	NCW	NA
065	Riet Fountain	Patinated hornfels flake	0 to 5	MSA	-30.72294	24.1755	NCW	NA
066	Riet Fountain	Patinated hornfels flakes	0 to 5	MSA	-30.72689	24.18172	NCW	NA
067	Riet Fountain	Hornfels flakes in washed-out area	0 to 5	MSA	-30.72504	24.18691	NCW	NA
068	Riet Fountain	Patinated hornfels flake blade	0 to 5	MSA	-30.72128	24.18422	NCW	NA
069	Riet Fountain	Hornfels flake blade lateral retouch	0 to 5	MSA	-30.71935	24.18286	NCW	NA
070	Riet Fountain	Patinated hornfels flakes in wetland	5 to 10	MSA	-30.71775	24.18149	NCW	NA
071	Riet Fountain	Triangular retouched flake, point	0 to 5	MSA	-30.71541	24.17958	NCW	NA
072	Riet Fountain	Jagged hornfels flake with dorsal scars	0 to 5	MSA	-30.71197	24.17723	NCW	NA
073	Riet Fountain	Hornfels debitage and flakes	0 to 5	MSA	-30.70904	24.16838	NCW	NA
074	Riet Fountain	Hornfels core flake with lateral retouch	0 to 5	MSA	-30.71346	24.16968	NCW	NA
075	Wagt	Hornfels core	0 to 5	MSA	-30.71095	24.14137	NCW	NA
076	Grid	Hornfels blade, edge retouched	0 to 5	MSA	-30.68882022	24.14215164	NCW	NA
077	Grid	Early MSA siltstone flake edge retouched	0 to 5	MSA	-30.68839403	24.13644379	NCW	NA
078	Grid	Old farm dam, earthen	n/a	Modern	-30.68789437	24.13177839	NCW	NA
079	Grid	Hornfels core and flake, edge retouched	0 to 5	MSA	-30.68242723	24.11585108	NCW	NA

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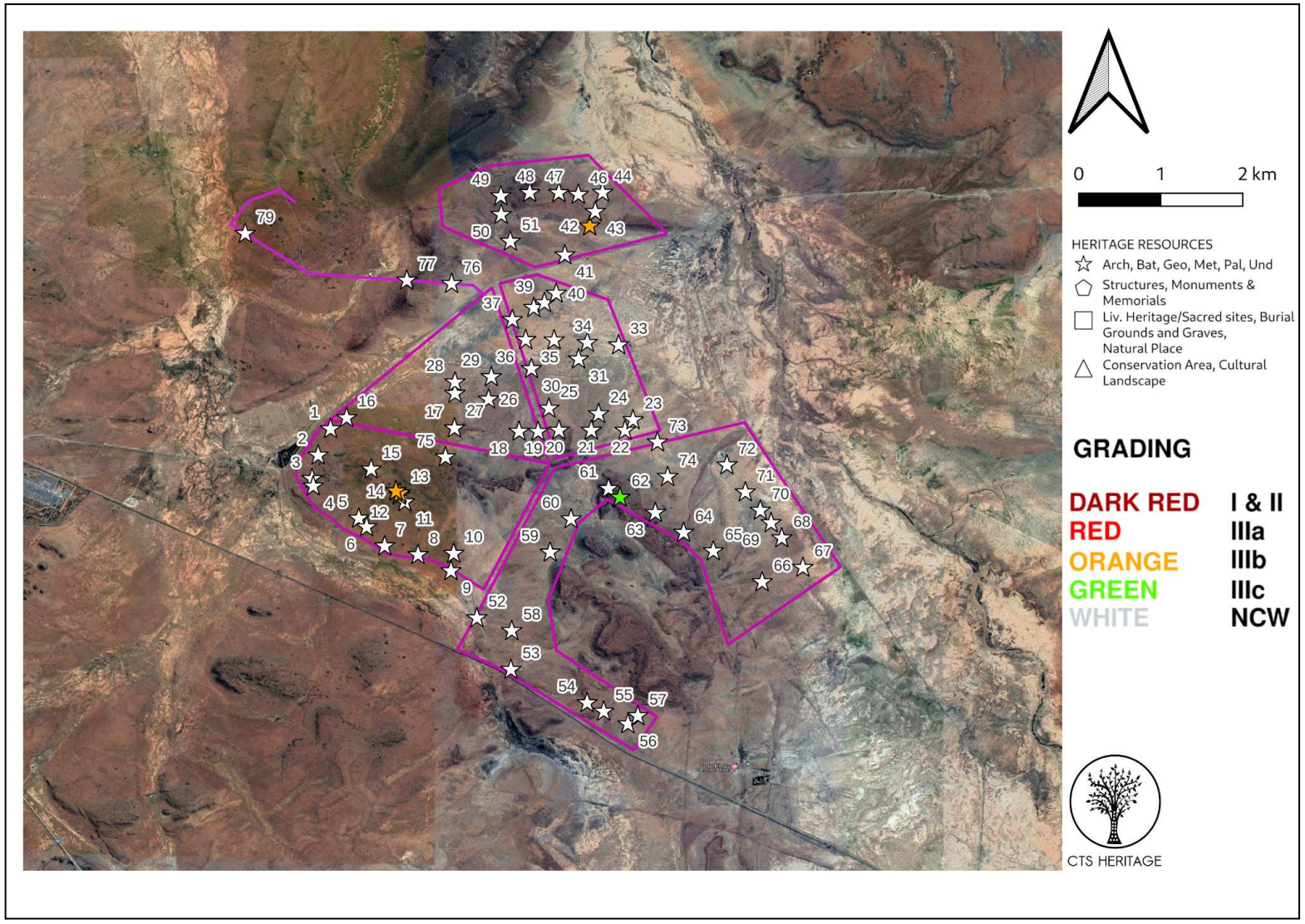

Figure 6.1: Map of field observations relative to the proposed development

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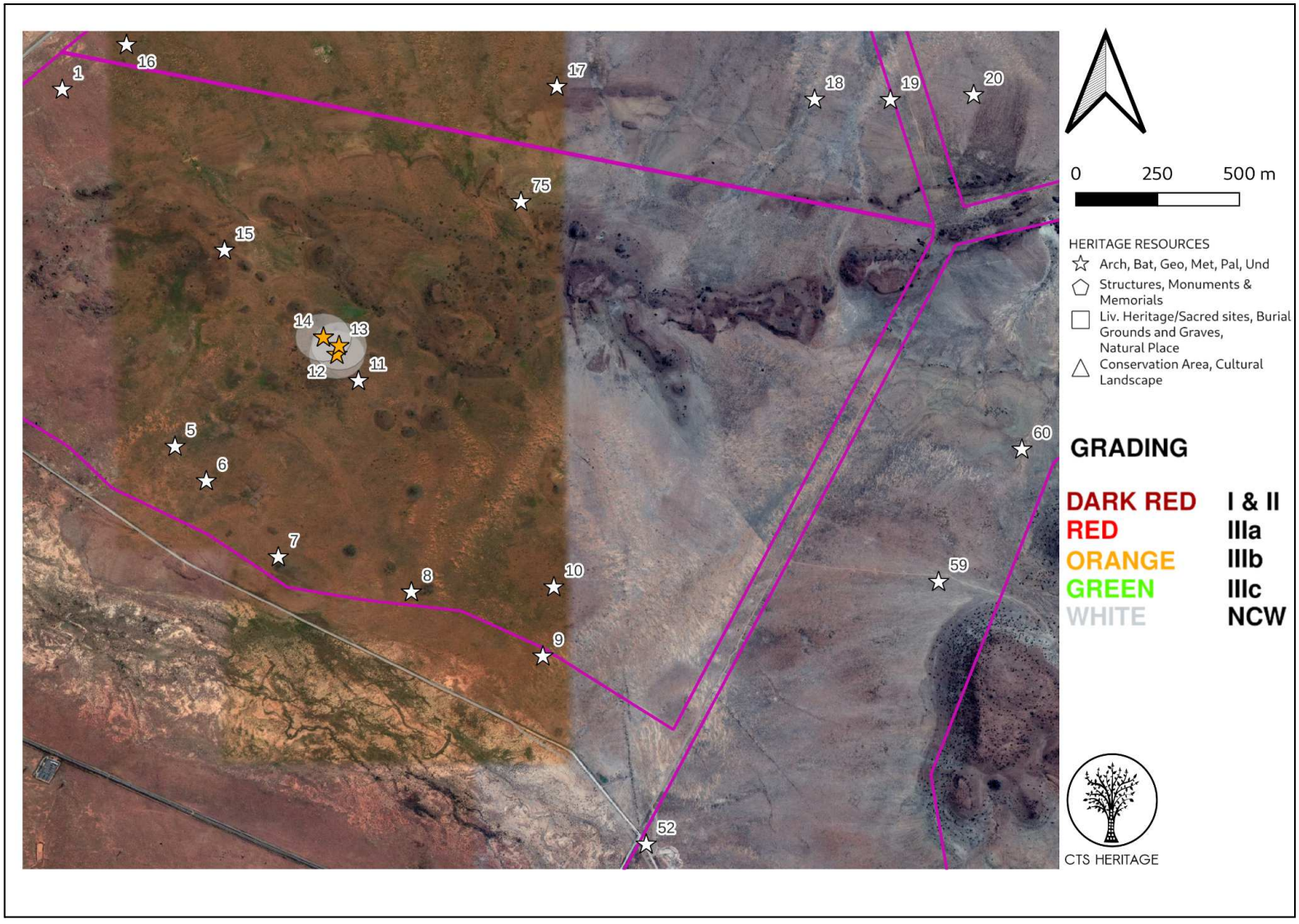

Figure 6.2: Map of field observations with 100m buffers set around the rock art sites

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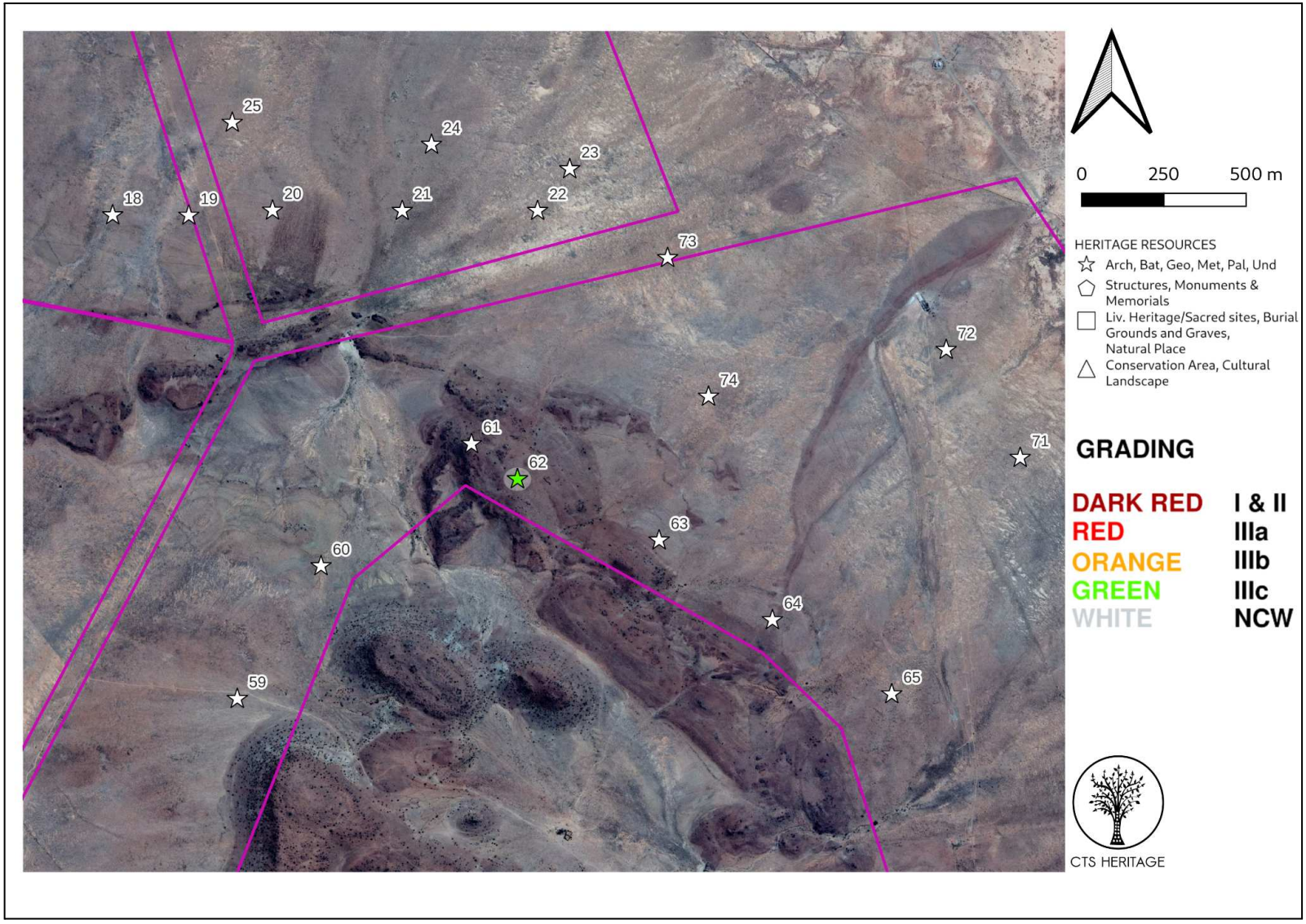

Figure 6.3: Map of field observations with 50m buffers set around the significant sites

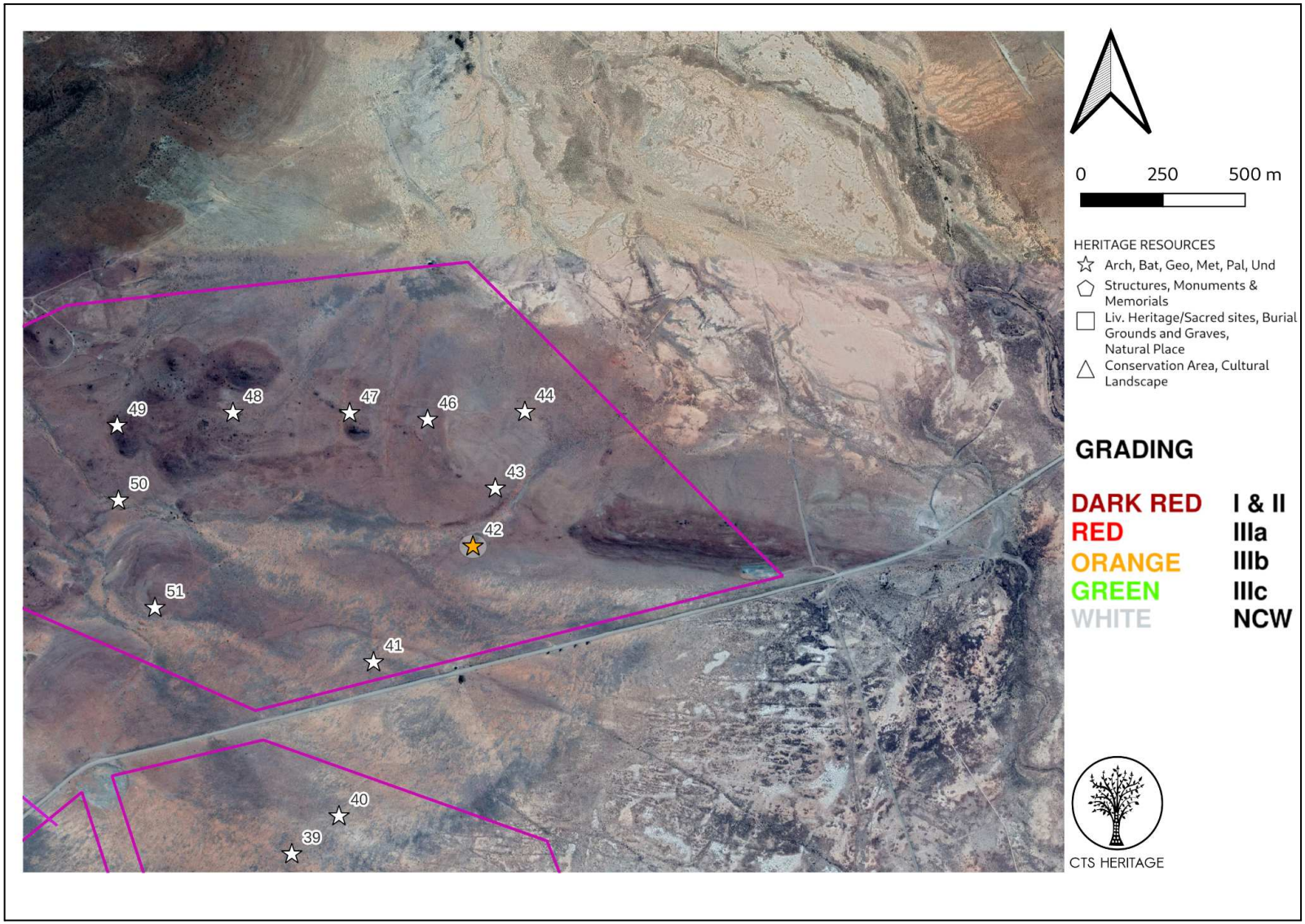

Figure 6.4: Map of field observations with 50m buffers set around the significant sites

4.3 Selected photographic record

(a full photographic record is available upon request)

Figure 7.1: Observation Pixley 007

Figure 7.2: Observations Pixley 012

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Figure 7.3: Observation Pixley 013 - DStretched image on the right

Figure 7.4: Observation Pixley 014

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Figure 7.5: Observation Pixley 042

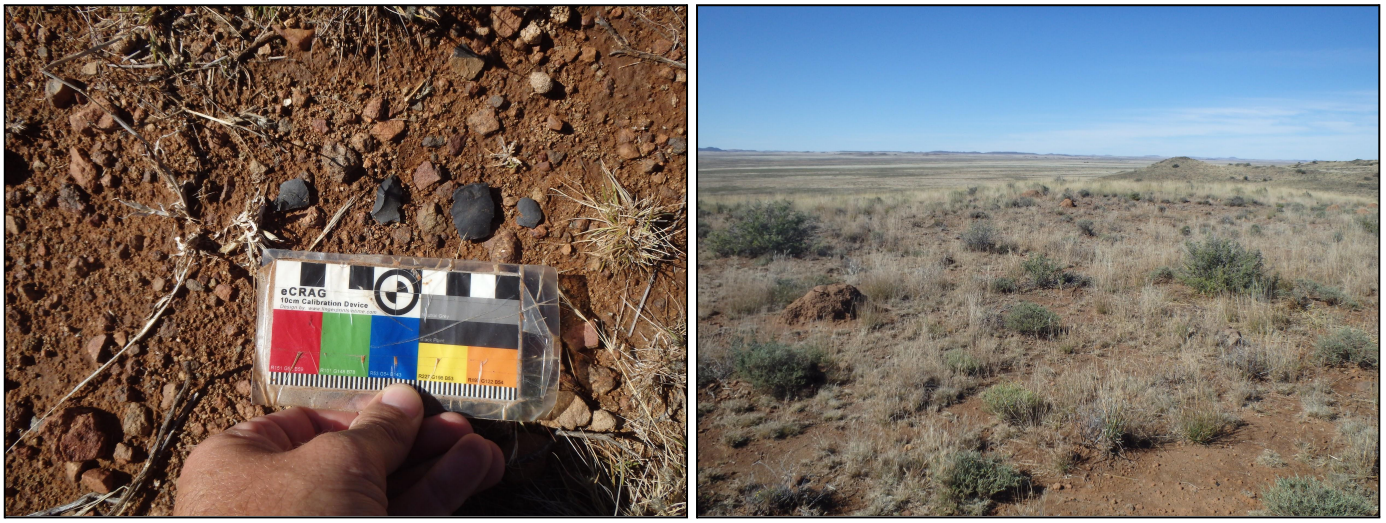

Figure 7.6: Observation Pixley 062

Figure 7.7: Observation Pixley 044

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5. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

5.1 Assessment of impact to Archaeological Resources

The results of the archaeological field assessment conducted largely aligns with the findings of previous archaeological assessments completed in the vicinity of the proposed development. The archaeological resources identified within the development area are dominated by Later and Middle Stone Age flakes, which corresponds with similar findings of others (Kruger, 2012). All except 5 of the archaeological resources identified within the areas proposed for the development in this field assessment have been determined to be not conservation-worthy. As such, these resources have been sufficiently recorded and there is no objection to the proposed development in these locations from an archaeological perspective. The five archaeological sites, numbers 012, 013, 014, 042 and 062 have been given buffer zones to demarcate and protect these sites from the development footprint. Sites 012-014 are rock engravings and associated stone tools surrounding these dolerite outcrops - a 100m buffer has been set for these sites. 50m buffers have been assigned to sites 042 and 062 which consist of higher concentrations of LSA stone tool assemblages.

Given the uneven terrain created by the dolerite outcrop as well as the tendency for pre-colonial occupation to be concentrated around these natural shelters, we highly recommend that careful consideration is made to placing the solar PV infrastructure away from these outcrops and utilising the flat, grassy plains where archaeological sensitivities are very low (see Figure 7 for sensitive dolerite outcrop area). Furthermore, access roads should, wherever possible, use existing jeep tracks and roads to minimise the impact on the landscape, particularly when nearing the dolerite outcrops.

The archaeological field assessment completed in February and May 2022 identified no structures or other kinds of heritage resources located within the areas proposed for development other than those outlined above.

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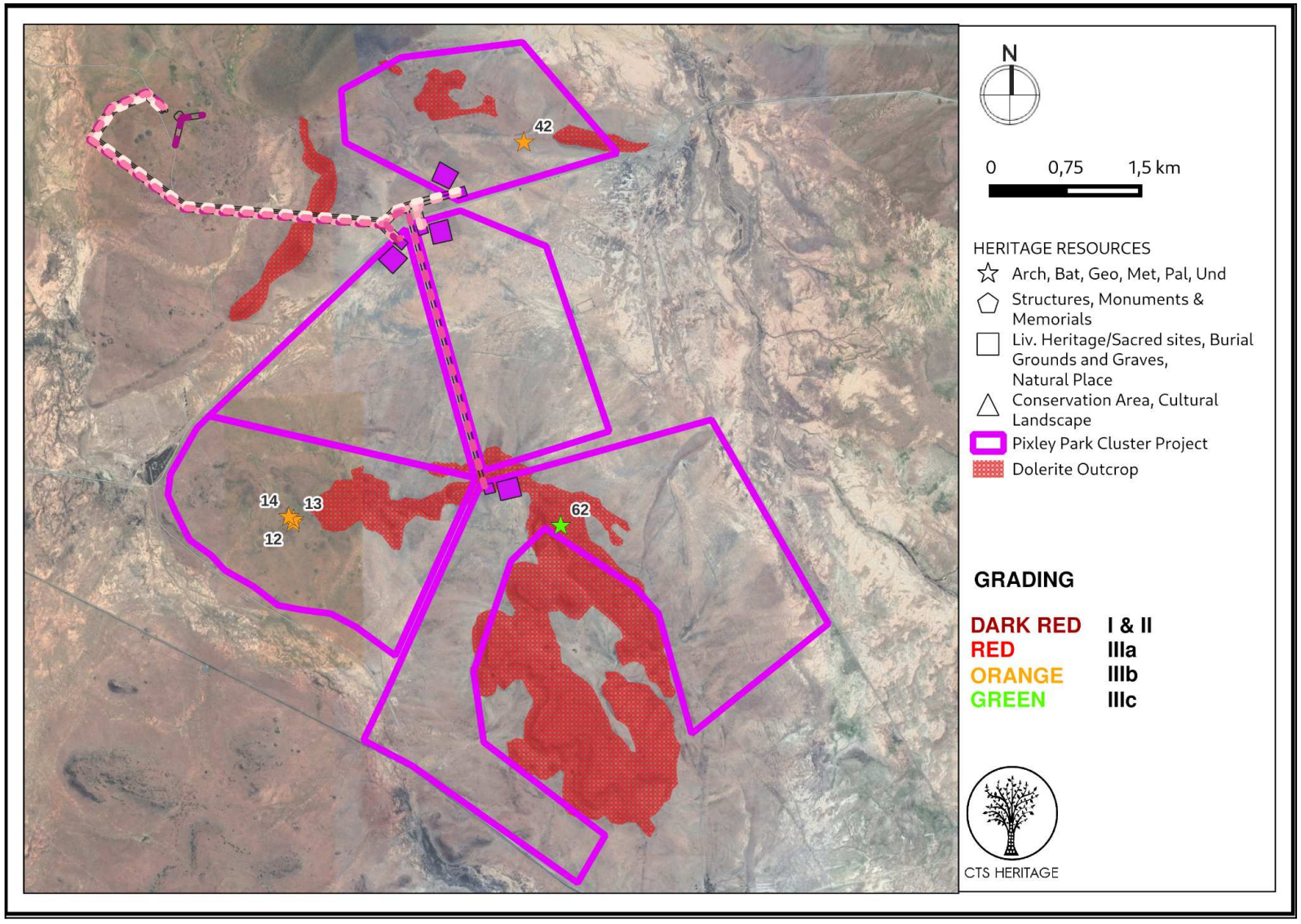

Figure 6.4: Map of field observations with 50m buffers set around the significant sites

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6. CONCLUSION AND RECOMMENDATIONS

The overall archaeological sensitivity of the development area with regard to the preservation of Early, Middle and Later Stone Age archaeology as well as Khoe and San heritage, early colonial settlement is regarded as very high. Despite this, the field assessment conducted for this project has demonstrated that the specific area proposed for development has low sensitivity for impacts to significant archaeological heritage on the flat, grassy plains with higher sensitivities in the immediate areas on and surrounding the dolerite outcrops.

As indicated above, the results of this assessment align with the findings of other specialists such as Morris (2011) who notes that ephemeral MSA and LSA scatters are the dominant archaeological signature of the area and are therefore not archaeologically significant.

Recommendations

There is no objection to the proposed development in terms of impacts to archaeological heritage on condition that:

- Sites Pixley 012, 013 and 014 are given a 100m buffers and demarcated during the construction period if any infrastructure is planned near these sites.
- Sites Pixley 042 and 062 are given 50m buffers
- The site development plan of the PV laydown areas and roads should be set to avoid the sites identified above
- The dolerite outcrops spanning west-east along portions of Wag ‘n Bietjie 5 as well as the outcrops in the far northern end near Carolus Poort should ideally be avoided for the location of the solar PV laydown area and access roads carefully planned to minimise the impact on any other dolerite outcrops. Site 062 lies on a small ridge on Riet Fountain 6 and roads or PV laydown areas should be placed on the level grassy plains and not on the ridges where archaeological material is concentrated.
- The construction of powerlines is far less impactful on archaeological sites and the siting of pylons can be made through most of the area without causing significant damage to archaeological sites.
- Should any buried archaeological resources or human remains or burials be uncovered during the course of development activities, work must cease in the vicinity of these finds. The South African Heritage Resources Agency (SAHRA) must be contacted immediately in order to determine an appropriate way forward.

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7. REFERENCES

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104576	Heritage Scoping	Wouter Fourie	10/10/2012	Heritage Scoping Report for the Proposed Solar PV Facility for Renosterberg Wind Energy Company (RWEC) near Petrusville, Northern Cape Province
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133138	HIA Phase 1	Jayson Orton, Lita Webley	09/07/2013	HERITAGE IMPACT ASSESSMENT FOR MULTIPLE PROPOSED SOLAR ENERGY FACILITIES
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133536	Palaeontological Specialist Reports	John E Almond	01/07/2013	PALAEONTOLOGICAL SPECIALIST STUDY
163982	Palaeontological Specialist Reports		31/08/2013	Palaeontological specialist assessment: combined desktop and field study: Proposed development PV Solar Facility near De Aar, Northern CApe Province
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339820	Heritage Impact Assessment Specialist Reports	Lita Webley, Jayson Orton	01/12/2011	Proposed De Aar Wind Energy Facility on the North and South Plateau, Northern Cape Province
339824	Heritage Impact Assessment Specialist Reports	Lita Webley, David Halkett	01/06/2015	Addendum: Proposed Wind Energy Facility situated on the Eastern plateau (South) near De Aar, Northern Cape Province.
4052	HIA Phase 1	Albert van Jaarsveld	01/03/2006	Hydra-Perseus and Beta-Perseus 765 kV Transmission Power Lines Environmental Impact Assessment. Impact on Cultural Heritage Resources
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