



CTS HERITAGE

HERITAGE SCREENER

CTS Reference Number:	CTS18_222
SAHRIS Reference:	9373 (previously 218)
Client:	Savannah
Date:	17 January 2019
Title:	Proposed amendment to the Great Karoo Wind Farm to be located on Farm Kentucky 206 and Portion 1 of Farm Wolvenkop 207, Northern Cape.

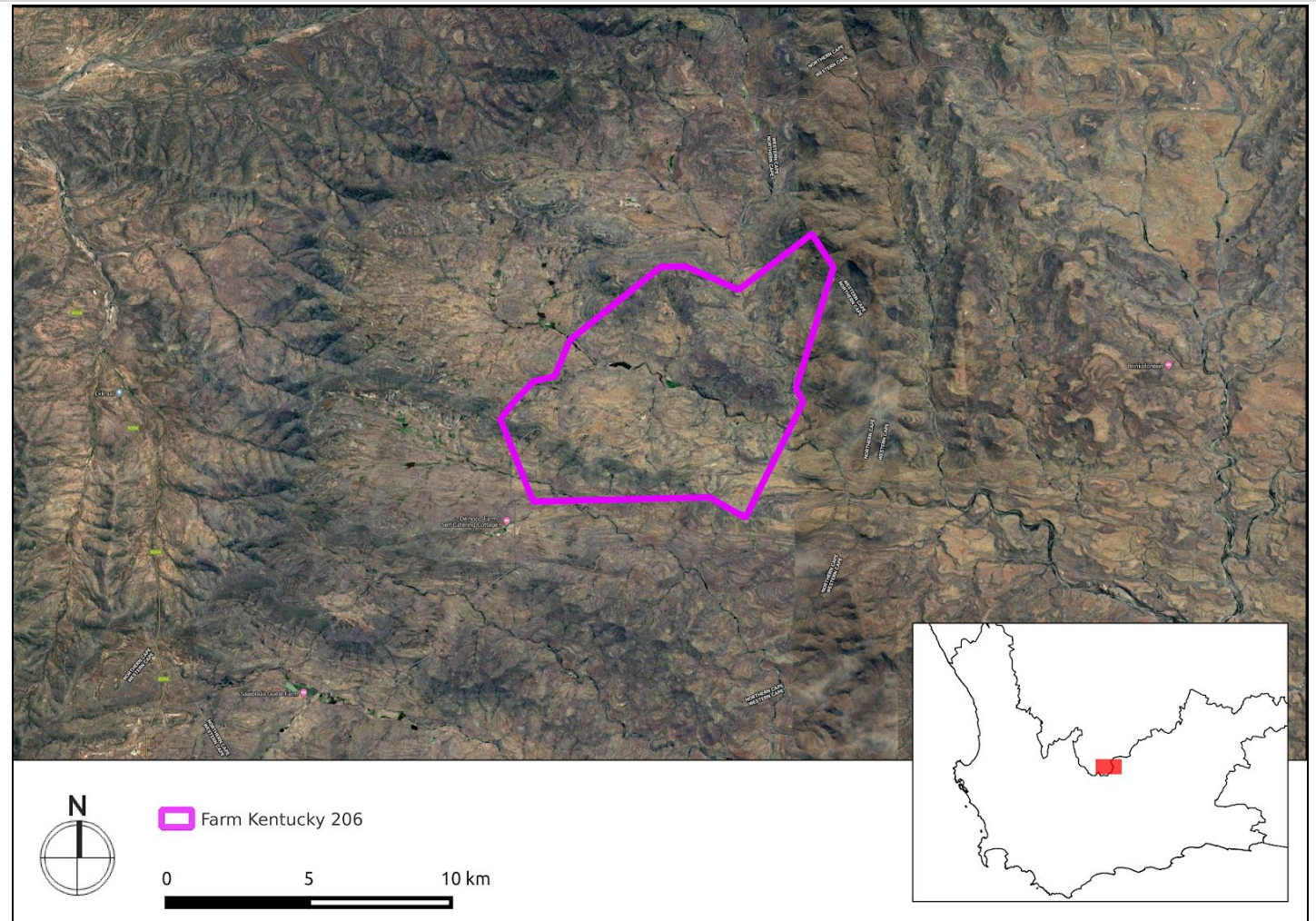


Figure 1a. Satellite map indicating the location of the proposed development in the Northern Cape

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

1. Proposed Development Summary

Great Karoo Wind Farm (Pty) Limited are requesting the Department of Environmental Affairs (DEA) to amend the wind farm layout, the project description, turbine specifications, WTG foundation and laydown area, as well as the EA validity period as described in the environmental authorisation dated 12 August 2014 (as amended), and in the associated Environmental Impact Assessment Report (EIAR) dated April 2014, as follows:

- Increase hub height to up to 150m;
- Increase rotor diameter to up to 180m;
- Increase rated power of turbines to up to 6.5MW per WTG;
- Potential increase to WTG foundation area and laydown area;
- Update the layout as required; and
- Extend the validity period by an additional 5 years;

2. Application References

Name of relevant heritage authority(s)	SAHRA
Name of decision making authority(s)	DEA

3. Property Information

Latitude / Longitude	32°47'49.15"S 20°45'31.18"E
Erf number / Farm number	Farm Kentucky 206 and Portion 1 of Farm Wolvenkop 207
Local Municipality	Karoo Hoogland Local Municipality
District Municipality	Namakwa District Municipality
Previous Magisterial District	Sutherland
Province	Northern Cape
Current Use	Agriculture
Current Zoning	Agriculture
Total Extent	70.7km ²

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

4. Nature of the Proposed Development

Total Surface Area	70.7km ²
Depth of excavation (m)	2m
Height of development (m)	150m
Expected years of operation before decommission	A minimum 20 year operational period is expected

5. Category of Development

x	Triggers: Section 38(8) of the National Heritage Resources Act
	Triggers: Section 38(1) of the National Heritage Resources Act
x	1. Construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier over 300m in length.
	2. Construction of a bridge or similar structure exceeding 50m in length.
	3. Any development or activity that will change the character of a site-
x	a) exceeding 5 000m ² in extent
	b) involving three or more existing erven or subdivisions thereof
	c) involving three or more erven or divisions thereof which have been consolidated within the past five years
	4. Rezoning of a site exceeding 10 000m ²
	5. Other (state):

6. Additional Infrastructure Required for this Development

General supporting infrastructure as per current EA (i.e. internal access roads, turbine hand stands, site offices and laydown areas, internal cabling, 132kV grid connection, substation and associated infrastructure, stormwater infrastructure etc.).

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

7. Mapping (please see Appendix 3 and 4 for a full description of our methodology and map legends)

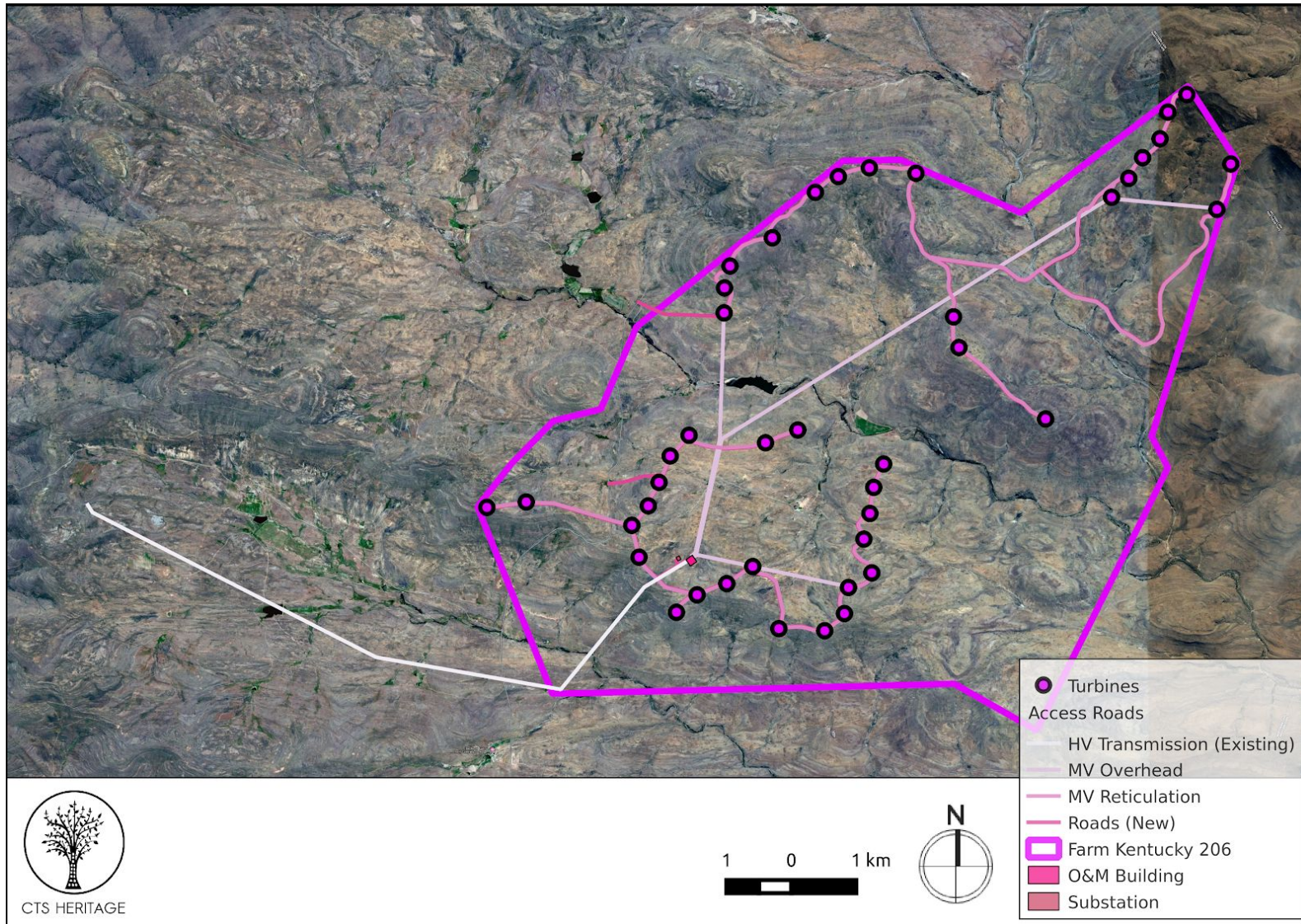


Figure 1b. Overview Map. Satellite image (2017) indicating the proposed development area at closer range with proposed layouts

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

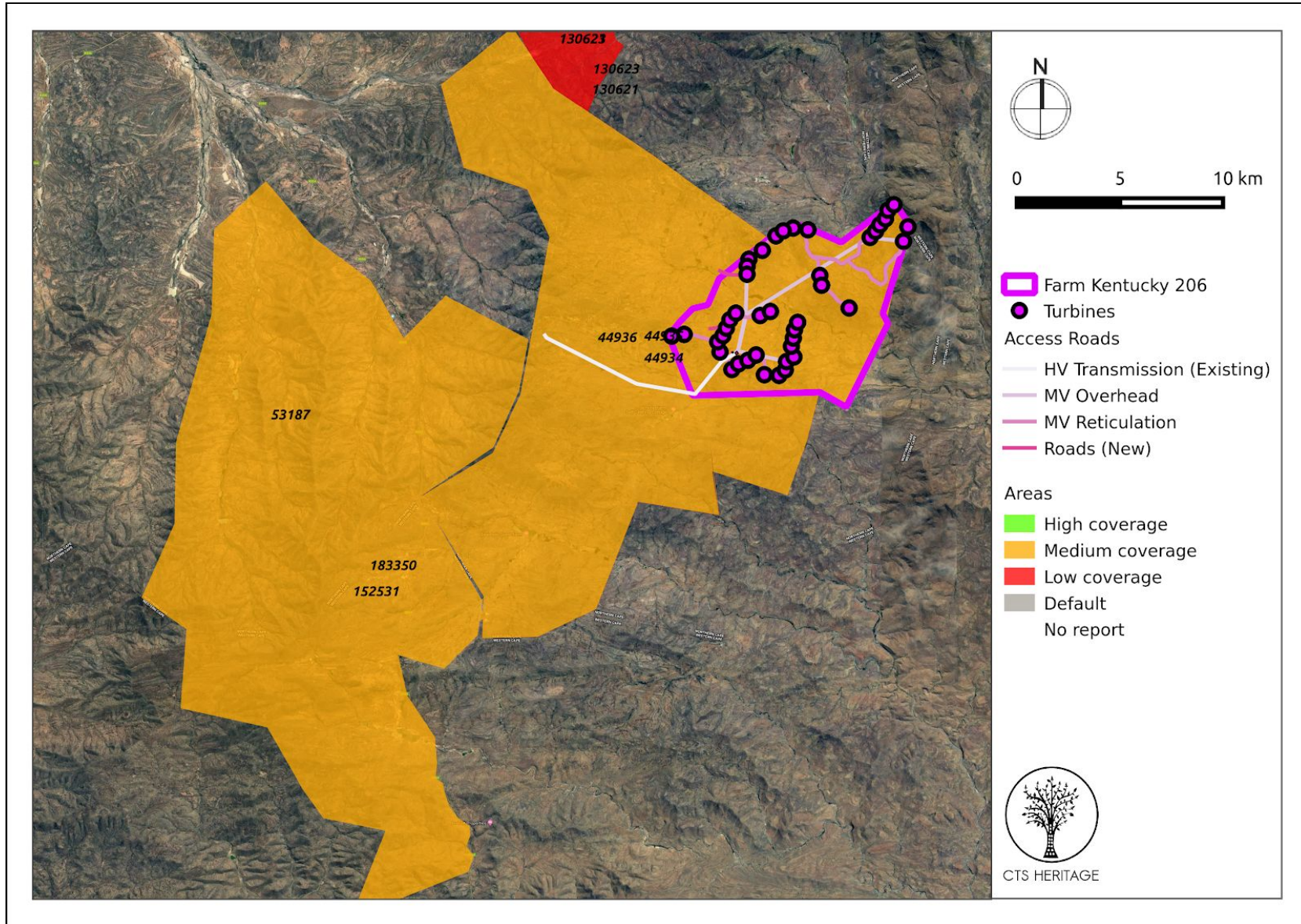


Figure 2. Previous HIAs Map. Previous Heritage Impact Assessments covering the proposed development area with SAHRIS NIDS indicated. Please see Appendix 2 for full reference list.

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

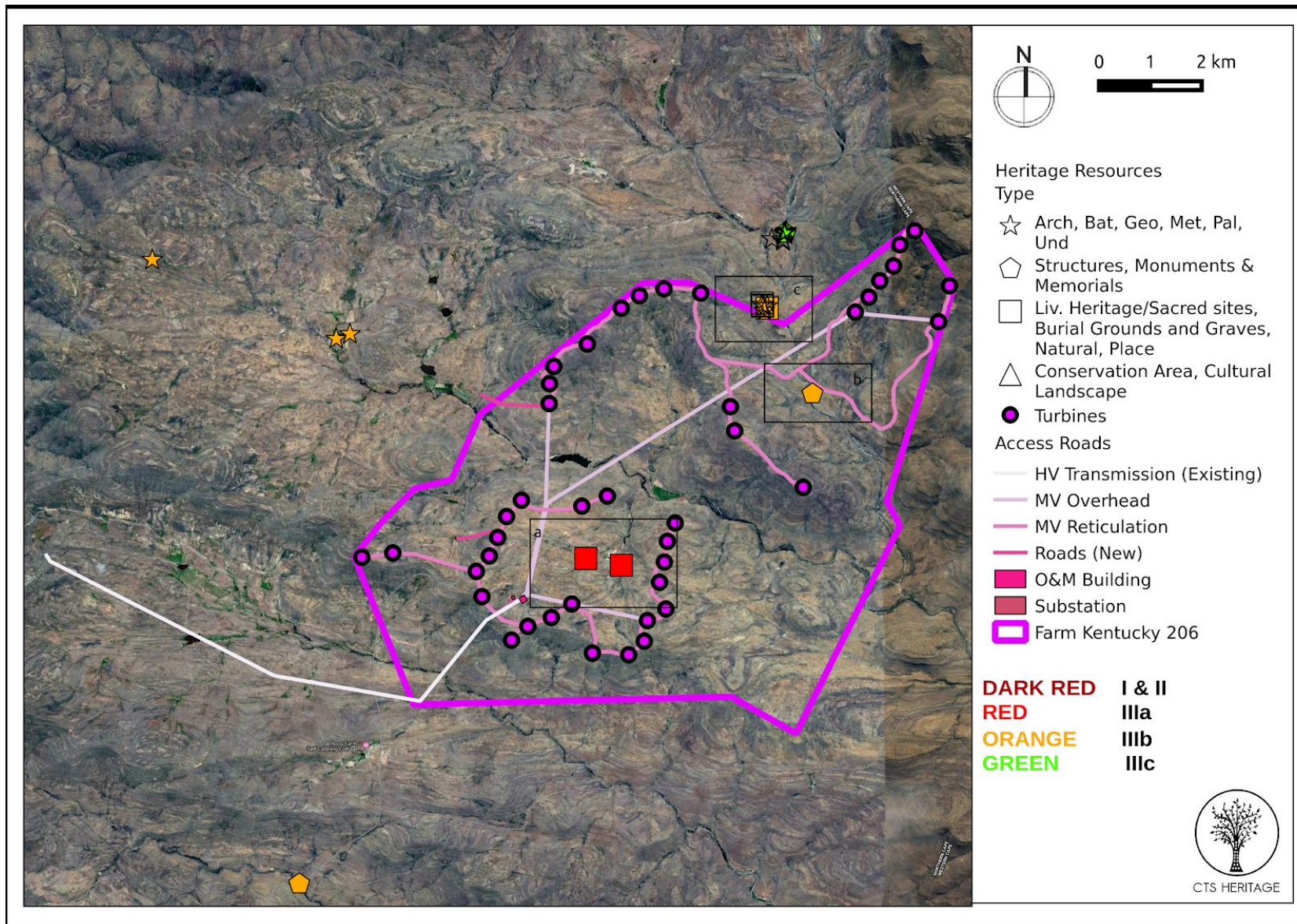


Figure 3. Heritage Resources Map. Heritage Resources previously identified within the study area, with SAHRIS Site IDs indicated in the insets below. Please See Appendix 4 for full description of heritage resource types.

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

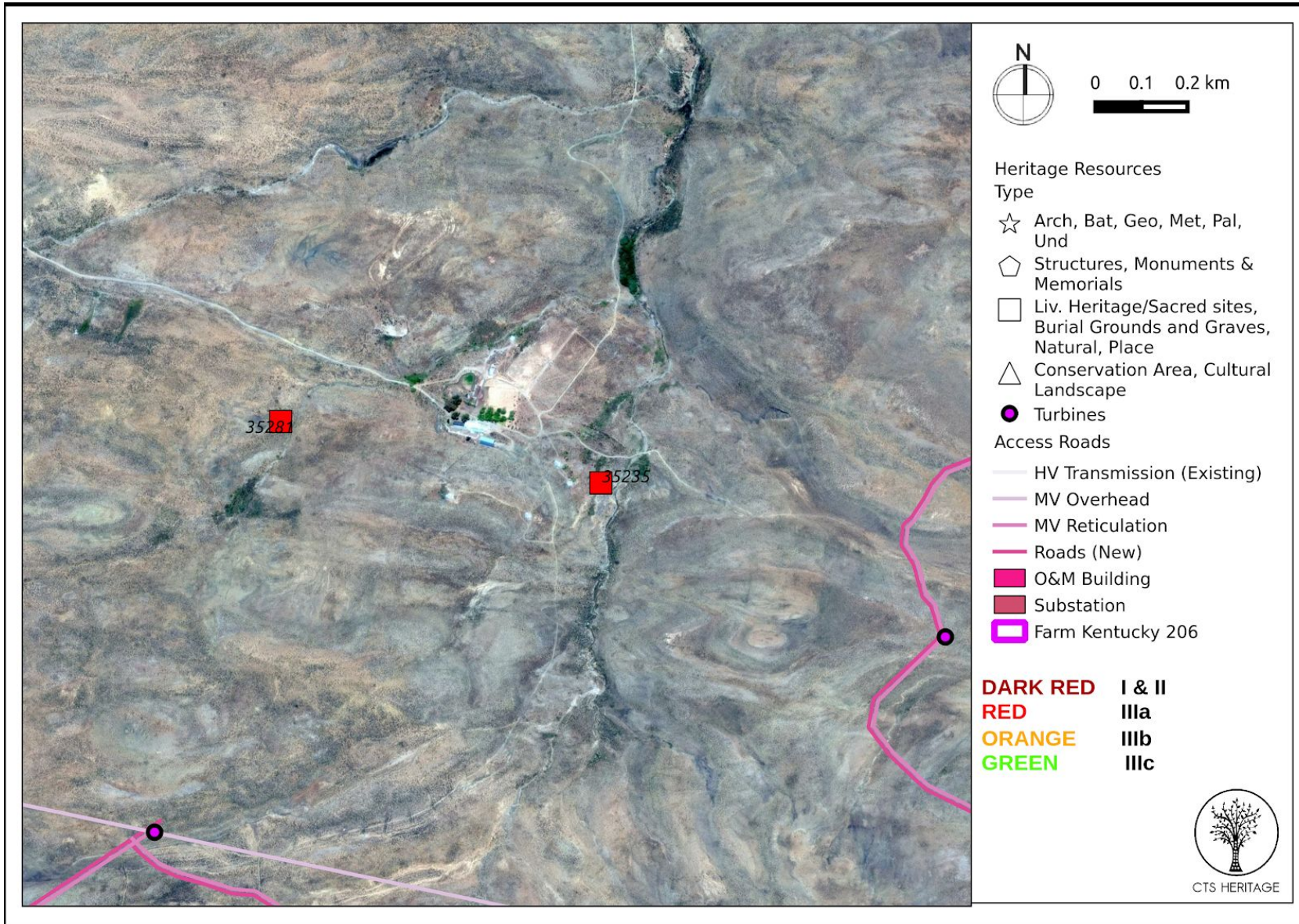


Figure 3a. Heritage Resources Map. Inset

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

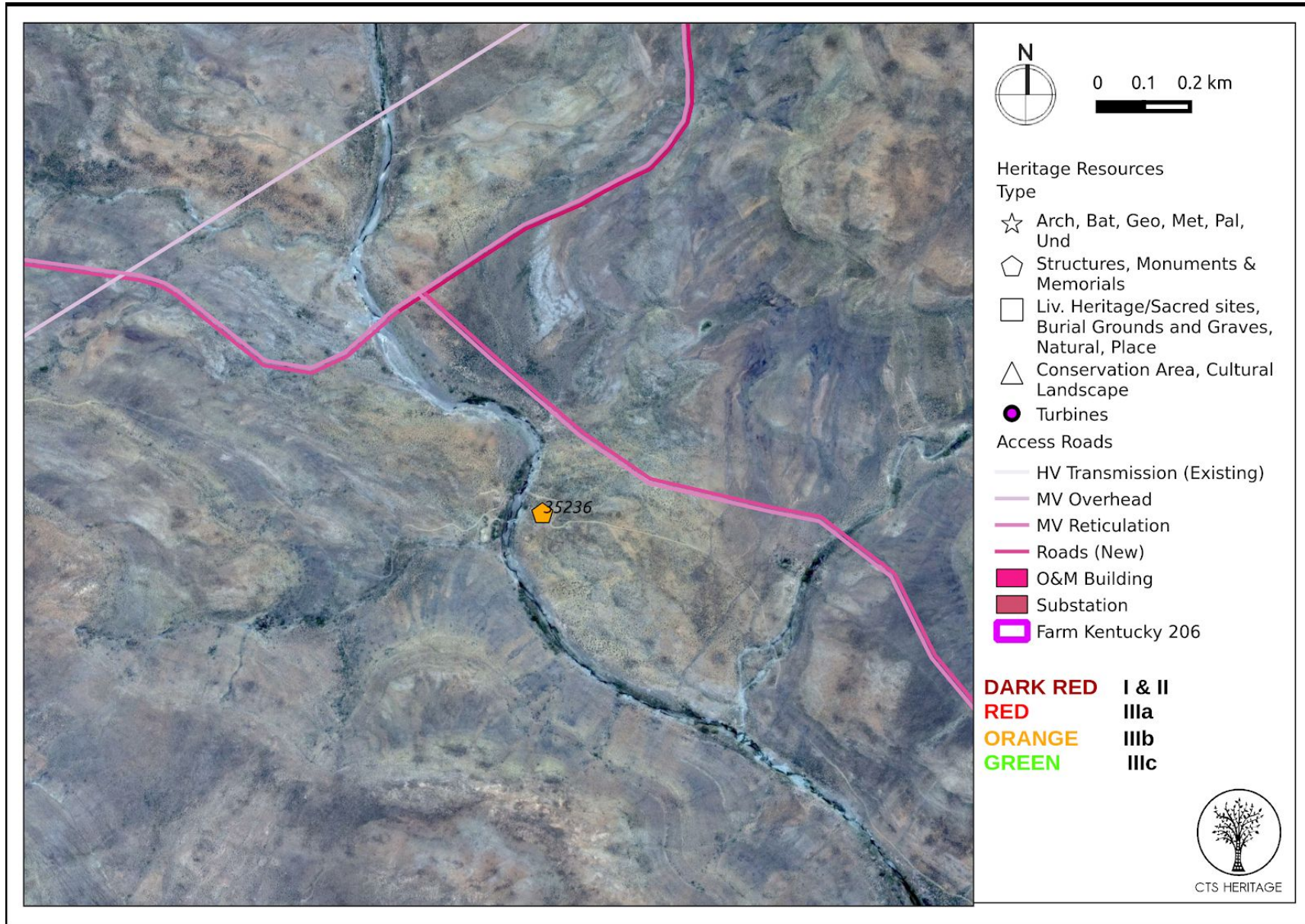


Figure 3b. Heritage Resources Map. Inset

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

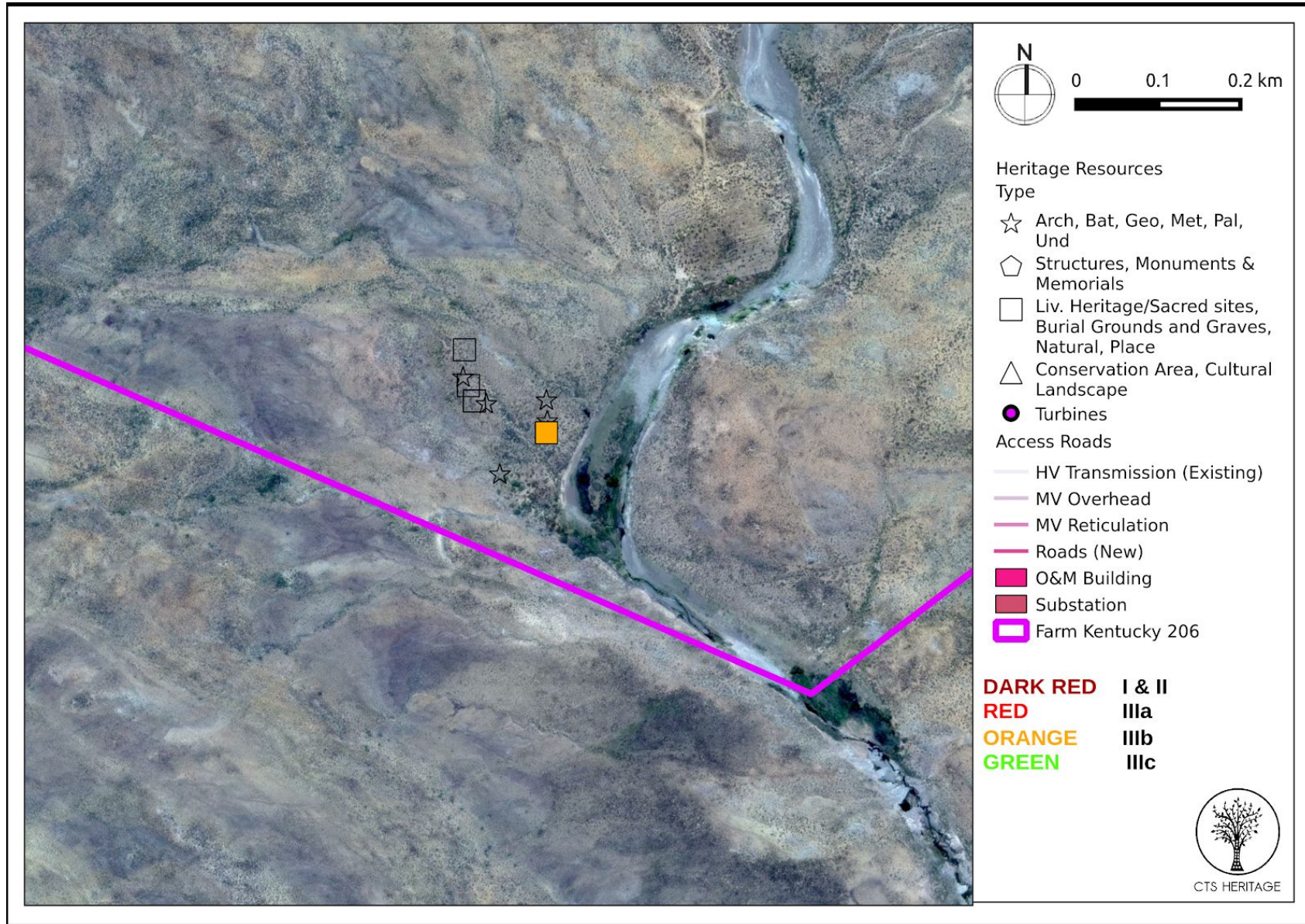


Figure 3c. Heritage Resources Map. Inset map - no impact to resources located outside of the Farm Kentucky 206 anticipated

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

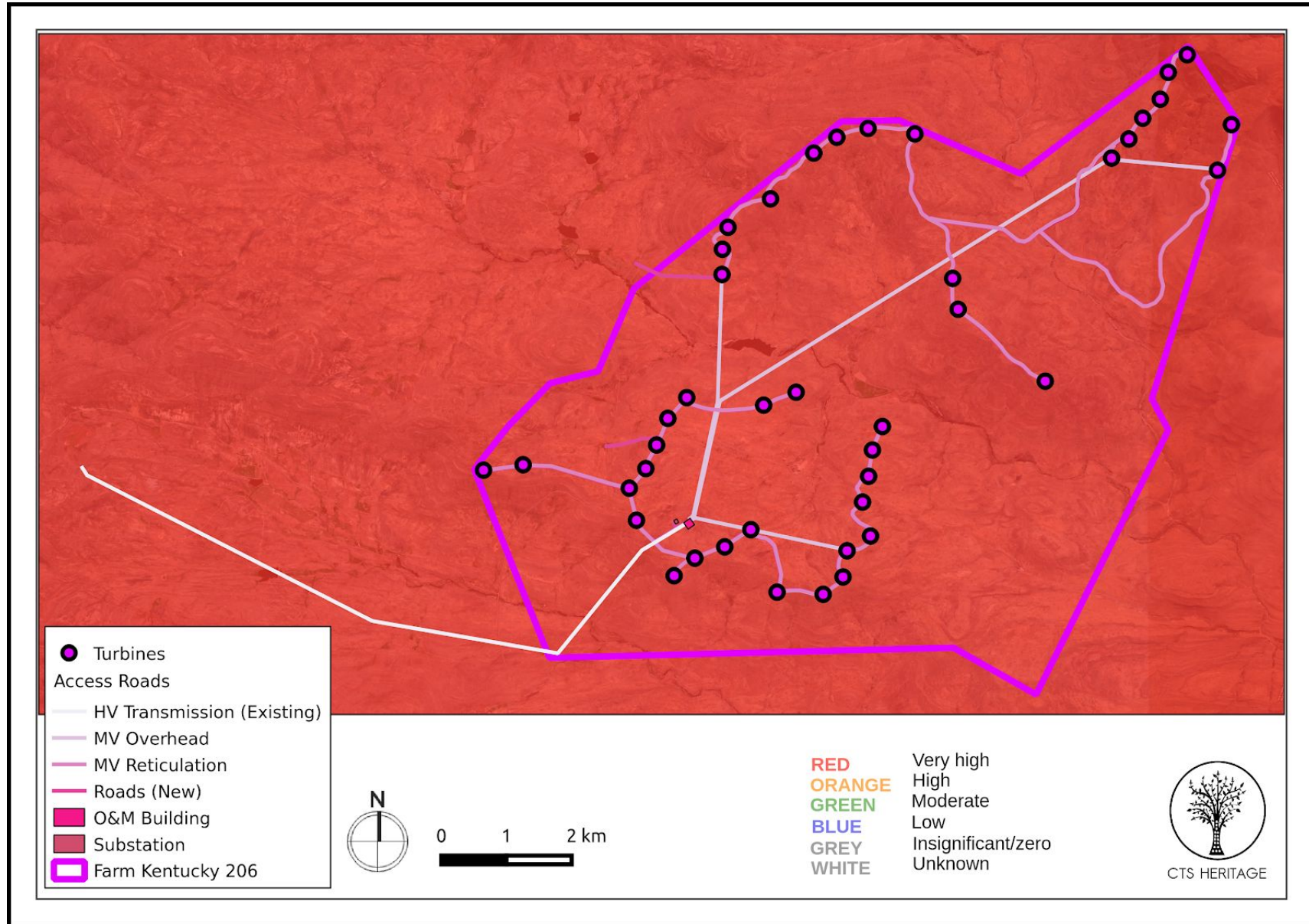


Figure 4a. Palaeosensitivity Map. Indicating fossil sensitivity underlying the study area. Please See Appendix 3 for full guide to the legend.

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

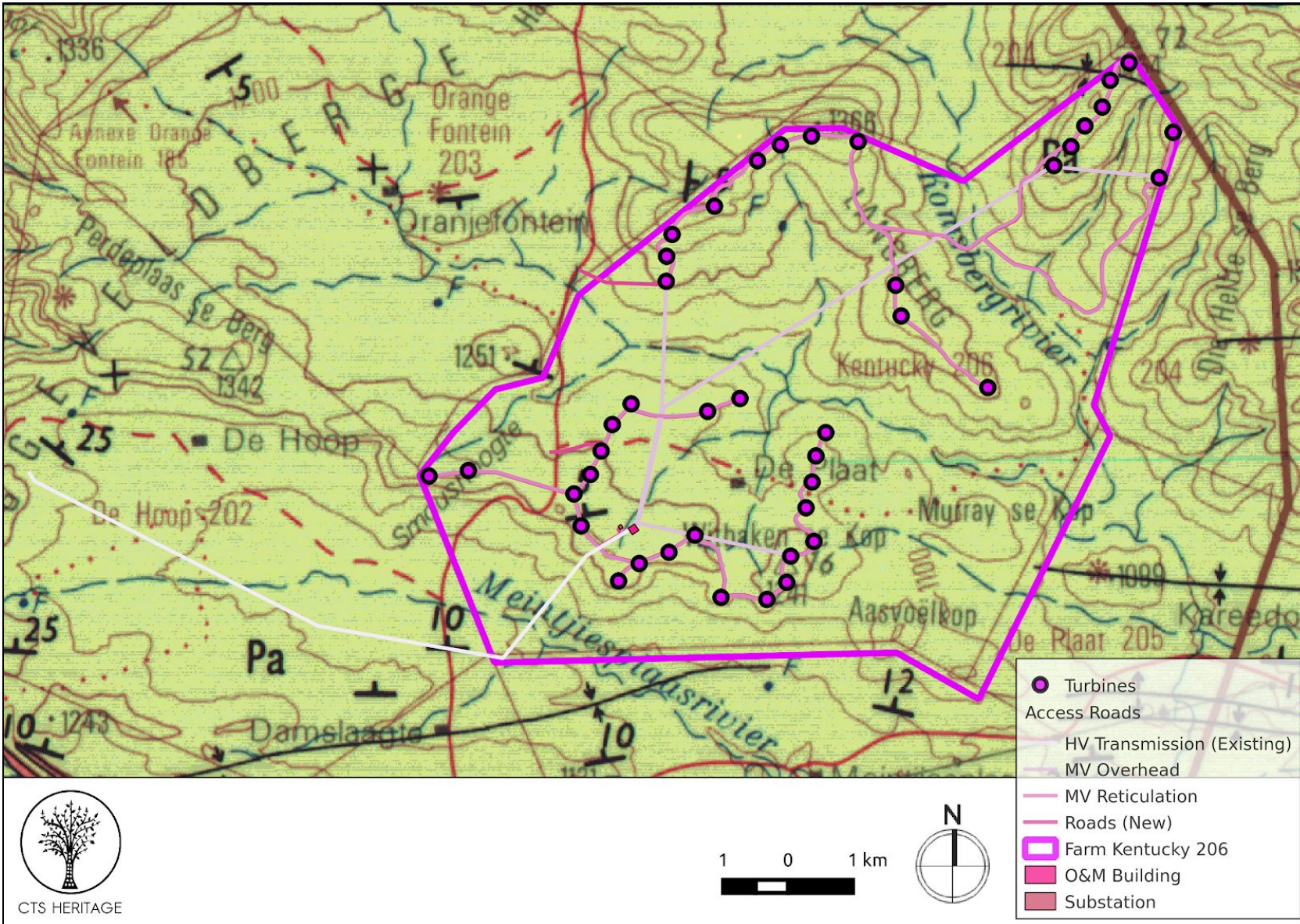


Figure 4b. Geology Map. Extract from the CGS 3220 Sutherland Map indicating that the development area is underlain by sediments of the Karoo Supergroup assigned to the Beaufort group, within the Abrahamskraal Formation of the Adelaide Subgroup.



CTS HERITAGE

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

8. Heritage Assessment

Background

Environmental Authorisation for the proposed development of the Great Karoo Wind Farm to be located on Farm Kentucky 206 and Portion 1 of Farm Wolvenkop 207, Northern Cape was issued on 12 August 2014. During the EIA process, both archaeological and palaeontological assessments were completed for this proposed development. Subsequent to the EA, amendments to the Great Karoo WEF are proposed. These amendments include:

- Increase hub height to up to 150m;
- Increase rotor diameter to up to 180m;
- Increase rated power of turbines to up to 6.5MW per WTG;
- Potential increase to WTG foundation area and laydown area;
- Update the layout as required; and
- Extend the validity period by an additional 5 years

The purpose of this assessment is therefore to ensure that the proposed amendments to the Great Karoo WEF development do not negatively impact on heritage resources based on the field assessments already conducted.

Archaeology and built environment heritage

Booth (SAHRIS NID 44935) conducted a field assessment of the area proposed for development in 2012. Booth (2012) noted that “No archaeological heritage remains were documented within the areas proposed for the development of the wind turbines.” However, Booth (2012) also identified a family graveyard (Site ID 35235) and an informal labourers’ graveyard (Site ID 35281) situated near to the current farmstead complex, the remnants of a stone-walled kraal to the north of the current farmstead complex (not mapped) and the ruins of a stone walled, large farmstead complex were documented within one of the valleys (Site ID 35236). These identified sites have been mapped in relation to the proposed development amendments (Figures 3a - 3c). Based on this information, no new impacts are anticipated. There are no advantages or disadvantages associated with the proposed change and no additional measures are required to ensure avoidance, management and mitigation of impacts associated with such proposed change.

Booth (2012) made the following recommendations pertaining to these resources:

Booth (2012) Recommendation	Comment
35281 and 35235 : An alternative access route must be proposed for the construction and development activities for the wind energy facility so as to avoid the destruction and/or negative impact on the graveyards.	No impact will take place based on the proposed amended alignment.
Kraal : An alternative access route must be proposed for the construction and development activities for the wind energy facility so as to avoid the destruction and/or negative impact on the dry stone walling kraal.	No impact will take place based on the proposed amended alignment.
35236 : An alternative access route must be proposed for the construction and development activities for the wind energy facility as the widening of the roads may impact on the sensitive heritage structures.	No impact will take place based on the proposed amended alignment.

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

A 10m perimeter boundary fence must be established of the sensitive heritage structures adjacent to the farm gravel road before and during all construction and development activities.

If there is no alternative route available for accessibility during the construction and development of the wind energy facility, and access can only occur on the road through the farmstead complex, passing the farmstead complex should be shifted to the east taking heed of the 10m protection perimeter boundary area to avoid the destruction and/or negative impact on the sensitive heritage structures adjacent to the farm gravel road

A 10m perimeter boundary fence must be established of the sensitive heritage structures adjacent to the farm gravel road before and during all construction and development activities.

In addition, the below recommendations from Booth (2012) have been endorsed by SAHRA in their Final Comment for this project dated 25 August 2016 and remain applicable for the proposed amendment:

- A walk-down of the amended layout is required prior to construction. This must be conducted by a qualified archaeologist to ensure that no heritage resources are to be impacted by the new locations of the turbines. If heritage resources are identified at or near any proposed infrastructure, an assessment of the significance of the heritage resources and the impact to the identified heritage resource must be completed. A report detailing the results of the survey must be submitted to SAHRA before construction commences.
- If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken.
- Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.

Palaeontology

Rossouw (2012) conducted a Desktop Palaeontology Assessment for the area proposed for development (SAHRIS ID 44936). Rossouw (2012) noted that the development area is underlain by sediments of the Karoo Supergroup assigned to the Beaufort group, within the Abrahamskraal Formation of the Adelaide Subgroup (Figure 4b), which area of very high palaeontological significance (Figure 4a). These identified significances have been mapped in relation to the proposed development amendments (Figures 4a and 4b). Based on this information, no new impacts are anticipated. There are no advantages or disadvantages associated with the proposed change and no additional measures are required to ensure avoidance, management and mitigation of impacts associated with such proposed change.

Rossouw (2012) recommended that a palaeontological field assessment be conducted of the turbine footings, access roads, offices and substation and underground cable routes prior to the commencement of development activities. In addition, Rossouw (2012) recommended that palaeontological monitoring take place during the construction phase of the development. In their Final Comment for this project dated 25 August 2016, SAHRA recommended that a walk-down of the amended layout is required prior to construction. This must be conducted by a qualified palaeontologist to ensure that no heritage resources are to be impacted by the new locations of the turbines. If heritage resources are identified at or near any proposed infrastructure, an assessment of the significance of the heritage resources and the impact to the identified heritage resource must be completed. A report detailing the results of the survey must be submitted to SAHRA before construction commences.

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

In a subsequent letter from SAHRA dated 21 October 2016, SAHRA “There will be no need for further palaeontological field assessment, as the Desktop Study is sufficient. A map of the identified palaeontological resources relative to the layout of the proposed development must be emailed to the case officer and the ECO must monitor all excavations in the Great Karoo WEF.” No such map is yet available and as such, this requirement remains applicable.

Conclusion

The proposed changes to the EA and site layout plan will NOT increase the significance of impacts originally identified in the EIA report or lead to any additional impacts. The proposed amendments will have zero or negligible effect on the significance of impacts identified in the EIA report as long as the recommendations contained in Booth (2012) and Rossouw (2012), and repeated below are implemented.

Recommendations:

- A walk-down of the amended layout is required prior to construction. This must be conducted by a qualified archaeologist to ensure that no heritage resources are to be impacted by the new locations of the turbines. If heritage resources are identified at or near any proposed infrastructure, an assessment of the significance of the heritage resources and the impact to the identified heritage resource must be completed. A report detailing the results of the survey must be submitted to SAHRA before construction commences.
- If concentrations of archaeological heritage material and human remains are uncovered during construction, all work must cease immediately and be reported to the Albany Museum (046 622 2312) and/or the South African Heritage Resources Agency (SAHRA) (021 642 4502) so that systematic and professional investigation/ excavation can be undertaken.
- Construction managers/foremen should be informed before construction starts on the possible types of heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
- A map of the identified palaeontological resources relative to the layout of the proposed development must be emailed to the case officer and the ECO must monitor all excavations in the Great Karoo WEF.

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 **Email:** info@ctsheritage.com **Web:** www.ctsheritage.com



CTS HERITAGE

APPENDIX 1

List of heritage resources within the development area

Site ID	Site no	Full Site Name	Site Type	Grading
35236	HDV011	Hidden Valley 011	Building	Grade IIIb
35235	HDV010	Hidden Valley 010	Burial Grounds & Graves	Grade IIIa
35281	HDV009	Hidden Valley 009	Burial Grounds & Graves	Grade IIIa

APPENDIX 2

Reference List with relevant AIAs and PIA highlighted

Heritage Impact Assessments				
Nid	Report Type	Author/s	Date	Title
130621	Heritage Scoping	Jaco van der Walt	28/06/2013	Achaeological Scoping Report for the Proposed Gunstfontein Renewable Energy Project: Wind and Solar Energy Facilities and The Associated Grid Connection Infrastructure, Northern Cape
130623	PIA Desktop	Barry Millsteed	10/07/2013	Desktop Palaeontological Heritage Impact Assessment Report on the Site of Proposed Solar and Wind Energy Generation Facilities (Gunsfontein Project) to be Located on Various Farms Near Sutherland, Northern Cape Province
152531	HIA Phase 1	Timothy Hart, Lita Webley	20/12/2013	Heritage Impact Assessment Report for the Phase 1 Roggeveld Wind Farm
44934	AIA Desktop	Celeste Booth	01/08/2011	An archaeological desktop study for the proposed establishment of the Hidden Valley wind energy facility and associated infrastructure on a site south of Sutherland, Northern Cape Province
53187	HIA Phase 1	Timothy Hart, Lita Webley	01/03/2011	HERITAGE IMPACT ASSESSMENT PROPOSED WIND ENERGY FACILITY
44935	AIA Phase 1	Celeste Booth	01/02/2012	A Phase 1 AIA for the proposed Hidden Valley Wind Energy Facility, near Sutherland, Northern Cape Province
183350	HIA Phase 1	Natalie Kendrick	27/10/2014	Heritage Impact Assessment for the Karreebosch Wind Farm (Phase 2 Roggeveld Wind Farm)
44936	PIA Desktop	Lloyd Rossouw	01/03/2012	Palaeontological desktop assessment of the proposed Hidden Valley Wind Energy Facility near Sutherland, Northern Cape Province

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

APPENDIX 3 - Keys/Guides

Key/Guide to Acronyms

AIA	Archaeological Impact Assessment
DARD	Department of Agriculture and Rural Development (KwaZulu-Natal)
DEA	Department of Environmental Affairs (National)
DEADP	Department of Environmental Affairs and Development Planning (Western Cape)
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism (Eastern Cape)
DEDECT	Department of Economic Development, Environment, Conservation and Tourism (North West)
DEDT	Department of Economic Development and Tourism (Mpumalanga)
DEDTEA	Department of economic Development, Tourism and Environmental Affairs (Free State)
DENC	Department of Environment and Nature Conservation (Northern Cape)
DMR	Department of Mineral Resources (National)
GDARD	Gauteng Department of Agriculture and Rural Development (Gauteng)
HIA	Heritage Impact Assessment
LEDET	Department of Economic Development, Environment and Tourism (Limpopo)
MPRDA	Mineral and Petroleum Resources Development Act, no 28 of 2002
NEMA	National Environmental Management Act, no 107 of 1998
NHRA	National Heritage Resources Act, no 25 of 1999
PIA	Palaeontological Impact Assessment
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
VIA	Visual Impact Assessment

Full guide to Palaeosensitivity Map legend

	RED:	VERY HIGH - field assessment and protocol for finds is required
	ORANGE/YELLOW:	HIGH - desktop study is required and based on the outcome of the desktop study, a field assessment is likely
	GREEN:	MODERATE - desktop study is required
	BLUE/PURPLE:	LOW - no palaeontological studies are required however a protocol for chance finds is required
	GREY:	INSIGNIFICANT/ZERO - no palaeontological studies are required
	WHITE/CLEAR:	UNKNOWN - these areas will require a minimum of a desktop study.

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

APPENDIX 4 - Methodology

The Heritage Screener summarises the heritage impact assessments and studies previously undertaken within the area of the proposed development and its surroundings. Heritage resources identified in these reports are assessed by our team during the screening process.

The heritage resources will be described both in terms of **type**:

- Group 1: Archaeological, Underwater, Palaeontological and Geological sites, Meteorites, and Battlefields
- Group 2: Structures, Monuments and Memorials
- Group 3: Burial Grounds and Graves, Living Heritage, Sacred and Natural sites
- Group 4: Cultural Landscapes, Conservation Areas and Scenic routes

and **significance** (Grade I, II, IIIa, b or c, ungraded), as determined by the author of the original heritage impact assessment report or by formal grading and/or protection by the heritage authorities.

Sites identified and mapped during research projects will also be considered.

DETERMINATION OF THE EXTENT OF THE INCLUSION ZONE TO BE TAKEN INTO CONSIDERATION

The extent of the inclusion zone to be considered for the Heritage Screener will be determined by CTS based on:

- the size of the development,
- the number and outcome of previous surveys existing in the area
- the potential cumulative impact of the application.

The inclusion zone will be considered as the region within a maximum distance of 50 km from the boundary of the proposed development.

DETERMINATION OF THE PALAEONTOLOGICAL SENSITIVITY

The possible impact of the proposed development on palaeontological resources is gauged by:

- reviewing the fossil sensitivity maps available on the South African Heritage Resources Information System (SAHRIS)
- considering the nature of the proposed development
- when available, taking information provided by the applicant related to the geological background of the area into account

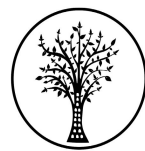
DETERMINATION OF THE COVERAGE RATING ASCRIBED TO A REPORT POLYGON

Each report assessed for the compilation of the Heritage Screener is colour-coded according to the level of coverage accomplished. The extent of the surveyed coverage is labeled in three categories, namely low, medium and high. In most instances the extent of the map corresponds to the extent of the development for which the specific report was undertaken.

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

Low coverage will be used for:

- desktop studies where no field assessment of the area was undertaken;
- reports where the sites are listed and described but no GPS coordinates were provided.
- older reports with GPS coordinates with low accuracy ratings;
- reports where the entire property was mapped, but only a small/limited area was surveyed.
- uploads on the National Inventory which are not properly mapped.

Medium coverage will be used for

- reports for which a field survey was undertaken but the area was not extensively covered. This may apply to instances where some impediments did not allow for full coverage such as thick vegetation, etc.
- reports for which the entire property was mapped, but only a specific area was surveyed thoroughly. This is differentiated from low ratings listed above when these surveys cover up to around 50% of the property.

High coverage will be used for

- reports where the area highlighted in the map was extensively surveyed as shown by the GPS track coordinates. This category will also apply to permit reports.

RECOMMENDATION GUIDE

The Heritage Screener includes a set of recommendations to the applicant based on whether an impact on heritage resources is anticipated. One of three possible recommendations is formulated:

(1) The heritage resources in the area proposed for development are sufficiently recorded - The surveys undertaken in the area adequately captured the heritage resources. There are no known sites which require mitigation or management plans. No further heritage work is recommended for the proposed development.

This recommendation is made when:

- enough work has been undertaken in the area
- it is the professional opinion of CTS that the area has already been assessed adequately from a heritage perspective for the type of development proposed

(2) The heritage resources and the area proposed for development are only partially recorded - The surveys undertaken in the area have not adequately captured the heritage resources and/or there are sites which require mitigation or management plans. Further specific heritage work is recommended for the proposed development.

This recommendation is made in instances in which there are already some studies undertaken in the area and/or in the adjacent area for the proposed development. Further studies in a limited HIA may include:

- improvement on some components of the heritage assessments already undertaken, for instance with a renewed field survey and/or with a specific specialist for the type of heritage resources expected in the area
- compilation of a report for a component of a heritage impact assessment not already undertaken in the area

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com



CTS HERITAGE

- undertaking mitigation measures requested in previous assessments/records of decision.

(3) The heritage resources within the area proposed for the development have not been adequately surveyed yet - Few or no surveys have been undertaken in the area proposed for development. A full Heritage Impact Assessment with a detailed field component is recommended for the proposed development.

Note:

The responsibility for generating a response detailing the requirements for the development lies with the heritage authority. However, since the methodology utilised for the compilation of the Heritage Screeners is thorough and consistent, contradictory outcomes to the recommendations made by CTS should rarely occur. Should a discrepancy arise, CTS will immediately take up the matter with the heritage authority to clarify the dispute.

The compilation of the Heritage Screener will not include any field assessment. The Heritage Screener will be submitted to the applicant within 24 hours from receipt of full payment. **If the 24-hour deadline is not met by CTS, the applicant will be refunded in full.**

CTS Heritage

34 Harries Street, Plumstead, Cape Town, 7800

Tel: +27 (0)87 073 5739 Email: info@ctsheritage.com Web: www.ctsheritage.com