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HERITAGE SCREENER

CTS Reference Number:	CTS18_104
SAHRIS Case ID	
Client:	Savannah Environmental
Date:	19 June 2018
Title:	Development of the Lichtenburg 1 PV Solar Energy Facility and associated infrastructure on a site near Lichtenburg, North West Province.

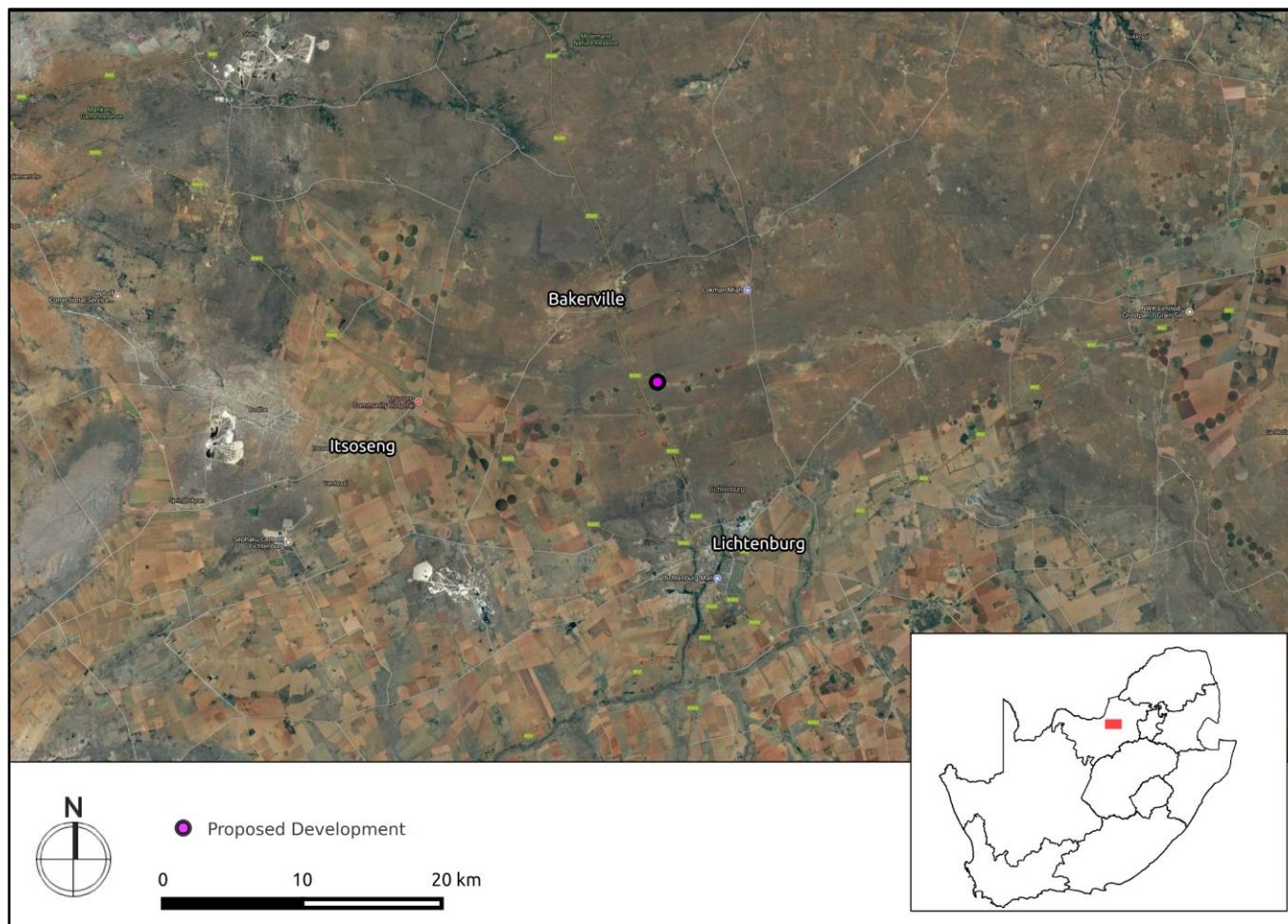


Figure 1a. Satellite map indicating the location of the proposed development in the North West Province

Recommendation by CTS Heritage Specialists:	RECOMMENDATION: Based on the available information for the proposed development area, it is likely that the proposed development will impact on significant heritage resources in the form of archaeology and palaeontology. As such, it is recommended that a full Heritage Impact Assessment (HIA) that satisfies section 38(3) of the National Heritage Resources Act (No. 25 of 1999) (NHRA) be conducted that assesses impacts to archaeological and palaeontological heritage including a field assessment.
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1. Proposed Development Summary

ABO Wind Lichtenburg 1 PV (Pty) Ltd proposes the development of the Lichtenburg 1 PV Solar Energy Facility on Portion 06 of the Farm Zamenkomst No 04. The proposed solar facility is planned to be bid into the Department of Energy's (DoE's) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme with the aim of evacuating the generated power into the Eskom national electricity grid and aiding in the diversification and stabilisation of the country's electricity supply. The project site is located approximately 12km north of Lichtenburg and 5.5km south-west of Bakerville in Ward 16 of the Ditsobotla Local Municipality, of Ngaka Modiri Molema District, North West Province. The area under investigation is approximately 428ha in extent and comprises 1 agricultural property. The project site can be accessed via unsurfaced farm roads, which can be accessed via the R505 regional road.

2. Application References

Name of relevant heritage authority(s)	South African Heritage Resources Agency (SAHRA)
Name of decision making authority(s)	North West Department of Rural, Environment and Agricultural Development (READ)

3. Property Information

Latitude / Longitude	-26.011386659041627, 26.15102338475799
Erf number / Farm number	Portion 06 of the Farm Zamenkomst No 04
Local Municipality	Ditsobotla Local Municipality
District Municipality	Ngaka Modiri Molema District
Previous Magisterial District	Lichtenburg
Province	North West Province
Current Use	Agriculture
Current Zoning	Agriculture
Total Extent	4.28km sq

4. Nature of the Proposed Development

Total Surface Area	428ha
Depth of excavation (m)	Approximately 3m
Height of development (m)	Approximately 3m
Expected years of operation before decommission	NA



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5. Category of Development

Triggers: Section 38(8) of the National Heritage Resources Act	X
Triggers: Section 38(1) of the National Heritage Resources Act	
1. Construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier over 300m in length.	X
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-	
a) exceeding 5 000m ² in extent	X
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

Arrays of PV panels (either static or tracking PV systems) with a generation capacity of up to 100MW.
 Mounting structures to support the PV panels.
 On-site inverters to convert the power from Direct Current (DC) to Alternating Current (AC) and a substation to facilitate the connection between the solar energy facility and the Eskom electricity grid.
 A new 132kV power line between the on-site substation and the Eskom grid connection point. Two options are currently being considered for grid connection:

- Connecting the facility to the existing Watershed Main Transmission Substation (MTS) (this is the preferred option).
- Connecting the facility (i.e. loop-in-loop-out) to one of the power lines which traverses the property in a north-south direction (this is dependent on line capacity).

Cabling between the project components (to be laid underground where practical).
 Offices and workshop areas for maintenance and storage.
 Temporary laydown areas.
 Internal access roads and fencing around the development area.

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



Figure 1b. Close up Map. Close up satellite image (2017) indicating the proposed development area.

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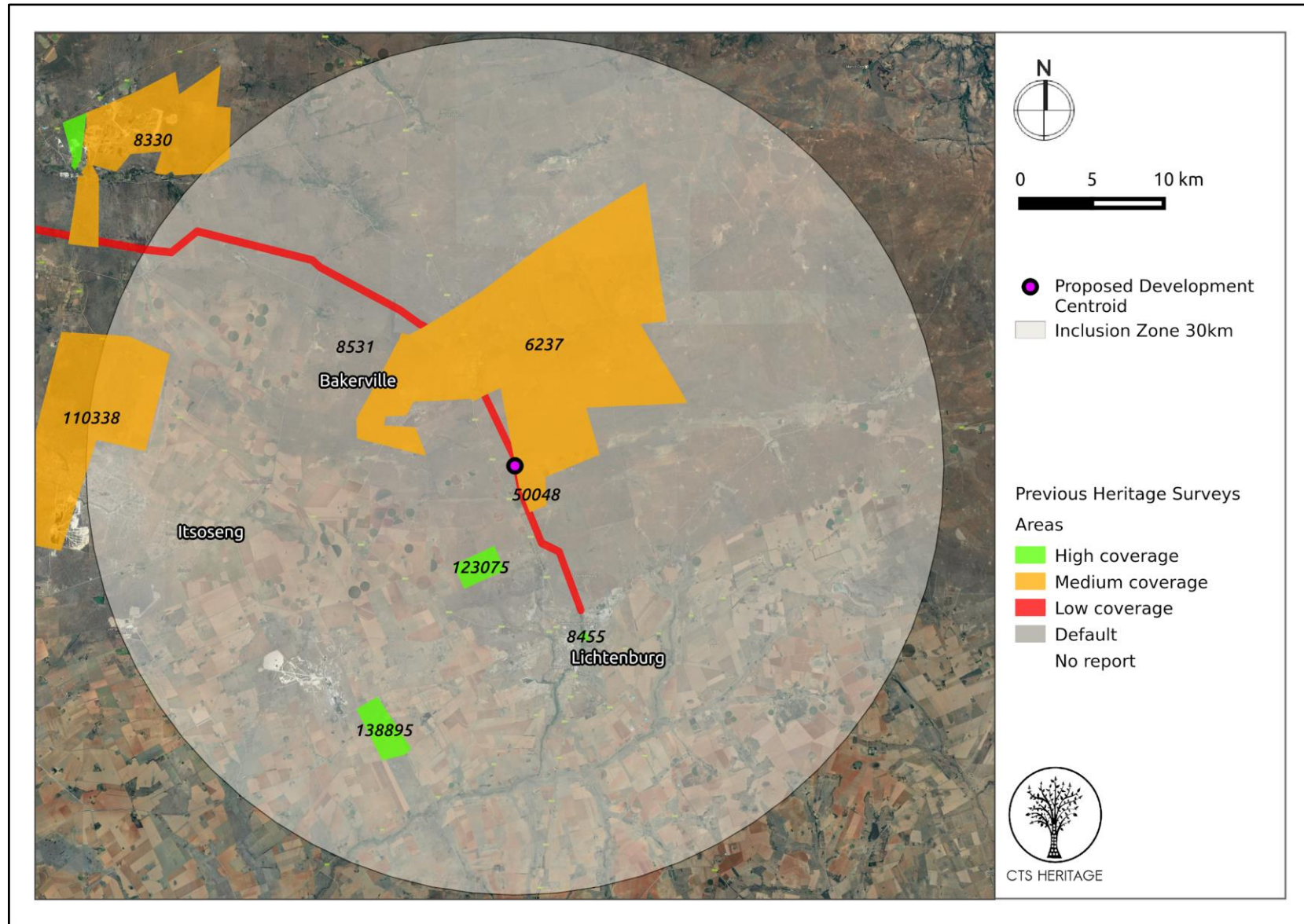


Figure 2. Heritage Reports map. Previous Heritage Impact Assessments surrounding the proposed development area within 30kms, with SAHRIS Notification of Intent to Develop (NIDs) indicated (please see Appendix 2 for full reference list).



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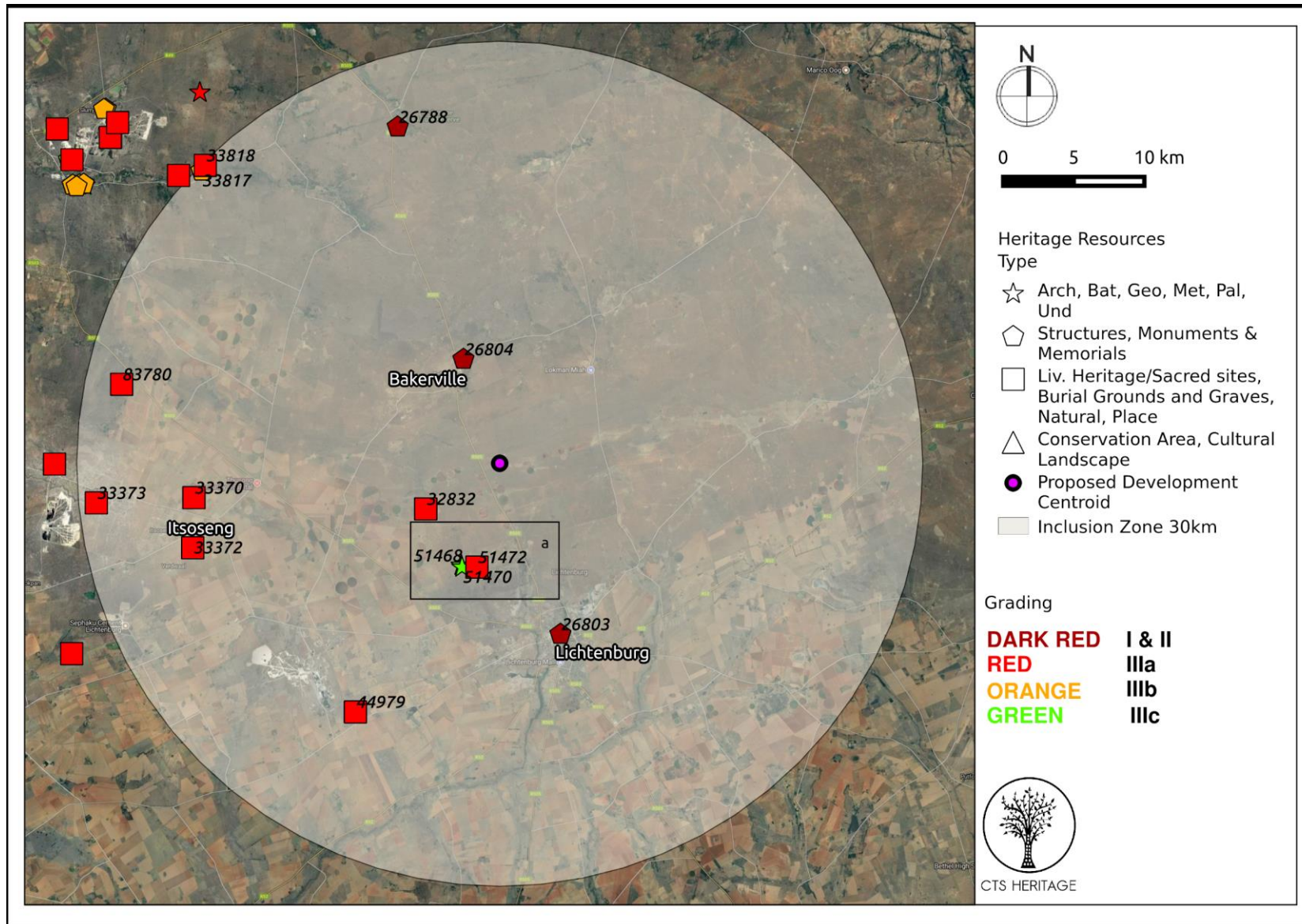


Figure 3. Heritage Resources Map. Heritage resources previously identified in and near the study area, with SAHRIS Site IDs indicated (see Figure 3a for insets). See Appendix 4 for full description of heritage resource types.



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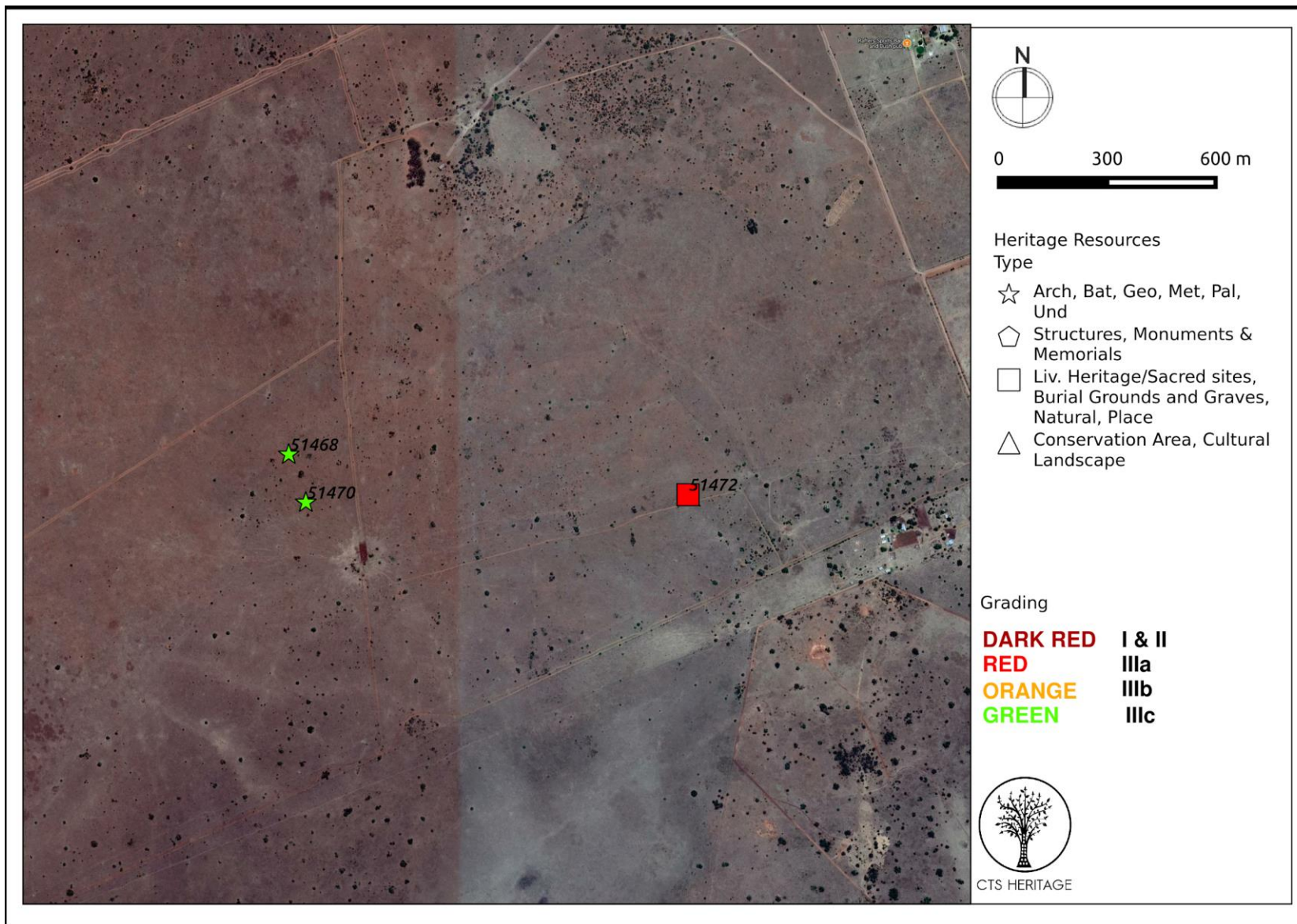


Figure 3a. Heritage Resources Map. Inset Map.



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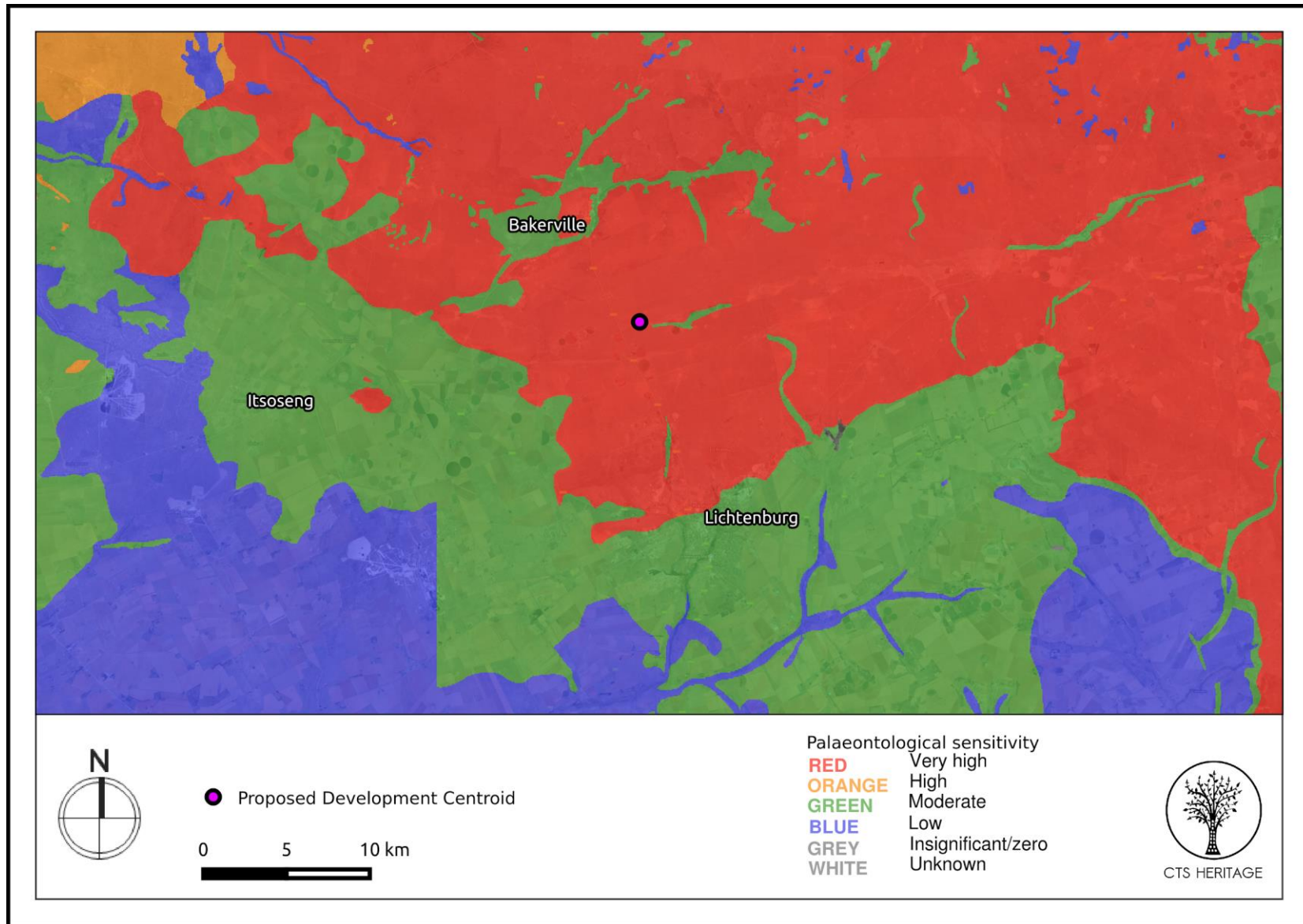


Figure 4. Palaeosensitivity Map, indicating very high fossil sensitivity underlying the study area.



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8. Heritage statement and character of the area

INTRODUCTION

ABO Wind Lichtenburg 1 PV (Pty) Ltd proposes the development of the Lichtenburg 1 PV Solar Energy Facility on Portion 06 of the Farm Zamenkomst No 04. The proposed solar facility is planned to be bid into the Department of Energy's (DoE's) Renewable Energy Independent Power Producer Procurement (REIPPP) Programme with the aim of evacuating the generated power into the Eskom national electricity grid and aiding in the diversification and stabilisation of the country's electricity supply. The project site is located approximately 12km north of Lichtenburg and 5.5km south-west of Bakerville in Ward 16 of the Ditsobotla Local Municipality, of Ngaka Modiri Molema District, North West Province. The area under investigation is approximately 428ha in extent and comprises 1 agricultural property. The project site can be accessed via unsurfaced farm roads, which can be accessed via the R505 regional road.

Photovoltaic (PV) technology is proposed for the generation of electricity. The solar energy facility will have a contracted capacity of up to 100MW, and will make use of either Fixed-tilt, Single-Axis Tracking, or Double-Axis Tracking PV technology. The PV structures / modules will occupy an area approximately 255ha in extent, while supporting infrastructure such as internal access roads (18ha), auxiliary buildings (1ha), and an onsite substation (1ha) will occupy the remaining extent. During construction a temporary laydown area approximately 5ha in extent will be required. The project will comprise solar panels which once installed will stand 3.5m above ground level. The solar panels will include centralised inverter stations at a height of approximately 3m, or string inverters mounted approximately 0.3m above ground.

If centralised inverter stations are used, Mega Volt (MV) distribution transformers are located internally, whereas string inverters are containerised with switchgear. The main transformer capacity varies according to detailed design and client / project specific requirements. It is anticipated however that 1 x 80MVA transformation capacity will be applicable, stepping up from 22kV or 33kV to 132kV for evacuation into the Eskom electricity grid.

A 132kV on-site substation is required, and will occupy an area up to 1ha in extent. A single power line is required to connect the solar energy facility to Eskom's national electricity grid. The power line will have a capacity of 132kV, be approximately 24m in height, will be developed in a power line servitude of up to 36m in width (i.e. up to 18m either side of centre line), and will make use of monopole or lattice tower structures.

HERITAGE RESOURCES

Lichtenburg town was established in 1873 and named "Town of Light". General Del la Rey was buried in Lichtenburg after a fatal shooting incident at Langlaagte. During the 1800's, more and more farmers settled in the area. During the Second Boer War, the strategically important town of Lichtenburg was occupied by both Boer and Briton for short spells. In November 1900, a large British force under Col. Robert Baden-Powell was transferred to Lichtenburg and secured the town, and much of the territory with it. In addition, the town is known from Rudyard Kipling's poem, Lichtenberg, which relays the story of a foreign combatant in the second South African War. In 1926, Lichtenburg experienced a gold rush that lasted approximately 10 years. Lichtenburg district is now mostly a farming area, combining cattle and crop-farming and large areas of former diamond mine diggings are now used as grazing.

According to van Schalkwyk et al (1995, SAHRIS NID 6237) in their report completed for the Bakerville Diamond Fields, "land use in the area goes back to the Early Stone Age, as can be determined by the number of stone artifacts found near the old mining commissioner's office. This material seems to be disturbed from its primary context because of the mining activities. It is postulated that similar occurrences will be found in other parts of the diggings, but that this material would have been disturbed out of context." As a result of the dominant land use in the area, many of the heritage resources identified by van Schalkwyk et al (1995) are associated with past and present agriculture; and consist of farming implements (many of them found together with discarded mining equipment), a few windmills, and dipping-troughs. One such trough, located at Elandsputte on the farm Uitgevonden 355JP, was the site where the first diamond was discovered. This structure is a proclaimed national monument (now Provincial Heritage Site).

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Van Schalkwyk et al (1995) identified a number of burial grounds within their surveyed area (Figure 2 and 3). As per Appendix 1, heritage resources known from this area include burial grounds and graves, archaeological artefacts and old structures, often associated with farming activities or diamond mining. It is likely that the proposed development will impact on such heritage resources.

The proposed development is located on geological deposits belonging to the Monte Christo Formation of the Chuniespoort Group. These deposits have a very high sensitivity for impacts to palaeontological resources (Figure 4). The Chuniespoort Group is known to contain a Range of shallow marine to intertidal stromatolites (domes, columns *etc.*) and organic-walled microfossils. In addition, it is within this geological group that fossiliferous Late Cenozoic cave breccias have been identified. Good examples of stromatolites from this Group have been identified within the Cradle of Humankind region. It is possible that the proposed development will impact significant palaeontological heritage resources.

RECOMMENDATION

Based on the available information for the proposed development area, it is likely that the proposed development will impact on significant heritage resources in the form of archaeology and palaeontology. As such, it is recommended that a full HIA that satisfies section 38(3) of the NHRA be conducted that assesses impacts to archaeological and palaeontological heritage including a field assessment.

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APPENDIX 1

List of heritage resources within the 30km Inclusion Zone

Site ID	Site no	Full Site Name	Site Type	Grading	Declaration
26804	9/2/235/0008	Historic cattle dip, Elandsputte, Lichtenburg District	Building	Grade II	Provincial Heritage Site
26803	9/2/235/0005	Nerderduitse Gereformeerde Church, 27 Gerrit Maritz Street, Lichtenburg	Building	Grade II	Provincial Heritage Site
26788	9/2/238/0015	Water mill, Malmani Eye, Marico District	Building	Grade II	Provincial Heritage Site
33370	GY01	Mafikeng Cement 1	Burial Grounds & Graves	Grade IIIa	
33372	GY02	Mafikeng Cement 2	Burial Grounds & Graves	Grade IIIa	
33817	ZPPCS4	Zeerust 4	Building		
33818	ZPPCS5	Zeerust 5	Burial Grounds & Graves	Grade IIIa	
32832	AEPC 3	Steenkoolspruit farm, Ogies Emalahleni Mpumalanga Province (mapped incorrectly on SAHRIS)	Burial Grounds & Graves	Grade IIIa	
51468	WSF 01	Watershed Solar Facility 01	Artefacts	Grade IIIc	
51470	WSF 02	Watershed Solar Facility 02	Artefacts	Grade IIIc	
51472	WSF 03	Watershed Solar Facility 03	Burial Grounds & Graves	Grade IIIa	
44979	HIB01	Hibernia 01	Burial Grounds & Graves	Grade IIIa	
33373	GY03	Mafikeng Cement 3	Burial Grounds & Graves	Grade IIIa	
83780	MALA015	eMalahleni 015	Burial Grounds & Graves	Grade IIIa	

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APPENDIX 2

Reference List within 30km Inclusion Zone

Heritage Impact Assessments				
Nid	Report Type	Author/s	Date	Title
6237	AIA	Johnny Van Schalkwyk, Robert de Jong, S Smith	01/08/1995	Reconnaissance of Remaining Cultural Resources in the Bakerville Diamond Fields
8330	AIA	Francois P Coetzee	01/03/2008	Cultural Heritage Survey of the PPC Slurry Operation, near Zeerust, North West Province
8455	HIA	Udo Kusel	25/07/2008	Cultural Heritage Resources Impact Assessment of Portion 151 of Lichtenburg Town and Townlands 27 IP (Lichtenburg Extension 10) North West Province
8531	HIA	Johnny Van Schalkwyk	01/11/2008	Heritage Impact Report for the Proposed 88 kV Power Line from Watershed Substation, Lichtenburg, to the Mmabatho Substation, North West Gauteng Province
50047	HIA	M Hutten	01/05/2012	Heritage Impact Assessment for the Proposed Lichtenburg Solar Park North of Lichtenburg, North West Province
50048	PIA	Bruce Rubidge	14/07/2012	Palaeontological Assessment - Lichtenburg Solar Park
110338	HIA	Julius CC Pistorius	01/06/2011	A PHASE I HERITAGE IMPACT ASSESSMENT (HIA) STUDY FOR THE PROPOSED MAFIKENG CEMENT PROJECT NEAR ITSOTSENG IN THE NORTH-WEST PROVINCE OF SOUTH AFRICA
123075	HIA	Jaco van der Walt	12/11/2013	Archaeological Impact Assessment Report – Watershed Solar Facility
138895	AIA	Jaco van der Walt, John E Almond	14/10/2013	Archaeological Impact Assessment for the Proposed Hibernia Solar Project near the town of Lichtenburg in the North West Province of South Africa & Paleontological Report: Recommended Exemption From Further Palaeontological Studies: Proposed Hibernia Pv S

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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
DEADP	Department of Environmental Affairs and Development Planning (Western Cape)
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism (Eastern Cape)
DEDT	Department of Economic Development and Tourism (Mpumalanga)
DEDETA	Department of Economic Development, Tourism and Environmental Affairs (Free State)
DENC	Department of Environment and Nature Conservation (Northern Cape)
DMR	Department of Mineral Resources
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
READ	Department of Rural, Environment and Agricultural Development (North West)
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.

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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 PALAEOLOGICAL 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

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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.

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

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- 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.

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