

CTS HERITAGE

HERITAGE SCREENER

CTS Reference Number:	CTS20_036
Client:	PHS
SAHRIS Case No:	15011
Date:	January 2021
Title:	Proposed Mining Application by Whale Head Minerals for a portion of remainder of Farm 1, Port Nolloth

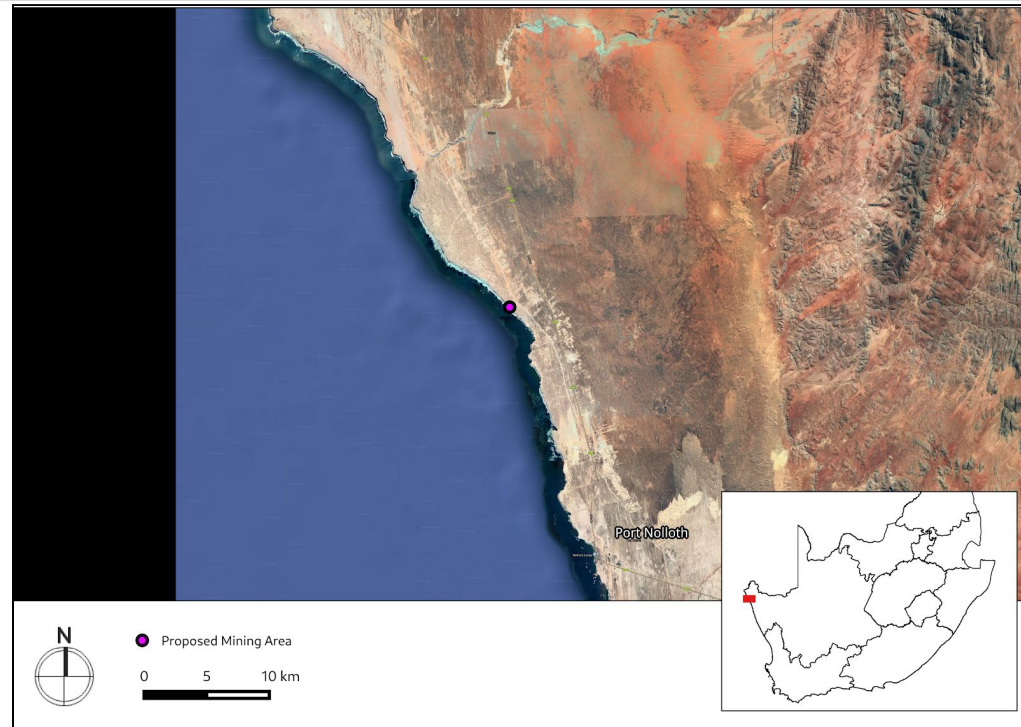


Figure 1a. Satellite map indicating the location of the proposed development in the Northern Cape Province

Recommendation by CTS Heritage Specialists

- RECOMMENDATION:**
- Based on the information available, it is unlikely that significant intact archaeological resources remain on the site and as such, it is unlikely that the proposed mining activities will impact significant archaeological heritage however should any archaeological resources be uncovered during the course of the proposed mining activities, that work must stop and SAHRA and an appropriately qualified archaeologist must be contacted to assess the significance of the uncovered resource to determine a way forward.
 - It is recommended that, while no further palaeontological specialist studies are required, the attached Fossil Finds Procedure be implemented for the proposed mining activities due to the sensitivity of the fossils that may be impacted by this proposed mining activity.
 - Should any MUCH resources be identified during the course of the proposed mining activities, that work must stop and SAHRA and an appropriately qualified MUCH specialist must be contacted to assess the significance of the uncovered resource to determine a way forward.
 - These recommendations must be included in the EMPr

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1. Proposed Development Summary

Whale Head Minerals (Pty) Ltd has identified a mineral sand deposit some 30 km North of Port Nolloth, Northern Cape Province, South Africa, with the aim of developing this resource to produce a saleable heavy mineral concentrate product from the wet concentrator plant (WCP), which would include garnet, ilmenite, monazite, zircon and rutile. All of the proposed mining area falls below the high water mark. *This application differs from the previous application made in that none of the proposed mining area falls above the high water mark.* The resource was originally prospected by Alexkor in the 1980's and 1990's while exploring for diamonds. Whale Head Minerals (Pty) Ltd conducted a Feasibility Study based on the findings by Alexkor, which considered the viability of the overall project, allowing for a mining operation, with a WCP. The proposed project site is characterized by coastal environmental sensitivity, as well as the relative remoteness of the site. Fresh water is not readily available, in addition the nearest electrical power source is some kilometres from the site.

At the site proposed for mining, mineral sands are located off shore in the bay area just seaward of the beach between the tidal zone and breaker zone. It is estimated that approximately 622 700 t of ore will be mined from the beach over a 5-year period, producing high grade heavy minerals concentrates. This period may be extended due to the possibility of unrealized potential in the resource through the replenishment of the resource. The resource would be exploited through the use of pumping techniques whereby the ore would be pumped from the offshore mining area to a collection point onshore from where it will be taken to an offsite wet concentrator plant (WCP) for final concentration.

2. Application References

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

3. Property Information

Latitude / Longitude	29° 4'32.10"S 16°47'55.72"E
Erf number / Farm number	Remainder of Farm 1 (majority of the area is below the high water mark of the coast)
Local Municipality	Richtersveld
District Municipality	Namakwa
Previous Magisterial District	Namakwaland
Province	Northern Cape
Current Use	Vacant/Surf Zone part of larger mining concession
Current Zoning	Mining Area

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4. Nature of the Proposed Development

Total Surface Area of development	5ha
Depth of excavation (m)	5m
Height of development (m)	NA

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
	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 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):

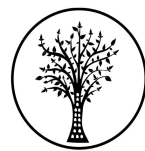
6. Additional Infrastructure Required for this Development

1. ROM Stockpile Gantry incorporating 2 cyclone discharges.
2. WCP modular construction inclusive of stair modules and screen and rougher bin modules.
3. Cyclones mounted on jib arms for the high grade, low grade and bagging shed.
4. ROM feed bin and feed conveyor.
5. Bagging plant.
6. MCC support platform.
7. Workshop and Storage shed

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

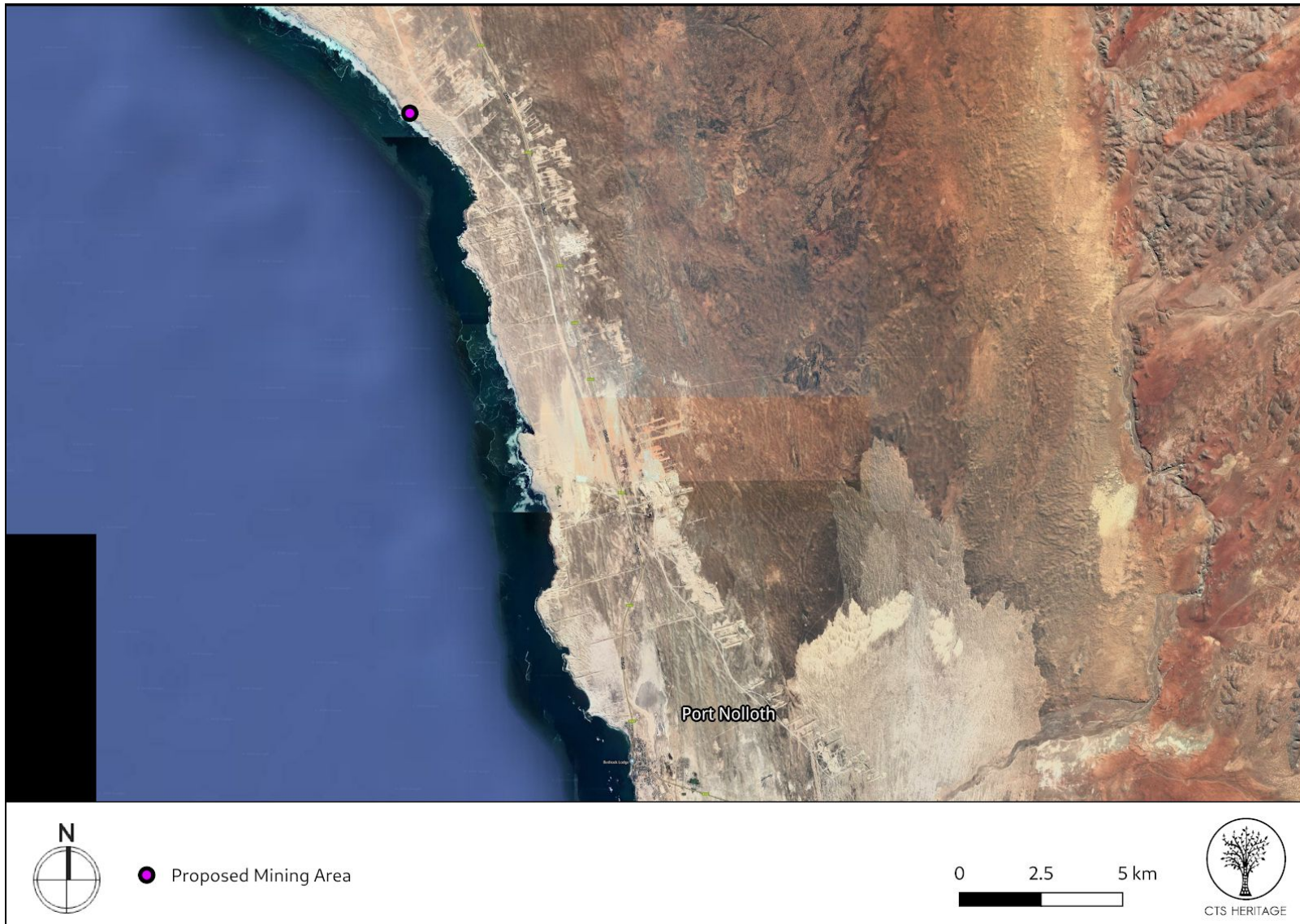


Figure 1b Overview Map. Satellite image (2019) indicating the proposed development area at closer range.

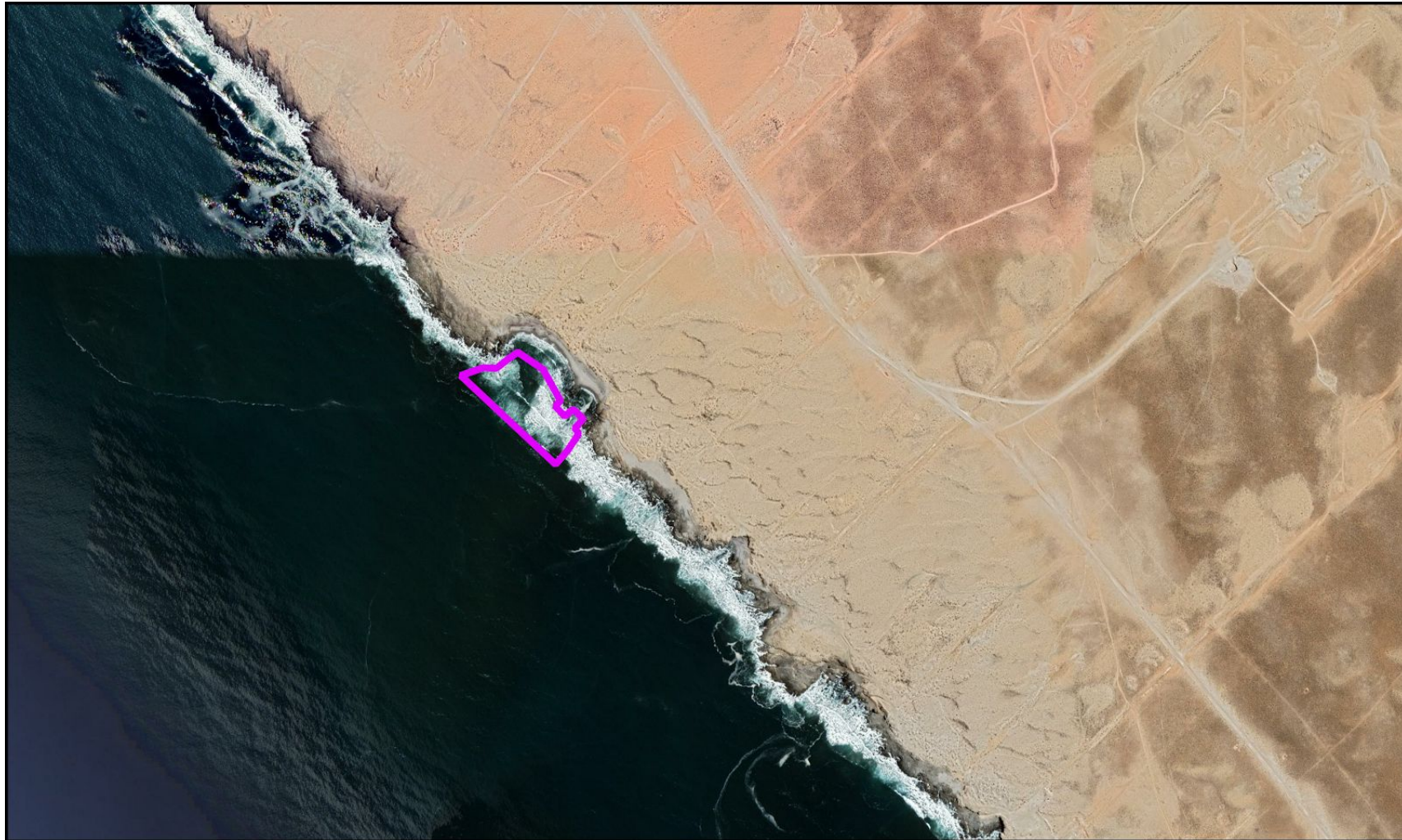
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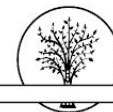
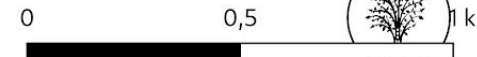
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 Proposed Mining Area



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

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 Proposed Mining Area

0 75 150 m



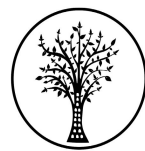
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Figure 1d. Overview Map. Satellite image (2019) indicating the proposed development area at closer range.

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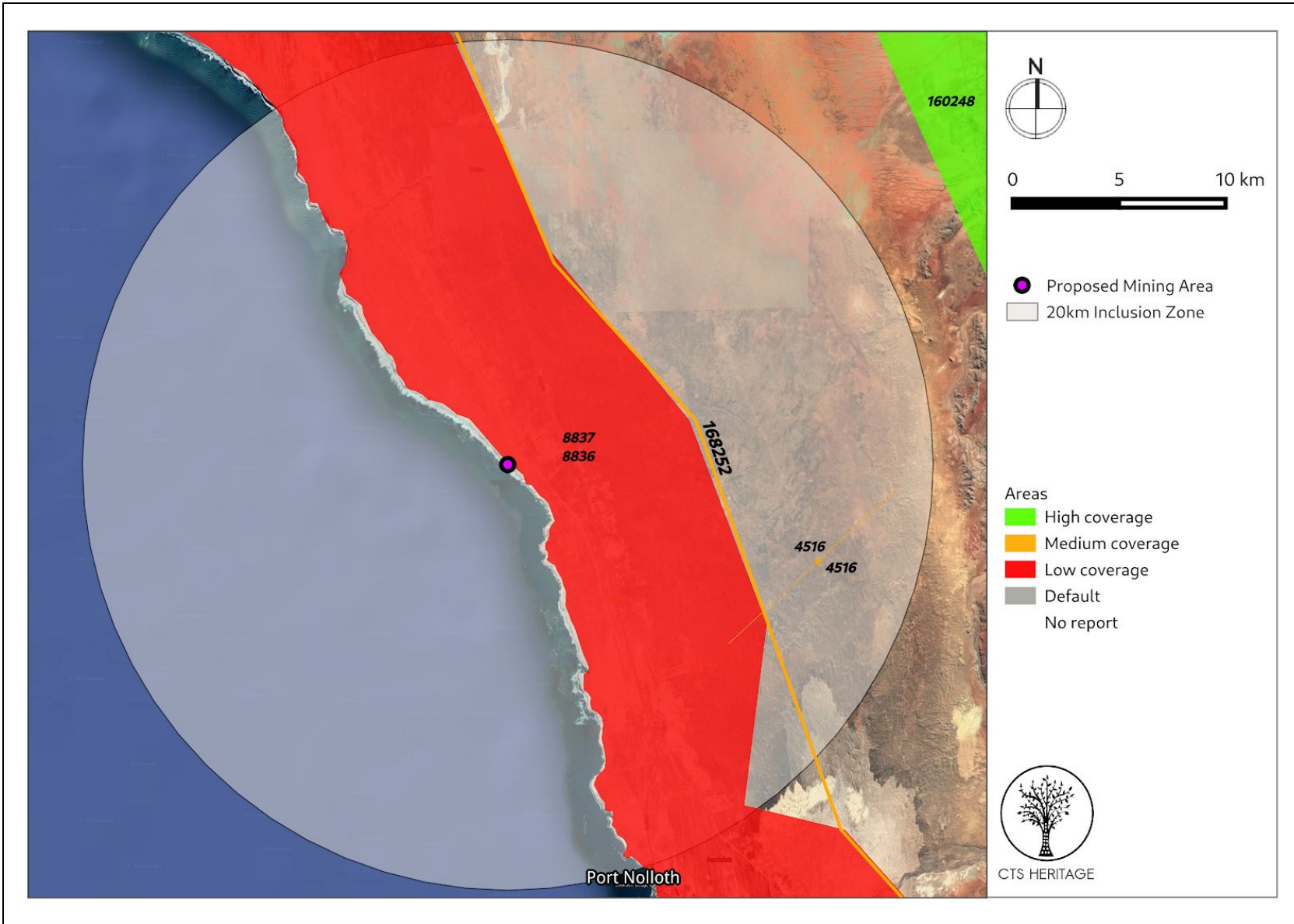


Figure 2a. Previous HIAs Map. Previous Heritage Impact Assessments surrounding the proposed development area within 5km, with SAHRIS NIDS indicated. Please see Appendix 2 for full reference list.

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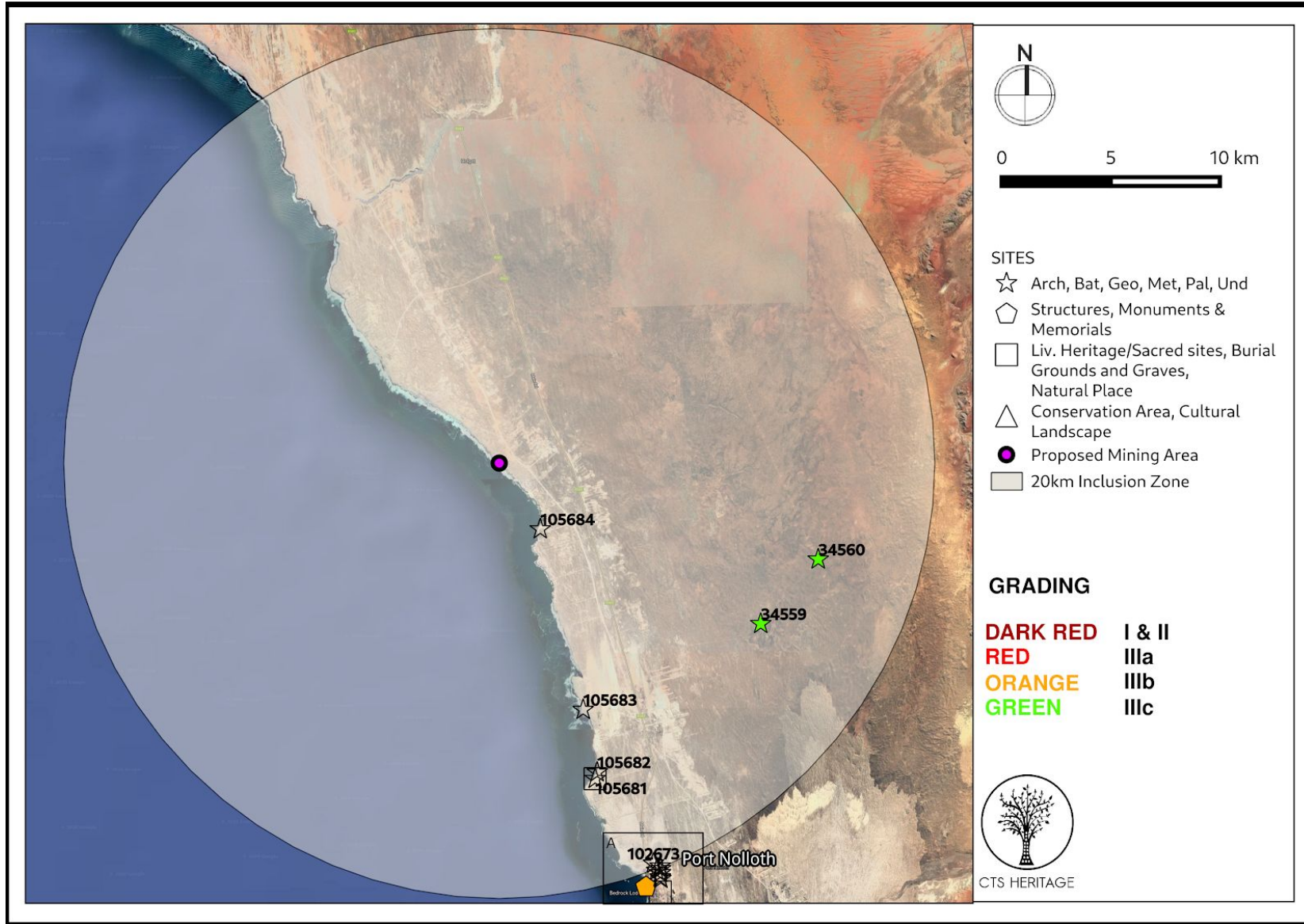


Figure 3. Heritage Resources Map. Heritage Resources previously identified in and near the study area, with SAHRIS Site IDs indicated. Please See Appendix 4 for full description of heritage resource types.

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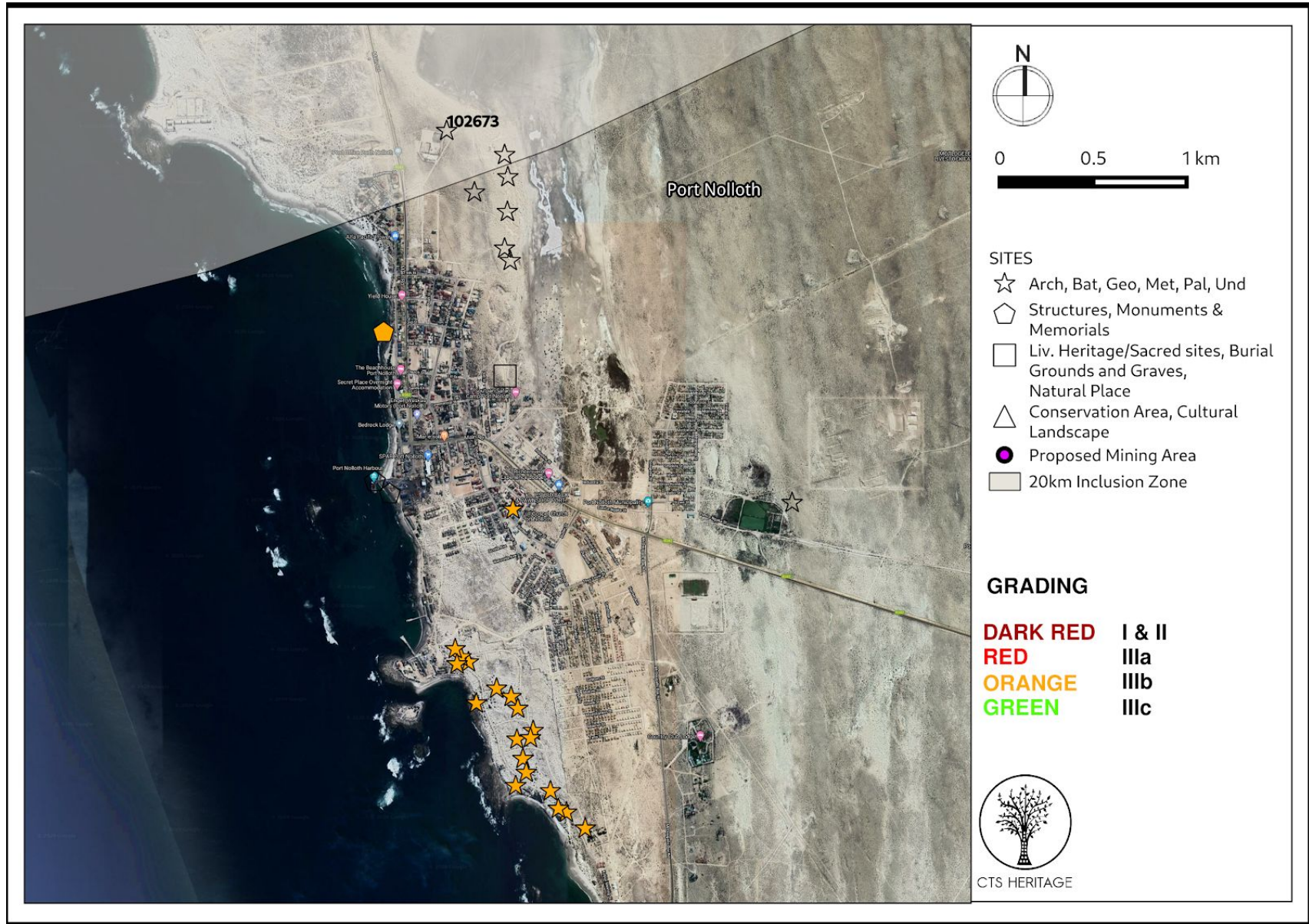


Figure 3a. Heritage Resources Map. Heritage Resources Inset A

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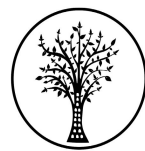


Figure 3b. Heritage Resources Map. Known Marine and Underwater Cultural Heritage (MUCH) in proximity to the proposed development (Maitland, pers comm. May 2020)

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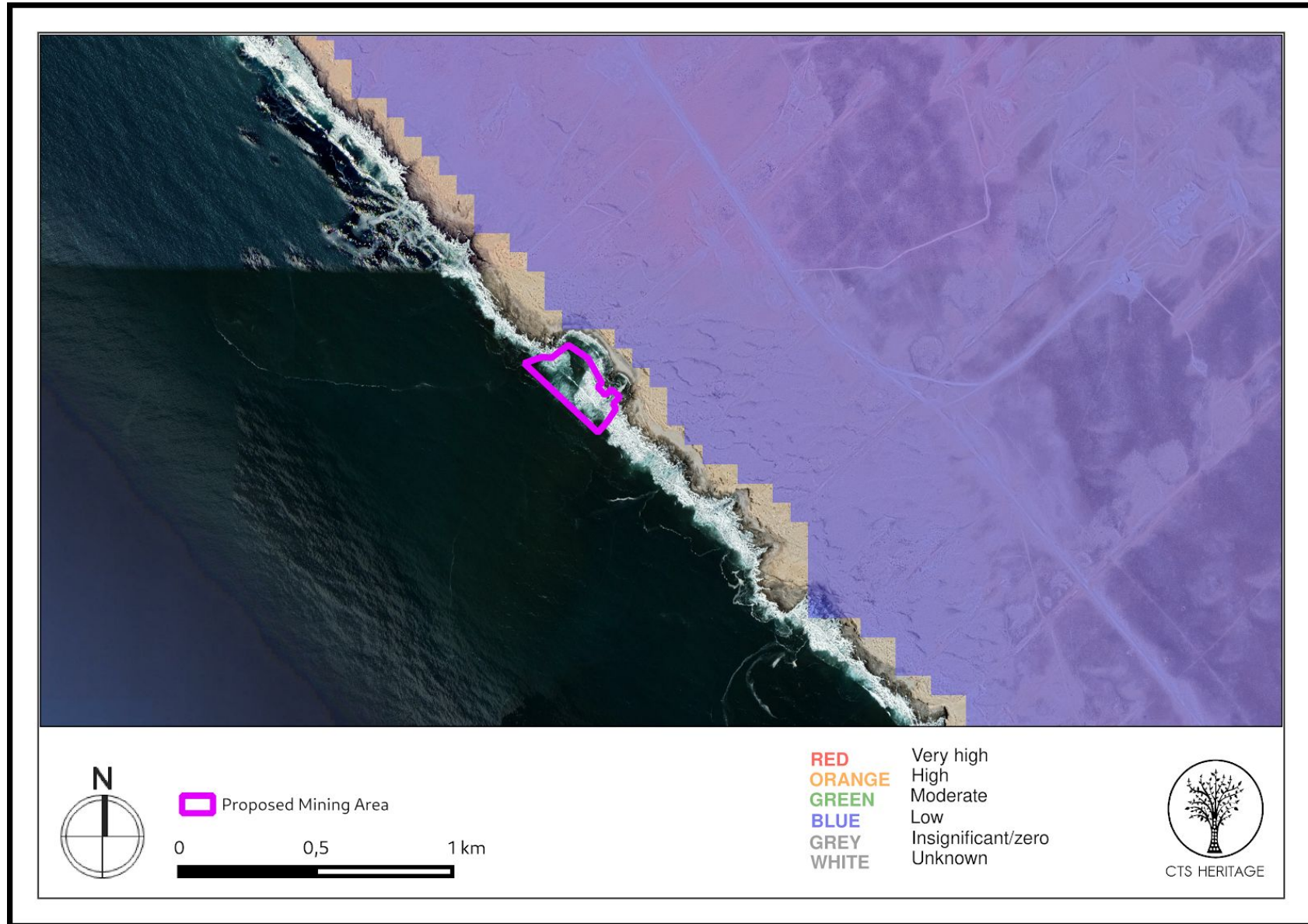


Figure 4. Palaeosensitivity Map. Indicating Low fossil sensitivity underlying the study area. Please See Appendix 3 for full guide to the legend.

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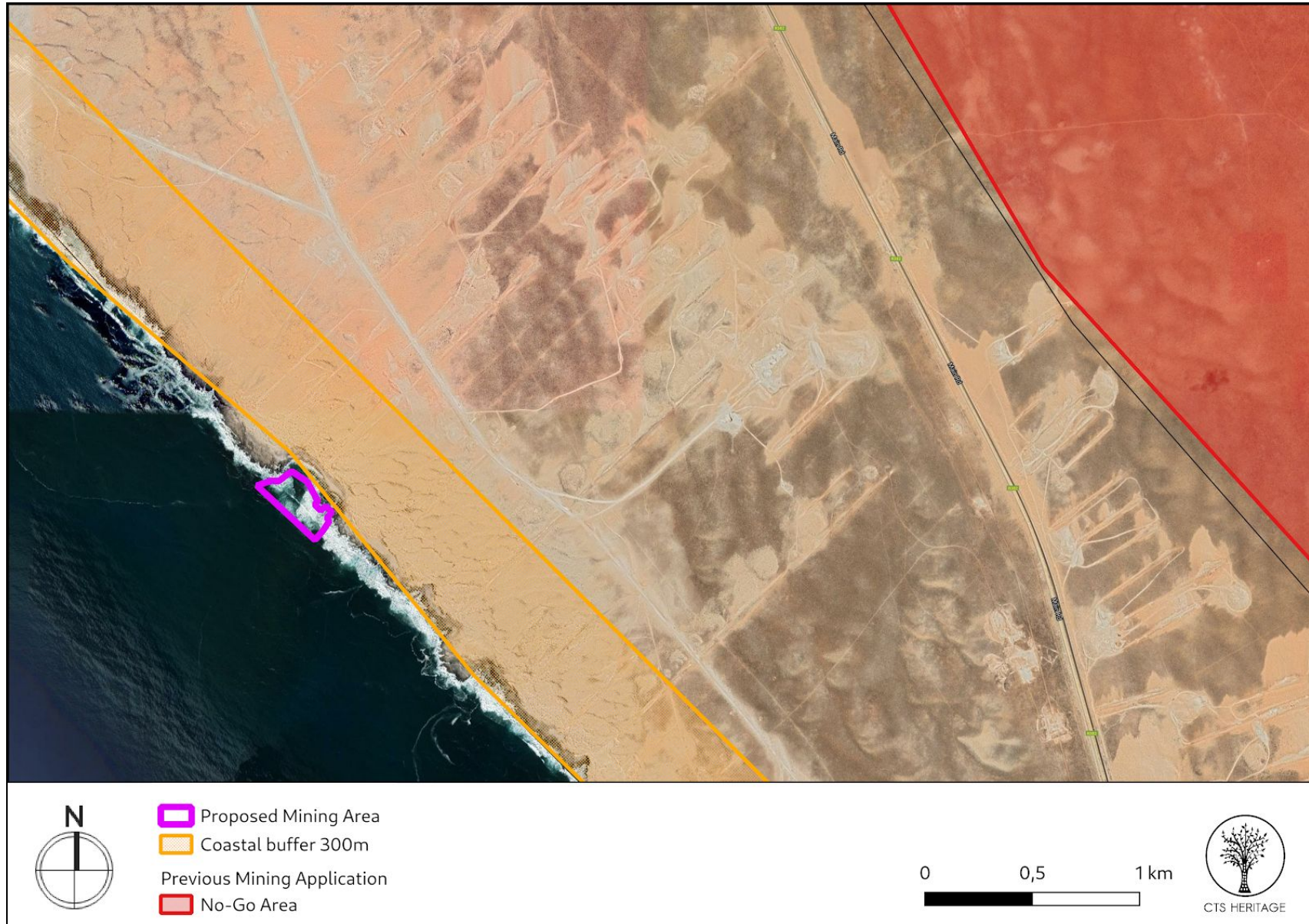


Figure 5. No-Go and High Sensitivity Areas Map. Identified in previous assessments

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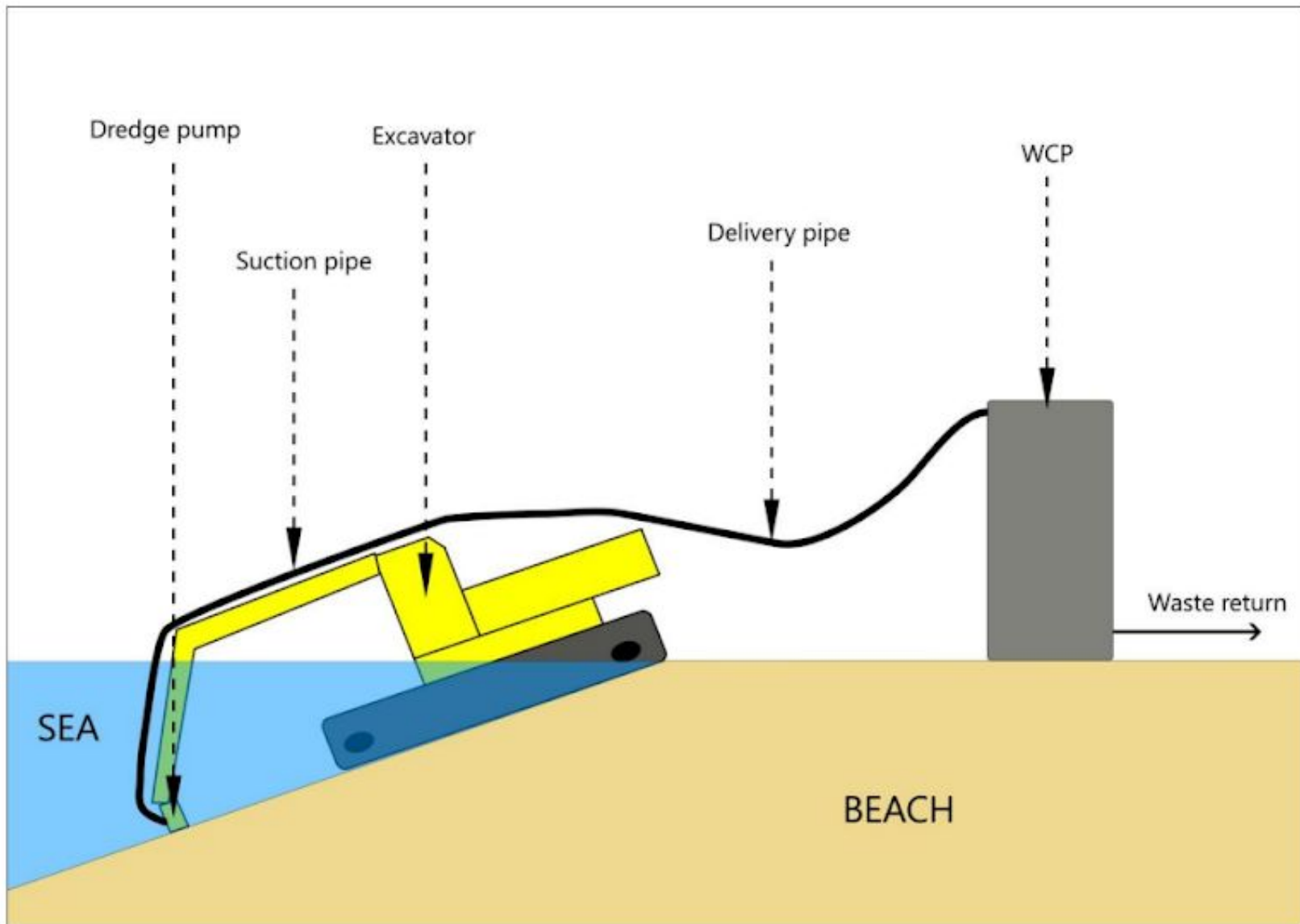


Figure 6. Mining methodology. From the Mine Works Program

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Figure 7.1. Mining area 2003 and Figure 7.2 Mining area 2013 (GoogleEarth)

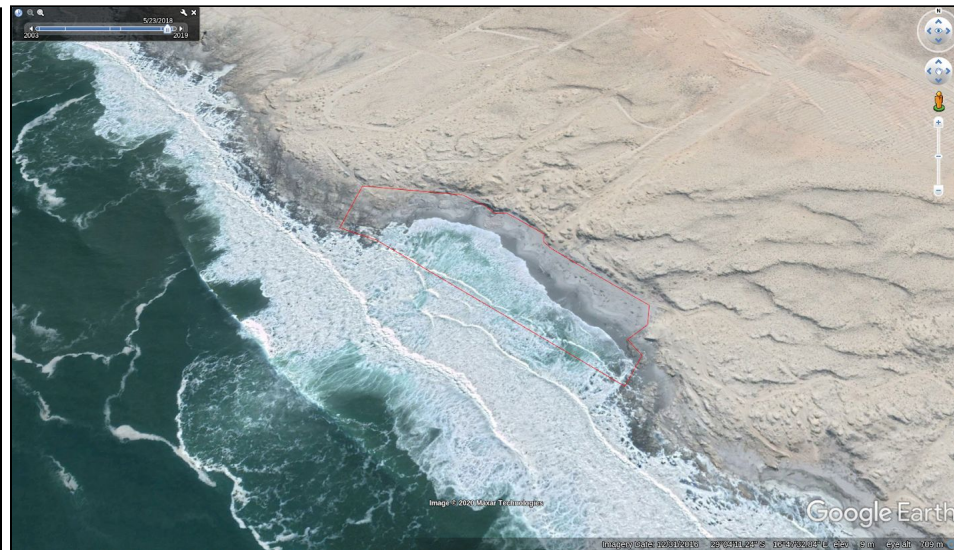
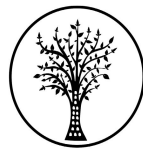


Figure 7.3. Mining area 2017 and Figure 7.4 Mining area 2018 (GoogleEarth)

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8. Heritage statement and character of the area

The area proposed for mining activities is located approximately 20km north of Port Nolloth along the West Coast of South Africa. The mining method proposed will require heavy piping and equipment on the beach. Local miners who have mined diamonds for many years in the same area are of the opinion that mobility of equipment on the beach is essential so that the equipment can be removed relatively quickly and easily in the event of the sea turning. Mining at Walviskop is done by means of a high-performance suction pump which is fitted to the excavator and receives the sediment from the suction head (mining tool fitted on the end of the boom) and delivers the sediment mined from the sea bed to the 260t per hour wet concentrator plant located on the beach for gravel processing. The mining rate has been estimated at a rate of 260 tonnes per hour based on applying a non-conventional mining method to the project.

All of the area proposed for sand mining is located below the high water mark within the active surf zone and as such, is unlikely to contain significant archaeological or palaeontological heritage. Archaeological evidence points to occupation of the West Coast region of South Africa, including the Namakwa coast from the Early Stone Age, through to the Middle and Later Stone Age, up until the arrival of early Trekboers in the 18th century (Kaplan 2008, NID 390540). The rocky shoreline attracted hunter-gatherers during the Holocene, in particular, resulting in rich archaeological deposits in the form of shell middens that stretch along the coastline and within the adjacent dune belt. In the past 2 000 years, early herders began arriving in the area, introducing livestock and new material culture (Orton 2012). Unmarked human burials occur, but these are seldom found by archaeologists, and are more commonly unearthed by mining operations (Kaplan 2008). As discussed in Smuts (2017), known heritage resources are predominantly located in undisturbed areas, except where these are structures within towns. The implications of this are twofold. Firstly, this makes it less likely that significant heritage resources will be impacted by the proposed mining, but also that sites are still present in undisturbed areas, and that these areas should therefore be avoided. However, previously, Kaplan (2008) and others (Smuts, 2017) have noted that the majority of significant heritage resources along this coastline exist within 300m of the high-water mark and as such, the areas within 300m of the high water mark have been red-flagged as particularly sensitive for impacts to significant archaeology. As all of the proposed mining activities take place below the high water mark, the proposed mining area falls just outside of this High Sensitivity Area (Figure 5). Previous recommendations have required only hand-augering within this sensitive 300m buffer area.

This area has been subjected to ongoing mining for almost a century (see attached letter from Hattingh, 2020). Alexkor SOC Limited (“Alexkor”) a state-owned diamond mining company has been actively mining diamonds since 1928. During the period 1928 to 2018, diamonds weighing more than 10,2 million carats have been recovered from marine gravel deposits on beaches and marine terraces at the Alexkor Mine. The Walviskop area is no exception and has seen active mining with surf zone mining taking place on an ongoing basis in this area since 2004 by mainly beach based dredging operations and to a lesser extent dredge mining from small boats in the bay itself. Beach mining using heavy earth moving equipment has taken place during at least two mining campaigns since 2013. Evidence of this is clear in the GoogleEarth images from 2013 and 2018 (Figure 7.2 and 7.4). As such, any significant archaeological resources within the proposed development area are likely to have been extensively disturbed in the past. Therefore the recommended hand-augering in this area is unlikely to mitigate impacts to significant archaeological heritage resources.

Maitland (2017, SAHRIS NID 487681) has conducted a thorough assessment of the likelihood of offshore mining impacts to Marine and Underwater Cultural Heritage (MUCH) including the offshore area likely to be impacted by this proposed mining activity. In her research, Maitland (2017) has mapped all known MUCH known within the immediate vicinity of the proposed mine. Based on the location of known recorded Underwater Cultural Heritage sites in the area taken from Maitland (2017), the nearest known wreck is approximately 11km away to the north (Figure 3b). This wreck is known as the *Ianthe* and is dated to 1890 (Maitland 2017). While no known MUCH resources are likely to be impacted by the proposed mining activities, it must be remembered that ships have been sailing down this coast for over 500 years. Therefore, there is always a possibility that the remains of wrecks may be uncovered during mining operations (Maitland, pers comm. May 2020).

According to the SAHRIS Palaeosensitivity Map, the area proposed for prospecting is underlain by Geological formations of low significance (Figure 4). The formations of low palaeontological significance include surficial Alluvium including Dune Beach Sand, the Oranjemund FM, the Holgat FM, the Vredefontein FM and Aeolianites. According to the

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Fossil Heritage Browser on SAHRIS, fossil bone finds during research on the Northern Cape coast mines have enabled age estimations based on correlations with the African vertebrate biochronology. Fossil data associated with the aeolian record overlaps with the presence of hominids at Elandsfontein, Duinefontein and Swartklip archaeological sites, making these very significant findings. In the marine deposits, fossil molluscan seashells, brachiopods, crustaceans (barnacles, crabs, prawns, ostracods), echinoids, polychaete worm tubes, corals, bryozoans and foraminifera are found. Shark teeth are common, and other fish teeth are known to occur, as are the bones of whales, dolphins, seals and seabirds. Pether (2007 and 2013) has written much about the palaeontological sensitivity of this area of the coastline. As such, it is recommended that, while no further palaeontological specialist studies are required, the attached Fossil Finds Procedure be implemented for the proposed mining activities due to the sensitivity of the fossils that may be impacted by this proposed mining activity.

RECOMMENDATION:

- **Based on the information available, it is unlikely that significant intact archaeological resources remain on the site and as such, it is unlikely that the proposed mining activities will impact significant archaeological heritage however should any archaeological resources be uncovered during the course of the proposed mining activities, that work must stop and SAHRA and an appropriately qualified archaeologist must be contacted to assess the significance of the uncovered resource to determine a way forward.**
- **It is recommended that, while no further palaeontological specialist studies are required, the attached Fossil Finds Procedure be implemented for the proposed mining activities due to the sensitivity of the fossils that may be impacted by this proposed mining activity.**
- **Should any MUCH resources be identified during the course of the proposed mining activities, that work must stop and SAHRA and an appropriately qualified MUCH specialist must be contacted to assess the significance of the uncovered resource to determine a way forward.**
- **These recommendations must be included in the EMPr**

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APPENDIX 1

List of heritage resources within the 5km Inclusion Zone from SAHRIS

Site ID	Site no	Full Site Name	Site Type	Grading
105684	ALEKOR 11	Alexkor Diamond Mine 11	Shell Midden, Artefacts	
105683	ALEKOR 12	Alexkor Diamond Mine 12	Shell Midden	
105682	ALEKOR 10	Alexkor Diamond Mine 10	Shell Midden	
105681	ALEKOR 09	Alexkor Diamond Mine 09	Burial Grounds & Graves, Shell Midden	
34560	MUI002	Muisvlak 002	Artefacts	Grade IIIc
34559	MUI001	Muisvlak 001	Artefacts	Grade IIIc
102673	PN2009/007	Port Nolloth sites	Archaeological	

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APPENDIX 2

Reference List from SAHRIS

HIAs				
SAHRIS NIDs	Report Type	Author	Date	Title
8837	PIA Phase 1	John Pether	28/09/2007	Palaeontological Heritage Impact Assessment and Mitigation Approaches
8836	PIA Phase 1	John Pether	01/11/2007	Coastal Plain Deposits of Namaqualand: Historical Palaeontology and Stratigraphy
4516	AIA Phase 1	Dave Halkett	01/01/1999	An Archaeological Assessment of Power Line Routes Between Muisvlak and Eksteenfontein, Richtersveld
168252	Heritage Impact Assessment Specialist Reports	Chrispen Chauke	31/05/2014	HERITAGE IMPACT ASSESSMENT STUDIES FOR THE PROPOSED GROMIS ORANJEMUND RECONDUCTORING, Namaqualand Region, Richtersveld Local Municipality, Northern Cape
487681	Heritage Impact Assessment Specialist Reports	Vanessa Maitland	12/12/2017	Underwater Heritage Impact Assessment for Marine Prospecting Areas off the West Coast of South Africa

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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 (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.

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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

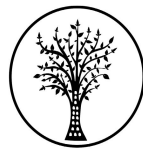
DETERMINATION OF THE COVERAGE RATING ASCRIBED TO A REPORT POLYGON

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 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.

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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.

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.**

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