ARCHAEOLOGICAL SPECIALIST STUDY

Walkthrough

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

UMMBILA EMOYENI RENEWABLE ENERGY WIND AND SOLAR PV FACILITIES, MPUMALANGA PROVINCE

Prepared by

CTS HERITAGE

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EXECUTIVE SUMMARY

Ummbila Emoyeni Renewable Energy Farm (Pty) Ltd is proposing the development of renewable energy facilities, collectively known as the Ummbila Emoyeni Renewable Energy Facility (REF), consisting of a commercial wind farm, solar PV facility, and associated grid infrastructure, including a battery energy storage system, located approximately 6km southeast of Bethal in the Mpumalanga Province of South Africa.

A preferred layout for the first phase of the WEF project has been determined. This proposed layout requires an additional field assessment to ensure that no heritage resources of significance will be impacted by the proposed development. As such, this Walkthrough Report must be read in conjunction with the Specialist Archaeology Report drafted by CTS Heritage for the Ummbila Emoyeni REF project as well as the Heritage Impact Assessment completed for the WEF Facility (CTS Heritage, September, 2022).

Even though the area is rich in history, no significant archaeological heritage resources were identified during the field assessment. No Stone Age or Iron Age heritage resources were identified during the survey. The few heritage resources that were identified consist of the ruins of older farm structures and kraals. Due to the paucity of older farm structures in the area as a result of demolition, it is recommended that the identified ruins and kraals remain untouched and that a safety buffer should exist around all such structures.

The field assessment identified three burial grounds or graves close to the proposed development footprints of turbines. All graves are of high local significance as a result of their social and cultural value, and are therefore graded IIIA. While no Stone Age or Iron Age archaeological resources were identified during the field assessment, it is clear that this landscape is sensitive for impacts to historical archaeology in the form of ruins and kraals, as well as marked and unmarked burial grounds and graves.

Recommendations

Based on the outcomes of this report, it is not anticipated that the proposed development of the renewable energy facilities and its associated grid connection infrastructure will negatively impact on significant archaeological heritage on condition that:

- A 50m no-go development buffer is implemented around all burial ground sites
- A Management Plan for the ongoing conservation of these burials is developed prior to construction, along with a Guide on how to identify marked and unmarked burials and how to proceed should previously unidentified burials be uncovered during the construction process.
- 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.

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1. INTRODUCTION

1.1 Background Information on Project

Ummbila Emoyeni Renewable Energy Farm (Pty) Ltd is proposing the development of renewable energy facilities, collectively known as the Ummbila Emoyeni Renewable Energy Facility (REF), consisting of a commercial wind farm, solar PV facility, and associated grid infrastructure, including a battery energy storage system, located approximately 6km southeast of Bethal in the Mpumalanga Province of South Africa.

A preferred layout for the first phase of the WEF project has been determined. This proposed layout requires an additional field assessment to ensure that no heritage resources of significance will be impacted by the proposed development. As such, this Walkthrough Report must be read in conjunction with the Specialist Archaeology Report drafted by CTS Heritage for the Ummbila Emoyeni REF project as well as the Heritage Impact Assessment completed for the WEF Facility (CTS Heritage, September, 2022).

The wind farm layout assessed here consists of the following infrastructure:

- Up to 25 wind turbines with a maximum hub height of up to 200m. The tip height of the turbines will be up to 300m.
- 33kV / 132kV onsite collector substations
- Cabling between turbines, to be laid underground where practical
- Access roads of 12-13m wide, with 12m at turning circles.

1.2 Description of Property and Affected Environment

The proposed Ummbila Emoyeni Renewable Energy Facility in Mpumalanga lies roughly halfway between the towns of Bethal and Morgenzon to the east of the R35 main road. This study forms part of a much larger study area that has been broken up into modular projects. The main Camden coal-fired power station to Vlakfontein 765kV overhead powerline runs east-west just south of the study area and the Bethal - Morgenzon railway runs to the west of the R35 before crossing over to the eastern side at Sukkelaar in the northwest corner of the study site. A gravel road linking Sukkelaar to the R39 main road forms the northern boundary of the project site.

The area envisaged for the various wind turbines and associated infrastructure is predominantly used for intensive maize agriculture. Most of the fields encountered were covered in high stands of maize during the survey. Soybeans are also grown interchangeably with the maize crops. Grassland covering the grazing areas are tucked inbetween the large maize fields for cattle and large stands of eucalyptus trees surround the werfs and a few ruins recorded during the study. The Heilvleispruit separates the farms north of the spruit from the ground largely belonging to the cluster of Goedgedacht farmsteads that are mostly abandoned today.

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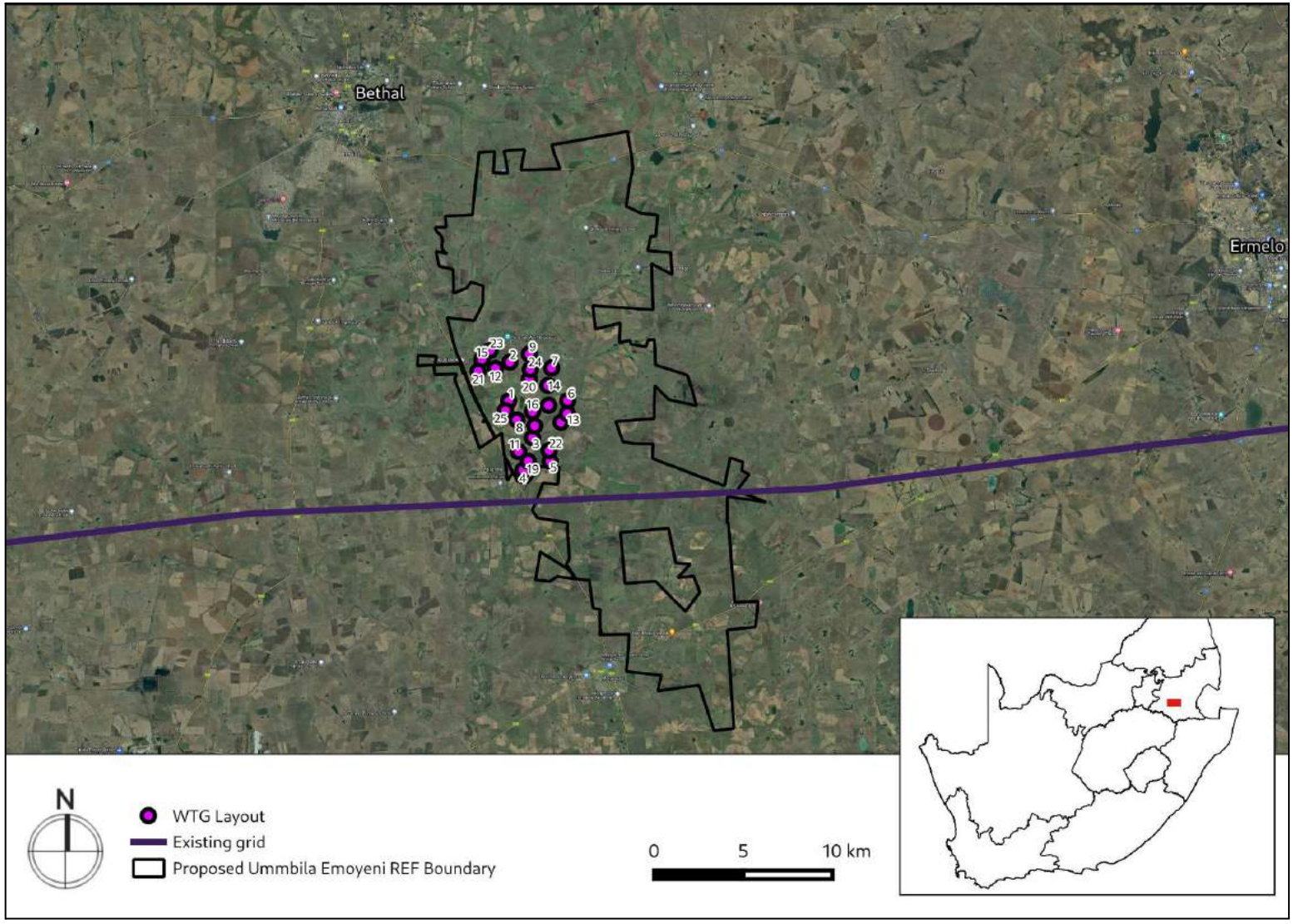

Figure 1.1: Satellite image indicating proposed location of development

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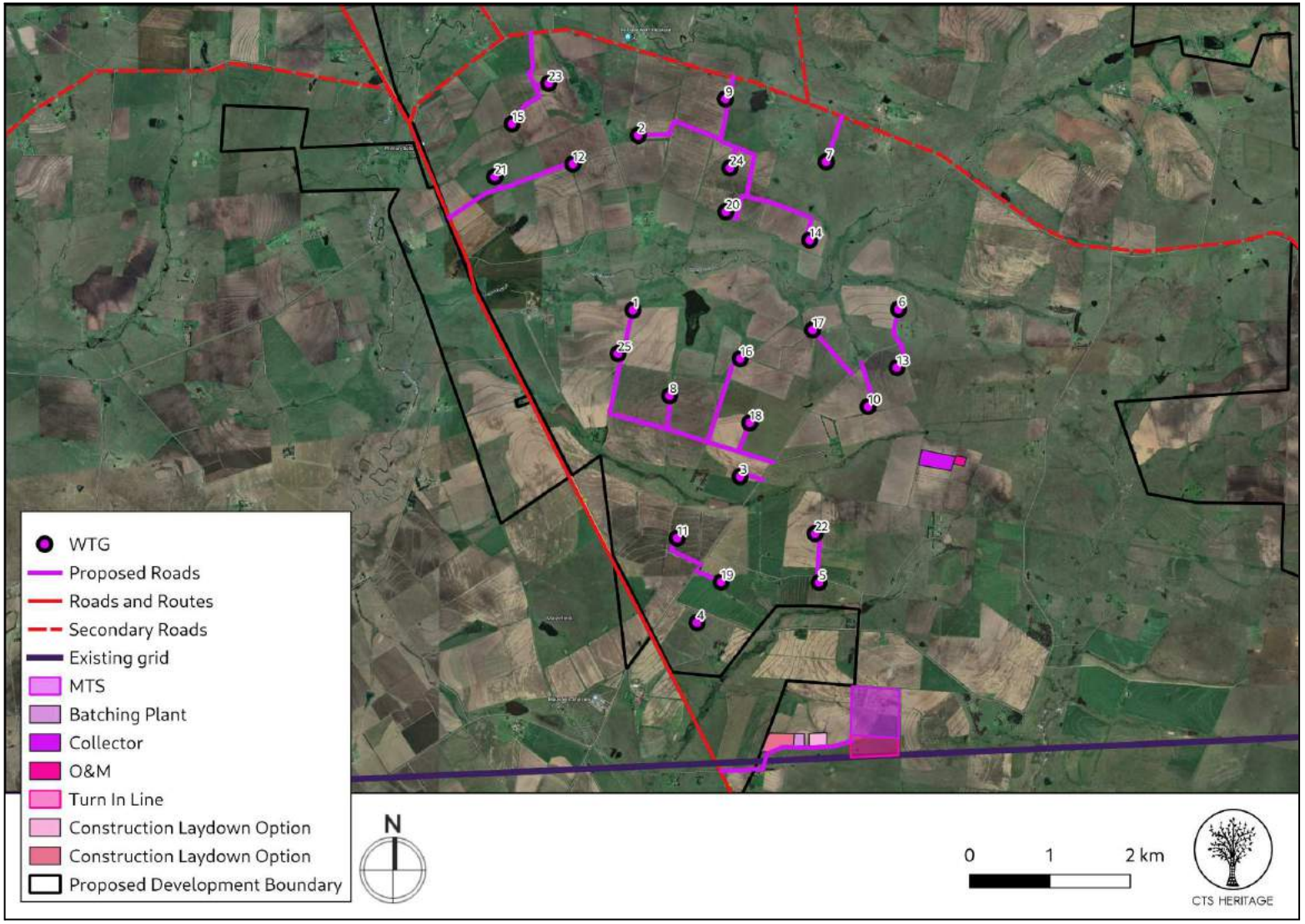

Figure 1.2: Project boundary with proposed layout

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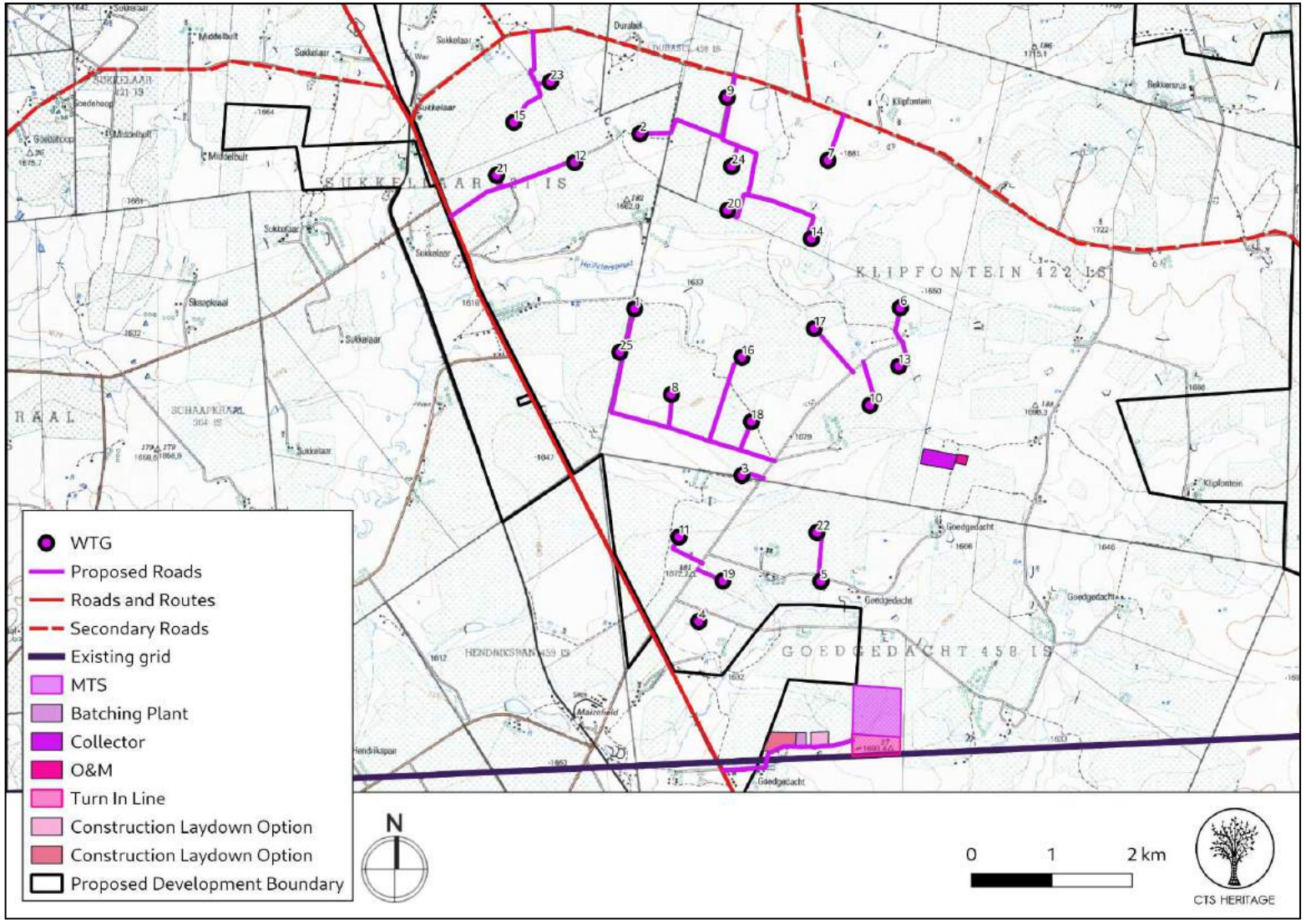

Figure 1.3: Project boundary on the 1:50 000 Topo Map

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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 from 24 to 27 March 2023 to determine what archaeological resources are likely to be impacted by the proposed development.
- The area proposed for development was assessed on foot, 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.

2.3 Constraints & Limitations

Given the heavy rains over the last few years, much of the terrain that has not been entirely cultivated for maize or soybean agriculture was covered in thick grassland that is regularly composted and fertilised by cattle manure. It was therefore unsurprising that the archaeological visibility of material on the surface is extremely low with the chances of finding buried Stone Age material limited to the very few areas that are not entirely ploughed and cultivated annually. The archaeological record in this area is therefore rated as having very low sensitivity.

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3. HISTORY AND EVOLUTION OF THE SITE AND CONTEXT

Background:

The area proposed for this Renewable Energy Development is located immediately south of Bethal, west of Ermelo and East of Secunda. This area is known for its rolling hills and extensive coal mine infrastructure.

Van Vollenhoven (2015) described the broader assessment area in his assessment completed for a de-stoning plan located adjacent to this proposed development area. Van Vollenhoven (2015) describes the environment as "disturbed by recent human activities, mainly agriculture. This consists of maize fields. Other disturbance visible is mining infrastructure..., a railway track... and power lines... Signs of old fields were also present which could be seen in the pioneer plant species consisting of weeds and grass. Almost half of the surveyed area consists of natural grassland. The vegetation cover varies between short and long grass... The topography of the area forms part of the rolling hills of the surrounding landscape."

Van Vollenhoven (2015) notes that "At the beginning of the 19th century the Phuthing, a South Sotho group, stayed in the vicinity of modern day Bethal. During the Difaquane they fled to the south (Bergh 1999: 10-11; 109). In 1829 the traveller Robert Scoon passed through an area to the north of Bethal (Bergh 1999: 13). The first white farmers only settled here during the late 1850's. By the 1890's this area was inhabited by many white farmers (Bergh 1999: 18-20). The town of Standerton was established in 1879 although it already was a district in 1878. Bethal was established in 1880 and it became an independent district in 1898 (Bergh 1999: 20-21). During the Anglo-Transvaal War (1880-1881) the British garrison in Standerton was beleaguered by the Boer forces (Bergh 1999: 46). The Highveld areas also saw much action consisting of various skirmishes between Boer and Brit during the Anglo-Boer War (1899-1902). It includes skirmishes on the farms Oshoek (4 December 1901), Trigaardsfontein (10 December 1901), Witbank (11 January 1902) and Nelspan (26 January 1902) (Bergh 1999: 51, 54)... At Standerton there was both a concentration camp for white and for black people (Bergh 1999: 54)."

The N17 that runs through the northern section of the development area marks the primary approach from Ermelo (established in the 1870's) to Bethal (established in the 1880's) and as such, the area proposed for development provides a significant gateway between these two historic towns. As with most National Routes, the alignment of the N17 follows the old regional route of the R29 which itself is likely based on historic routes between these significant towns. The way that the local farmsteads and roads interact with each other and elements of the landscape such as topography and river courses etc. all act as contributing elements to the cultural landscape.

Archaeology

None of the area proposed for development has been previously assessed in any heritage impact assessment process. Heritage Impact Assessments have been completed nearby for projects in Secunda and these can be used to infer the archaeological sensitivity in the development area. Van Vollenhoven (2015) notes that the geographical area around the towns of Standerton and Bethal is not known to conserve Stone Age archaeology. He notes that "No such sites are indicated on maps contained in a historical atlas of this area (Bergh 1999: 4-5). However, this may only be since no

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research has actually been done in this area. The closest known Stone Age occurrences are a Late Stone Age site at the town of Ermelo and rock art sites far to the west of Standerton (Bergh 1999: 4-5)." Van Vollenhoven (2015) noted no natural shelters during the survey; however, the good vegetation in the surrounding area and the rivers indicate that ample grazing and water may have been available, making it a prime spot for hunting in the past. Therefore one may assume that Stone Age people probably would have moved through the area. Late Iron Age sites are found in a large area around the towns of Bethal and Standerton and number at least 585 such sites.

In the heritage assessment of a powerline upgrade at the nearby Syferfontein Mine, Nel & Karodia (2013), noted that "*a heritage assessment was conducted in 2000 by the National Cultural History Museum and included in the Syferfontein Mine EMP in 2010. During the survey, a few Stone Age artefacts were identified. These artefacts were not considered to have any primary context and therefore were interpreted to have low significance value. No Early Iron Age sites were identified. The Late Iron Age sites found here conform to those identified in the literature for the Southern Highveld area (former southern Transvaal, northern Orange Free State) as Type V sites. As the soil is mostly turf, Iron Age settlement usually took place on the various dolerite outcrops. The added benefit of choosing these locations was that it was located at the source of building material used in constructing the settlements. One such site shows interesting features as the living units were actually excavated to obtain enough building material for the surrounding walls. A few of the farmsteads dating to early part of this century were identified as possibly having historical-architectural significance. A number of abandoned homesteads are located in the areas that were investigated. These seem to belong to farm labourers and were all abandoned within the last few years. They are therefore not viewed to be of cultural or historical significance. However, some graves are located in the vicinity of the homesteads and it is possible that more graves will be located nearby*".

In the assessment completed for the WEF by CTS Heritage in 2022, the field assessment determined that the area proposed for development has medium to high local historical significance. The broader cultural landscape consists of old farmhouses, kraals, circular stone structures, and the remnants of old water pumps, feeding and watering troughs. During the field assessment, the specialists were informed that some of the oldest farmhouses in the area, constructed with adobe, were demolished by current farmers as they were considered "unsavable". This is an unfortunate loss of a significant layer of vernacular architecture and unique settlement heritage from this area. It is imperative that further erosion of this significant layer within the landscape is prevented through an inventory process or similar to record any remaining adobe farmhouses in the area. Unfortunately, this is beyond the scope of this assessment.

Even though the area is rich in history, no significant archaeological heritage resources were identified during the field assessment. No Stone Age or Iron Age heritage resources were identified during the survey. The few heritage resources that were identified consist of the ruins of older farm structures and kraals. Due to the paucity of older farm structures in the area as a result of demolition, it is recommended that the identified ruins and kraals remain untouched and that a safety buffer should exist around all such structures.

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The field assessment identified six burial grounds or graves close to or within the proposed development footprints of turbines, roads and the solar PV facility. All graves are of high local significance as a result of their social and cultural value, and are therefore graded IIIA.

None of the sites identified in the assessment are located within the development area, however the text provides a good assessment of resources that may be present. It is clear that the development area has not previously been assessed. It is therefore possible that the proposed development will impact negatively on archaeological resources associated with the Late Iron Age, burial grounds and graves as well as stone age archaeological resources.

Palaeontology

The palaeontological assessment completed for the Ummbila Emoyeni REF identified trace fossils within the Vryheid Formation outcrops within the development area. The PIA notes that "Deep weathering and extensive agricultural disturbance prevented the recording of fossils over most of the inspected areas, but it is significant to note that in the few places where exposures were noticed, highly significant fossils were recorded."

No palaeontological no-go areas have been identified within the project areas. With the exception of one fossil site of low scientific value, none of the recorded fossil sites overlaps directly with, or lies close to (< 20 m) the proposed infrastructure and no modification of the layouts through micro-siting is proposed here on palaeontological grounds.

The potential for rare, unrecorded fossil sites of high scientific and/or conservation value is very high in the areas proposed for development located within the Vryheid Formation and where excavation depth will exceed 1.5m. These are best handled through a Chance Fossil Finds Protocol as per the recommendations in the HIA.

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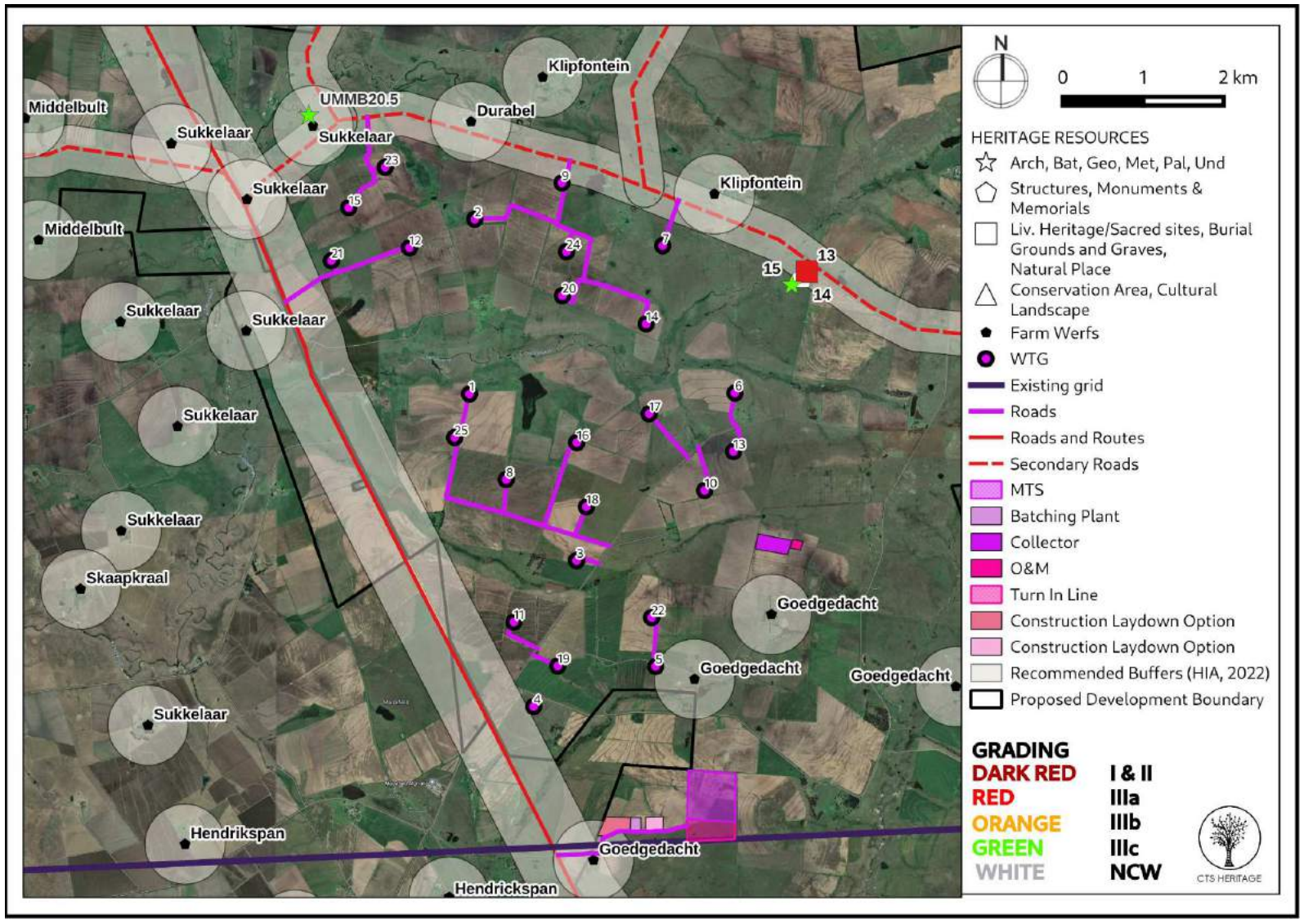

Figure 3. Heritage Resources Map. Heritage Resources previously identified in and near the study area, with SAHRIS Site IDs indicated

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4. IDENTIFICATION OF HERITAGE RESOURCES

4.1 Field Assessment

When read against the previous HIAs completed in the study area, the broader character of heritage resources present in the area consists predominantly of ruins, partially demolished workers' cottages and werfs associated with the Durabel, Goedgedacht, Sukkelaar and Klipfontein farms. A number of modern and historic graves were also recorded in association with the werfs - most of the deceased were buried in the 20th and 21st century with only a handful of older graves. The Roux family graveyard near Klipfontein, was particularly notable with two large monuments and statues above the graves. The pattern of early 20th century expansion and then contraction in the built environment of the area owes itself to the rapid expansion of mechanised agriculture after the Second World War and the concomitant drop in the need for manual labour to work on the farms.

Figure 4.1: View of the 765kV overhead line running to Camden power station

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Figure 4.2: Typical soybean and maize fields with gum trees surrounding the werfs. Southern part of the study area.

Figure 4.3: Contextual image of development area

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Figure 4.4: Patches of grassland for grazing surrounded by maize and soybean fields, 765kV OHL.

Figure 4.5: High stands of maize.

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Figure 4.6: Generally flat terrain characterises the study area.

Figure 4.7: Contextual Images of landscape taken from the beacon in the Goedgedacht zone.

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Figure 4.8: Contextual Images of landscape showing the large gum trees near a few ruins.

Figure 4.9: Wetter areas towards the depressions formed between the gentle slopes covered in grazing areas.

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Figure 4.10: Contextual image of development area, soybean fields.

Figure 4.11: Contextual image of development area, cosmos flowers in bloom.

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Figure 4.12: Contextual image of development area - maize fields looking north.

Figure 4.13: Contextual image of development area

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Figure 4.14: Contextual image of development area with the Heilvleispruit behind the photographer looking south.

Figure 4.15: Contextual image of development area

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Figure 4.16: Contextual image of development area

Figure 4.17: Contextual image of development area

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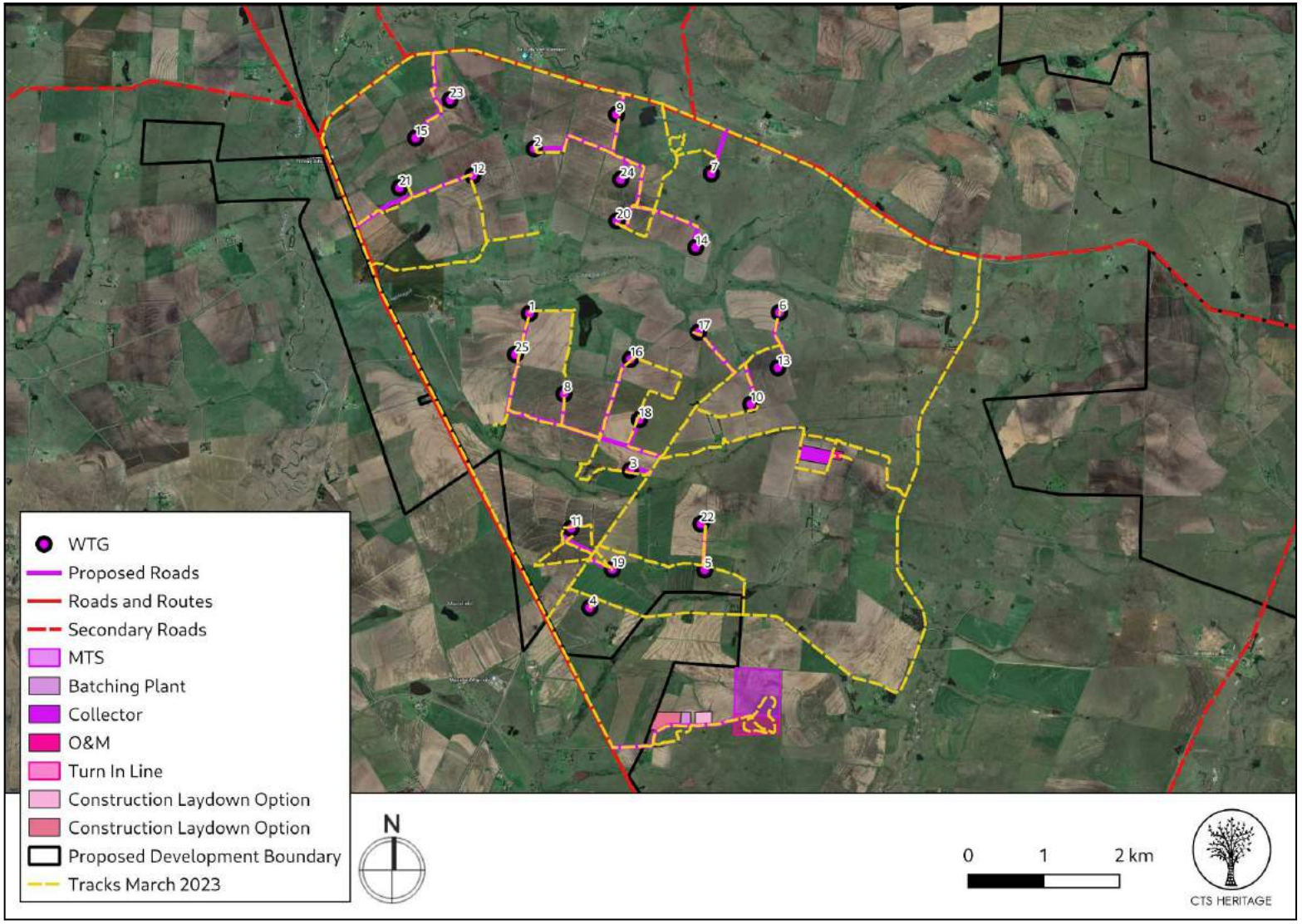

Figure 5: Overall track paths of foot survey for the proposed development

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4.2 Archaeological Resources identified

Table 1: Observations noted during the field assessment

ID	Description	Type	Period	Density	Co-ordinates		Grade	Mitigation
001	Goedgedacht modern werf	Structure	Modern	n/a	-26.650879	29.574819	NCW	No impact anticipated
002	Older vernacular stone walled ruins at Goedgedacht	Ruin	Historic	n/a	-26.650925	29.575191	IIIC	No impact anticipated
002	Older vernacular stone walled ruins at Goedgedacht	Ruin	Historic	n/a	-26.650657	29.575351	IIIC	No impact anticipated
003	Ruins in amongst clump of gum trees	Ruin	Historic	n/a	-26.618225	29.565424	NCW	No impact anticipated
003	Ruins in amongst clump of gum trees	Ruin	Historic	n/a	-26.618589	29.566446	NCW	No impact anticipated
004	Early 20th c workers cottages in clumps of poplar and gum trees; ruined stone buildings behind cottages	Ruin	Historic	n/a	-26.612631	29.554328	IIIC	No impact anticipated
005	Another ruined werf surrounded by trees	Ruin	Historic	n/a	-26.614588	29.584951	NCW	No impact anticipated
006	Goedgedacht 20th c ruins and kraal	Ruin	Historic	n/a	-26.628428	29.586664	NCW	No impact anticipated
007	Well built stone vernacular ruin	Ruin	Historic	n/a	-26.645114	29.604456	IIIC	No impact anticipated
008	Modern concrete ruined building	Ruin	Modern	n/a	-26.631649	29.610628	NCW	No impact anticipated
009	Vernacular stone built ruin	Ruin	Historic	n/a	-26.62053	29.610407	IIIC	No impact anticipated
010	Grave with headstone in dense bush	Graves/BurialGrounds	Historic	n/a	-26.620134	29.60832	IIIA	50m Buffer
011	Another ruined stone built werf	Ruin	Historic	n/a	-26.613934	29.609715	IIIC	No impact anticipated
012	Stone ruins in clump of trees next to dam	Ruin	Historic	n/a	-26.58523	29.605929	IIIC	No impact anticipated
013	Klipfontein werf, mixture of modern and older stone built buildings, kraals	Structure	Historic	n/a	-26.577317	29.590856	IIIC	No impact anticipated
014	Klipfontein family graveyard, well marked by trees and fence, more than 5 graves	Graves/BurialGrounds	Historic	n/a	-26.579172	29.590069	IIIA	50m Buffer
015	Ruined werf, concrete alterations to brick structures	Ruin	Historic	n/a	-26.579609	29.57869	NCW	No impact anticipated
016	Roux family graveyard, wrought iron fence, two large monuments with a small statue of a girl in a dress throwing flowers, 1920s-1930s	Graves/BurialGrounds	Historic	n/a	-26.577635	29.579855	IIIA	50m Buffer
017	Durabel werf, stone buildings and some modern additions	Structure	Historic	n/a	-26.568629	29.559531	IIIC	No impact anticipated
018	Informal settlement	Structure	Modern	n/a	-26.592334	29.551016	NCW	No impact anticipated
019	Modern werf	Structure	Modern	n/a	-26.588717	29.560758	NCW	No impact anticipated

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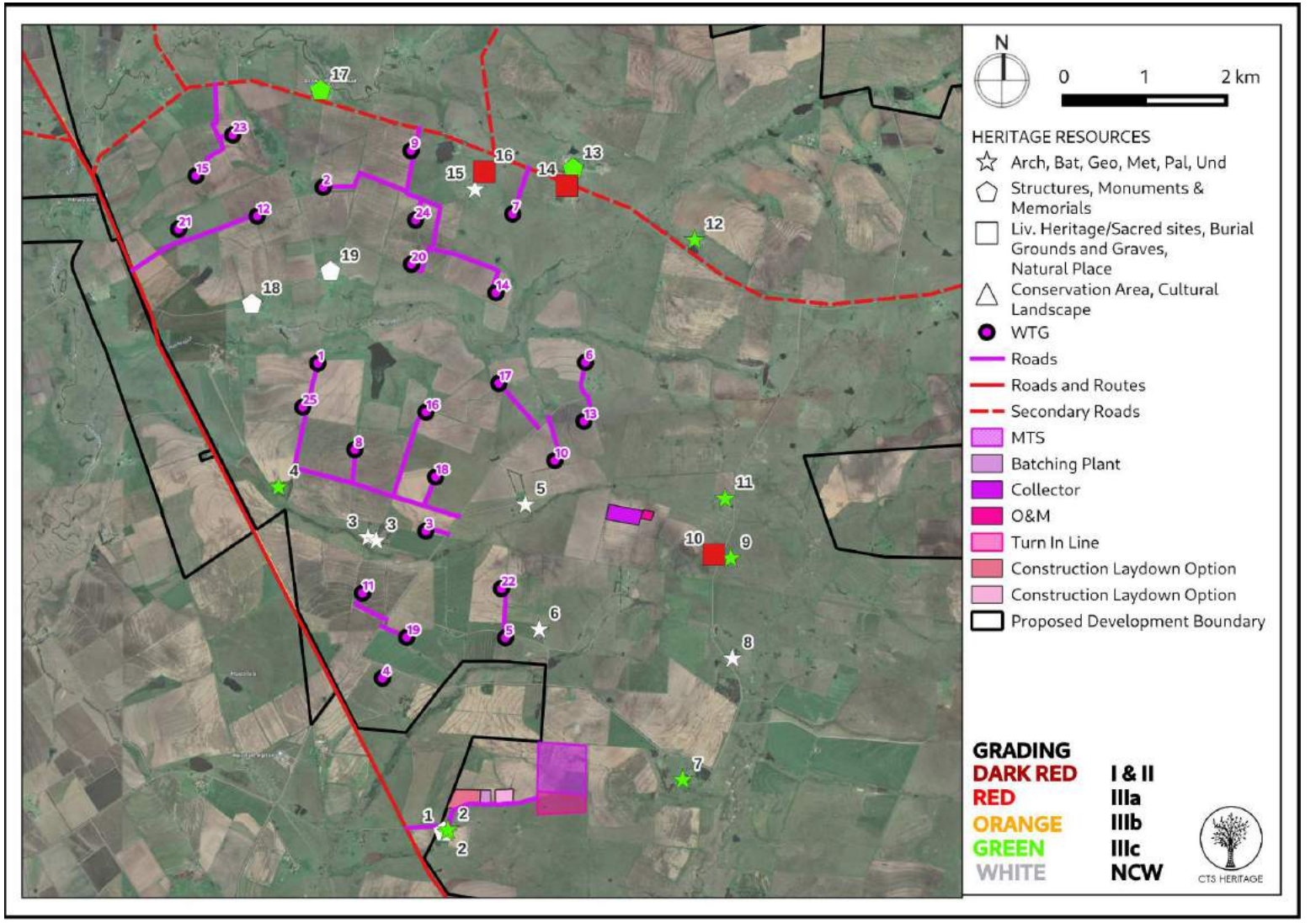

Figure 6: Map of all sites and observations noted within the development area

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4.3 Selected photographic record

(a full photographic record is available upon request)

Figure 6.1: Observation 001

Figure 6.2: Observation 002

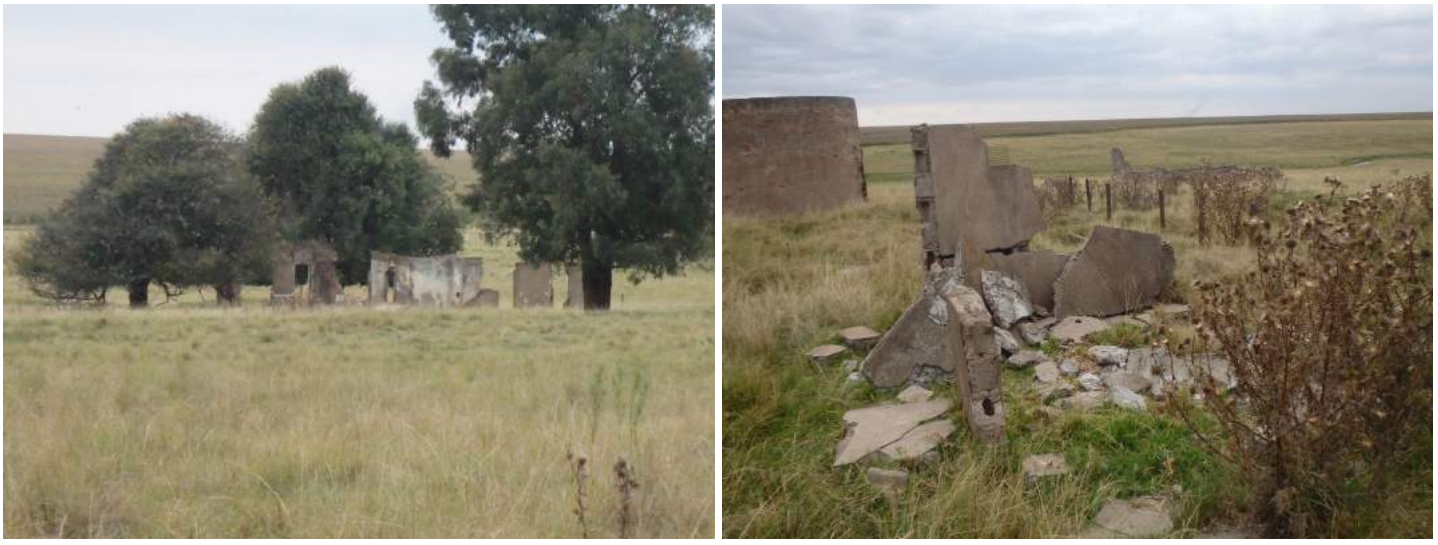

Figure 6.3: Observation 003

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Figure 6.4: Observation 003

Figure 6.5 Observation 004

Figure 6.6 Observation 005

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Figure 6.7 Observation 005

Figure 6.8 Observation 006

Figure 6.9: Observation 007

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Figure 6.10: Observation 008

Figure 6.11: Observation 009

Figure 6.12: Observation 010

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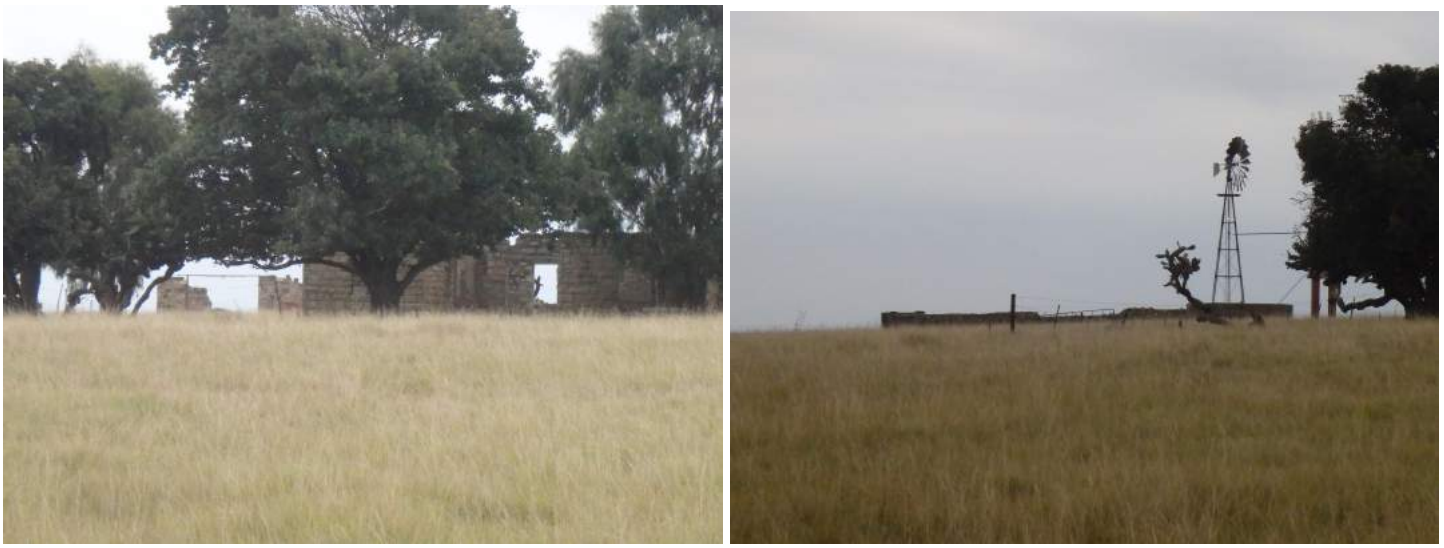

Figures 6.13: Observation 011

Figure 6.14: Observation 012

Figure 6.15: Observation 013

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Figure 6.16: Observation 014

Figure 6.17: Observation 014

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Figure 6.18: Observation 015

Figure 6.19: Observation 016

Figure 6.20: Observation 017

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Figure 6.21: Observation 018

Figure 6.22: Observation 019

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5. ASSESSMENT OF THE IMPACT OF THE DEVELOPMENT

5.1 Assessment of impact to Archaeological Resources

The proposed development will not have a substantial negative impact on the heritage resources identified within the proposed development area for the renewable energy facilities and associated infrastructure. No Stone Age or Iron age archaeology was identified during the field assessment. Some historical ruins and kraals of contextual historic significance, graded IIIC, were identified; however, none of these are to be impacted as per the layout provided.

A number of burial grounds and/or graves were identified during the field assessment (Grade IIIA) and some of these may be indirectly impacted. A no development buffer of at least 50m is present around each burial site in the layout provided.

6. CONCLUSION AND RECOMMENDATIONS

Even though the area is rich in history, no significant archaeological heritage resources were identified during the field assessment. No Stone Age or Iron Age heritage resources were identified during the survey. The few heritage resources that were identified consist of the ruins of older farm structures and kraals. Due to the paucity of older farm structures in the area as a result of demolition, it is recommended that the identified ruins and kraals remain untouched and that a safety buffer should exist around all such structures.

The field assessment identified three burial grounds or graves close to the proposed development footprints of turbines. All graves are of high local significance as a result of their social and cultural value, and are therefore graded IIIA. While no Stone Age or Iron Age archaeological resources were identified during the field assessment, it is clear that this landscape is sensitive for impacts to historical archaeology in the form of ruins and kraals, as well as marked and unmarked burial grounds and graves.

Recommendations

Based on the outcomes of this report, it is not anticipated that the proposed development of the renewable energy facilities and its associated grid connection infrastructure will negatively impact on significant archaeological heritage on condition that:

- A 50m no-go development buffer is implemented around all burial ground sites
- A Management Plan for the ongoing conservation of these burials is developed prior to construction, along with a Guide on how to identify marked and unmarked burials and how to proceed should previously unidentified burials be uncovered during the construction process.
- 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.

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7. REFERENCES

Heritage Impact Assessments				
Nid	**Report Type**	**Author/s**	**Date**	**Title**
157393	Heritage Statement	Shahzaadee Karodia Khan, Johan Nel	01/02/2014	HERITAGE STATEMENT FOR THE BASIC ASSESSMENT UNDERTAKEN FOR A POWERLINE UPGRADE, SYFERFONTEIN MINE, SECUNDA, MPUMALANGA PROVINCE
358403	HIA Phase 1	Anton van Vollenhoven	10/08/2015	A report on a Cultural Heritage Impact Assessment for the Development of a De-stoning Plan at the New Denmark Colliery, close to Standerton, Mpumalanga Province
5014	AIA Phase 1	Julius CC Pistorius	01/06/2007	A Phase 1 Heritage Impact Assessment Study for the Proposed New 88 kV Power Line Running from the Majuba Power Station near Amersfoort to the Camden Power Station near Ermelo in the Mpumalanga Province
5059	AIA Phase 1	Johnny Van Schalkwyk	01/05/2003	Archaeological Survey of a Section of the Secunda-Mozambique Gas Pipeline Bethal and Highveld Ridge
5700	AIA Phase 1	Johnny Van Schalkwyk	01/10/2002	A Survey of Cultural Resources for the Proposed New Tutuka-Alpha Standerton Power Transmission Line, Standerton District
7920	AIA Phase 1	Johnny Van Schalkwyk	01/02/2004	Heritage Impact Assessment for the Planned Sivukile Extension 4 Township Lekwa Municipality

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