HERITAGE IMPACT ASSESSMENT

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

Proposed development of the Mercury Solar PV Cluster (North and South) near Orkney in the Free State

Prepared by CTS Heritage

CTS HERITAGE

For

Landscape Dynamics

June 2022

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EXECUTIVE SUMMARY

1. Site Name:

Mercury Solar Cluster PV Facilities including Zaaiplaats PV1, Kleinfontein PV1, Vlakfontein PV1, Hormah PV1 and Ratpan PV1.

2. Location:

Approximately 15km southeast of Orkney in the Free State Province

3. Locality Plan:

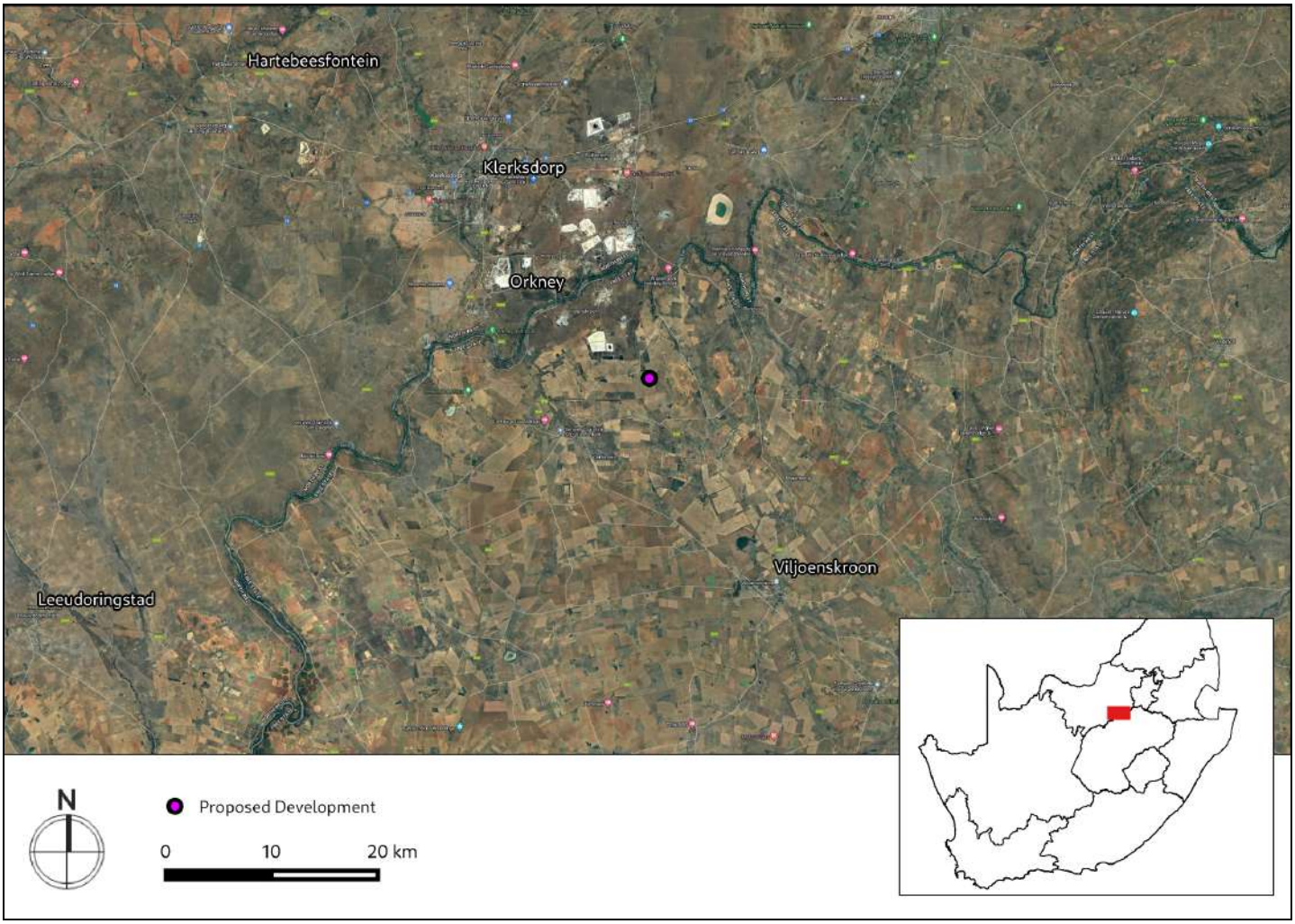

Figure A: Location of the proposed development area

4. Description of Proposed Development:

Landscape Dynamics Environmental Consultants (Pty) Ltd was appointed by Mulilo Renewable Project Developments (Pty) Ltd to obtain Environmental Authorisation for the Mercury Cluster Solar PV Project and associated gridline infrastructure. The project will involve the development of five Photo Voltaic (PV) solar facilities on privately owned land in the vicinity of Viljoenskroon in the Free State Province, together with associated grid connections (power lines) to connect the solar farms to the existing Mercury Transmission Substation (MTS). This HIA assesses the likely impacts of the proposed 5xPV facilities to heritage resources.

5. Anticipated Impacts on Heritage Resources:

Overall, the area proposed for development is not considered to be a particularly sensitive area in terms of heritage significance however various elements do contribute to the particular sense of place of the area. These elements include tree avenues and clusters associated with roads and dispersed farm werfs. Some negative impact to this sense of place is anticipated, however this impact can be mitigated as per the recommendations of the VIA and the recommendations included below.

The survey proceeded with several constraints and limitations, yet the project area was comprehensively surveyed for heritage resources. A single site and very few isolated individual artefacts were documented. Cumulatively these findings indicate cultural evidence for MSA and LSA occupations of the area. The majority of finds were identified in disturbed surface contexts, and could not be tied chrono-culturally to a particular prehistoric period, however one site (VK4) was relatively less affected by post-depositional processes, and may have been exposed relatively recently. This site is not impacted in the final layout assessed in this report.

One isolated historic burial and an historic burial ground were identified within the vicinity of the Zaaiplaats farm werf. These resources have high levels of social and intrinsic cultural value and are graded IIIA. The presence of these burials highlights the possibility of further hidden or unmarked burials located throughout the development area.

In terms of impacts to palaeontology, based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the overlying deep soils and sands of the Quaternary. In the northernmost section (Kleinfontein PV1, only north of the grid connection) there is a very small chance that fossils may occur in the shales below ground of the early Permian Vryheid Formation so a Fossil Chance Find Protocol should be added to the EMPr. The proposed PV projects are located entirely on moderately sensitive Quaternary sands.

6. Recommendations:

Based on the outcomes of this report, it is not anticipated that the proposed development of the solar PV facilities and their associated grid connection infrastructure will negatively impact on significant heritage resources. The following recommendations are made:

- The recommendations of the VIA must be implemented.
- A 20m no development buffer area must be implemented around site VK04 (Figure 7.1)
- Retention of the tree avenues located along roads, access routes and farm boundaries is required as far as possible
- A portion of the tree plantation located within 200m of the marked farm werf on Vlakfontein (Figure 7.2) is retained in order to shield the existing farm werfs from the PV facilities and retain some sense of place, and retain the relationship between the road, farm werf and plantation.
- Should Alternative 1 be implemented and the farm structures at Zaaiplaats be retained, then the development exclusion area indicated in Figure 7.3 must be implemented. This exclusion area ensures the protection of the sense of place associated with the Zaaiplaats farm werf as well as the settlement pattern pertaining to the road, farm werf and eucalyptus plantations. This exclusion area also contributes to the conservation of the burials identified as CVK100 and CVK101 and provides sufficient buffers in this regard. This is largely due to the extent of the exclusion area to the north west of the burial areas.
- Should Alternative 2 be implemented and the structures be demolished, there is no longer a cultural landscape pattern of heritage value to uphold and the recommended exclusion area in this regard will no longer apply. However, the recommended buffers pertaining to the burial (40m) and burial ground (100m) must still apply (Figure 7.4).
- Ongoing community access to these burials, as well as their conservation into the future, must be ensured. This can be managed through the development of a Heritage Management Plan for the burials to be implemented for the duration of the project.
- A pre-construction archaeological walkdown is recommended to identify any unmarked or hidden burials or significant archaeological resources within the development area.
- The attached Chance Fossil Finds Procedure must be implemented for the duration of construction activities and incorporated into each proposed developments the Environmental Management Program
- Although all possible care has been taken to identify sites of cultural importance during the investigation of the study area, it is always possible that hidden or subsurface sites could be overlooked during the assessment. If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils, burials or other categories of heritage resources are found during the proposed development, work must cease in the vicinity of the find and SAHRA must be alerted immediately to determine an appropriate way forward.

Details of Specialist who prepared the HIA

Jenna Lavin, an archaeologist with an MSc in Archaeology and Palaeoenvironments, and currently completing an MPhil in Conservation Management, heads up the heritage division of the organisation, and has a wealth of experience in the heritage management sector. Jenna's previous position as the Assistant Director for Policy, Research and Planning at Heritage Western Cape has provided her with an in-depth understanding of national and international heritage legislation. Her 8 years of experience at various heritage authorities in South Africa means that she has dealt extensively with permitting, policy formulation, compliance and heritage management at national and provincial level and has also been heavily involved in rolling out training on SAHRIS to the Provincial Heritage Resources Authorities and local authorities.

Jenna is on the Executive Committee of the Association of Professional Heritage Practitioners (APHP), and is also an active member of the International Committee on Monuments and Sites (ICOMOS) as well as the International Committee on Archaeological Heritage Management (ICAHM). In addition, Jenna has been a member of the Association of Southern African Professional Archaeologists (ASAPA) since 2009. Recently, Jenna has been responsible for conducting training in how to write Wikipedia articles for the Africa Centre's WikiAfrica project.

Since 2016, Jenna has drafted over 250 Screening and Heritage Impact Assessments throughout South Africa.

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CONTENTS

APPENDICES

1. INTRODUCTION

1.1 Background Information on Project

Landscape Dynamics Environmental Consultants (Pty) Ltd was appointed by Mulilo Renewable Project Developments (Pty) Ltd to obtain Environmental Authorisations for the Mercury Cluster Solar PV Projects. The project will involve the development of five Photo Voltaic (PV) solar facilities on privately owned land in the vicinity of Viljoenskroon in the Free State Province, together with associated grid connections (power lines) to connect the solar farms to the existing Mercury Transmission Substation (MTS). It is important to note that the proposed development is located in the Klerksdorp REDZ. This HIA assesses the likely impacts of the proposed 5xPV facilities to heritage resources.

The ten proposed applications described below are the result from the Basic Screening Assessment referred to above, as well as consideration by Mulilo in terms of financial viability and landowner/farmer recommendations. The number of these applications can however change and/or the site areas could be redefined within the total assessment area during the course of the EIA process.

Project components could include the following:

- Solar PV facility PV modules and mounting structures
- Battery Energy Storage Systems (BESS) (Approx. 3m in height)
    - Diesel Storage Facility of less than 500m^3 storage
- Operational & Maintenance Buildings
- Additional infrastructure (Access Roads - new and/or upgrade; stormwater; water pipelines, etc.)
- Eskom self-build infrastructure including 132kV power lines with switching stations for each PV facility (monopoles approx. 32m in height)
- Laydown area for the construction period

Initially, 7x PV Facilities were proposed as part of the Mercury PV Cluster development. All 7x PV facilities have been assessed in the appendices however only 5x PV facilities have been included in this HIA as two of the proposed projects have been suspended due to the high agricultural value of the land proposed for development. The Appendices to this report (Archaeology Assessment, Palaeontology Assessment and Desktop Heritage Screening Assessment) assess all 7x PV Facilities.

1.2 Description of Property and Affected Environment

The footprint of the proposed Mercury Solar PV Cluster facility is located across several agricultural camps, approximately 14 km south-east of the town of Orkney. Although Orkney is located in the North-West province, the Mercury PV study area is located across the southern bank of the Vaal River, on the northern border of the

Free State province of South Africa.

Where retained and unaffected by agriculture, the natural vegetation comprises thick grassland typical of the southern African Grassland Biome in the summer-rainfall region, and is interspersed with dense invasive forest along several drainage and paleo-drainage channels. Chert bedrock outcrops in multiple locations in the north-east. In the few areas where indigenous grassland is retained, evidence of smaller antelope (such as Duiker and Steenbok), several primates including Vervet monkeys and baboons, indigenous fowl including francolin, spurfowl and guineafowl , as well as abundant traces of burrowing rodents (molerats, hares and meerkats) were observed within the project footprint.

The topography of the project area is generally flat, with extensive disturbance in the form of active crops, camps with evidence of recent and historical clearing for crop farming and bioturbation in the form of rodent activity in the upper 0.5-1.2m of sandy topsoil, as well as extensive cattle and other stock rotation farming in other areas. Indeed, the vast majority of the area has been affected by various historical farming related activities, with prominent evidence in the form of often impenetrable maize and beans crops over substantial portions of the footprint.

The sandy upper sediments have been fluvially deposited (Figure 4.18) across much of the area, with very few lithic inclusions, indicating low-energy deposition in the north-western portions, and with primary nodules of chert (5-10cm in maximum diameter) deriving from the local bedrock where dirt tracks have been built towards the south-east and north-east portions. Despite the apparent availability of artefact quality raw-material in the form of local cherts, evidence of archaeology within the footprint is extremely sparse. Some ephemeral Stone Age exploitation evidence in the form of simple cortical flakes and cores associated with unworked nodules were identified. Only one site potentially represents an occupational artefact scatter in a dateable context that needs to be avoided (see sensitivity ranking and single recommendation for buffer zone).

The intensive current and historical use of substantial portions of the landscape, and relatively abundant remnants of recently abandoned structures on some of the properties in combination with the presence of previously identified graves near, but not within, the footprint raise the potential for graves and isolated burials. Importantly, no graves were identified within the survey, and there would not be evidence of graves within the extensive ploughed areas of the footprint. However, the dense grass cover was a pertinent constraint to documenting potential graves in the areas that were not ploughed. Extensive grass cover made potential grave locations impossible to exhaustively assess across the project area (particularly in cases where above surface material indicators may have been removed through crop related activities or through trampling related to stock farming).

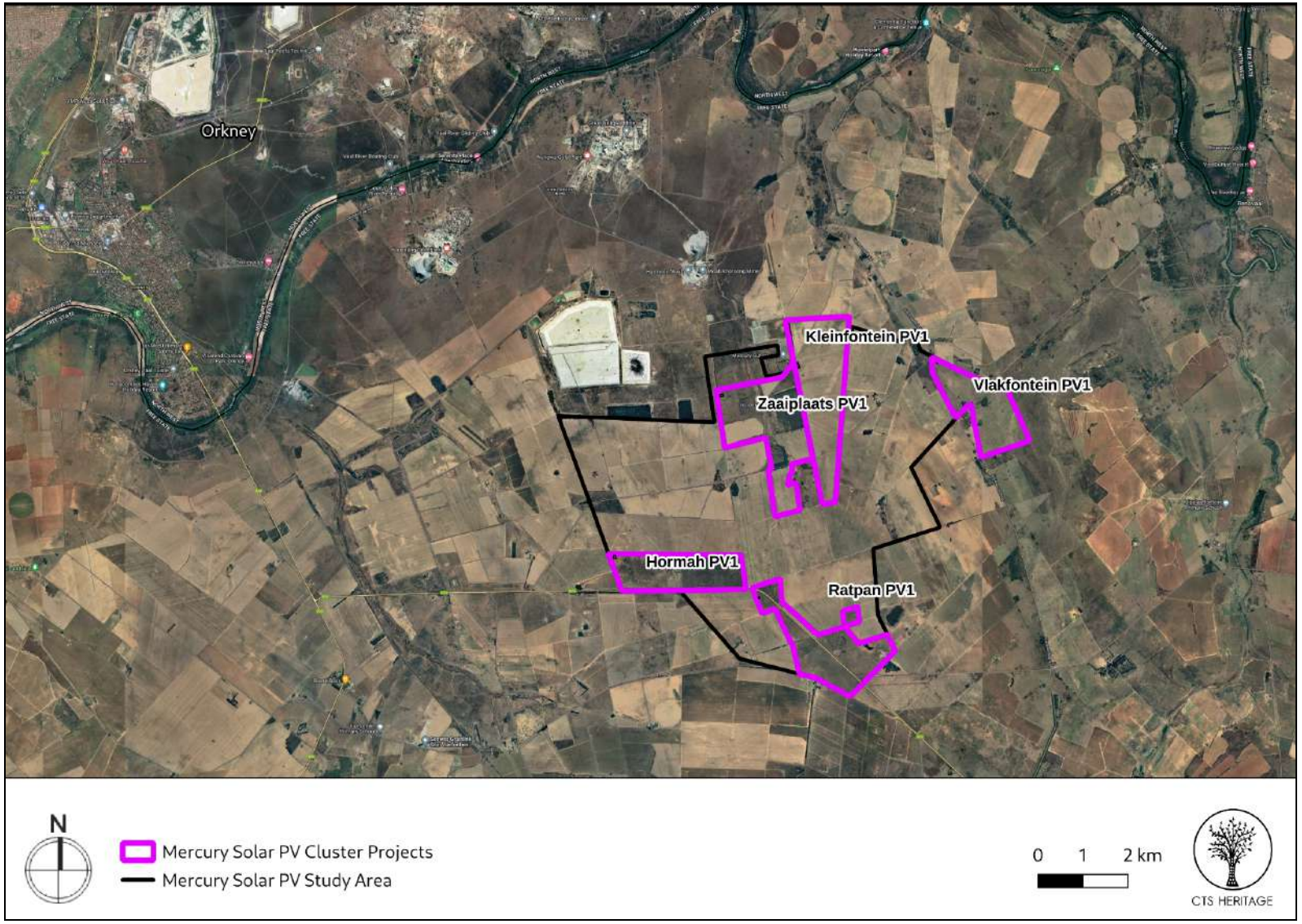

Figure 1.1: Proposed development relative to Orkney

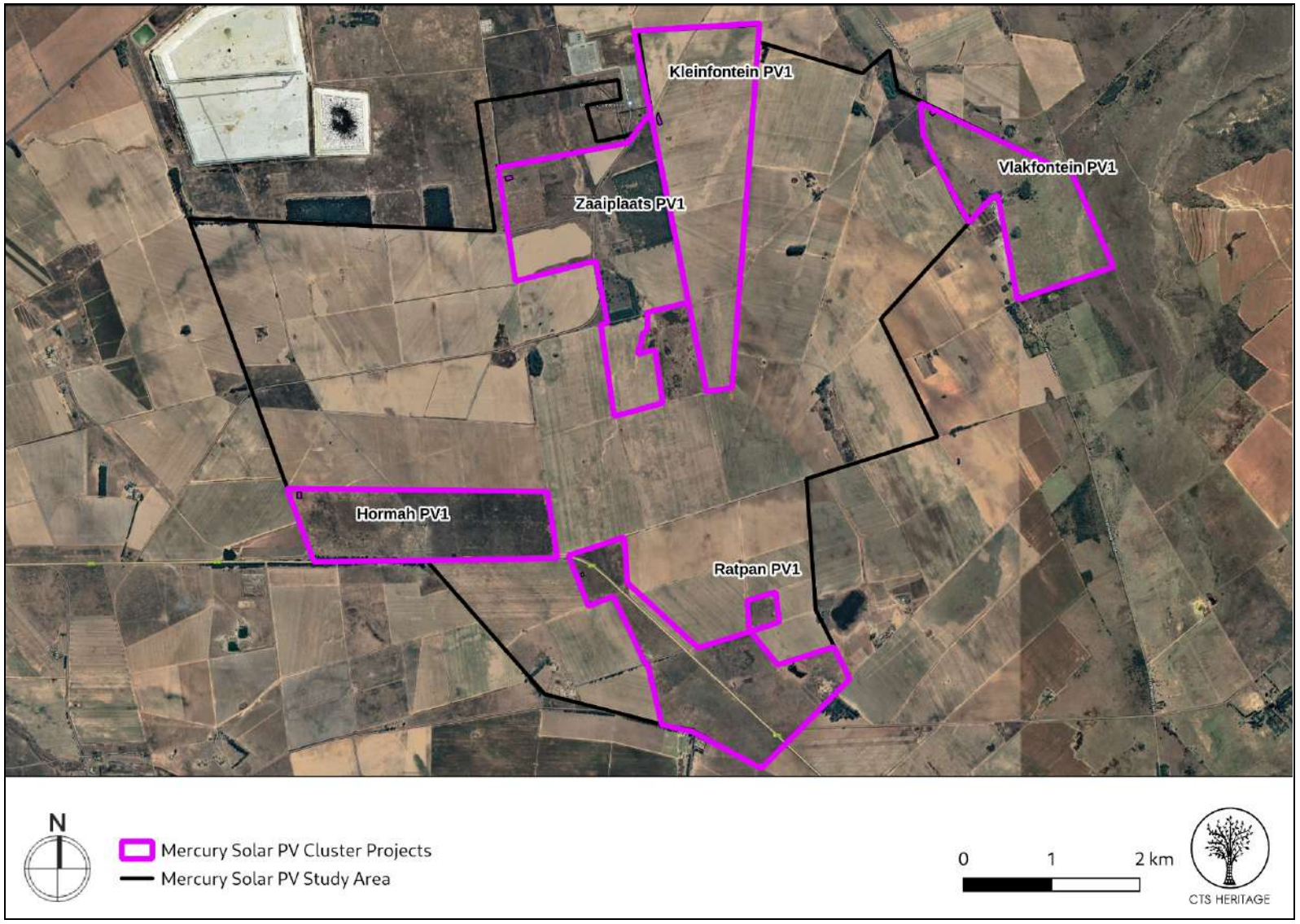

Figure 1.2: The proposed development layout of the 5x Solar PV Facilities

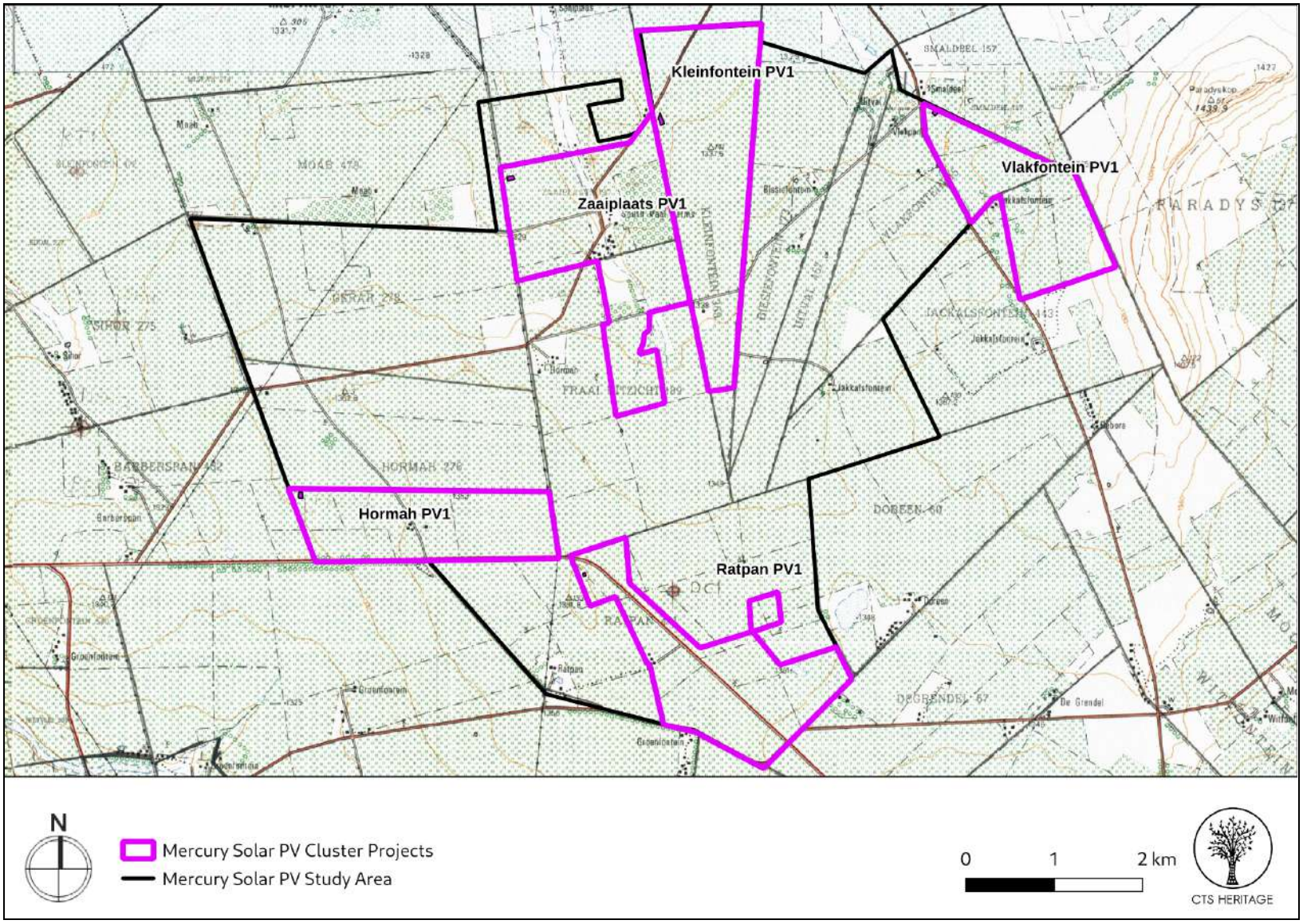

Figure 1.3: The proposed development layout of the Mercury PV Facilities on an extract of the 1:50 000 Topo Map

Figure 1.3: The proposed development layout of the Zaaiplaats and Kleinfontein PV facilities

Figure 1.3: The proposed development layout of the Vlakfontein PV facility

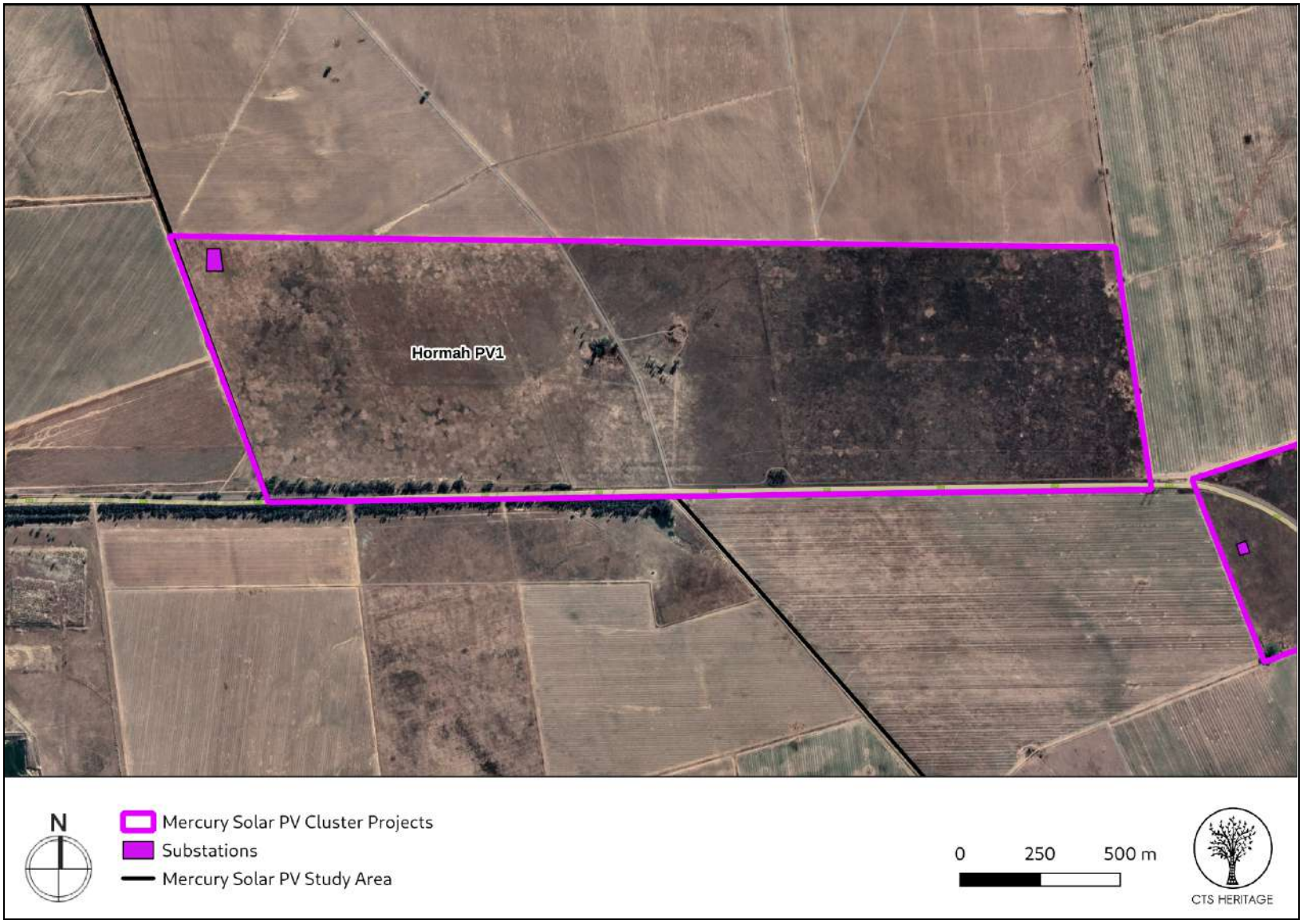

Figure 1.3: The proposed development layout of the Hormah PV Facility

Figure 1.3: The proposed development layout of the Ratpan PV Facility

2. METHODOLOGY

2.1 Purpose of HIA

The purpose of this Heritage Impact Assessment (HIA) is to satisfy the requirements of section 38(8), and therefore section 38(3) of the National Heritage Resources Act (Act 25 of 1999).

2.2 Summary of steps followed

- A Desktop Study was conducted of relevant reports previously written (please see the reference list for the age and nature of the reports used)
- An archaeologist conducted an assessment of archaeological resources likely to be disturbed by the proposed development. The archaeologists conducted their site visit from 18 to 22 March 2022
- A palaeontologist conducted a desktop assessment of palaeontological resources likely to be disturbed by the proposed development.
- The identified resources were assessed to evaluate their heritage significance and impacts to these resources were assessed.
- Alternatives and mitigation options were discussed with the Environmental Assessment Practitioner

2.3 Assumptions and uncertainties

- The *significance* of the sites and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. It must be kept in mind that the various aspects are not mutually exclusive, and that the evaluation of any site is done with reference to any number of these.

- It should be noted that archaeological and palaeontological deposits often occur below ground level. Should artefacts or skeletal material be revealed at the site during construction, such activities should be halted, and it would be required that the heritage consultants are notified for an investigation and evaluation of the find(s) to take place.

However, despite this, sufficient time and expertise was allocated to provide an accurate assessment of the heritage sensitivity of the area.

2.4 Constraints & Limitations

(1) The survey was conducted on 18-22 March, 2022 at the very end of the summer rainfall season, which is probably the time of year when the area has the densest vegetation. Dense grasses and occasional shrubland cover portions of the project area. This coverage significantly inhibited the visibility of surface

archaeology. However, this is not regarded as a substantial problem in relation to the Stone Age archaeological remains, which in most cases look to have generally limited scientific importance due to the disturbed contexts they occur in. Additionally, even in the few places that had optimal visibility, evidence of archaeology was extremely sparse. It is clear that the Stone Age sensitivity and scientific potential of the project area has been comprehensively assessed. However the inability to assess some of the footprint area at ground surface level should be regarded as a constraint to the documentation of potential graves.

(2) Previous vegetation clearing activities by farmers may have affected surface archaeology including the possible above-surface presence of material evidence of graves (i.e. the removal of surface stone structures).

(3) Clearly, topsoils are substantially disturbed in and around areas where crops are actively growing, rendering the exposed isolated archaeological finds largely limited in potential for modern scientific analyses.

(4) Densely planted maize and bean fields inhibited access to substantial portions of the footprint, however, any archaeology occurring in these areas would be *ex situ* in any case, and of limited scientific importance.

(5) Heavy rain on March 21st resulted in the flooding of lower lying areas which inhibited archaeological visibility and survey mobility.

The experience of the heritage practitioner, and observations made during the study, allow us to predict with some accuracy the archaeological sensitivity of the receiving environment.

2.5 Impact Assessment Methodology

Impacts are evaluated and assessed in terms of the following criteria:

Extent of impact	Explanation of extent
Site	Impacts limited to construction site and direct surrounding area
Local	Impacts affecting environmental elements within the local area / district
Regional	Impacts affecting environmental elements within the province
National	Impacts affecting environmental elements on a national level

Duration of impact	Explanation of duration
Short term	0 - 5 years. The impact is reversible in less than 5 years.
Medium term	5 - 15 years. The impact is reversible in less than 15 years.
Long term	>15 years, but where the impacts will cease if the project is decommissioned
Permanent	The impact will continue indefinitely and is irreversible.

Probability of impact	Explanation of Probability
Unlikely	The chance of the impact occurring is extremely low
Possible	The impact may occur
Probable	The impact will very likely occur
Definite	Impact will certainly occur

Reversibility of impact	Explanation of Reversibility Ratings
Low	The affected environment will not be able to recover from the impact - permanently modified
Medium	The affected environment will only recover from the impact with significant intervention
High	The affected environment will be able to recover from the impact

Significance of impact	Explanation of Significance
None	There is no impact at all
Low	Impact is negligible or is of a low order and is likely to have little real effect
Moderate	Impact is real but not substantial
High	Impact is substantial
Very high	Impact is very high and can therefore influence the viability of the project

3. HISTORY AND EVOLUTION OF THE SITE AND CONTEXT

3.1 Desktop Assessment

Background:

Landscape Dynamics Environmental Consultants (Pty) Ltd was appointed by Mulilo Renewable Project Developments (Pty) Ltd to obtain Environmental Authorisation for the Mercury Cluster Solar PV Project. The project will involve the development of Photo Voltaic (PV) solar facilities on privately owned land in the vicinity of Viljoenskroon in the Free State Province, together with associated grid connections (power lines) to connect the solar farms to the existing Mercury Transmission Substation (MTS). It is important to note that the proposed development is located in the Klerksdorp REDZ.

The majority of the total assessment area of the 3 400 hectares site has a high agricultural sensitivity according to the Screening Tool of the Department of Forestry, Fisheries and the Environment (DFFE). The Subdivision of Agricultural Land Act (Act 70 of 1970) (SALA) requires that any long term lease or a change of land use on agricultural land be approved by the Department of Agriculture, Land Reform and Rural Development (DALRRD).

Built Environment & Cultural Landscapes

The development areas are located in peri-urban farms just outside the towns of Orkney (North West) and Viljoenskroon (Free State). The town of Orkney was established in 1940 at the junction of the various railway lines. It was name after the old gold mine opened by Thomas Leask, who came from the Orkney Islands, in 1880 (SESA 1973 in Van Schalkwyk 2021). Viljoenskroon is a maize and cattle farming town located in the Free State province of South Africa. It was named after the original farm owner J. J. Viljoen and his horse Kroon. The town was laid out in 1921 on the farm "Mahemskuil" and became a municipality in 1925. A number of large gold and diamond mines are also located inbetween the three solar PV sites, namely Taulekoa Mine next to Goedgenoeg 433, Kopanong Gold Mine next to Pretorius Kraal 53 and Great Noligwa Mine next to Groot Vaders Bosch 592. Ruins of or intact avenues of trees, historical farmsteads and farm labourer's cottages may potentially be found within the proposed development areas. The cultural landscape is characterised by agriculture with abrupt transitions into extremely heavy industrial areas in and around the mining compounds. The development of solar PV plants is therefore unlikely to have any impacts on the landscape character of the area. Potentially conservation-worthy cultural landscape (eg. tree avenues) and built environment structures were noted during the field assessment..

Archaeology

Archaeological sites spanning the Earlier, Middle and Later Stone Age have been found in the region despite the extensive agricultural transformation of the area. In Dreyer (2005) and Van der Walt's (2007) heritage impact assessments of Pretorius Kraal 53, various modern buildings were recorded that are located near the banks of the Vaal River that were deemed as not conservation worthy. Van der Walt identified some Middle to Later Stone Age

artefacts scattered across the farm but did not map them. In Van Schalkwyk's (2021) impact assessment of the Siyanda Solar farm on Grootdraai 468 (which lies on the western border of Pretorius Kraal 53), visibility issues were a major problem,

"Due to the very dense vegetation cover that occur in the project area, natural as well as agricultural fields, it was impossible to obtain any ground visibility. The strategy was therefore to examine natural and man-made features that are usually associated with human habitation and activities such as clumps of trees and rock outcrops. The proposed power line corridor connecting the Solar Power Plant to the the existing Vaal Reef Substation was not surveyed as access to the relevant properties (Pretoriuskraal 53) was not possible. It is proposed that once the power line route has been confirmed within the 100m corridor a heritage walk-though needs to be undertaken." Two burial sites were recorded during this survey despite the lack of Stone Age sites with the help of a local informant who had been working on the property for a number of years.

In his assessment of an area immediately adjacent to the project area, Huffman (2005, SAHRIS ID 7367) identified no sites of archaeological interest. In their assessment of an area located immediately adjacent to the areas proposed for development, Henderson and Koortzen (2007, SAHRIS ID 7340) noted that while no sites were found in the area surveyed, a number of previously excavated inspection pits yielded archaeological material in the form of stone artefacts. Henderson and Koortzen (2007, SAHRIS ID 7340) note that "These artefacts had been brought up from an unknown depth (probably no more than a metre or two), and were mostly undiagnostic flakes with one blade-like flake which could be Middle Stone Age. Raw material included cryptocrystalline, chert and quartz." It is therefore highly likely that further burials may be located on the proposed solar PV areas as well as Stone Age material similar to the artefacts recorded but not mapped by Van der Walt. An archaeological field survey has been completed.

Palaeontology

According to the SAHRIS Palaeosensitivity Map (see Desktop Heritage Screening Assessment - Appendix 3) the development sites are underlain by sediments of Low to Very High fossil sensitivity (Figure 4). The two Free State solar PV sites are underlain by sediments of the Malmani subgroup (Vmd) while the North West site is underlain by sediments of the Allanridge Formation (Va) (Figure 5a) and quaternary aged sands (Qs) cover the proposed powerline route south of Pretorius Kraal 53. In his assessment of the Siyanda Solar Plant, Almond (2021) found "*several large float blocks on either side of farm track comprising pale grey to yellowish-weathering chert within mm-scale fine internal lamination, locally convolute or with zones of regular, stromatolite-like, upward-convex stacked laminae. These might be pseudostromatolites - i.e. abiogenic sedimentary structures formed by isopachous cement growth - rather than true microbially-bound stromatolites.*"

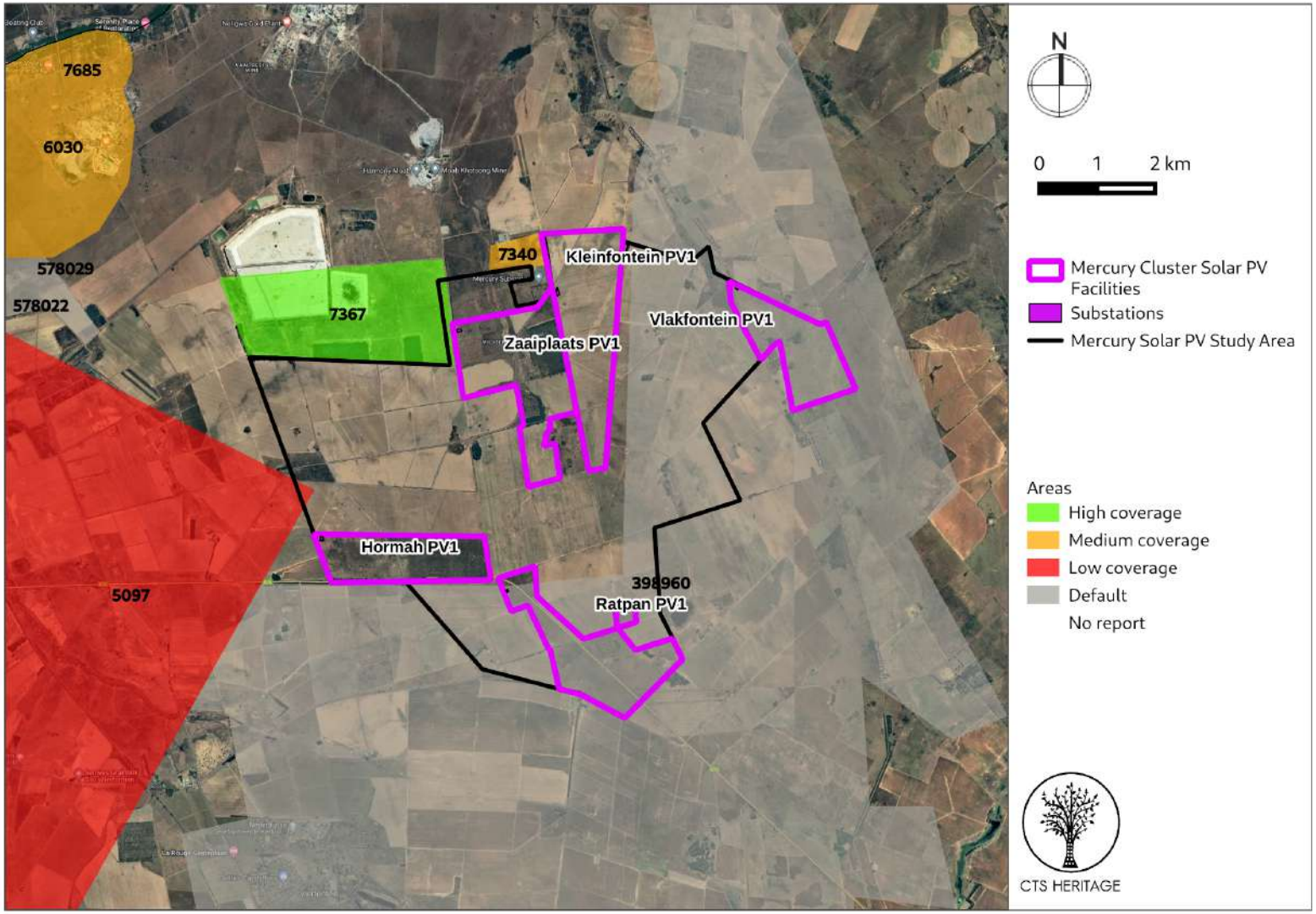

Figure 2: Spatialisation of heritage assessments conducted in proximity to the proposed development

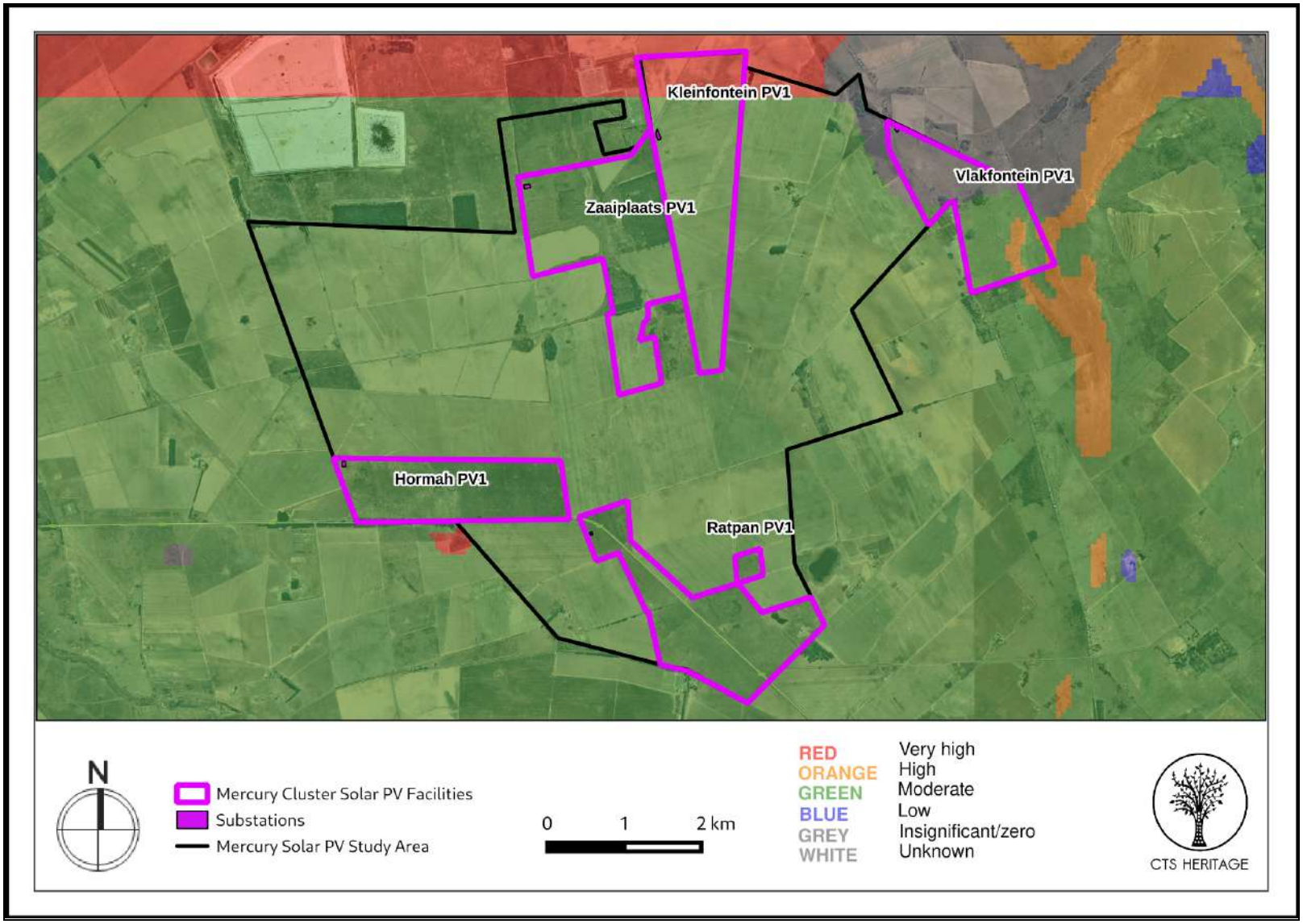

Figure 3.1: Palaeontological sensitivity of the proposed development area

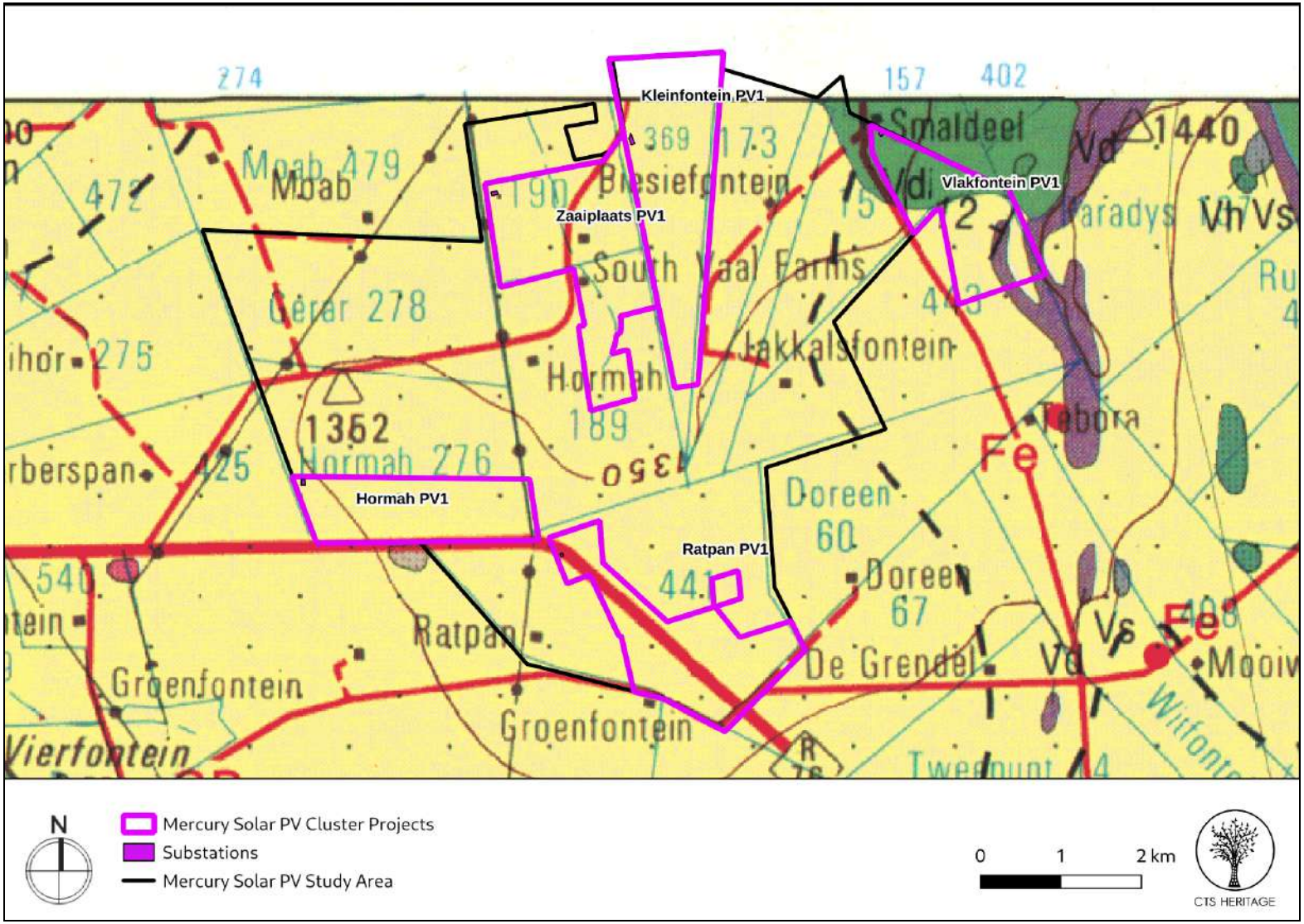

Figure 3.2: Geology Map. Extract from the CGS 2726 Kroonstad Geology Map indicating that the development area is underlain by quaternary aged sands (Qs) along the proposed powerline route south of Pretorius Kraal 53.

4. IDENTIFICATION OF HERITAGE RESOURCES

4.1 Summary of findings of Specialist Reports

Initially, 7x PV Facilities were proposed as part of the Mercury PV Cluster development. All 7x PV facilities have been assessed in the appendices however only 5x PV facilities have been included in this HIA as two of the proposed projects have been suspended due to the high agricultural value of the land proposed for development.

A number of structures have been identified in and around the development area. The only structures located within an area proposed for development are located at Zaaiplaats. These structures are presently occupied and form a small node in this area. The structures consist of a farm house and additional informal dwellings. As far as can be ascertained from the information available, while it is likely that the farm house structure is older than 60 years, it has limited cultural value and would be considered to be Not Conservation-Worthy. The other informal structures are not as old and also do not have cultural value as defined in section 3 of the NHRA.

Figure 4: Zaaiplaats Farm House (NCW)

Archaeology (Appendix 1)

The survey proceeded with several constraints and limitations resulting from the development areas being subject to ongoing cultivation. That being said, the project area was comprehensively surveyed for heritage resources where possible. A single site and very few isolated individual artefacts were documented. Cumulatively these findings indicate cultural evidence for MSA and LSA occupations of the area. The majority of finds were identified in disturbed surface contexts, and could not be tied chrono-culturally to a particular prehistoric period, however one site (VK4) was relatively less affected by post-depositional processes, and may have been exposed relatively recently.

One isolated historic burial and an historic burial ground were identified within the vicinity of the Zaaiplaats farm werf. These resources have high levels of social and intrinsic cultural value and are graded IIIA. The presence of these burials highlights the possibility of further hidden or unmarked burials located throughout the development area.

Palaeontology (Appendix 2)

The proposed site lies on the moderately sensitive Quaternary sands and alluvium which might have trapped transported and fragmentary fossils if there are such features as palaeo-pan and palaeo-springs. The land has been cultivated or grazed for decades and no such feature is visible in the satellite imagery. Due to inconsistency in the geological maps it appears that the northernmost part of Zaaiplaats PV 1 and Kleinfontein PV 1 are on very highly sensitive rocks of the Vryheid Formation that are most likely covered by Quaternary sands and alluvium.

Based on the geology of the area and the palaeontological record as we know it, it can be assumed that the formation and layout of the dolomites, sandstones, mudstones, shales and sands are typical for the country and might contain fossil plant, insect, invertebrate and vertebrate material. The sands and soils of the Quaternary period would not preserve fossils. The inconsistency between the adjacent maps 2626 and 2726 with the former focused on the rocks below ground (red) and the latter (green) on the surface rocks should be noted.

4.2 Heritage Resources identified

The broader cultural landscape of the development area has been assessed for cultural heritage significance, and found to have the following elements that contribute to the cultural value of the area:

- Dispersed farm werfs often associated with clusters of trees, with a consistent relationship between werfs, trees and roads
- Remnant areas of tree plantation
- Avenues of trees along roads, farm boundaries and access routes

According to the VIA completed for the project, “The scenic quality of the proposed development site is rated Medium as landform includes interesting undulations but not visually dominating scenic elements. Landscape Scarcity is rated Low for the entire area as, even though it is interesting within its setting, it is common within the region. Adjacent landscape is rated Medium to Low for the whole area as while the rural agrarian landscape does have value, the proximity to the substation and mining landscapes does degrade the overall scenic quality. Cultural modification is indicated as neutral as the existing manmade modifications in the landscape neither add nor detract from the visual harmony.”

The VIA also notes that “Receptor sensitivity to landscape changes is rated Medium for the sensitivity buffers and

local prominent topographic areas, and Low for the undulating grasslands and cultivated lands. The maintenance of visual quality to sustain adjacent land use objectives is moderate, as the area is located within an agricultural land use and also in close proximity to mining landscapes. The area also falls within a REDZ area, and there are no tourist related activities making use of the landscape resources. The Vaal River receptors are in background distance zones and valley located with no clear views to the proposed development site."

Various mitigation measures are proposed in the VIA assessments completed which are supported in this HIA.

Figure 5.1 From Zaaiplaats towards the Mercury Substation

Figure 5.2 From Vlakfontein across the development area

In terms of the heritage resources identified in the archaeological field assessment, see Table 2 below and Appendix 1 for full descriptions and images.

Table 2: Artefacts identified during the field assessment development area

POINT ID	Project Area	Period	Description	Co-ordinates		Grading	Mitigation
VK1	NA	MSA-LSA	Isolated artefacts, out of context	27.03483	26.78492	NCW	No mitigation recommended
VK2	NA	Unknown	Isolated artefact, a hammerstone, out of context	27.03037	26.79516	NCW	No mitigation recommended
VK3	Hormah PV 1	ESA-MSA	Isolated artefacts, a quartz flake, out of context	27.04743	26.79594	NCW	No mitigation recommended
VK4	**Ratpan PV 2**	**LSA**	**A small concentration of artefacts. Surface finds in addition to a possibility of in situ deposits in a dateable context.**	**27.06312**	**26.84205**	**IIIC**	**20m buffer zone**
CVK100	**Zaaiplaats**	**Historic**	**Single marked grave**	**-27.018724**	**26.820979**	**IIIA**	**40m buffer zone**
CVK101	**Zaaiplaats**	**Historic**	**A cluster of ¬10-12 burials although some are so eroded there is a possibility there are substantially more.**	**-27.019253**	**26.81864**	**IIIA**	**100m buffer zone**

Figure 5.3 MSA-LSA out of context artefacts at VK1 and VK3

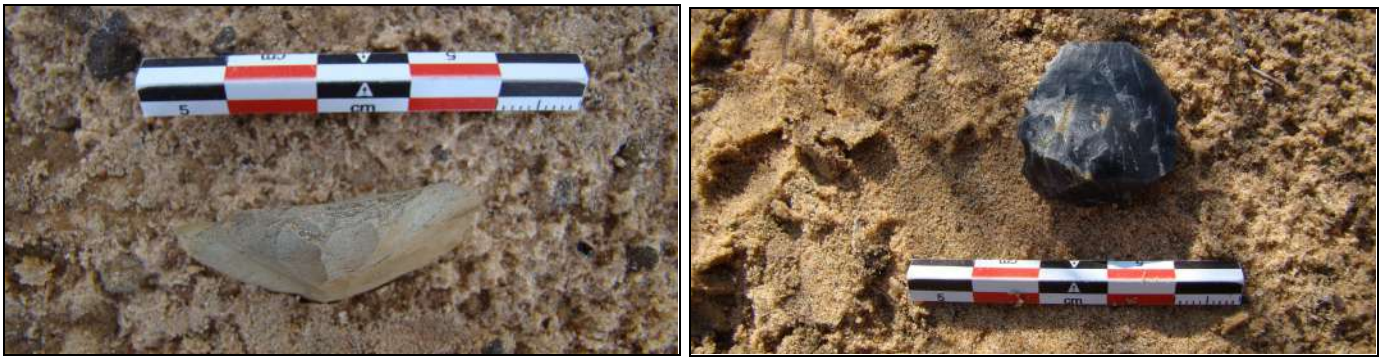

Figure 5.4 MSA-LSA surface artefacts at VK4: chert scraper, chert flake, quartzite flake, chert flake, and two quartzite flakes

Figure 5.5 Historic burial ground CVK101

Figure 5.6 Locality VK4 with a concentration of artefacts that should be avoided

4.3 Mapping and spatialisation of heritage resources

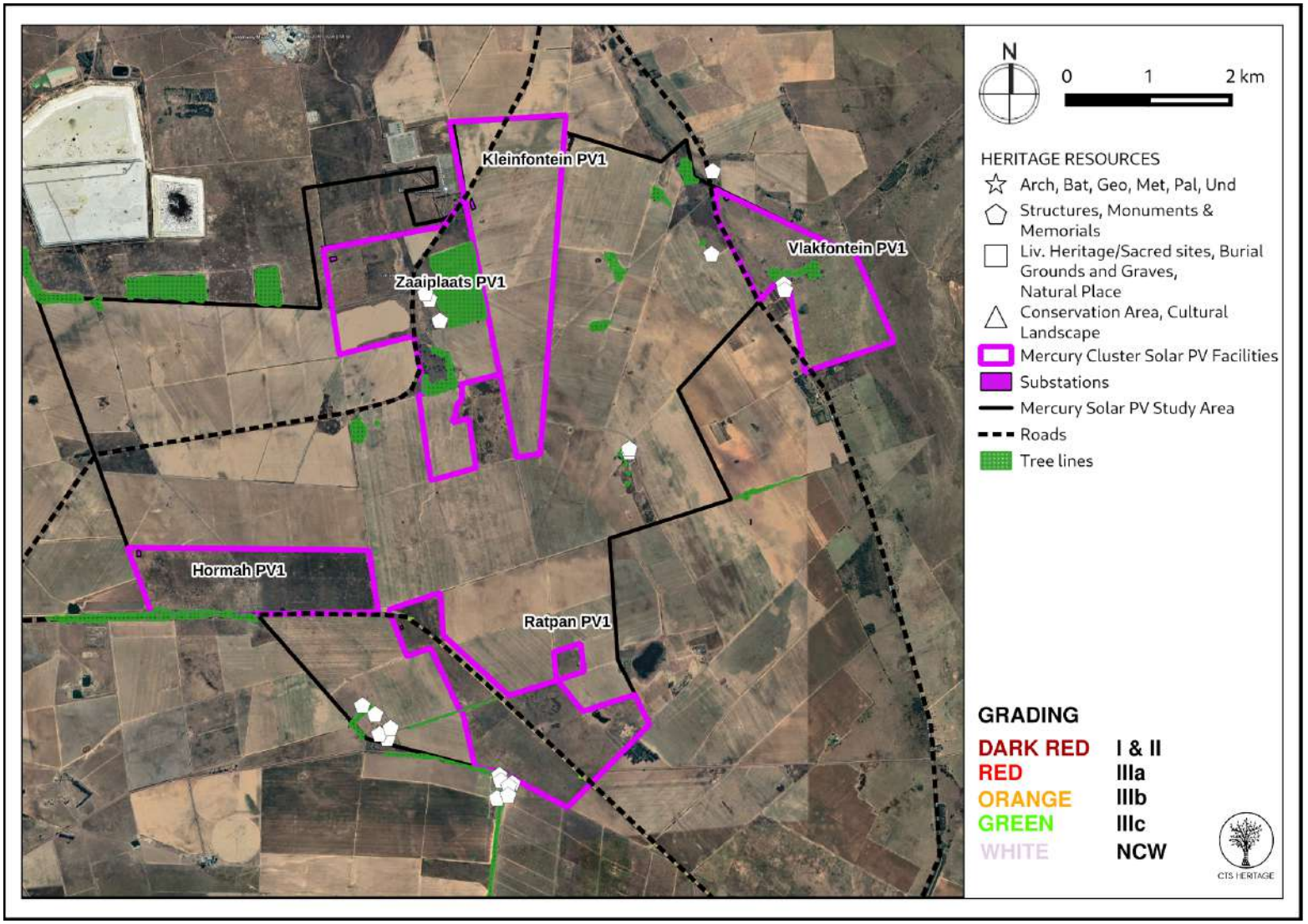

Figure 5.1: Map of roads, structures and tree clusters within the proposed development area

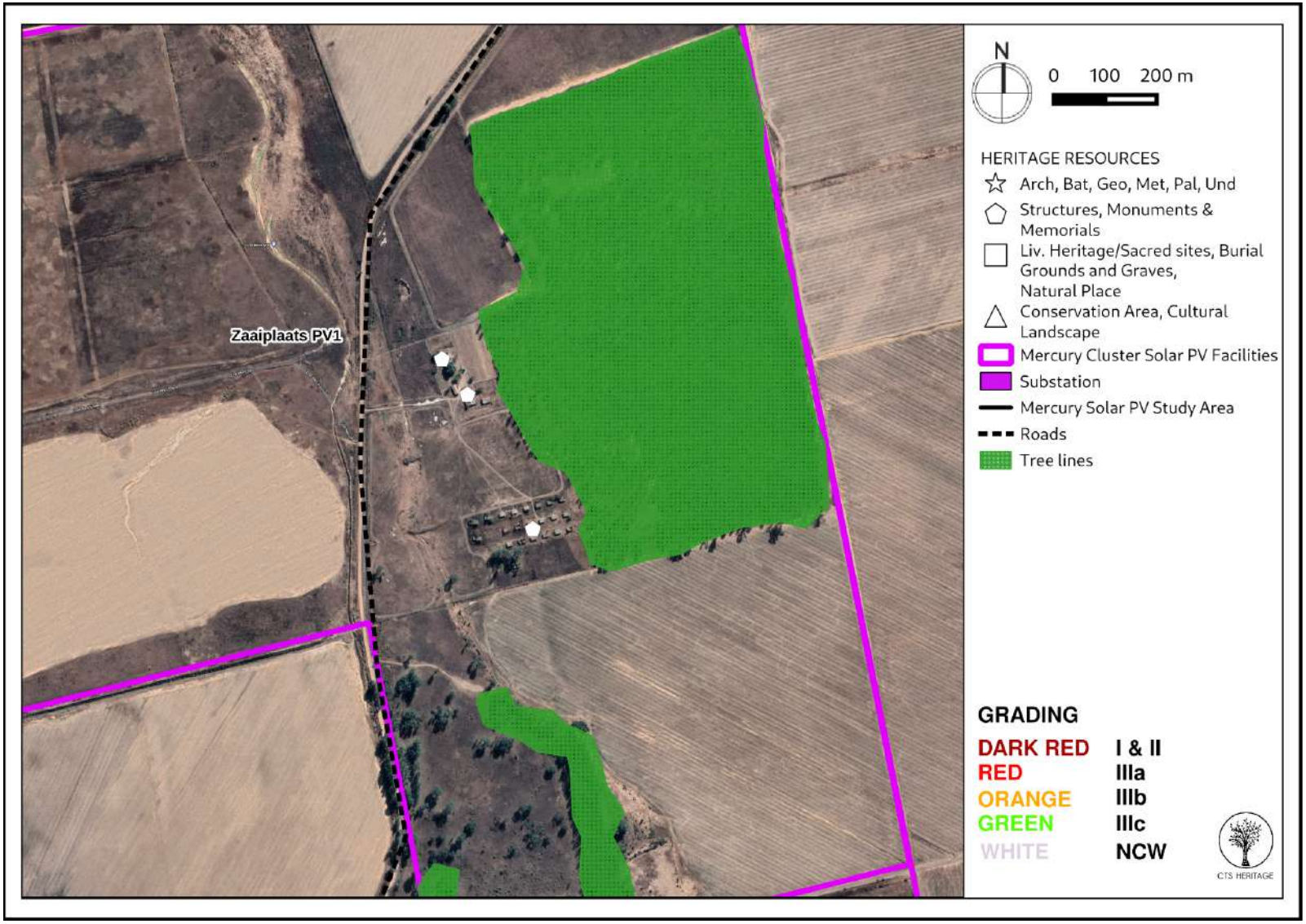

Figure 5.2: Map of indicating the relationship between the roads, structures and tree clusters within the Zaaiplaats PV 1 Facility Area

Figure 5.3: Map of indicating the relationship between the roads, structures and tree clusters within the Vlakfontein PV 1 Facility Area

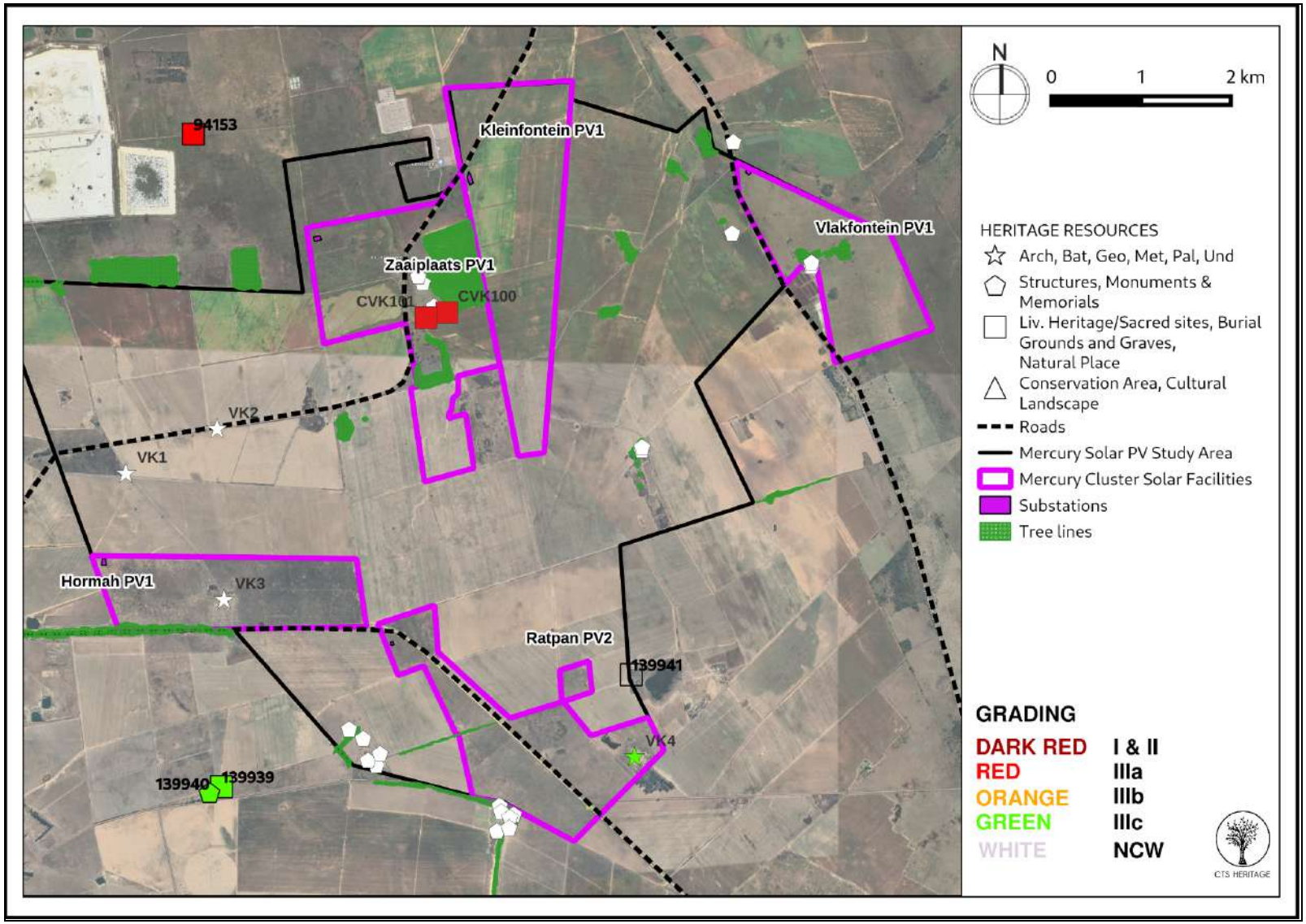

Figure 5.4: Map of archaeological heritage resources within the proposed development area

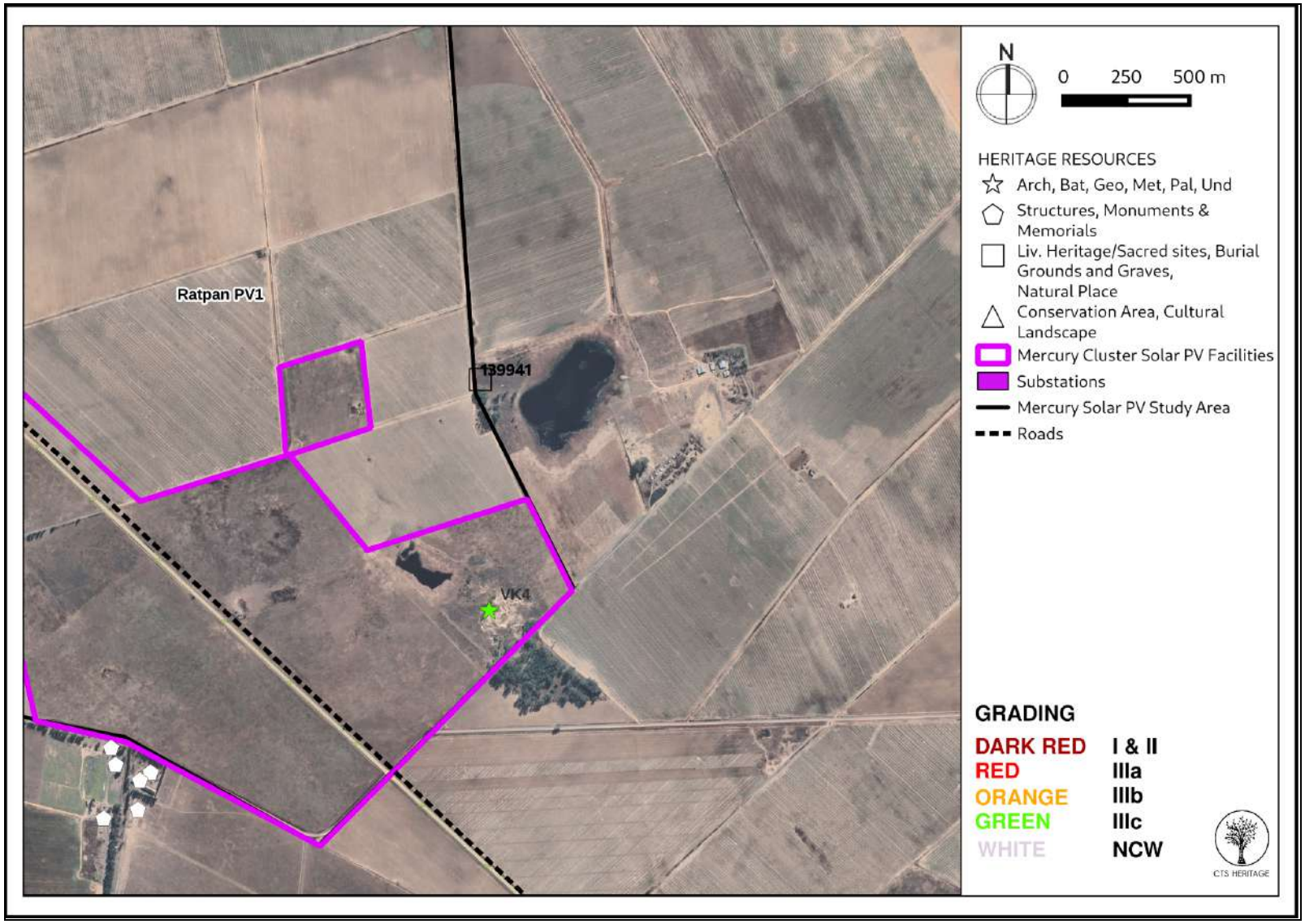

Figure 5.5: Map of heritage resources within the proposed development area in Ratpan PV 1

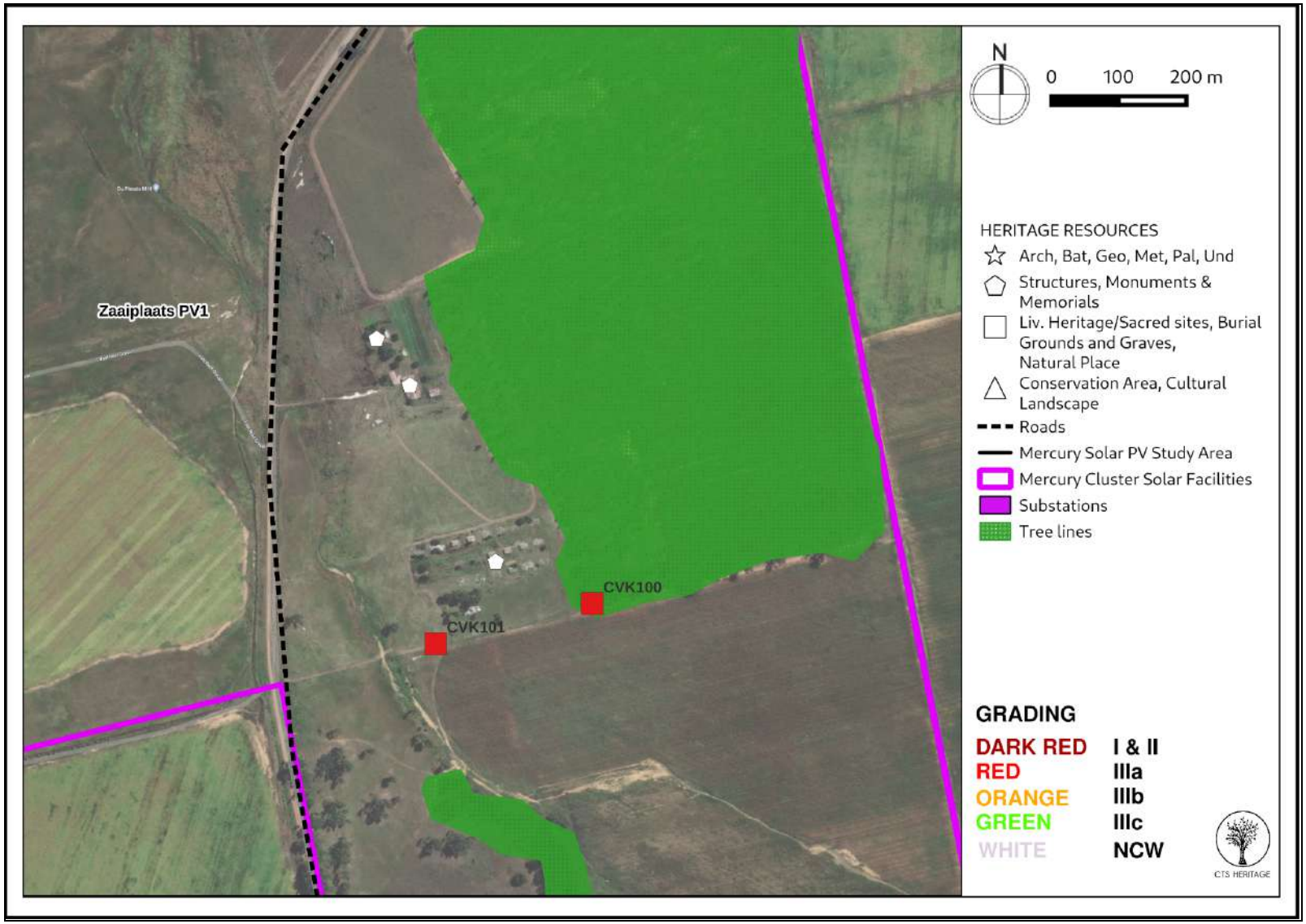

Figure 5.6: Map of heritage resources within the proposed development area in Zaaiplaats PV 1

5. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

5.1 Assessment of impact to Heritage Resources

5.1.1 Cultural Landscape and VIA

A VIA was completed for the proposed development, the results of which are summarised below.

PV Facilities

The anticipated result of the PV installation is a potential impact to the visual character and sense of place of the broader development area. The conclusion of the Visual Impact Assessment completed for the projects is that the proposed development should be authorised WITH MITIGATION. While landscape resources are not significant such that a fatal flaw is proposed, risks to landscape integrity of a rural area that has medium levels of scenic quality could take place. Mitigation would reduce the visual intrusion of the PV projects and retain the rural sense of place along the narrow farm roads such that the defined Class III Visual Objectives are met i.e., partially retain the existing character of the landscape, where the level of change to the characteristic landscape should be moderate.

All proposed PV facilities are located along existing routes, although none of these routes are known for their scenic qualities. Although no structures are anticipated to be directly impacted by the proposed development, the proposed PV facilities are likely to erode the scenic qualities of these werfs through the removal and replacement of tree plantation with PV facilities - specifically Zaaiplaats and Vlakfontein. It is therefore recommended that, in addition to the retention of the tree avenues located along roads, access routes and farm boundaries, that a portion of the tree plantation located within proximity of the marked farm werfs is retained in order to shield the existing farm werfs from the PV facilities and retain some sense of place (this is depicted as an exclusion area in Figure 7.2 and 7.3). This will also ensure that no PV panels are erected between the farm werfs and the roads and will assist in retaining the pattern of the relationship between the roads, the farm buildings, and the Eucalyptus plantations.

Alternatively, it has been proposed that the developer may pursue the option of demolishing the existing farm werf structures at Zaaiplaats. Should this process proceed, and the structures be removed, there is no longer a pattern to uphold and the recommended buffers in this regard will no longer apply.

Table 4.1: Impacts of the proposed development to the cultural landscape resources for Kleinfontein PV 1, Hormah PV 1 and Ratpan PV 2

Impact Description: It is possible that cultural landscape resources may be impacted by the proposed development

Cumulative Impact Description: Destruction or negative impact to significant cultural landscape heritage

Mitigation:

- Retention of the tree avenues located along roads, access routes and farm boundaries where possible.
- Implementation of the mitigation measures outlined in the VIA

Impact Assessment

Name of Impact	Extent	Duration	Probability	Reversibility of impact	Significance without mitigation	Significance after mitigation
Cultural landscape consists of tree avenues along existing roads and around farm werfs	Limited to the development footprint	Where manifest, the impact will be permanent	It is possible that significant cultural landscape resources will be impacted	Any impacts to heritage resources that do occur are irreversible	Moderate	Low

Impact on Irreplaceable Resources (*after* mitigation) - No

Cumulative impact rating (*after* mitigation) - Low

Table 4.2: Impacts of the proposed development to the cultural landscape resources for Zaaiplaats Pv 1 and Vlakfontein PV 1

Impact Description: It is possible that cultural landscape resources may be impacted by the proposed development

Cumulative Impact Description: Destruction or negative impact to significant cultural landscape heritage

Mitigation:

- Retention of the tree avenues located along roads, access routes and farm boundaries where possible
- A portion of the tree plantation located within 200m of the marked farm werfs is retained in order to shield the existing farm werfs at Vlakfontein and Zaailplaats from the PV facilities and retain some sense of place, and retain the relationship between the road, farm werf and eucalyptus plantation.

Impact Assessment

Name of Impact	Extent	Duration	Probability	Reversibility of impact	Significance without mitigation	Significance after mitigation
Cultural landscape consists of tree avenues along existing roads and around farm werfs, and remnant tree plantation	Limited to the development footprint	Where manifest, the impact will be permanent	It is possible that significant cultural landscape resources will be impacted	Any impacts to heritage resources that do occur are irreversible	Moderate	Low

Impact on Irreplaceable Resources (*after* mitigation) - No

Cumulative impact rating (*after* mitigation) - Low

5.1.2 Archaeology

The site at VK4 has a concentration of artefacts that look to be eroding from a potentially dateable sedimentary context, and therefore should be avoided with the guidance of a 20m buffer zone for development. Apart from this one site, the potential for finding a dateable *in-situ* archaeological horizon based on current surface observations appears to be low. The documented archaeology is therefore classified as scientifically LOW-SIGNIFICANCE.

One isolated historic burial and an historic burial ground were identified within the vicinity of the Zaaiplaats farm werf. These resources have high levels of social and intrinsic cultural value and are graded IIIA. The presence of these burials highlights the possibility of further hidden or unmarked burials located throughout the development area.

Calcrete formation was documented in one place on the landscape, which suggests that there may be potential for fossil preservation below surface in some places, although no exposed fossils were documented during the survey. Concerning Stone Age archaeology, there are no objections to the authorization of the proposed development provided that if any evidence of human remains or archaeological material is exposed during excavation, that development activities cease in the area of the identified remains.

PV Facilities

No significant archaeological resources were noted within the proposed Kleinfontein PV1 Facility, Vlakfontein PV1 Facility or the Hormah PV1 Facility.

One archaeological site of low local significance (VK4, Grade IIIC) was identified within the development area for the proposed Ratpan PV2 Facility. A no development buffer of 20m is recommended for implementation around this site to ensure its preservation. Furthermore, this area has been excluded from the final layouts for this development.

Two significant resources were identified within the Zaaiplaats PV area - CVK100 and CVK101, both representing burials within close proximity to the farm werf and occupied structures. A no-development buffer of 40m is recommended around the isolated burial (CVK100) and a no-development buffer of 100m is recommended around the burial ground (CVK101) to ensure that no impact takes place and that the sense of place associated with the burials is retained.

Table 4.3 Impacts of the proposed development to archaeological resources for Ratpan PV 2

Impact Description: It is possible that significant archaeological resources may be impacted by the proposed development

Cumulative Impact Description: Destruction or negative impact to significant archaeological heritage

Mitigation:

- Site VK4 must be excluded from the development area with a no-go buffer of 20m implemented around the site.
- Should any buried archaeological resources 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.

Impact Assessment

Name of Impact	Extent	Duration	Probability	Reversibility of impact	Significance without mitigation	Significance after mitigation
1 archaeological site VK4 of low scientific significance was identified within the area proposed for development and may be impacted	Limited to the development footprint	Where manifest, the impact will be permanent	It is possible that significant archaeological resources will be impacted	Any impacts to heritage resources that do occur are irreversible	Moderate	Low

Impact on Irreplaceable Resources (*after* mitigation) - No

Cumulative impact rating (*after* mitigation) - Low

Table 4.3 Impacts of the proposed development to archaeological resources for Zaaiplaats PV1 Facility

Impact Description: It is possible that significant burial grounds may be impacted by the proposed development

Cumulative Impact Description: Destruction or negative impact to significant archaeological heritage

Mitigation:

- A no-development buffer of 40m is recommended around the isolated burial (CVK100) and a no-development buffer of 100m is recommended around the burial ground (CVK101) to ensure that no impact takes place and that the sense of place associated with the burials is retained
- Ongoing community access to these burials, as well as their conservation into the future, must be ensured. This can be managed through the development of a Heritage Management Plan for the burials to be implemented for the duration of the project.
- Should any buried archaeological resources 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.

Impact Assessment

Name of Impact	Extent	Duration	Probability	Reversibility of impact	Significance without mitigation	Significance after mitigation
One isolated burial and one burial ground was identified within the area proposed for development and may be impacted	Limited to the development footprint	Where manifest, the impact will be permanent	It is possible that significant archaeological resources will be impacted	Any impacts to heritage resources that do occur are irreversible	High	Low

Impact on Irreplaceable Resources (*after* mitigation) - No

Cumulative impact rating (*after* mitigation) - Low

Table 4.4 Impacts of the proposed development to archaeological resources for Kleinfontein PV1 Facility, Vlakfontein PV1 Facility or the Hormah PV1 Facility

Impact Description: It is possible that significant archaeological resources may be impacted by the proposed development

Cumulative Impact Description: Destruction or negative impact to significant archaeological heritage

Mitigation:

- Should any buried archaeological resources 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.

Impact Assessment

Name of Impact	Extent	Duration	Probability	Reversibility of impact	Significance without mitigation	Significance after mitigation
Archaeological resources are known from the broader area and may be present within the cultivated fields	Limited to the development footprint	Where manifest, the impact will be permanent	It is possible that significant archaeological resources will be impacted	Any impacts to heritage resources that do occur are irreversible	Moderate	Low

Impact on Irreplaceable Resources (*after* mitigation) - No

Cumulative impact rating (*after* mitigation) - Low

5.1.3 Palaeontology

Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The geological structures suggest that the rocks are the right age and type to contain fossils but the area is covered in deep cultivated soils. Since there is an extremely small chance that fossils from the Vryheid Formation may occur below ground and may be disturbed a Fossil Chance Find Protocol has been added to this report. Taking account of the defined criteria, the potential impact to fossil heritage resources is extremely low.

PV Facilities

Based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the overlying deep soils and sands of the Quaternary. In the northernmost section (Kleinfontein PV1 only north of the grid connection) there is a very small chance that fossils may occur in the shales below ground of the early Permian Vryheid Formation. The impact on the palaeontological heritage would be low, therefore, as far as the palaeontological is concerned, the projects should be authorised.

Table 4.5: Impacts of the proposed development of the PV facilities to palaeontological resources

Impact Description: It is possible that significant palaeontological resources may be impacted by the proposed development

Cumulative Impact Description: Destruction or negative impact to significant palaeontological heritage

Mitigation:

- The attached Chance Fossil Finds procedure must be implemented during the course of construction activities

Impact Assessment

Name of Impact	Extent	Duration	Probability	Reversibility of impact	Significance without mitigation	Significance after mitigation
According to the SAHRIS Palaeosensitivity Map, the area proposed for development is underlain by sediments that have high and moderate palaeontological sensitivity.	Limited to the development footprint	Where manifest, the impact will be permanent	It is possible that significant fossil resources will be impacted	Any impacts to heritage resources that do occur are irreversible	Moderate	Low

Impact on Irreplaceable Resources (*after* mitigation) - No

Cumulative impact rating (*after* mitigation) - Low

5.2 Sustainable Social and Economic Benefit

According to the SIA completed for this project, "the establishment of renewable energy infrastructure, such as the proposed SEF, should be viewed, firstly within the context of the South Africa's current reliance on coal powered energy to meet the majority of its energy needs, and secondly, within the context of the success of the REIPPPP. The Green Jobs study (2011) notes thatSouth Africa has one of the most carbon-intensive economies in the world, thus making the greening of the electricity mix a national imperative. Since operation, theIndependent Power Producers (IPPs) have generated 35699 GWh, resulting in 36.2Mton of CO2 emissions being offset and saving 42.8 million kilolitres of water relatedto fossil fuel power generation.The REIPPPP had therefore contributed significantly towards meeting South Africa's GHG emission targets and, at the same time, supporting energy security, economic stability, and environmental sustainability.

The total number of permanent employment opportunities associated with a single 100MW SEF would be ~20, increasing to ~ 100 for five PV SEFs. The majority of low and semi-skilled beneficiaries are likely to be HD members of the community.Given the location of the proposed facility the majority of permanent staff is likely to reside in Klerksdorp and Orkney. Procurement during the operational phase will also create opportunities for the local economy and businesses.In this regard the overview of the IPPPP (June 2020) notes that the operational phase procurement spend over the 20 year for BW1 to BW4, 1S and 2S2 will be in the region of R 73.1 billion. The Green Jobs study (2011) also found that energy generation is expected to become an increasingly important contributor to green job creation over time, as projects are constructed or commissioned. The study notes that largest gains are likely to be associated with O&M activities. In this regard, O&M employment linked to renewable energy generation plants will also be substantial in the longer term.

The establishment of a community benefit structure (typically, a Community Trust) also creates an opportunity to support local economic development in the area. The requirement for the project to allocate funds to socio-economic contributions (through structures such as Community Trusts) provides an opportunity to advance local community projects, which is guaranteed for a 20-year period (project lifespan). The revenue from the proposed SEF can be used to support a number of social and economic initiatives in the area, including but not limited to:

- Creation of jobs.
- Education.
- Support for and provision of basic services.
- School feeding schemes.
- Training and skills development.
- Support for SMME's."

Based on the information available, the benefits associated with the proposed SEF development and associated grid connection outweigh the anticipated minor negative impacts to heritage resources.

5.3 Proposed development alternatives

No alternatives have been considered as part of this assessment, however alternatives have been proposed in terms of impacts to the heritage resources identified within the Zaaiplaats PV project area.

Alternative 1: The farm werf structures are retained

- In this alternative, the farm werf structures are retained and the recommended development exclusion area (Figure 7.3) is implemented. This exclusion area ensures the protection of the sense of place associated with the Zaaiplaats farm werf as well as the settlement pattern pertaining to the road, farm werf and eucalyptus plantations. This exclusion area also contributes to the conservation of the burials identified as CVK100 and CVK101 and provides sufficient buffers in this regard. This is largely due to the extent of the exclusion area to the north west of the burial areas.

Alternative 2: The farm werf structures are demolished

- As the Zaaiplaats farm house is likely older than 60 years, a permit in terms of section 34 of the NHRA must be obtained from the relevant heritage authority (Free State Provincial Heritage Authority) before demolition can take place.
- Should the structures be demolished, and the structures be removed, there is no longer a cultural landscape pattern of heritage value to uphold and the recommended exclusion area in this regard will no longer apply.

- However, the recommended buffers pertaining to the burial (40m) and burial ground (100m) must still apply (Figure 7.4).

5.4 Cumulative Impacts

In terms of impacts to heritage resources, it is preferred that this kind of infrastructure development is concentrated in one location and is not sprawled across an otherwise agricultural landscape. The proposed development is therefore unlikely to result in unacceptable risk or loss, nor will the proposed development result in a complete change to the sense of place of the area or result in an unacceptable increase in impact due to its location as one of many renewable energy facilities in this area, and its proximity to the existing Mercury Substation. Furthermore, this development is located within the Klerksdorp REDZ, an area that has been pre-identified as suitable for renewable energy development and as such, cumulative impact is expected in this area.

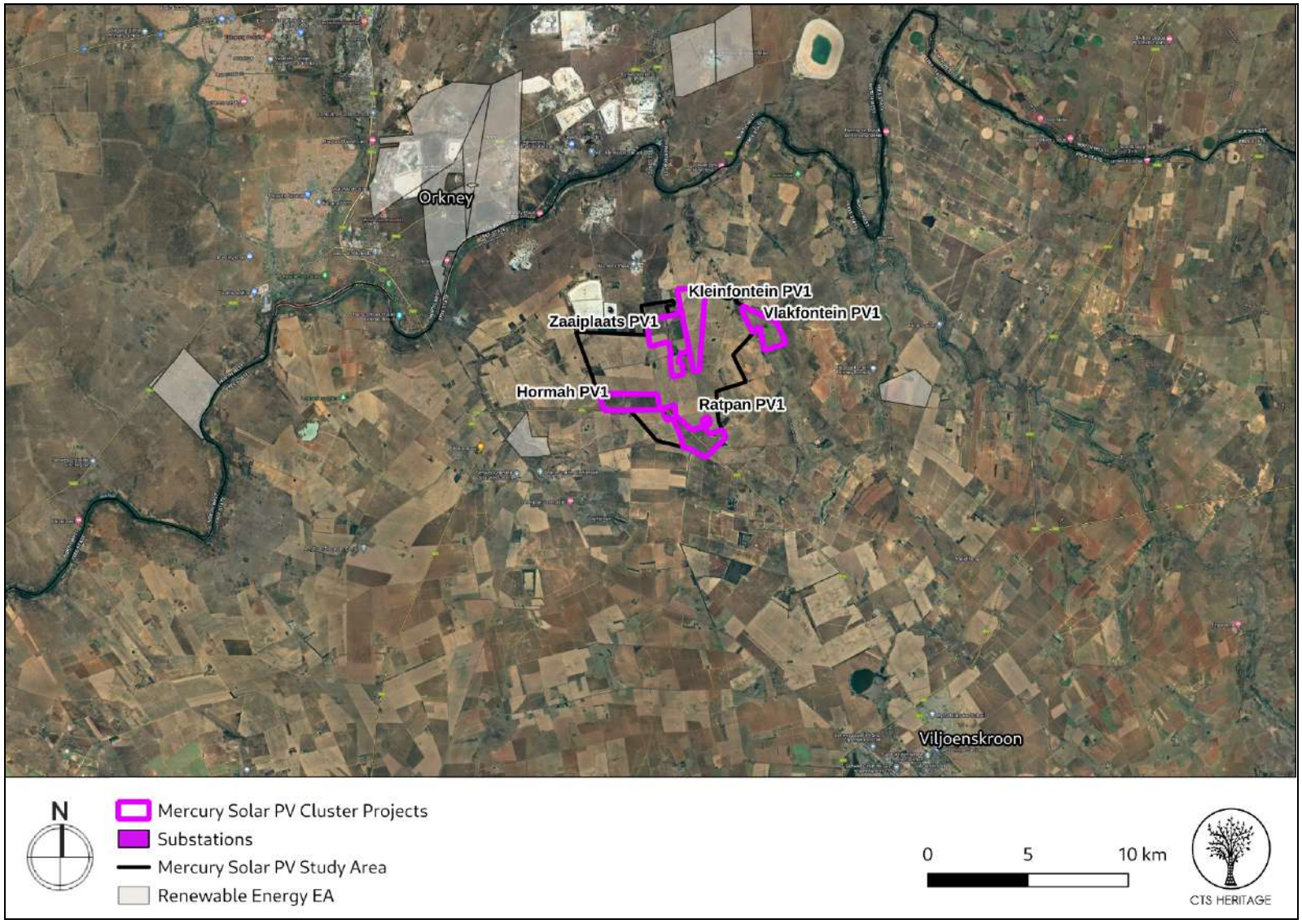

Figure 6: Approved REF projects within 20km of the proposed development area

6. RESULTS OF PUBLIC CONSULTATION

As this application is made in terms of NEMA, the public consultation on the HIA will take place with the broader public consultation process required for the Environmental Impact Assessment process and will be managed by the lead environmental consultants on the project.

7. CONCLUSION

Overall, the area proposed for development is not considered to be a particularly sensitive area in terms of heritage significance however various elements do contribute to the particular sense of place of the area. These elements include tree avenues and clusters associated with roads and dispersed farm werfs. Some negative impact to this sense of place is anticipated, however this impact can be mitigated as per the recommendations of the VIA and the recommendations included below.

The survey proceeded with several constraints and limitations, yet the project area was comprehensively surveyed for heritage resources. A single site and very few isolated individual artefacts were documented. Cumulatively these findings indicate cultural evidence for MSA and LSA occupations of the area. The majority of finds were identified in disturbed surface contexts, and could not be tied chrono-culturally to a particular prehistoric period, however one site (VK4) was relatively less affected by post-depositional processes, and may have been exposed relatively recently. This site is not impacted in the final layout assessed in this report.

One isolated historic burial (CVK100) and an historic burial ground (CVK101) were identified within the vicinity of the Zaaiplaats farm werf. These resources have high levels of social and intrinsic cultural value and are graded IIIA. The presence of these burials highlights the possibility of further hidden or unmarked burials located throughout the development area.

In terms of impacts to palaeontology, based on experience and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the overlying deep soils and sands of the Quaternary. In the northernmost section (Kleinfontein PV1 and Kleinfontein PV1, only north of the grid connection) there is a very small chance that fossils may occur in the shales below ground of the early Permian Vryheid Formation so a Fossil Chance Find Protocol should be added to the EMPr. The proposed PV facilities projects are located entirely on moderately sensitive Quaternary sands.

8. RECOMMENDATIONS

Based on the outcomes of this report, it is not anticipated that the proposed development of the solar PV facilities and their associated grid connection infrastructure will negatively impact on significant heritage resources. The following recommendations are made:

- The recommendations of the VIA must be implemented.

- A 20m no development buffer area must be implemented around site VK04 (Figure 7.1)
- Retention of the tree avenues located along roads, access routes and farm boundaries is required as far as possible
- A portion of the tree plantation located within 200m of the marked farm werf on Vlakfontein (Figure 7.2) is retained in order to shield the existing farm werfs from the PV facilities and retain some sense of place, and retain the relationship between the road, farm werf and plantation.
- Should Alternative 1 be implemented and the farm structures at Zaaiplaats be retained, then the development exclusion area indicated in Figure 7.3 must be implemented. This exclusion area ensures the protection of the sense of place associated with the Zaaiplaats farm werf as well as the settlement pattern pertaining to the road, farm werf and eucalyptus plantations. This exclusion area also contributes to the conservation of the burials identified as CVK100 and CVK101 and provides sufficient buffers in this regard. This is largely due to the extent of the exclusion area to the north west of the burial areas.
- Should Alternative 2 be implemented and the structures be demolished, there is no longer a cultural landscape pattern of heritage value to uphold and the recommended exclusion area in this regard will no longer apply. However, the recommended buffers pertaining to the burial (CVK100 - 40m) and burial ground (CVK101 - 100m) must still apply (Figure 7.4).
- Ongoing community access to these burials, as well as their conservation into the future, must be ensured. This can be managed through the development of a Heritage Management Plan for the burials to be implemented for the duration of the project.
- A pre-construction archaeological walkdown is recommended to identify any unmarked or hidden burials or significant archaeological resources within the development area.
- The attached Chance Fossil Finds Procedure must be implemented for the duration of construction activities and incorporated into each proposed developments the Environmental Management Program
- Although all possible care has been taken to identify sites of cultural importance during the investigation of the study area, it is always possible that hidden or subsurface sites could be overlooked during the assessment. If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils, burials or other categories of heritage resources are found during the proposed development, work must cease in the vicinity of the find and SAHRA must be alerted immediately to determine an appropriate way forward.

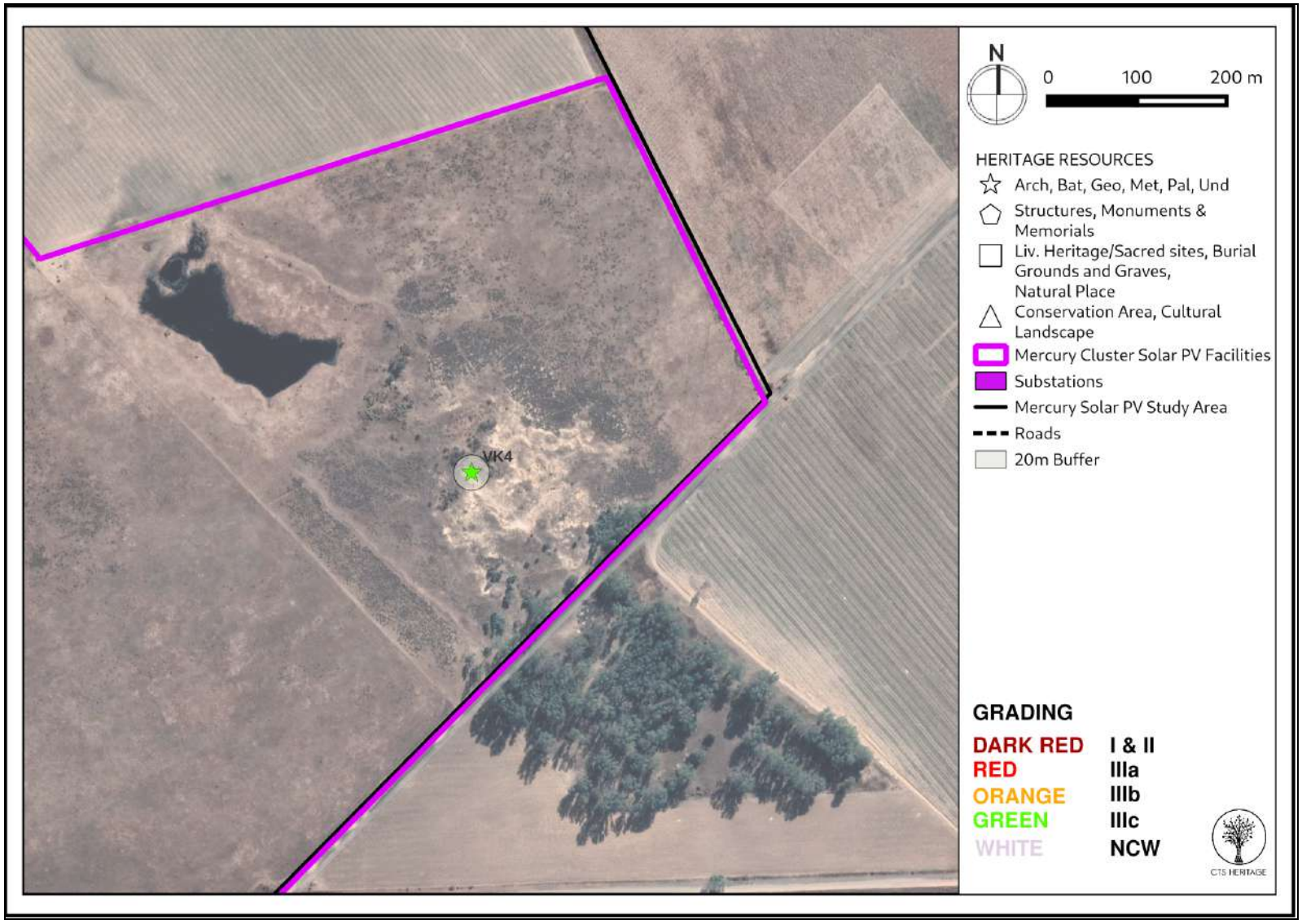

Figure 7.1: Proposed mitigation - No Go Buffer of 20m around VK4

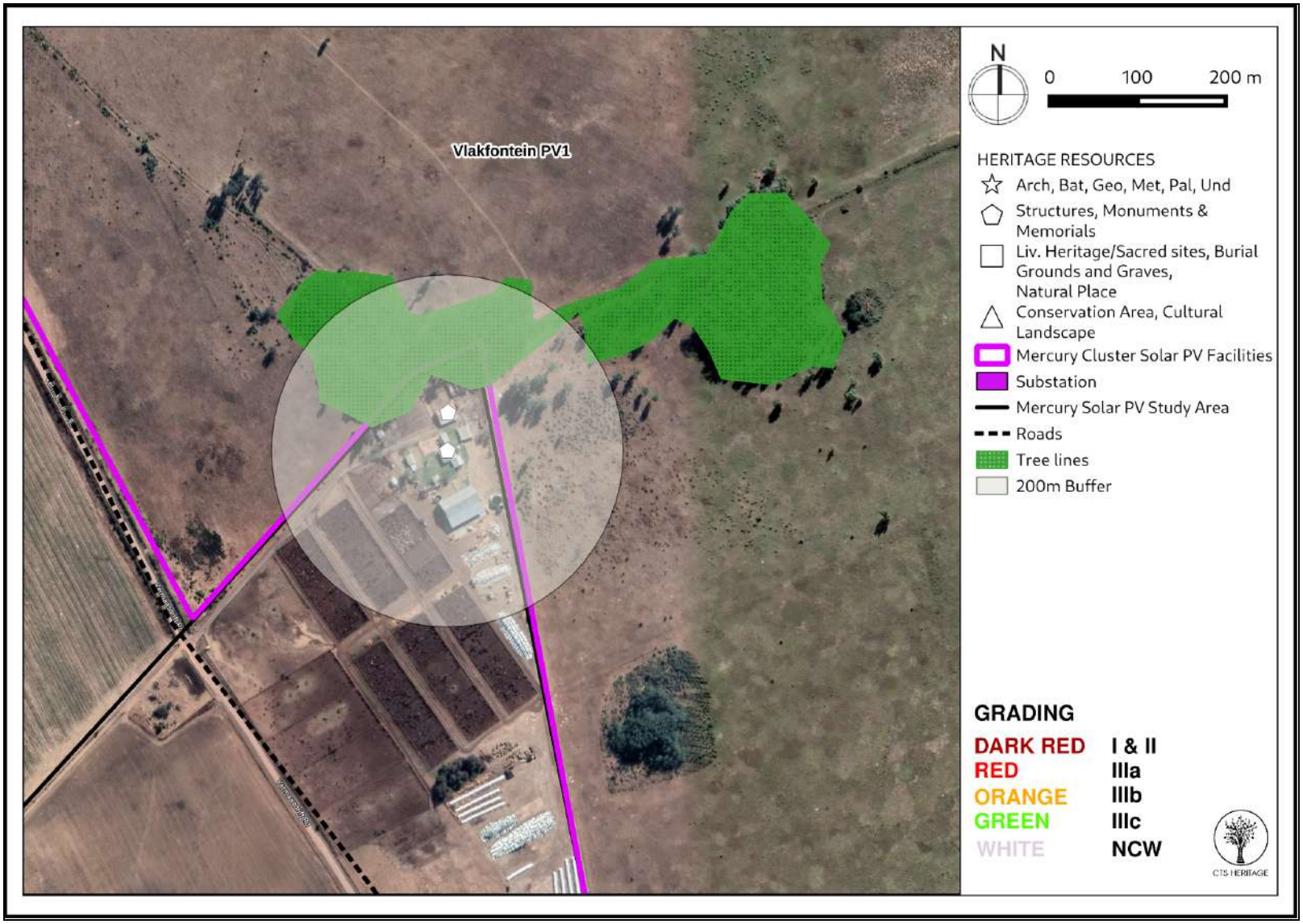

Figure 7.2: Proposed mitigation - 200m buffer for tree retention for Vlakfontein PV 1 Project Area

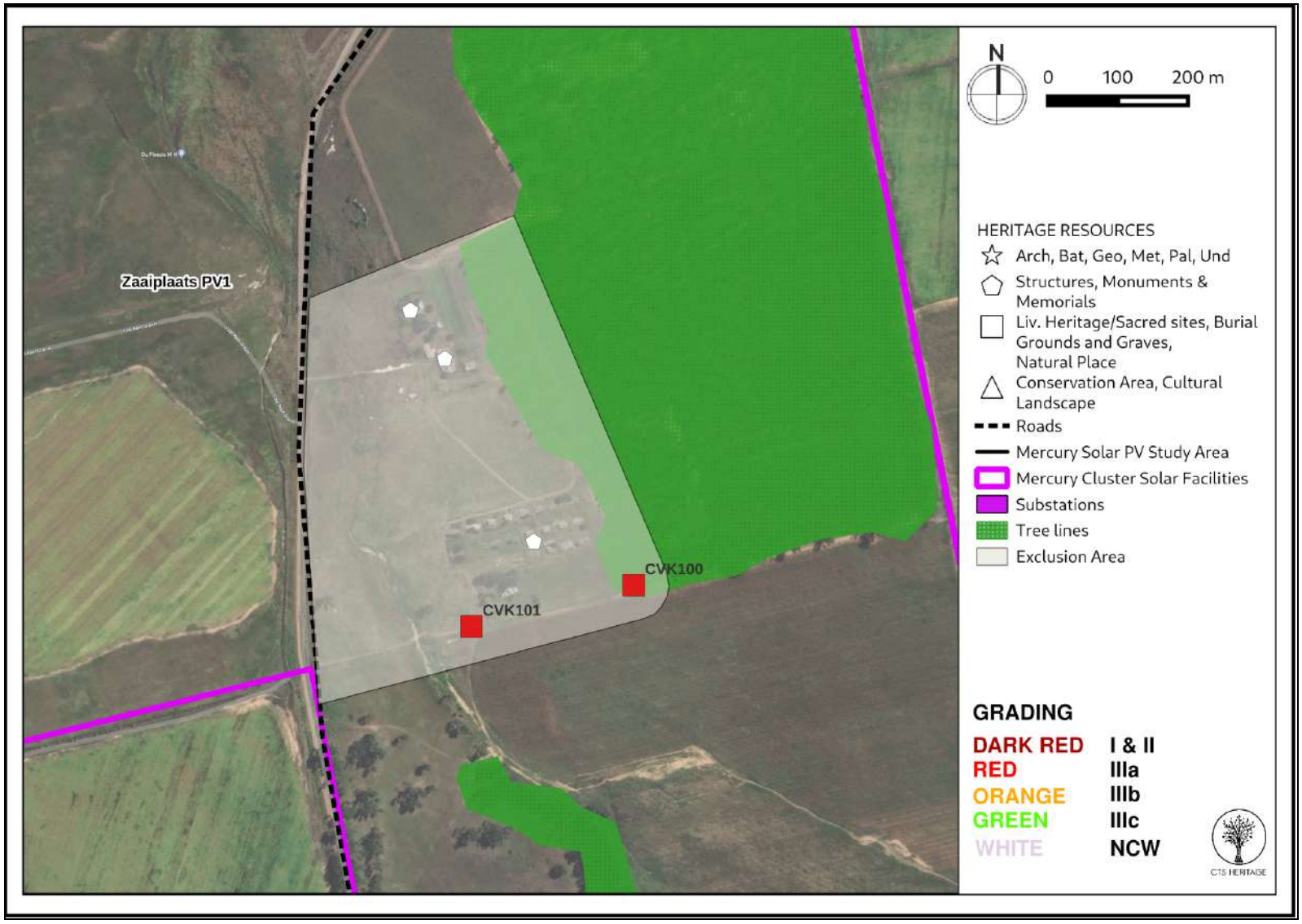

Figure 7.3: Proposed mitigation - development exclusion area for tree retention for Zaaiplaats PV 1 Project Area - Alternative 1

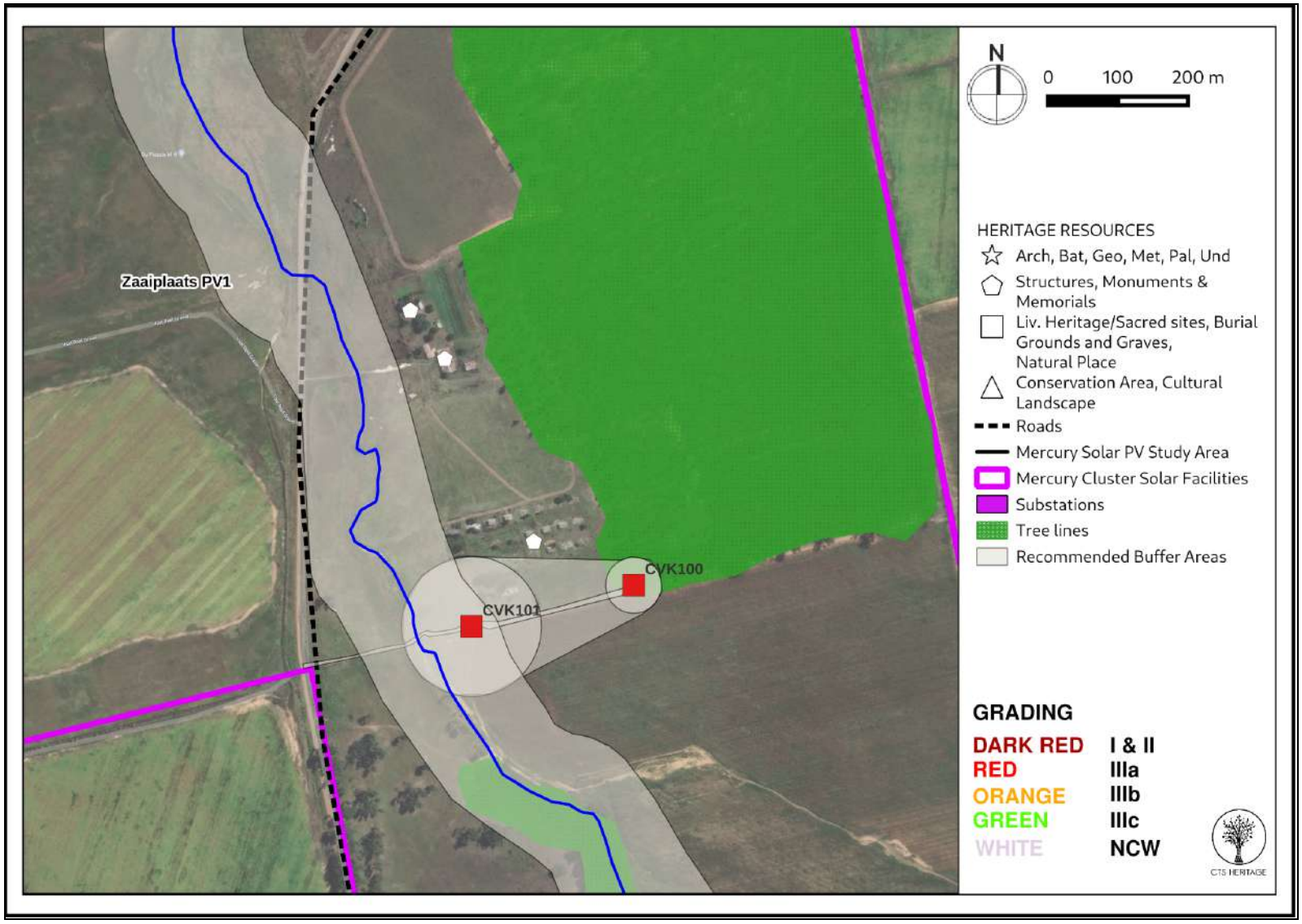

Figure 7.4: Proposed mitigation - Buffers for the conservation of the identified burials and burial ground - Alternative 2

9. REFERENCES

Heritage Impact Assessments				
Nid	**Report Type**	**Author/s**	**Date**	**Title**
321166	Jaco van der Walt	17/06/2015	Archaeological Specialist Reports	Archaeological Scoping Report for the Proposed Buffels Solar 1 SEF, Klerksdorp, North West Province
321168	Barry Millsteed	21/06/2015	PIA Desktop	Palaeontological Heritage Impact Assessment Report on the Site of a Proposed Solar Power Production Facility known as the Buffels Solar 1 PV Energy Facility to be located approximately 20 km north East of Orkney, NW Province
321169	Barry Millsteed	21/06/2015	PIA Desktop	Palaeontological Heritage Impact Assessment Report on the Site of a Proposed Solar Power Production Facility known as the Buffels Solar 2 PV Energy Facility to be located approximately 20 km north East of Orkney, NW Province
321170		17/06/2015	Archaeological Specialist Reports	Archaeological Scoping Report for the Proposed Buffels Solar 2 SEF, Klerksdorp, North West Province
345	Marion Bamford	18/05/2012	PIA Phase 1	Palaeontological Impact Assessment for Kabi Vaalkop Solar PV Facility
365014	Sidney Miller	02/03/2015	HIA Phase 1	Cultural Heritage Impact Assessment for Shafts #1 to #7, Orkney, Northwest Province, South Africa, for CAPM Gold.
5097	Johnny Van Schalkwyk	07/03/2003	AIA Phase 1	Mercury-Perseus 400 kV Transmission Line, Cultural Heritage Resources
6030	Cobus Dreyer	20/06/2005	AIA Phase 1	Archaeological and Historical Investigation of the Proposed Residential Developments on Subdivision 13 of the Farm Pretoriuskraal 53, Viljoenskroon, Free State
7340	**Zoe Henderson, C Koortzen**	**19/06/2007**	**AIA Phase 1**	**Heritage Assessment Report Mercury Substation Expansion, Zaaiplaats 190/3, Fezile Dabi (DC20) District, Free State, South Africa**
7367	**Thomas Huffman**	**01/03/2005**	**AIA Phase 1**	**Archaeological Assessment of the Mispah Tailings Dam Extension**
7684	Jaco van der Walt	25/09/2007	AIA Phase 1	Archaeological Impact Assessment. Township Development and Sub Division of AH18, Pretoriuskraal, Orkney, North West Province
7685	Jaco van der Walt	25/09/2007	AIA Phase 1	Archaeological Impact Assessment. Township Development on Sub Division of AH19, Pretoriuskraal, Orkney, North West Province

9124	Francois P Coetzee	01/04/2012	Heritage Study	Cultural Heritage Survey of the Proposed Kabi Vaalkop PV Facility near Orkney, Dr Kenneth Kaunda District, North West Province

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APPENDICES

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APPENDIX 1: Archaeological Assessment (2022)

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APPENDIX 2: Palaeontological Assessment (2022)

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APPENDIX 3: Heritage Screening Assessment