

HERITAGE SCREENER

CTS Reference Number:	CTS19_176
Client:	Lwandle Environmental Consulting
Date:	November 2019
Title:	INSTALLATION OF HF RADAR ON THE SOUTH COAST OF RSA: SITE 5, BUSHY PARK FARM

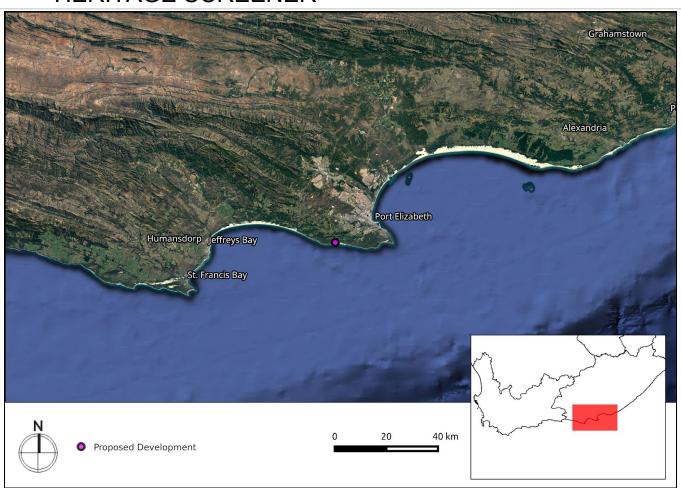


Figure 1a. Satellite map indicating the location of the proposed development in the Eastern Cape Province

Recommendation by CTS Heritage Specialists

RECOMMENDATION:

Based on the information available for the area proposed for the proposed HF Radar Installation, as well as the limited and temporary nature and scale of the proposed development, it is very unlikely that the proposed development will impact on significant archaeological or palaeontological heritage. As such, it is recommended that no further heritage studies are required, and that this desktop assessment is sufficient for any process required in terms of section 38 of the National Heritage Resources Act (Act 25 of 1999).



1. Proposed Development Summary

Lwandle Technologies (Pty) Ltd (Lwandle) in technical partnership with Actimar Operational Oceanography (Actimar) plan to provide near real time, remotely sensed, environmental data on sea surface current and wave conditions to the South African coastal and maritime sectors. This application is for the installation of temporary a temporary HF radar system that comprises of 4 transmitting antenna, 12 receiving antenna, a 3m container and a solar panel array for power. The antenna are connected by coaxial cable protected by LDPE. The cables are placed in shallow trenches and covered with material to prevent damage from farm vehicles and grazing animals. The precise location of individual components is to be confirmed with radar specialists on site and agreed with the landowner before installation.

2. Application References

Name of relevant heritage authority(s)	ECPHRA
Name of decision making authority(s)	Nelson Mandela Bay Metropolitan Municipality, Eastern Cape

3. Property Information

Latitude / Longitude	34°01′38.77″S, 25°27′27.05″E
Erf number / Farm number	Farm 6/26
Local Municipality	Nelson Mandela Bay
District Municipality	Nelson Mandela Bay
Province	Eastern Cape
Current Use	Agricultural
Current Zoning	Agricultural
Total Extent of Property	NA NA

4. Nature of the Proposed Development

Total Surface Area of development	Approximately 1km
Depth of excavation (m)	Not exceeding 30cm deep and 20cm wide for cable laying to be recovered and reseeded.
Height of development (m)	4m



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
Х	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-
	a) exceeding 5 000m² 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

This radar site will require:

- vehicle access for installation, monthly checking and then eventual uninstalling;
- a container either 2.4 m or 6 m long x 2.4 m wide x 2.4 m high, to house the computer for storing the data collected, and ~10 batteries for storing solar power
- ~60 m2 of solar panels, to supply approximately 17.28 kWh/day of power
- electrical and antenna cables, in protective black plastic tubes laid on the ground surface, or buried if required for protection against trampling by cattle; radar signals transmitted at 5.25 MHz frequency which is an extremely low/ non-invasive electromagnetic force used by oceanographic research vessels;
- 4 transmission (TX) antennae, and 12 reception antennae (RX), with supporting poles, reaching 5.5 m high. This height is lower than a telephone transmission pole, and about half the height of the majority of wooden poles used for power transmission lines. For technical reasons the bases of the 12 RX antennae need to be at the same height off the ground and thus follow the topography, but for good transmission the tops of the 4 TX antennae need to be at the same elevation so their length would differ to compensate for any differences in ground level;
- the antennae will be placed approximately 28 m apart, and
- protective wooden fencing around antennae where necessary.



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



Figure 1b Overview Map. Satellite image (2019) indicating the proposed development area at closer range.





Figure 1c. Overview Map. Satellite image (2019) indicating the proposed development area at closer range.





Figure 1d. Overview Map. Satellite image (2019) indicating the proposed development area at closer range





Figure 1e. Overview Map. Satellite image (2019) indicating the proposed development area at closer range



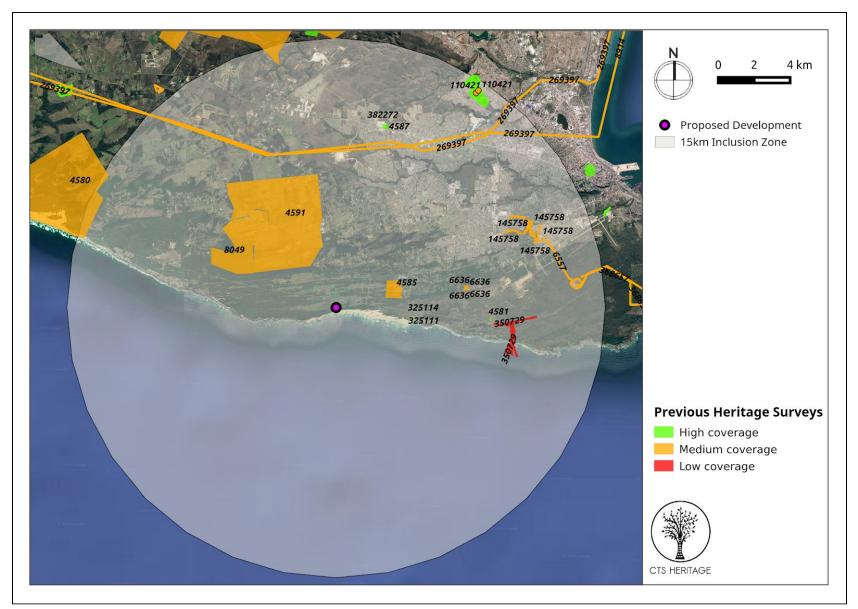


Figure 2. Previous HIAs Map. Previous Heritage Impact Assessments surrounding the proposed development area within 15km, with SAHRIS NIDS indicated. Please see Appendix 2 for full reference list.



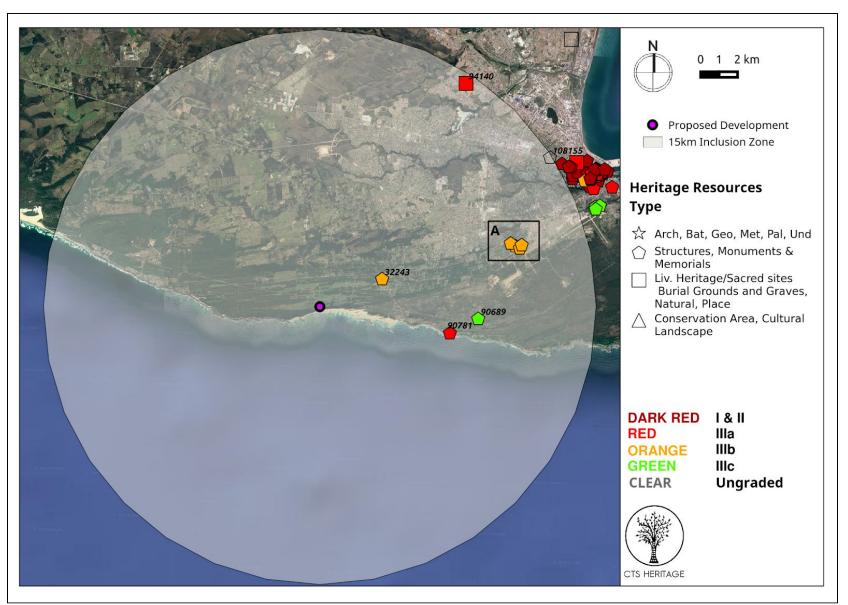


Figure 3a. Heritage Resources Map. Heritage Resources previously identified in and near the study area, with SAHRIS Site IDs indicated. Please See Appendix 4 for full description of heritage resource types.





Figure 3b. Heritage Resources Map. Heritage Resources Inset A



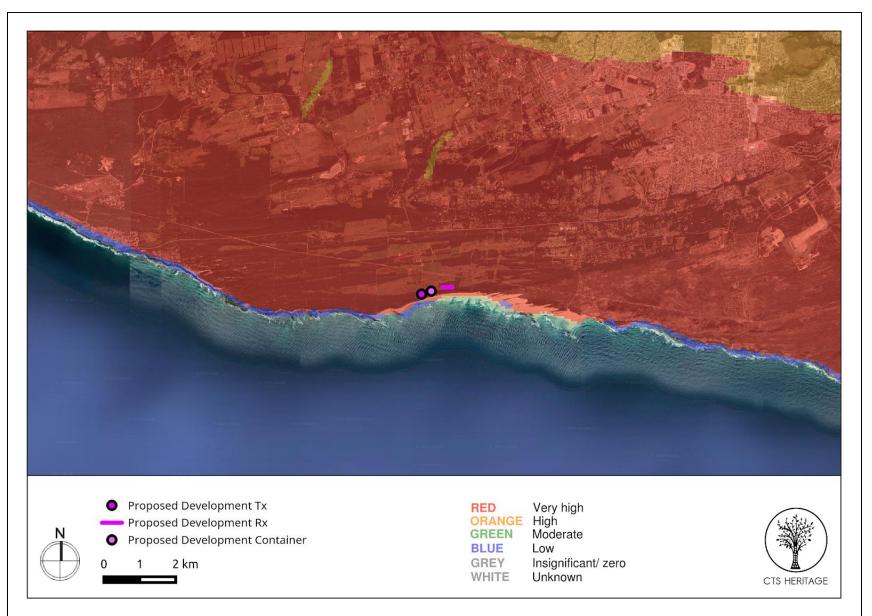


Figure 4. Palaeosensitivity Map. Indicating Moderate and Very High fossil sensitivity underlying the study area. Please See Appendix 3 for full guide to the legend.





Figure 5. Map of known Palaeontological Sites. Extracted from the PalaeoBiology Database (PBDB - https://paleobiodb.org/#/) More detail in Appendix 1



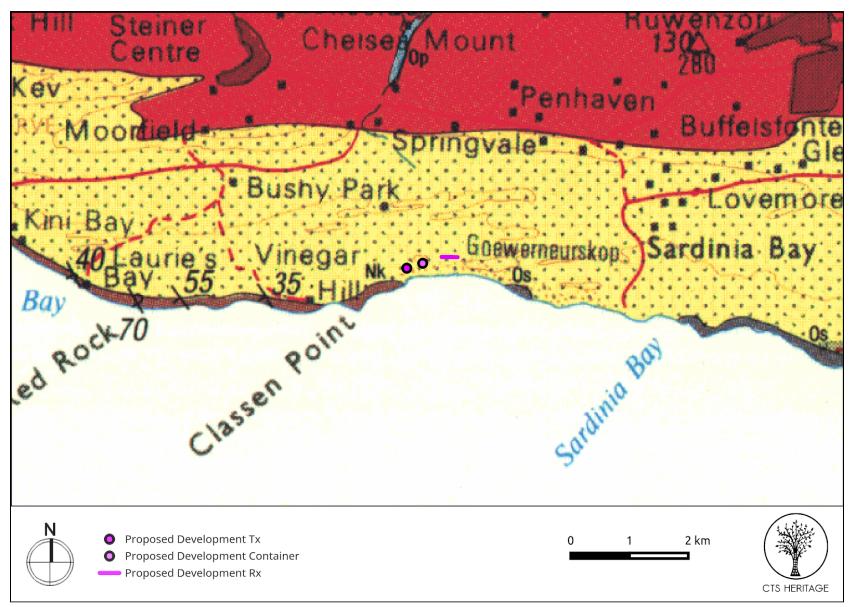


Figure 6. Geology Map. Indicating the underlying geology across the study area through overlaying the geology maps from the CGS series 3324 Port Elizabeth (Qw: Quaternary Aeolian Sands; Qs: Salnova(Marine-estuarine sand and gravel; marine terrace deposit))





Figure 7a and b. Example of the kinds of infrastructure proposed.





Figure 7c. Example of the kinds of infrastructure proposed.



8. Heritage statement and character of the area

The site proposed for this HF Radar installation is located approximately 15km south west of Port Elizabeth, along the South Coast. Port Elizabeth was founded in the early 19th century by the government of the Cape Colony in order to strengthen the border region between the Cape Colony and the Xhosa. Algoa Bay, the bay within which PE is located, was first occupied by hunters and gatherers ancestral to the San who first settled this area at least 10,000 years ago. Evidence for hunter gatherer occupation is provided by shell middens - large mounds of shell left behind in dumps. In 2005, Webley found numerous shell middens in the Cape Recife Nature Reserve - located along the coast approximately 10km east of the proposed development area. Around 2,000 years ago, they were gradually displaced or assimilated by agriculturalist populations ancestral to the Xhosa people.

In general, the coastline of the Eastern Cape is sensitive in terms of archaeological heritage related to the Middle and Later Stone Age, especially in the form of shell midden remains. According to Van Ryneveld (2010), "Sites are often found within white shifting sand dunes and vary greatly in character; from several meters in extent with significant deposit depth to fairly small ephemeral scatters of lithic artefacts, charcoal and shell. Sites are most common within approximately 400m, but up to 2km from the shoreline (ACO UCT 2010)". Van Ryneveld goes further to note that "MSA and ESA artefacts closer to the coast have been identified on palaeosols (ACO UCT 2010). Anderson (2010) reported on a single Acheulean artefact located during his survey further inland. The ACO UCT (2010) as well as Anderson and Van Schalkwyk (Pers. Comm. - 2010-12-08) highlighted the possibility of unmarked LSA graves, which, if discovered or encountered during the course of development would be of significant social and scientific interest". While the area proposed for the HF Radar Infrastructure has not previously been assessed for heritage resources, a number of assessments have been completed within 5km of the development area (Figure 2). In one such assessment, Webley (2007) noted the presence of an abundance of historical artefactual material in this general area. According to Webley (2007), after European settlement of the area, the Driftsands threatened the development of Port Elizabeth harbour. It was therefore decided that, from 1893 to 1909, the Driftsands dunes would be stabilised by the spreading the town garbage over the dunes in a swathe from Happy Valley to Sardinia Bay. According to Webley (2007), it is not known whether any historical material was dumped at Bushy Park Farm. In 2015, Binneman assessed an area located just 4km east of the proposed development area for impacts to archaeological heritage resulting from a car park and toilet block infrastructure at Sardinia Bay. As with the proposed development of the HF Radar, the development assessed by Binneman (2015) was located within 1km of the high water mark, an area that is known to be very sensitive for impacts to coastal archaeological heritage. Binneman noted that "Apart from a few stone tools no other significant archaeological sites/materials were observed." He further noted that "In general the areas investigated appear to be of low archaeological sensitivity and it seems unlikely that any archaeological remains of significance will be found in situ or exposed during the development." The same assessment is likely to apply to this proposed development area. As such, due to the limited nature and scale of the proposed development, it is unlikely that this development will impact on significant archaeological heritage, despite its placement within the sensitive coastal archaeological zone.

According to the SAHRA Palaeosensitivity Map, the area proposed for the HF Radar Installation is located within an area that is very highly sensitive for impacts to palaeontological heritage (Figure 4). According to the geology maps from the CGS series 3324 Port Elizabeth, the area proposed for development is underlain by Quaternary Aeolian Sands. Almond (2015) drafted a letter recommending exemption from further palaeontological studies for an area located just 4km east of the proposed development area for impacts to resulting from a car park and toilet block infrastructure at Sardinia Bay. In his assessment, Almond concludes that "The bedrocks and superficial sediments underlying the alternative public access and associated development footprints are of low palaeontological sensitivity. It is concluded that the proposed infrastructure developments are unlikely to have significant impacts on local palaeontological heritage resources. There are no preferences on palaeontological grounds for any of the alternative development site options." The same assessment is likely to apply to this proposed development area. As such, due to the limited nature and scale of the proposed development, it is unlikely that this development will impact on significant palaeontological heritage, despite its placement within an area of very high palaeontological sensitivity.

RECOMMENDATION:

Based on the information available for the area proposed for the proposed HF Radar Installation, as well as the limited and temporary nature and scale of the proposed development, it is very unlikely that the proposed development will impact on significant archaeological or palaeontological heritage. As such, it is recommended that no further heritage studies are required, and that this desktop assessment is sufficient for any process required in terms of section 38 of the National Heritage Resources Act (Act 25 of 1999).



APPENDIX 1

List of heritage resources within the 15km Inclusion Zone from SAHRIS

Site ID	Site no	Full Site Name	Site Type	Grading
91356	WAL004	WALMER 004	Structures	Grade IIIb
32243	Maitland Mines	Maitland Mines	Structures	Grade IIIb
91353	WAL001	WALMER 001	Structures	Grade IIIb
91354	WAL002	WALMER 002	Structures	Grade IIIb
94140	MLB1	Malabar Extension 6	Burial Grounds & amp; Graves	Grade IIIa
108155	Port Elizabeth Concentration Camp Memorial	Port Elizabeth Concentration Camp Memorial	Monuments & Memorials	
90689	SCHOEN 001	Schoenmakerskop 001	Structures, Artefacts	Grade IIIc
90781	Sacramento Monument	Sacramento Shipwreck Monument Cannon	Monuments & Memorials	Grade IIIa
91355	WAL003	WALMER 003	Structures	Grade IIIb



Sites from PalaeoBiology Database in figure 5

Collection No.	Collection	Formation	Reference
82508	Locality C [Alphard Gp]		H. C. Kinger and W., J. Kennedy. 1980. Upper Cretaceous ammonites and inoceramids from the off-shore Alphard Group of South Africa. Annals of the South African Museum 82(7):293-320
77527	Alexandria Formation (Engelbreicht et al. 1962)	Alexandria	A. Ruddock. 1966. The Tertiary limestone of the southern coastal regions of Cape Province, South Africa. Sedimentary Basins of the African Coasts
65286	Swartkops Brickfield Molluscs	Sundays River	R. W. Shone. 1986. A new ophiuroid from the Sundays River Formation (Lower Cretaceous), South Africa. <i>Journal of Paleontology</i> 60(4) :904-910
65285	Swartkops Brickfield Ophiuroid	Sundays River	R. W. Shone. 1986. A new ophiuroid from the Sundays River Formation (Lower Cretaceous), South Africa. <i>Journal of Paleontology</i> 60(4) :904-910

APPENDIX 2

Reference List from SAHRIS

	Heritage Impact Assessments			
Nid	Report Type	Author/s	Date	Title
4580	AIA Phase 1	Lita Webley	01/03/2003	Maitland River Mouth Strategic Environmental Assessment - Phase 1 Heritage Impact Assessment
4581	AIA Phase 1	Lita Webley	12/05/2005	Phase 1 Heritage Impact Assessment of a Proposed Water Reservoir Site near Schoenmakerskop, Port Elizabeth
4585	HIA Phase 1	Lita Webley	21/05/2007	Phase 1 Heritage Impact Assessment for the Establishment of the Sardinia Bay Golf Estate (Erf 378 - Theescombe), Port Elizabeth
4587	HIA Letter of Exemption	Johan Binneman	01/04/2008	A Letter of Recommendation (with conditions) for the Exemption of a Full Phase 1 Archaeological and Historical Heritage Impact Assessment for the proposed residential development on erven 18 and 20 Parsons Vlei, Port Elizabeth, Nelson Mandela Bay Municip
4591	HIA Phase 1	Jenny Bennie	04/09/2008	Heritage Impact Assessment: Portion 87 of the Farm Cragga Kamma No. 23, Port Elizabeth
6557	AIA Phase 1	Karen Van Ryneveld	09/07/2010	Driftsands Collector Sewer Augumentation, Port Elizabeth (Nelson Mandela Bay Municipality), Eastern Cape Archaeological Survey CCpe, South Africa
6636	AIA Phase 1	Johan Binneman	01/06/2008	Phase 1 Archaeological Heritage Impact Assessment of the Proposed Development of a Sand Quarry on Erf 429,



				Theescombe, Port Elizabeth, Nelson Mandela Bay Metropolitan, Eastern Cape Province
8049	AIA Phase 1	Johan Binneman	01/02/2010	A PHASE 1 ARCHAEOLOGICAL HERITAGE IMPACT ASSESSMENT FOR THE PROPOSED REZONING AND SUBDIVISION OF FARM 36 AND 37, THEESCOMBE, PORT ELIZABETH, NELSON MANDELA BAY MUNICIPALITY, EASTERN CAPE PROVINCE, FOR THE DEVELOPMENT OF TWO RESIDENTIAL NODES, LODGE AND N
8914	PIA Phase 1	Robert Gess	30/03/2011	Palaeontological heritage component of FibreCo Telecommunications, basic assessment for the proposed fibre optic data cable project: Route 5: PE to Durban
110421	AIA Phase 1	Karen Van Ryneveld	16/02/2013	Phase 1 Archaeological Impact Assessment. Malabar Extension 6 Phase 2 Housing Development, Erf/RE 349, New Brighton & Erven 444 & 1086, Malabar, Nelson Mandela Bay Municipality, Eastern Cape, South Africa.
110730	PIA Desktop	John E Almond	01/02/2013	Proposed Malabar Extension 6 Phase 2 Housing Development, Nelson Mandela Bay Municipality, Eastern Cape
145619	AIA Phase 1	Karen Van Ryneveld	17/01/2013	PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT MALABAR EXTENSION 6 PHASE 2 HOUSING DEVELOPMENT, ERF/RE 349, NEW BRIGHTON & ERVEN 444 & 1086, MALABAR, NELSON MANDELA BAY MUNICIPALITY, EASTERN CAPE, SOUTH AFRICA
145758	AIA Phase 1	Karen Van Ryneveld	08/03/2013	PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT WALMER STORMWATER DETENTION PONDS AND ASSOCIATED INFRASTRUCTURE, ERVEN 1935 AND 7006, WALMER, NELSON MANDELA BAY MUNICIPALITY, EASTERN CAPE, SOUTH AFFRICA
269397	AIA Phase 1	Celeste Booth	02/03/2015	FibreCo Repeater Sites Routes 3 and 4_Heritage_2015 AIA report
325111	AIA Phase 1	Johan Binneman	22/07/2015	A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF A PARKING BAY AND ASSOCIATED INFRASTRUCTURES AT SARDINIA BAY, PORT ELIZABETH, NELSON MANDELA BAY MUNICIPALITY, EASTERN CAPE PROVINCE
325114	PIA Desktop	John Almond	05/08/2015	RECOMMENDED EXEMPTION FROM FURTHER PALAEONTOLOGICAL STUDIES: PUBLIC ACCESS TO SARDINIA BAY BEACH, PORT ELIZABETH, NELSON MANDELA BAY MUNICIPALITY, EASTERN CAPE
350729		Kyla Bluff	19/11/2015	Desalination Plant near Port Elizabeth
368642	HIA Phase 1	Jenny Bennie	01/09/2013	HERITAGE IMPACT ASSESSMENT (HISTORICAL COMPONENT) PROPOSED UPGRADE OF THE CAPE RECIFE WASTE WATER TREATMENT WORKS IN PORT ELIZABETH, NELSON MANDELA BAY MUNICIPALITY, EASTERN CAPE
368657	AIA Phase 1	Johan Binneman	01/10/2013	A PHASE 1 ARCHAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED UPGRADE AND EXPANSION OF THE CAPE RECIFE WASTE WATER TREATMENT WORKS IN PORT ELIZABETH, NELSON MANDELA BAY MUNICIPALITY, EASTERN CAPE PROVINCE
382272	AIA Desktop	Jenna Lavin	02/12/2016	Heritage Screener: Proposed Development on Erf 1792 Parsons Vlei, Port Elizabeth



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.



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

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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.

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
 - 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.