

UGU DISTRICT MUNICIPALITY



**PROPOSED BHOBHOYI PIPELINE NEAR PORT SHEPSTONE IN UGU DISTRICT MUNICIPALITY,
KWAZULU NATAL PROVINCE**

HERITAGE IMPACT ASSESSMENT

18 SEPTEMBER 2023

Submitted to : Nema Consulting

Prepared by:

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The heritage impact assessment report has been compiled considering the NEMA Appendix 6 requirements for specialist reports as indicated in the table below.

Requirements of Appendix 6 – GN R326 EIAs Regulations (2014, amended 2017)	Relevant section in report
1.(1) (a) (i) Details of the specialist who prepared the report	Section 1.1.3 of Report
(ii) The expertise of that person to compile a specialist report including a curriculum vita	Section 1.1.3 and of Report and Appendix 2
(b) A declaration that the person is independent in a form as may be specified by the competent authority	Page iii of the report
(c) An indication of the scope of, and the purpose for which, the report was prepared	Section 1.1
(cA) An indication of the quality and age of base data used for the specialist report	N/A
(cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 5
(d) The duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment	Section 6
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used	Section 7
(f) details of an assessment of the specific identified sensitivity of the site related to the proposed activity or activities and its associated structures and infrastructure, inclusive of a site plan identifying site alternatives;	Section 5.4 and 5.5, Section 6
(g) An identification of any areas to be avoided, including buffers	Section 6
(h) A map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Appendix 1
(i) A description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3
(j) A description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment	Sections 6, 11
(k) Any mitigation measures for inclusion in the EMPr	Section 8, 11
(l) Any conditions for inclusion in the environmental authorisation	N/A
(m) Any monitoring requirements for inclusion in the EMPr or environmental authorisation	N/A
(n)(i) A reasoned opinion as to whether the proposed activity, activities or portions thereof should be authorised and	Section 13
(n)(iA) A reasoned opinion regarding the acceptability of the proposed activity or activities; and	
(n)(ii) If the opinion is that the proposed activity, activities or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan	Section 8, 12
(o) A description of any consultation process that was undertaken during the course of carrying out the study	Not applicable. A public consultation process will be handled as part of the EIAs and EMPr process.

Requirements of Appendix 6 – GN R326 EIAs Regulations (2014, amended 2017)	Relevant section in report
(p) A summary and copies if any comments that were received during any consultation process	Not applicable. To date no comments have been raised regarding heritage resources that require input from a specialist.
(q) Any other information requested by the competent authority.	Not applicable.
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to a specialist report, the requirements as indicated in such notice will apply.	Section 38(3) of the NHRA

Declaration of Independence

The report has been compiled by Nitai Consulting (Pty) Ltd, an appointed Heritage Specialist for Nema Consulting for the Proposed Bhubhoyi Pipeline Near Port Shepstone In Ugu District Municipality, Kwazulu Natal Province. The views contained in this report are purely objective and no other interests are displayed during the decision-making processes discussed in the Heritage Impact Assessment Process.

I, Jennifer Kitto, declare that –

General declaration:

- I act as the independent heritage specialist in this application*
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant*
- I declare that there are no circumstances that may compromise my objectivity in performing such work;*
- I have expertise in conducting heritage impact assessments, including knowledge of the NHR Act, Regulations and any guidelines that have relevance to the proposed activity;*
- I will comply with the NHRA, Regulations and all other applicable legislation;*
- I will take into account, to the extent possible, the matters listed in section 38 of the NHRA when preparing the application and any report relating to the application;*
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;*
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;*
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;*
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not*
- All the particulars furnished by me in this form are true and correct;*
- I will perform all other obligations as expected of a heritage specialist in terms of the Act and the constitutions of my affiliated professional bodies; and*
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the NEMA.*

Disclosure of Vested Interest

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

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PRINCIPAL HERITAGE PRACTITIONER – Jennifer Kitto

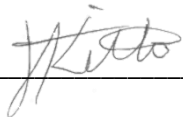
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Amendments Page

Date:	Nature of Amendment	Amendment Number:
27 March 2023	First Draft	00
18 September 2023	Final Revised	01

Executive Summary

Introduction

The Ugu District Municipality (UDM) (the “Applicant”) has proposed the development of the Umzimkhulu River Weir and Bhobhoyi Pipeline near Port Shepstone, in KwaZulu-Natal (KZN) (the “Project”). Nema Consulting was appointed by Escongweni Engineers initially to provide a Scoping and Environmental Impact Reporting (S&EIR) Process in terms of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended), promulgated under the National Environmental Management Act (Act No. 107 of 1998) (NEMA) for both the proposed weir and associated pipeline. However, this has been amended subsequently to two separate processes. The KZN Department of Economic Development, Tourism and Environmental Affairs (DEDTEA) agreed that the environmental processes for the overall Project will be split as follows:

- S&EIR Process for the weir and associated infrastructure; and
- Basic Assessment for the pipeline

Therefore, this HIA Report deals with only the proposed pipeline which will connect the pump station at St. Helen’s Rock to the Bhobhoyi Water Treatment Works (WTW). The overall length of the proposed pipeline is approximately 3.4 km. It passes through private farms and the semi-rural residential areas of Dujazana and Bhobhoyi.

Methodology/ Significance Assessment

The Desktop Literature Review and Site Survey fieldwork provided confirmation of the existence of heritage resources occurring within and close to project area footprint. Much of the proposed pipeline route runs along the main gravel road which is highly disturbed. During the inspection several structures were identified that could be older than 60 years and are therefore protected by heritage legislation. The inspection of the area that was surveyed identified a total of six heritage resources within or close to the project footprint. These resources include: four historical houses (UMZ-P01, UMZ-P02, UMZ-P03, UMZ-P06) and the historical buildings of the Bhobhoyi Water Treatment Plant (UMZ-P04) as well as one informal church site (UMZ-P05).

Identification of Activities, Aspect and Impacts

The project area that will be impacted by the proposed Umzimkhulu pipeline contains some areas that are currently disturbed by semi-rural residential settlement, informal and formal agricultural activities, sand mining and some undeveloped areas.

The impact significance of the proposed project on protected historical structures is medium to high as several historical structures were identified, including historical houses (UMZ-P01, UMZ-P02, UMZ-P03, UMZ-P06) and the existing historical Bhobhoyi Water Treatment Plant buildings (UMZ-P04).

The impact significance of the project on graves and cemeteries is low as no definite grave sites were identified during the field survey. However, in this region it is common for deceased family members to be buried within the imizi homestead property. Since the route traverses a community residential area, the presence of grave sites will need to be verified by consultation with the community regarding measures to avoid such graves, before or during the detailed design stage. One possible grave site was noted by a previous HIA report as located just outside the Bhubhoyi WTW.

The impact significance of the project on intangible and living heritage resources is low as one informal church site was identified. The site is situated just outside (within 15m) and east of the pipeline route corridor and roughly 65m from the centre line (UMZ-P05).

The impact significance of the proposed project on archaeological resources is low as no archaeological sites or material were identified.

Mitigation Measures

The proposed Bhubhoyi pipeline project will impact on certain heritage resources identified within and adjacent to the router corridor. A total of six heritage resources were identified within or adjacent to the route corridor area. These resources include: four historical houses (UMZ-P01, UMZ-P02, UMZ-P03, UMZ-P06) and the historical buildings of the Bhubhoyi Water Treatment Plant (UMZ-P04) as well as one informal church site (UMZ-P05).

The recommendations below are provided to mitigate the potential impact of the proposed pipeline project on the identified heritage resources:

- All historical structures identified and near to the route corridor must be protected with a 10-30m buffer, depending on significance and distance from the final line alignment.
- All identified historical structures are protected and any proposed destruction will require a permit from Amafa KZN.
- The Historical buildings of the Bhubhoyi Water Treatment Works at UMZ-P04 must be avoided as “no-go” areas and protected from any damage. It is recommended that a Phase II mitigation process should be undertaken to research the history of the historical buildings and provide recommendations on the feasibility of possible formal protection as a Grade II or Grade III heritage site. The final alignment of the pipeline should be adjusted to avoid any negative impact to individual buildings.
- The informal church site (UMZ-P05) should be avoided with a buffer of 10-20m and there should be community consultation regarding the possible impact.
- After final design of the route alignment and prior to construction, a walk-down of the final alignment must be undertaken by a heritage specialist to identify any unidentified grave sites and cemeteries. If any grave sites are identified, a buffer of at least 30m must be placed around the grave site to ensure that during construction, these sites are not damaged.

- A separate palaeontological desktop assessment has been undertaken as the project area falls into an area where the underlying geology is mostly of Moderate to Low/Insignificant fossil sensitivity. The assessment will indicate if significant/sensitive fossils will be impacted by the proposed project and provide mitigation measures and the way forward in this regard.

Conclusion

No fatal flaws were identified during this study, therefore, it is the considered opinion of the heritage specialist that the construction of the proposed Bhubhoyi pipeline within the project footprint can proceed. There are no objections from a heritage perspective if the recommendations and mitigation measures contained in this report and in the desktop palaeontological assessment are implemented where necessary.

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List of Abbreviations

Amafa	KwaZulu-Natal Amafa and Research Institute
ASAPA	Association of Southern African Professional Archaeologists
DEDTEA	KZN Department of Economic Development, Tourism and Environmental Affairs
DFFE	Department of Forestry Fisheries and Environment
DWS	Department of Water and Sanitation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EWR	Ecological Water Requirements
GIS	Geographic Information System
HIA	Heritage Impact Assessment
IAIASa	International Association for Impact Assessment
IAP	Interested and Affected Party
km	Kilometre (1 000m)
KZN	KwaZulu-Natal
NEMA	National Environmental Management Act (No. 107 of 1998)
NHRA	National Heritage Resources Act (No 25 of 1999)
NHS	National Heritage Site
NWA	National Water Act (Act No. 36 of 1998)
OCS	Off-Channel Storage
PHRA	Provincial Heritage Resources Authority
RWSS	Regional Water Supply Scheme
SAHRA	South African Heritage Resources Agency
S&EIR	Scoping and Environmental Impact Reporting
UDM	Ugu District Municipality
WTW	Water Treatment Works

1 INTRODUCTION

The Ugu District Municipality (UDM) (the “Applicant”) has proposed the development of the Umzimkhulu River Weir and Bhubhoyi Pipeline near Port Shepstone, in KwaZulu-Natal (KZN) (the “Project”). Nemai Consulting was appointed by Escongweni Engineers initially to conduct a Scoping and Environmental Impact Reporting (S&EIR) Process in terms of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended), promulgated under the National Environmental Management Act (Act No. 107 of 1998) (NEMA) for both the proposed weir and associated pipeline. This has been amended subsequently to two separate processes. The KZN Department of Economic Development, Tourism and Environmental Affairs (DEDTEA) agreed that the environmental processes for the overall Project will be split as follows:

- S&EIR Process for the weir and associated infrastructure; and
- Basic Assessment for the pipeline

Therefore, this HIA Report deals with only the proposed pipeline which will connect the pump station at St. Helen’s Rock to the Bhubhoyi Water Treatment Works (WTW). The overall length of the proposed pipeline is approximately 3.4 km. It passes through private farms and the semi-rural residential areas of Dujazana and Bhubhoyi.

1.1 Scope & Terms of Reference for the HIA report

1.1.1 Summary of Key Issues & Triggers Identified During Scoping

In terms of the NHRA, the following proposed activities trigger the need for a Heritage Impact Assessment (HIA):

- Potential occurrence of heritage resources, graves and structures older than 60 years within the Project’s footprint.
- Proposed development that is more than 5000m²
- Proposed linear development that is longer than 300m
- Proposed development where an impact assessment is triggered in terms of NEMA.

1.1.2 Approach

- Undertake a Heritage Impact Assessment in accordance with the NHRA.
- Identify and map all heritage resources in the area affected, as defined in Section 2 of the NHRA, including archaeological sites on or near (within 100m of) the proposed developments.
- Assess the significance of such resources in terms of the heritage assessment criteria as set out in the regulations.
- Assess the impacts of the Project on such heritage resources.
- Prepare a heritage sensitivity map (GIS-based), based on the findings of the study.
- Identify heritage resources to be monitored.
- Comply with specific requirements and guidelines of Amafa Institute and SAHRA.

1.1.3 Nominated Specialist Details

Organisation:	Nitai Consulting
Name:	Jennifer Kitto
Qualifications:	BA Archaeology and Social Anthropology; BA (Hons) Social Anthropology
No. of years' experience:	24
Affiliation (if applicable):	Association of Southern African Professional Archaeologists (ASAPA) - Technical member No.444 International Association for Impact Assessment (IAIAsa) – Member No. 7151

1.2 Project Description

The Project Area is located within Wards 12, 14, 23 and 34 of the Ray Nkonyeni Local Municipality (RNLM), in the south of KZN. The proposed pipeline route lies approximately 7 km to the north-west of Port Shepstone's central business district (CBD). The proposed pipeline will connect the pump station at St. Helen's Rock to the Bhubhoi Water Treatment Works (WTW). The overall length of the proposed pipeline is approximately 3.4 km. It passes through private farms and the semi-rural residential areas of Dujazana and Bhubhoi.

There is currently only one functioning ND700/600 pipeline delivering water to the storage dam and WTW that was built in the 2000's, which has limited capacity on its own and which requires complete system shutdown for ongoing maintenance. In addition, there is extreme risk to the system with only one pipeline feeding the WTW. Bifurcation pipework to and from the storage dam is prone to leaks and thus ongoing maintenance shutdowns and risk of serious failure.

2 LEGISLATION

The identification, evaluation and assessment of any cultural heritage site, artefact or find in the South African context is required and governed by various pieces of legislation, including the National Heritage Resources Act, 25 of 1999 (NHRA) and associated Regulations, National Environmental Management Act, Act 107 of 1998 (NEMA) and associated Regulations and, as well as the National Health Act, Act No. 61 of 2003 (NHA), specific Regulations governing human remains.

2.1 National Heritage Resources Act, No 25 of 1999 (NHRA)

The NHRA is the defines cultural heritage resources (section 3), provides protection to specific types of heritage resources (sections 34, 35, 36) and also requires an impact assessment of such resources for specific development activities (section 38(1)). Section 38(8) further allows for cooperation and integration of the management of such impact assessment between the national or provincial heritage authority (SAHRA or a PHRA) and the national environmental authority (DEFF).

In terms of section 38(1)(a) of the NHRA, the specific types of development activity that may require a Heritage Impact Assessment (HIA) include: the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length. As the proposed powerline is approximately 260 km long, this study falls under s38(8) and requires comment from the relevant heritage resources authority. (South African Heritage Resources Authority-SAHRA and/or the Free State Provincial Heritage Authority).

Sections 34-36 of the NHRA further stipulate the protections afforded to specific types of heritage resources, *i.e.* structures older than 60 years (s34); archaeological, palaeontological, meteorites (s35); graves and burial grounds (s36), as well as the mitigation process to be followed if these resources need to be disturbed. The construction of the solar PV project and powerline may result in impacts to any of these types of heritage resources.

2.2 National Environmental Management Act, Act 107 of 1998 (NEMA)

NEMA states that an integrated Environment Management Plan (EMP) should, (23 -2 (b)) “...identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage”. In addition, the NEMA and associated Regulations GNR 982 (Government Gazette 38282, 14 December 2014, amended 2017) state that, “the objective of an environmental impact assessment process is to, ... identify the location of the development footprint within the preferred site ... focussing on the geographical, physical, biological, social, economic, *cultural and heritage aspects* of the environment” (GNR 982, Appendix 3(2)(c), emphasis added).

The EIA Regulations, 2014 (as amended), published in GNR 982 of 2014 (Government Gazette 38282) promulgated under the (NEMA) contain specific requirements to be addressed in the different types or impact assessment reports (Regulations 19, 21 and 23) as well as requirements for Specialist Reports (Appendix 6).

2.2 KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act No 5 of 2018)

The KZN Amafa and Research Institute is the provincial heritage resources authority and is mandated by the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act No 5 of 2018). A Heritage Impact Assessment will be undertaken for the Project, which will be included in the BA Report. The Project will need to apply for a permit if any heritage sites or graves are to be affected.

The length of the proposed replacement bulk water pipeline is approximately 3.4 km and therefore triggers section 41 (1)(a) of Act No 5 of 2018 which lists developments or activities that may require an HIA. Section 41 (1)(a) refers to: “the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length”. The replacement and operation of the pipeline may also impact graves, structures, archaeological and palaeontological resources that are protected in terms of sections 37, 38, 39, and 40 of the Act.

2.3 The National Health Act, No. 61 of 2003 (NHA), Regulations 2013

In the case of graves and/or burial grounds that could be impacted by a proposed development, and which are identified through an impact assessment, specific Regulations relating to the Management of Human Remains (GNR 363 of 2013 in Government Gazette 36473) address the exhumation and reburial of human remains: Regulations 26, 27 and 28.

3 ASSUMPTIONS AND CONSTRAINTS

This assessment assumes that all the information provided by the Environmental Assessment Practitioner (EAP) regarding the pipeline route corridor is correct and current.

The project area traverses an area that includes sugar cane fields and undeveloped areas where access was restricted due to a lack of roads as well as sections of extremely dense vegetation. In addition, the sections of semi-rural residential settlement had been subject to protests regarding the lack of water supply in the week prior to the fieldwork and the author was therefore advised by the community facilitator not to access certain areas of the route that could involve some interaction with the community.

The large area of the project footprint meant that it was not feasible to undertake a pedestrian survey of the whole area and the fieldwork therefore, comprised a combination of vehicle and pedestrian investigation. The extremely dense and long vegetation in several sections meant that archaeological and heritage visibility was low in those areas. Therefore, there is a possibility that some heritage resources were not identified, specifically, informal graves or burial sites.

4 PROJECT DESCRIPTION

4.1 Location

The Project Area is located within Wards 12, 14, 23 and 34 of the Ray Nkonyeni Local Municipality (RNLM), in the south of KZN. The proposed pipeline route lies approximately 7 km to the north-west of Port Shepstone’s central business district (CBD), **Figure 1** and **Figure 2**. The proposed pipeline will connect the

pump station at St. Helen’s Rock to the Bhoiboyi Water Treatment Works (WTW). The overall length of the proposed pipeline is approximately 3.4 km. It passes through private farms and the semi-rural residential areas of Dujazana and Bhoiboyi.

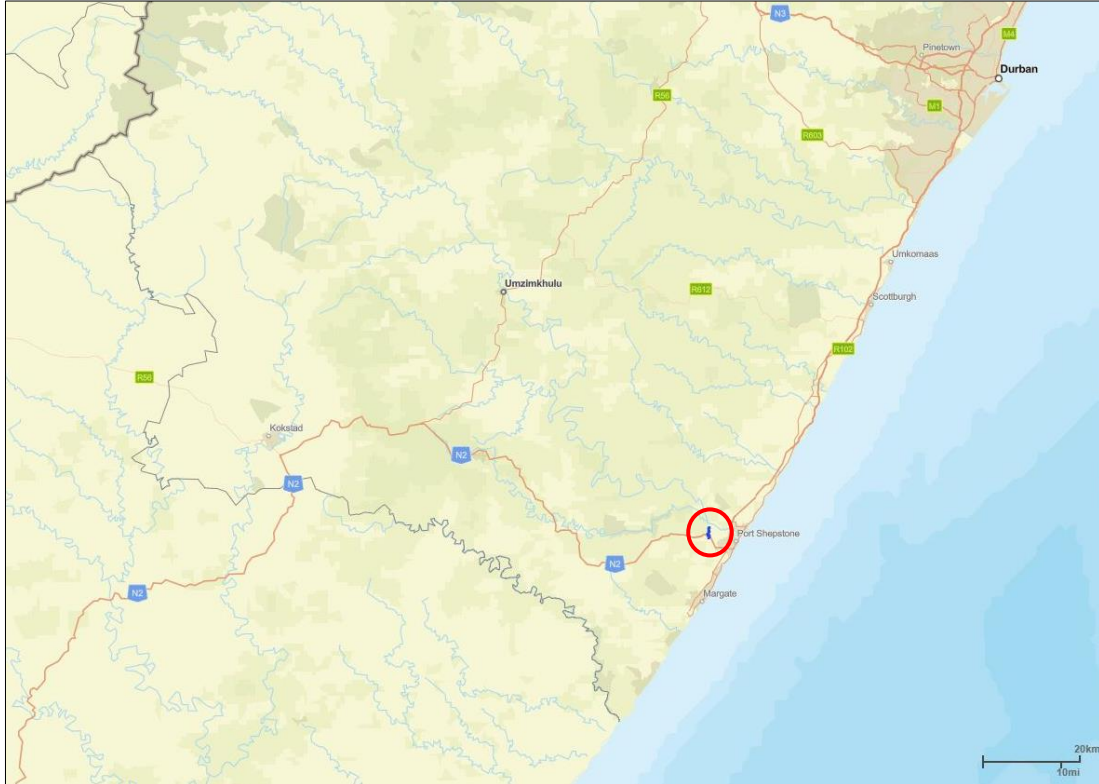


Figure 1: Approximate Regional Locality of the project and Port Shepstone in relation to Durban (red circle), DFFE Screening Tool

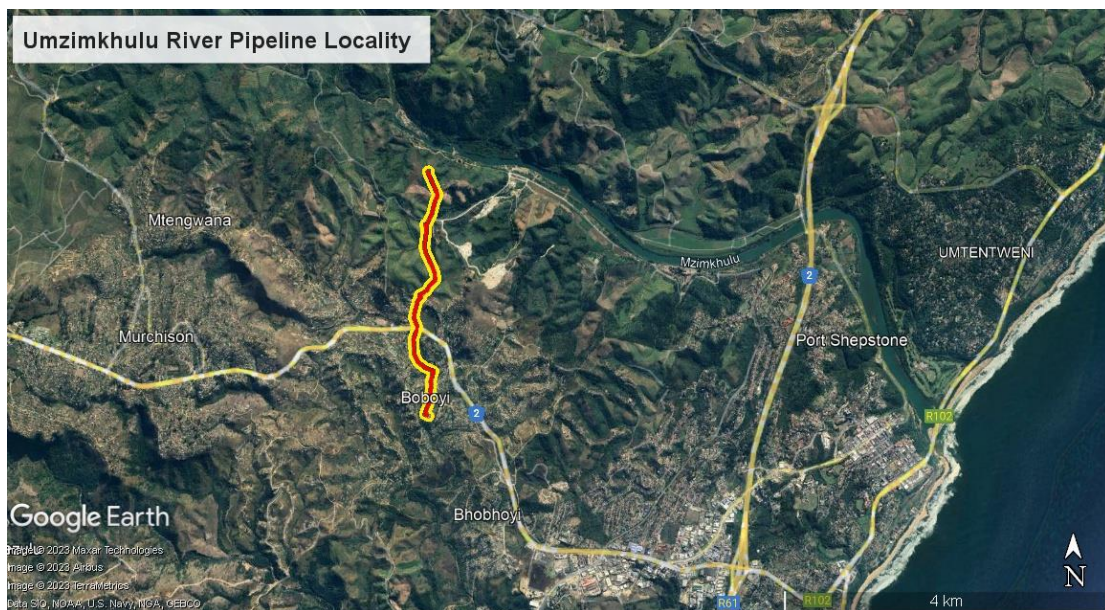


Figure 2: Enlarged view of Pipeline Locality (red and yellow polygon)

4.2 Project Technical Details

There is currently only one functioning ND700/600 pipeline delivering water to the storage dam and WTW that was built in the 2000's, which has limited capacity on its own and which requires complete system shutdown for ongoing maintenance. In addition, there is extreme risk to the system with only one pipeline feeding the WTW. Bifurcation pipework to and from the storage dam is prone to leaks and thus ongoing maintenance shutdowns and risk of serious failure.

To achieve the licenced 88 Ml/d on average, the whole system requires the capacity to deliver up to 108 M/d (peak) at times in order to maintain this average. The existing ND700/600 pipeline from the St. Helen's Rock abstraction works to the existing WTW on its own cannot do this. The existing ND700/600 and proposed ND700 will therefore need to accommodate a combined flow of 1.25 m³ /s at a maximum mean velocity of 1.87 m/s.

The following is noted in terms of pipeline crossings:

- Watercourse crossings will generally consist of pipe sections encased in concrete in accordance with the relevant criteria specified by the Department of Water and Sanitation (DWS); and
- The N2 will be crossed via pipe jacking.

Details of the properties directly affected by the Project's physical footprint:

- Portion 1 of the Farm The Sides No. 6082
- Remainder of the Farm The Sides No. 6082
- Remainder of the Farm The Bushes No. 5470
- Remainder of the Farm The Band No. 6694
- Remainder of Alfred Location No. 5 No. 15845
- Portion 69 of Alfred Location No. 5 No. 15845
- Portion 9 of Alfred Native Location No. 5 No. 15845
- Portion 72 of Alfred Location No. 5 No. 15845

Design Considerations

In terms of the hydraulic design of the Umzimkhulu Water System pre-1970 it was designed to eventually add a second 600-900 dia. rising main pipeline to augment the existing single functional 600 dia. line and ensure adequate sustainable flow to both the off-channel storage dam and the Bhoobhoi WTW.

The design process for the proposed second pipeline considered the following:

- Field investigations;
- Surge analysis;
- Existing infrastructure alignment (pump station tie-in, off-channel storage dam and WTW tie-in); and
- Crossings (including N2, D201, homesteads and watercourses).

Pipeline Specifications:

The pipeline specifications are provided in Table below.

Table 1: Pipeline Technical Specifications

Pipe diameter	700 mm
Peak Throughput Capacity	625 l/s
Pipe material	Steel pipes with welded joints.
Installation	<ul style="list-style-type: none"> Underground, with a minimum cover above the pipe of 1,0 m. Access/valve chambers will be located at approximately 500 m intervals along the route. It will be concrete structures protruding slightly above natural ground level.
Servitude Width	Typically, 40 m during construction (temporary) and 25 m permanent.
Servitude Conditions	<ul style="list-style-type: none"> Permanent access to the pipeline servitude will be required after construction. Pipeline markers (concrete posts) will be installed at changes in direction and at regular intervals along the route.

Servitude Registration

The proposed new pipeline route of approximately 3.4 km from St. Helen’s Rock abstraction works to the Bhobhoyi WTW is shown Figure 3 below. In sections 1 and 2 of the route the proposed pipeline attempts to follow existing roads as much as possible. In section 3 access is more complicated due to existing homesteads.

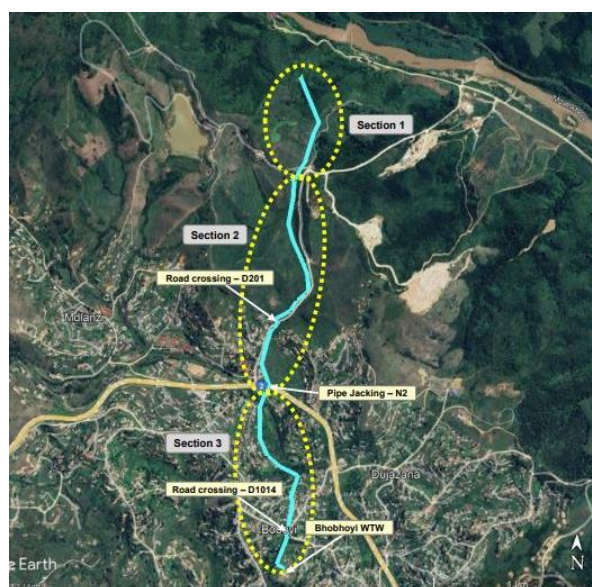


Figure 3: Details of proposed new pipeline route (Nemai, Draft Scoping Report, 2022)

5 STATUS QUO ANALYSIS

5.1 General Existing Condition of Receiving Environment

The properties affected by the proposed weir structure are zoned Agriculture 1 in terms of the Ray Nkonyeni Municipal Planning Scheme. The first section (approximately 300 m) of the proposed pipeline traverses a natural area. Thereafter, it passes through cultivated land before traversing semi-rural residential areas that fall under the KwaNdwalane Traditional Authority. To minimise impacts to the receiving environment and current land uses, the proposed pipeline attempts to follow existing roads as much as possible.

The area to the immediate south of the Umzimkhulu River comprises the very steep to steep undeveloped and densely vegetated sideslope of the Umzimkhulu River Valley. To the south of the river valley the topography comprises narrow valley lines separating rounded moderate to steep hillsides cultivated with sugar cane crops. In the immediate vicinity and south of the N2 national freeway the cultivated land gives way to informal/rural developments spanning the undulating topography. From the existing abstraction works the proposed new pipeline rises up the very steep valley side slopes to a very well elevated undeveloped hilltop at a distance of +/- 750 m along the pipeline length, thereafter, traversing the steep upper slopes along existing cane tracks for a distance of +/- 250 m. At a distance of +/- 1000 m, the pipeline alignment intersects with a district gravel road, along which the pipeline continues in a southerly direction along to lower slopes and narrow valley bottom. At a chainage of approximately 2000 m the gravel district road is traversed. The N2 road servitude is located at a distance of +/- 2550 m below which the pipeline will be pipe-jacked. To the south of the N2 road, the pipeline route traverses the Boboyi River located at a distance of +/- 2700 m, thereafter, spanning the lower slopes along the southern bank of the river. The pipeline route rises up relatively steeply to an elevated plateau at a distance of 3200 m, before continuing southwards along / between existing roads and rural dwellings to the relatively elevated Bboboyi WTW. At a chainage of +/- 3560 m the rising main traverses the D1410 district road below which pipe-jacking may be required.

The proposed pipeline route may affect the following physical features located in the Project Area (amongst others):

- Power lines;
- Telephone lines;
- Public and private roads;
- Infrastructure associated with agricultural practices (e.g., irrigation pipelines);
- Fencing erected on the boundaries of properties; and
- Dwellings in close proximity to the route in the Dujazana and Boboyi areas.



Figure 4: View of the central route corridor area, north of the N2 highway, showing the sugar cane fields and dense vegetation along the existing gravel road



Figure 5: General View of the semi-residential areas immediately north of the N2 highway, along the existing gravel road of the central section



Figure 6: View of the sugar cane fields along the northern section of the pipeline route corridor



Figure 7: Further View of the extensive sugar cane fields along the northern section of the route corridor



Figure 8: View of the semi-rural residential settlement of Bbobhoyi, along the southern section of the pipeline corridor, showing dense vegetation along the existing gravel road



Figure 9: View showing some of the existing houses along the southern section of the pipeline corridor

5.2 Cultural-Heritage Receiving Environment

5.2.1 DFFE Screening Tool

The DFFE Screening Tool was accessed for information on the cultural-heritage sensitivity of the general region. The following is noted in terms of the relative archaeological, cultural and palaeontology theme in the Pipeline Project Area, according to the National Web Based Environmental Screening Tool:

- No features of high archaeological and cultural sensitivity occur within the pipeline route (**Figure 10**); and
- Features with a high and medium palaeontological sensitivity occur along two sections of the pipeline (**Figure 11**).

It is noted that the first section of the pipeline is located in a sugarcane field and the second section falls within areas affected by subsistence agriculture and dwellings in the Boboyi area.

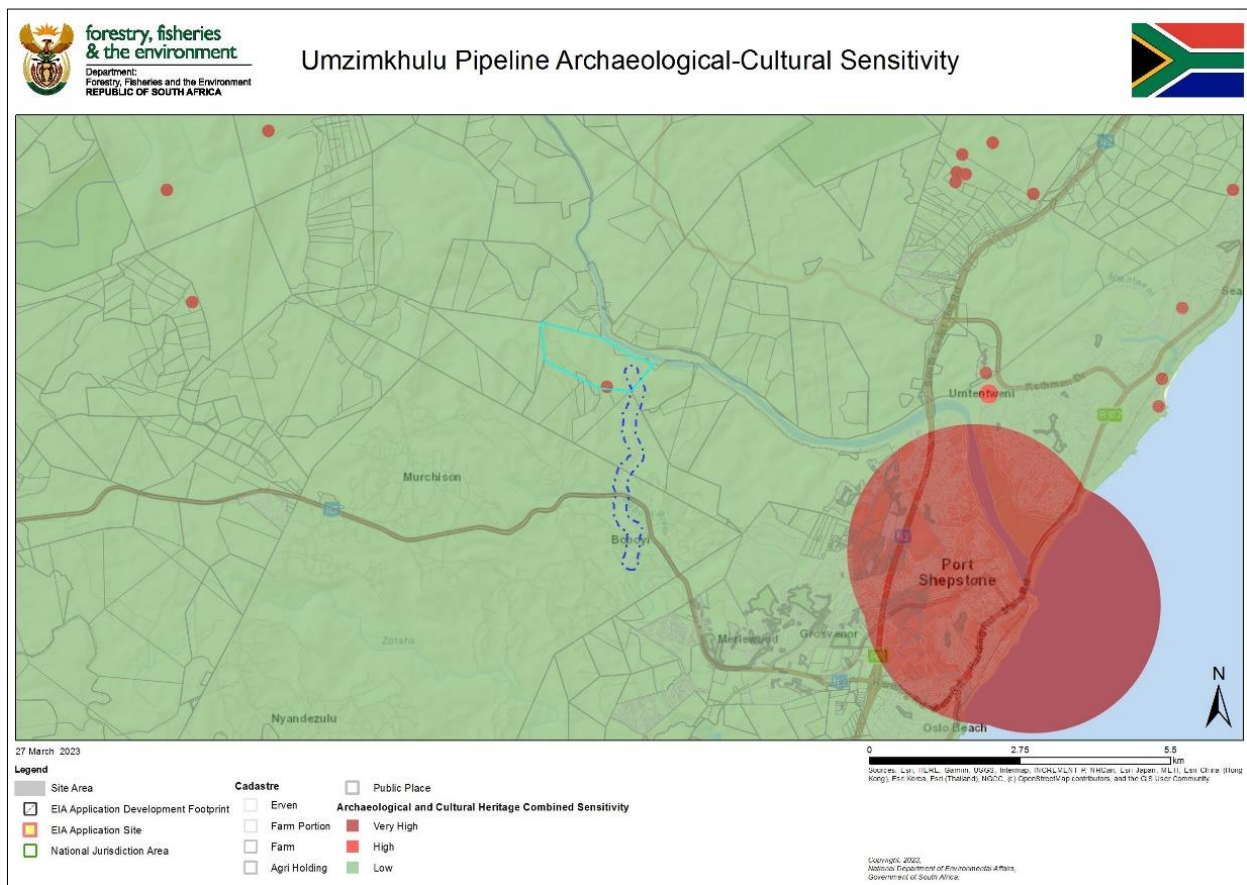


Figure 10: Archaeological Cultural Sensitivity map indicating that the project footprint is located within a region of low archaeological and cultural heritage sensitivity (DFFE Screening Tool).

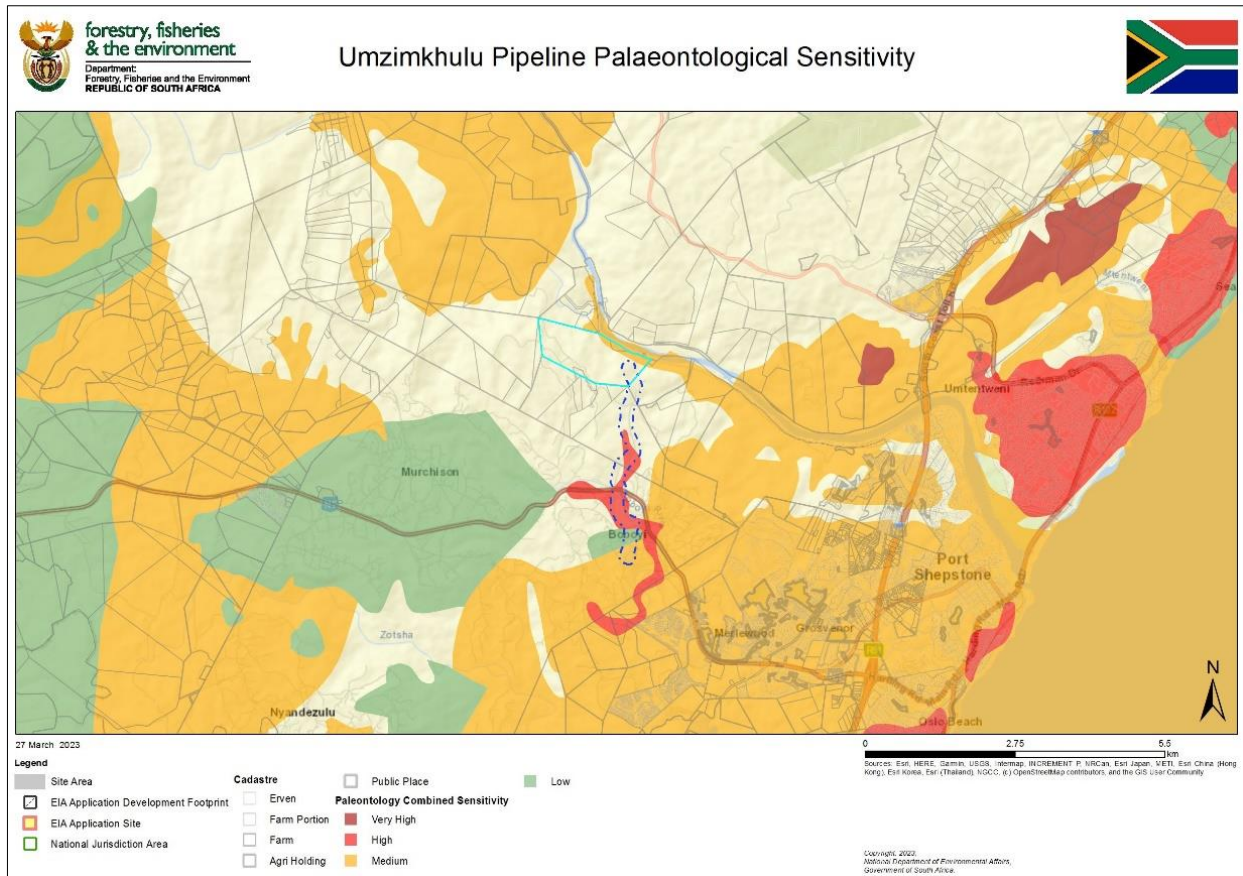


Figure 11: Palaeontological Sensitivity map indicating that the project footprint is located within a region of High and Medium palaeontological sensitivity (DFFE Screening Tool).

Based on the screening results, potential Impacts / implications include:

- Possible alteration or disturbance of structures older than 60 years.
- Possible direct impacts on heritage resources or graves as a result of ground disturbance during construction
- Possible impacts on palaeontological resources

5.2.2 Historical Background of Surrounding Region (archaeological and historical literature survey)

The archaeological history of the area can broadly be divided into a Stone Age, Iron Age and Historic or Colonial Period. An archaeological and historical overview of the general region is presented below.

Stone Age

The Stone Age can be divided into three periods:

- Earlier Stone Age (400 000 – 2 million Before Present/BP)
- Middle Stone Age (30 000 – 300 000 BP)
- Later Stone Age (30 000 BP – recent times)

Prins (2019) has noted that Stone Age sites of all the main periods and cultural traditions occur along the coastal belt in the immediate vicinity of Hibberdene and Port Shepstone. Most of these occur in open air contexts as exposed by donga and sheet erosion.

The Earlier Stone Age (ESA) is the first and oldest phase identified in South Africa's archaeological history and comprises two technological phases. The earliest of these is known as Oldowan and is associated with more basic flaked tools. It dates to approximately 250 000 to 40 000 years ago.

The Middle Stone Age (MSA) is associated with flakes, points and blades manufactured by means of the prepared core technique. This phase is furthermore associated with modern humans and complex cognition (Wadley 2013). Several well-known MSA sites are located in the general region of the study area. Another MSA site from the surrounding landscape is the Umhlatuzana Rock Shelter which is located 35 km west of Durban (Kaplan, 1989).

The Later Stone Age (LSA) is the third archaeological phase identified (c.40 000 years ago to the historic past) and is associated with an abundance of very small stone tools known as microliths. One example of a Late Stone Age (LSA) site in the general vicinity of the present study area is the Umhlatuzana Rock Shelter, located roughly 35km west of Durban. Rescue excavations during 1985 exposed an unexpectedly rich archaeological deposit which reached a depth of 2.5 m. Cultural assemblages from the MSA and LSA were recovered (Kaplan, 1989). Other LSA sites in the surrounding area are the nearby sites of Shongweni South and Shongweni North, and Borchers Shelter and Umbeli Belli in the Paddock and Scottburgh areas respectively (Mitchell, 1998).

Prins (2019) notes that archaeological sites in the greater region surrounding the project area include two Middle Stone Age sites and eleven Later Stone Age rock art sites situated within the greater Oribi Gorge and adjacent areas.

Iron Age

The Iron Age represents the spread of Bantu speaking people and includes both the Pre-Historic and Historic periods. As the name indicates, this period is noted for evidence of the ability of these early people to manipulate and work Iron ore into implements. The Iron Age in South Africa can be divided into three distinct periods:

The Early Iron Age: Most of the first millennium AD.

The Middle Iron Age: 10th to 13th centuries AD

The Late Iron Age: 14th century to colonial period.

Early Iron Age

Archaeologically, the Natal area of current day KwaZulu-Natal was occupied by the Zulu people by AD 1050 (Huffman, 2007). These Early Iron Age people practiced a mixed farming economy and had the technology to work metals like iron and copper. However, not much research has been undertaken on the Early Iron Age, this can be partly attributed to the poor preservation of these early sites. The archaeological evidence of the Iron Age people in the region is represented through distinct ceramic traditions (which Huffman has subdivided into groups called facies), stone walls in a distinctive pattern known as the central cattle pattern

and other structural features such as grain bins and hut floor remains, kraal remains, and iron implements, slags, bellows and furnaces.

The Early Iron Age period is characterised by three distinct ceramic pottery styles known as “Msuluzi” (AD 650-750), Ndongondwane (AD 750-950) and Ntshekane (AD 900-AD 1050). Most of the Early Iron Age sites in the greater Ugu District Municipality belong to these traditions (Maggs 1989; Huffman 2007).

AD 1350 – AD 1750 Ongoing research in KwaZulu-Natal has focused on the second phase of the Blackburn sequence, known as Moor Park. During the fourteenth century, the Moor Park farmers were the first to colonize the higher altitude grasslands of South Africa's interior (Huffman, 2007).

c. 1500 During this period, documents dating to as early as 1550 indicate that the black African population of present day Kwazulu Natal had generally uniform customs and language (Van Jaarsveld, 1998). While they were not known as specifically Zulu yet, these residents were certainly Nguni.

No Iron Age sites have been identified in the region of the project area but this may be due to a lack of research in the area.

Colonial History

After the territory between the uMthavuna and uMzimkhulu Rivers in the south of the present KwaZulu Natal was annexed to Natal in the 1860s, it came to be called Alfred County, and later Port Shepstone and Harding districts. Port Shepstone was a name given to the mouth of the uMzimkhulu River.

Cele (2009) notes that various written sources recognise Mpondoland as an established African political institution beyond the uMzimkhulu River before the rise of the Zulu kingdom. One source has argued that AmaMpondo lived to the east of the AmaXhosa, and that Mpondoland country began at the uMzimkhulu River and ended at the uThukela River. Cele quotes another source as stating that “..., the Mpondo kingdom extended to the uMzimkhulu River to the northeast and the uMthatha River to the southwest”. In addition, Cele notes that for hundreds of years the Xhosa groups from the Cape Colony had been moving eastwards, occupying the areas up to the uMzimkhulu River (Cele 2009). Cele notes that the existence of both Zulu and Mpondo names in the areas between the uMzimkhulu and uMthavuna Rivers suggests that there were mixed settlements in this area. Cele refers to one specific example of a village situated next to Port Shepstone which is called Nobamba. Nobamba was the name given to the kraal of a brother of King Cetshwayo Zulu which is the place known today as Weenen in Zululand. In the nineteenth century Chief Duka Fynn (of what was then the Nkumbini chiefdom) adopted the name for his kraal on the Bhooboyi area, near Port Shepstone. Apparently, oral history says this name was used because the Fynns’ chiefdoms comprised people who were defined as “stragglers” from the Zulu kingdom. There are also other villages in Port Shepstone named after either Zulu leaders (Ganyaza) or Mpondo leaders (Mntengwane, who was the grandson of Faku, king of Mpondoland) (Cele 2009).

Before 1866, Natal’s southern border with Mpondoland was the uMzimkhulu River. In earlier studies of Natal “No Man’s Land” surfaced as a Treaty State by agreement between the Cape colonial authorities and Faku, the king of Mpondoland, in the 1840s. The perceived Boer presence in the interior, following the Great Trek of the 1830s, posed a threat and facilitated a political relationship between Faku and the British Cape

government known as the Maitland Treaty of 1844. Faku's control of hinterland areas between the uMzimkhulu and uMthatha Rivers was reasserted, with a bonus piece of land added further north at the base of the Drakensberg Mountains. The uMzimkhulu River was reinforced as a boundary of the Mpondo state on the east. It remained a Mpondoland/Natal border until the 1860s when Natal expanded southwards, imposing the uMthavuna River as a new boundary (Cele 2009).

An area 1 550 square miles in extent, named Alfred County, was annexed to the Colony of Natal on 1 January 1866. Previously known as "Nomansland", the new territory was named after the second son of Queen Victoria, who had visited Natal in 1860. The name, Port Shepstone, was derived from a Proclamation issued by Col. Bisset on 15 January 1866 from the banks of the uMzimkhulu River (du Bois 2016)

The town of Murchison was initially the seat of governance in the area until 1871 when the magistracy was relocated to the hamlet of Harding. In 1874 Archibald Sinclair, who settled in the Lower Umzimkulu area in 1868, produced the first sugar in Alfred County on his farm Ambleside. By October 1882 the Lower Umzimkulu District Association had been formed. Subsequently, a township feasibility study was tabled in the legislature in November 1881. However, it was not until December 1913, that Port Shepstone was proclaimed as a township. The magistracy of Lower Umzimkulu came into being in April 1889. In 1893 full fiscal status was finally granted, but only after several petitions had been submitted over a ten-year period (du Bois 2016).

August 1882 saw the arrival of 229 Norwegian settlers. Captain Landmark, Master of the Mission ship, "Elieser", went on an exploring trip through Natal and Zululand. He was so impressed with the conditions he found that on arrival back in Norway, he began publicising Natal as a place for settlement to prospective farmers. Interest was aroused especially among farmers round Aalesund. The Seamen's Mission in London contacted the agent for the Government of Natal to negotiate conditions for emigration to Natal. Fifty families were initially given permission to land at the mouth of the Umzimkulu River. They would be given a lot of 100 acres for each family with 2,000 acres of common grazing of cattle ([The Norwegian Settlers Association of Marburg, South Africa \(norsettler.co.za\)](http://TheNorwegianSettlersAssociationofMarburgSouthAfrica.norsettler.co.za)).

The Aikens built the first central sugar mill in the county by 1885. In February 1897, the line reached the north bank of the uMkhomanzi. and on 26 July 1901 the first train from Durban arrived at the station on the north bank of the uMzimkhulu (du Bois 2016).

5.2.3 Cartographic findings

An assessment of available historical topographical maps was undertaken to establish a historic layering for the study area. Overlays of the maps were made on Google Earth. These historic maps are valuable resources in identifying possible heritage sites and features located within the study area. It should be noted that the earliest edition of the map sheets for this area dates to 1972 (see **Figure 12** below).

The topographical maps were obtained from the Dept. Agriculture Land Reform and Rural Development (DALRRD) in Cape Town . The following 1:50 000 map sheet was assessed for the Bhobhoji Pipeline Route: 3030CB Port Shepstone Edition 1 1972, . Edition 2 1996, Edition 3 2004 and Edition 4 2013.

As can be seen in the following figures (**Figure 12** to **Figure 15**), the map sheets depict various heritage features within or close to the pipeline route corridor. These are all structures or groups of structures (green polygons).

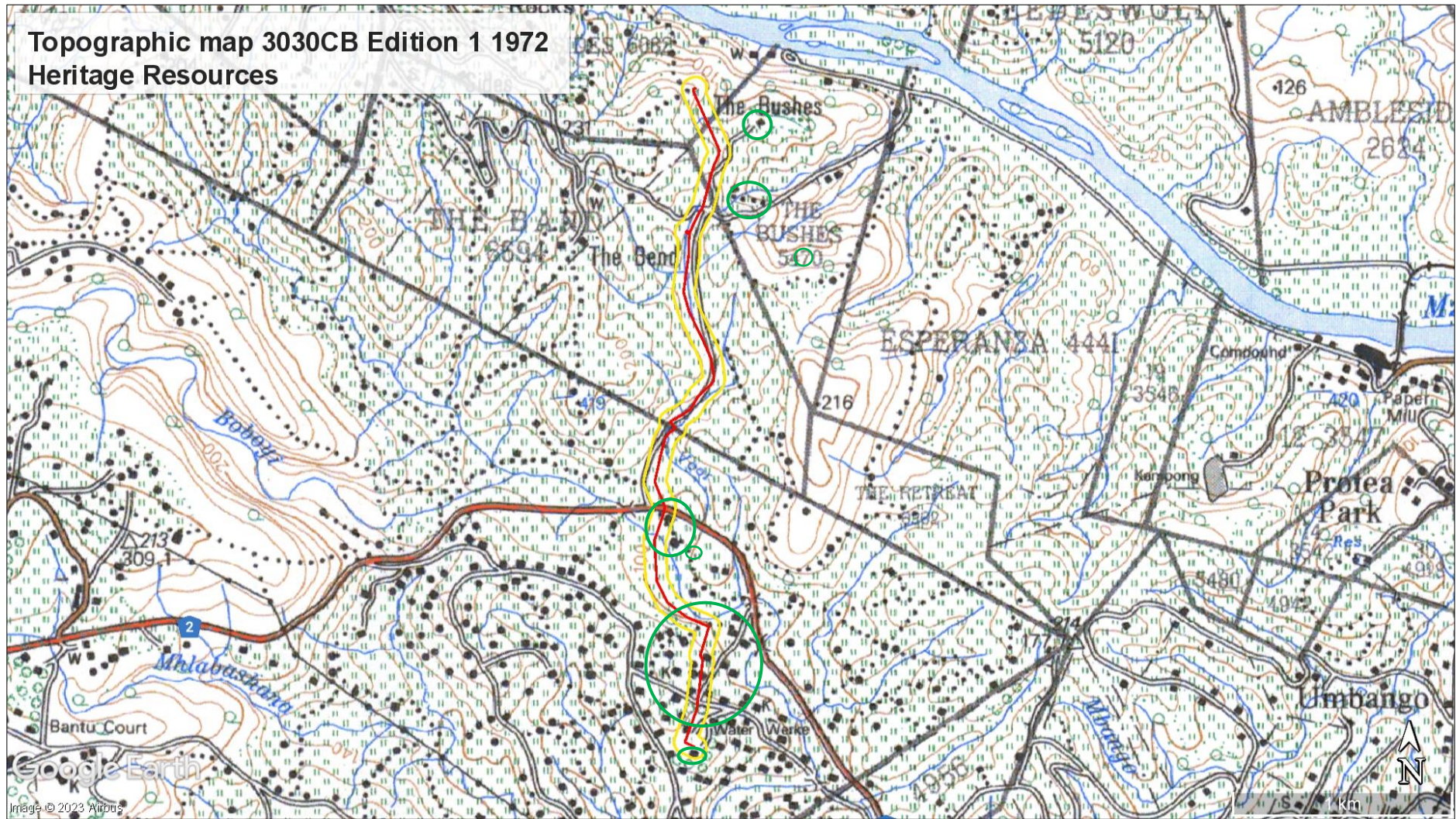


Figure 12: Enlarged view of topographic map 3030CB Ed 1 1972, depicting a large number of heritage structures within or close to the Umzimkhulu Pipeline corridor (green polygons)

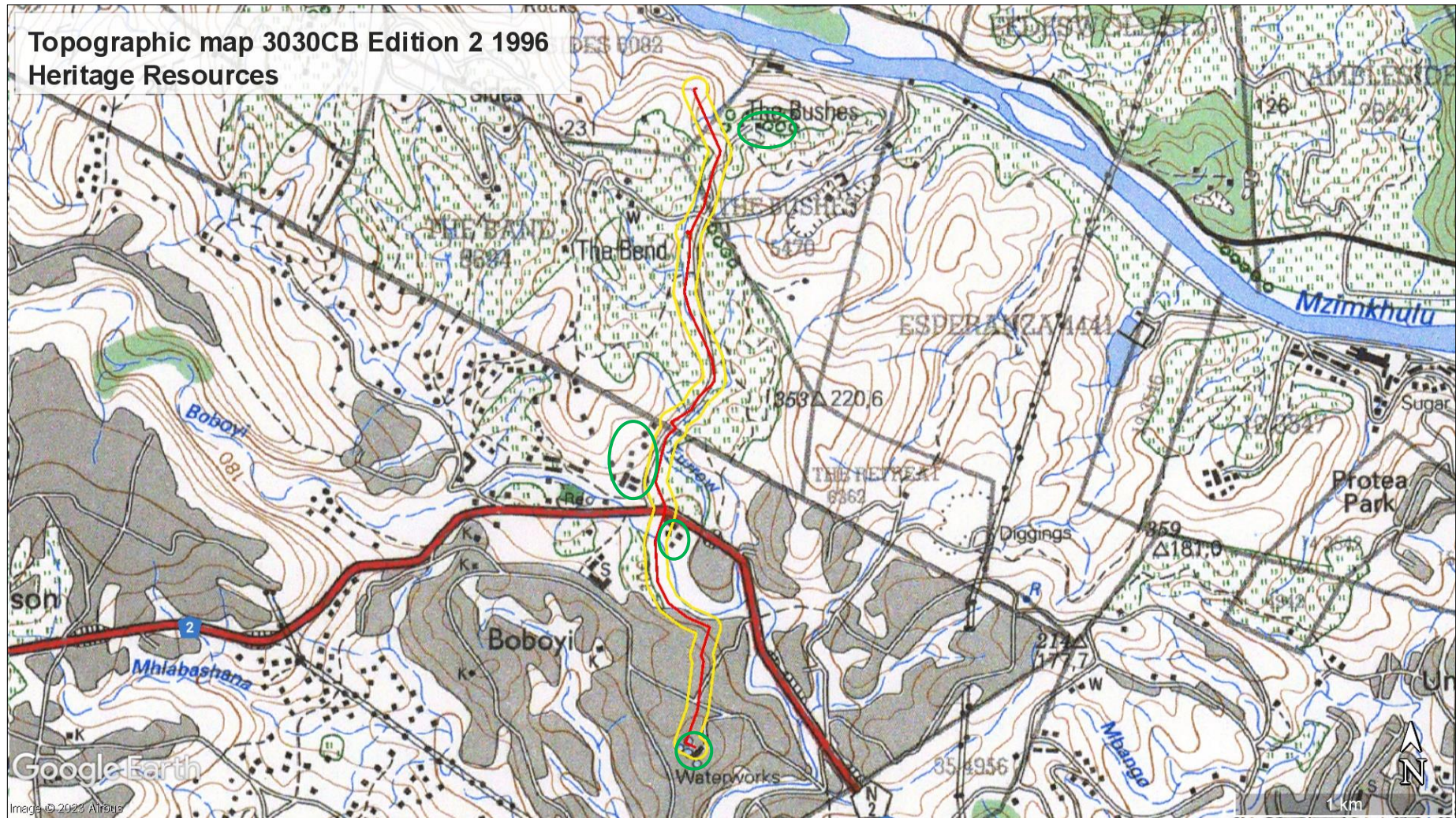


Figure 13: Enlarged view of topographic map 3030CB Ed 1 1996, showing the southern section of the Umzimkhulu Pipeline corridor as a built-up area with a few clusters of individual structures situated around the central and northern sections (green polygons)

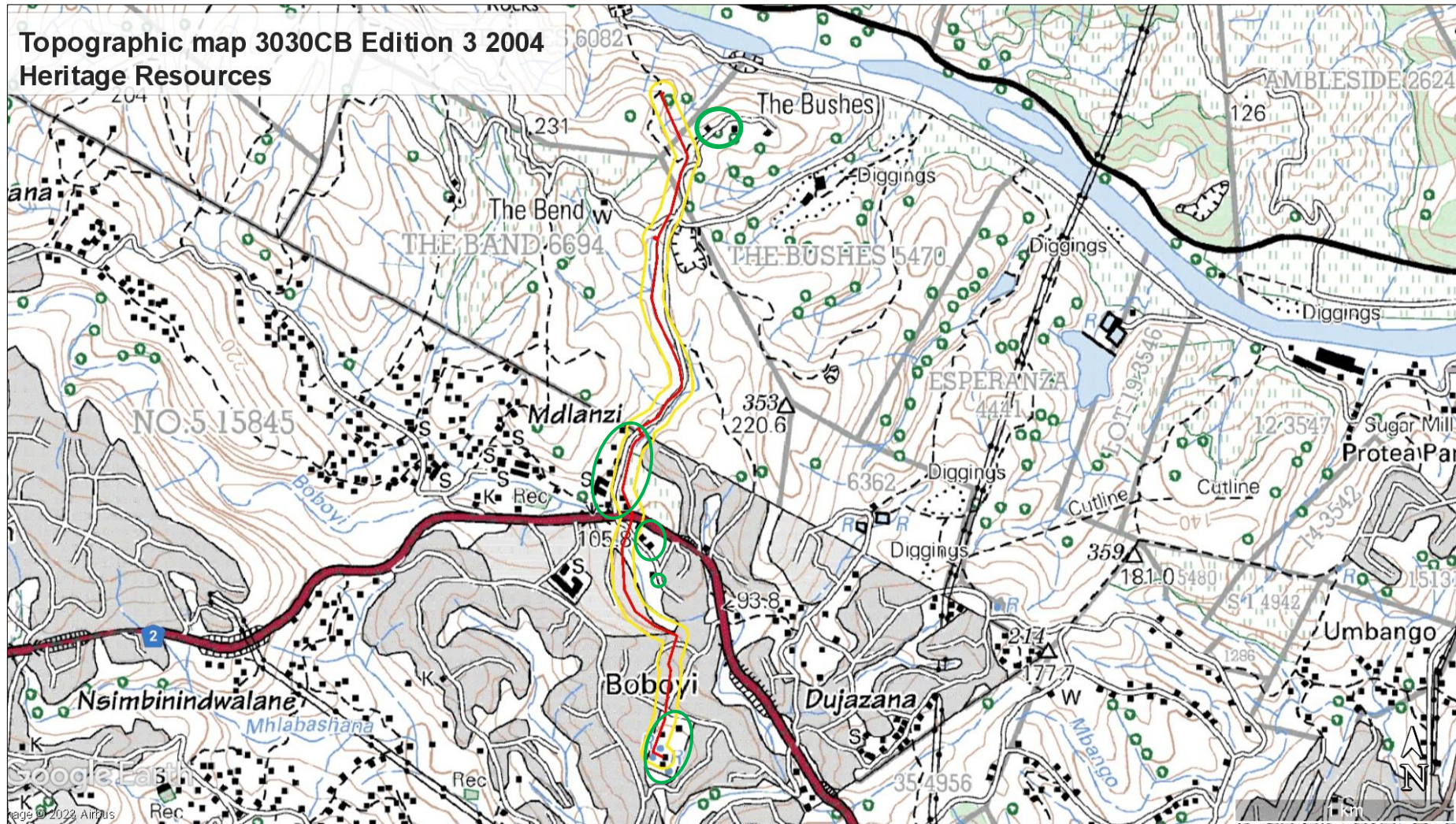


Figure 14: Enlarged view of topographic map 3030CB Ed 1 2004, showing the southern section of the Umzimkhulu Pipeline corridor as a built-up area with a few clusters of individual structures situated around the central and northern sections (green polygons)

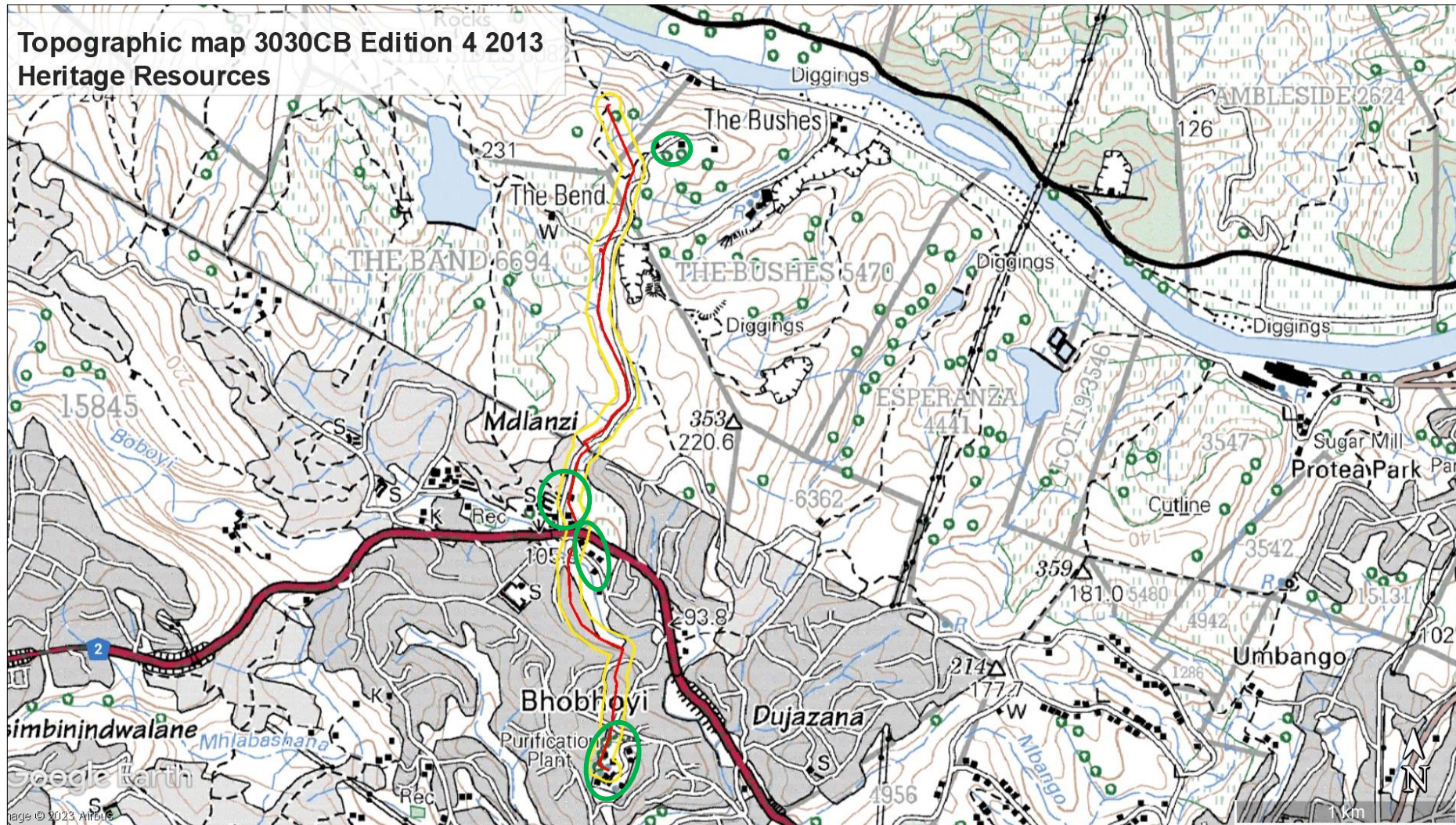


Figure 15: Enlarged view of topographic map 3030CB Ed 1 2013, showing the southern section of the Umzimkhulu Pipeline corridor as a built-up area with a few clusters of individual structures situated around the central and northern sections (green polygons)

5.3 Previous HIA reports in the area

A search on the South African Heritage Resources Information System (SAHRIS) has identified several Heritage Impact Assessments conducted in and around the study area. One of these reports concerned a study area which was located in the same area as the current proposed pipeline route (Beater 2021).

Beater, JL. 2022. *Marburg Bulk Water Pipeline Replacement Project, Ugu District Municipality Kwazulu-Natal Phase 1 Heritage Impact Assessment*. This report assessed a proposed pipeline route between the Bhoohoyi Water Treatment Works (WTW) and the Marburg reservoir. The study identified a number of grave sites (9) as well as two structures that could be 60 years or older. One of the identified grave sites was indicated by local community members as being located 6m outside the east side of the Bhoohoyi WTW but could not be verified at the time as the site was completely overgrown with vegetation.

Anderson, G. 2022. *HIA for the Kwanyuswa Pipeline Replacement Project, Ugu District Municipality*. The project area for this report was located 25km Northwest of the town of Port Shepstone. The study noted several historical buildings within 100m of the pipeline.

Prins, F. 2019. *Phase One Heritage Impact Assessment of the Proposed Africa Lime Quarry near Port Shepstone, Hibiscus Coast Local Municipality, KZN*. The study area for this report was located 2km to the east of Port Shepstone. No disturbance of any potential heritage features was noted.

Booth, C. 2015. *Addendum: Archaeological And Heritage Investigation of Proposed Deviations and Repeater Sites for an Environmental Authorisation Amendment for Fibreco Route 4 (George To Port Elizabeth) and 5 (Port Elizabeth To Durban)*. No archaeological heritage remains were documented during the investigation of repeater sites / deviations along Route 4 and Route 5. However, significant heritage buildings, features and structures occur in several of towns through which the repeater site route deviates. Specifically, with regard to the Port Shepstone area, the two study area were noted as being previously disturbed by residential development and open but transformed spaces.

5.4 Palaeontological sensitivity

Note that this section was compiled by the author and not by a palaeontological specialist. A basic palaeontological sensitivity was determined using the SAHRIS database South African Fossil Sensitivity Map (<http://www.sahra.org.za/sahris/map/palaeo>). This map indicates that the project footprint falls within an area where the underlying geology is of mostly of Moderate (green) to Low /Insignificant (grey) fossil sensitivity (see **Figure 16** below). A separate desktop study has been undertaken. The recommendations and mitigation measures provided by the desktop assessment must be implemented and adhered to where necessary.

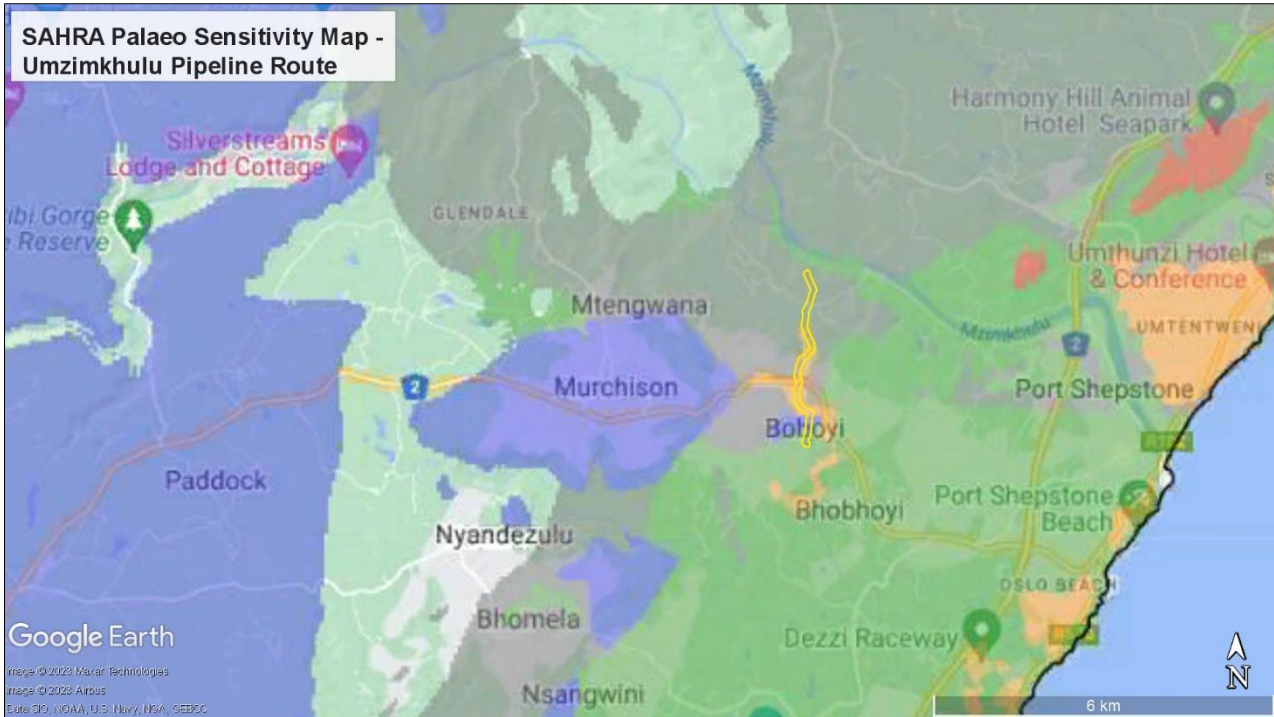


Figure 16: SAHRIS Palaeo sensitivity map overlain on the uMzimkhulu Pipeline corridor (Yellow polygon). The underlying geology is shown as of mostly of Moderate (green) to Low /Insignificant (grey) fossil sensitivity.

Table 2: SAHRIS Fossil Map Palaeontological Sensitivity Ratings and Required Actions

Colour	Sensitivity	Required Action
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 to be requested.
GREEN	MODERATE	Desktop study is required.
BLUE	LOW	No palaeontological studies are required however a protocol for finds is required.
GREY	INSIGNIFICANT /ZERO	No palaeontological studies are required.
WHITE/CLEAR	UNKNOWN	These areas will require a minimum of a desktop study. As more information becomes known, SAHRA will continue to populate the map.

5.5 Findings of the Historical Desktop Study

The general overview from the historical desktop study has shown that various archaeological and historical resources can be expected to occur in the project area. Furthermore, the examination of the earliest edition

(1972) of the 1:50 000 topographical maps produced by overlying the maps with satellite Imagery (Google Earth) has shown that some heritage features could be expected within the project footprint.

The Site Survey fieldwork provided confirmation that several historical structures resources occur within and close to the project area footprint, specifically the historical buildings and structures of the Bhoohoyi Water Treatment Plant.

6 SITE SURVEY/FIELDWORK RESULTS

The survey of the proposed Bhoohoyi Pipeline project route corridor took place over two days (1 -2 March 2023) by the author (heritage specialist) with the social specialist and Community Officer. A vehicle was used to access the route corridor area and the survey was conducted by both vehicle and on foot (at selected areas). The survey covered as much of the route corridor area as was feasibly accessible, given that the route runs across semi- rural-residential areas, agricultural fields (sugar cane) and uncultivated partially natural areas.

The author used a Global Positioning System (GPS) application to navigate access roads in the study area and for recording the tracklog of the survey and waypoints of the identified heritage resources. A combination of a Sony digital camera and a Samsung mobile phone was used for photographic recording of identified heritage resources and general images of the project study area.

The survey aimed to find and identify archaeological and other heritage resources such as burial grounds and graves (BGG), archaeological material or sites, historic built environment and landscape features of cultural heritage significance. Much of the proposed pipeline route runs along the main gravel road which is highly disturbed. During the inspection several structures were identified that could be older than 60 years and therefore protected by heritage legislation. The inspection of the area that was surveyed identified a total of six heritage resources within or close to the project footprint. These resources include: four historical houses (UMZ-P01, UMZ-P02, UMZ-P03, UMZ-P06) and the historical buildings of the Bhoohoyi Water Treatment Plant (UMZ-P04) as well as one informal church site (UMZ-P05).

Identified Heritage Sites

Site Name	UMZ-P01
GPS Coordinates	-30°43'22.14", 30°23'29.79"
Site Description	Historical house
Approximate Age	60 years or older
NHRA, No. 25	Section 34
Field Grading and Ratings	
Site context and description	The house is situated within the powerline route corridor at the edge of the residential area located North of the N2 highway. The house is located within 20m of the centre line of the pipeline route and within 12m of the existing gravel road. It is currently occupied.
Site Density	N/A
Uniqueness	Low
Heritage Significance	Low- GP.C/ IIIC
Mitigation	To be avoided with a buffer of 10-30m to prevent indirect impact during construction.



Figure 17:View of UMZ-P01 from the gravel road

Site Name	UMZ-P02
GPS Coordinates	30°43'37.93"S ; 30°23'30.44"
Site Description	Three old buildings
Approximate Age	Likely to be 60 years or older. Marked on the 1972 topographic map.
NHRA, No. 25	Section 34
Field Grading and Ratings	
Site context and description	The site consists of three abandoned buildings. Two are constructed of moulded concrete bricks: one is a house and the other is a shop with a painted sign identifying it as a panelbeaters. The third building seems to be a partially constructed recent house. The buildings are situated right along the existing gravel road which runs east of the proposed pipeline route and is located approx. 66m from the centre line of the pipeline route.
Site Density	.3 buildings
Uniqueness	Low
Heritage Significance	Low- GP.C/ IIIC
Mitigation	The buildings are protected and any proposed destruction will require a permit from Amafa KZN. There could be indirect impact during construction.



Figure 18: View of the old house at UMZ-P02



Figure 19: View of the panelbeaters shop, showing that the entrance has been blocked with concrete bricks



Figure 20: View of the abandoned, partially constructed recent house

Site Name	UMZ-P03
GPS Coordinates	-30°43'44.69"; 30°23'34.76"E
Site Description	Historical house, c 1950s
Approximate Age	60 years or older
NHRA, No. 25	Section 34
Field Grading and Ratings	
Site context and description	This is an historical house constructed with materials and details that could date it to the 1950s: purple brick and partially plastered walls and older ventilation details. The house is situated east of the existing gravel road. It is located quite a distance outside the route corridor (\pm 135m east) and approx. 184m east of the pipeline centre line. The house is currently occupied.
Site Density	N/A
Uniqueness	Low
Heritage Significance	Low- GP.BC/ IIIC
Mitigation	No mitigation required as the building is situated quite a distance from the route corridor.



Figure 21: View of UKM-P03

Site Name	UMZ-P04
GPS Coordinates	- 30°44'11.18"; 30°23'33.87"
Site Description	Historical buildings at Water Treatment Works
Approximate Age	60 years or older
NHRA, No. 25	Section 34
Field Grading and Ratings	
Site context and description	<p>This site was confirmed as containing several historical building dating to c1940s/50s. The main building is constructed of yellow & blue/purple bricks, with strong vertical elements on the front elevation and intricate detailed plaster decoration at the top. The Water Treatment Plant consists of 4-5 buildings, as well as the treatment tanks.</p> <p>There are also several other buildings located on the property: two-three outbuildings and one-two houses. The property has been landscaped extensively in the past to accommodate the water treatment tanks and other buildings.</p>
Site Density	.Approx 10 buildings as well as the water treatment tanks
Uniqueness	Medium -high
Heritage Significance	High- GP.A/ IIIA
Mitigation	The original historical buildings should be avoided and barricaded to prevent any damage. It is recommended that a Phase II mitigation study should be undertaken to record the buildings and research the history of the site. It is possible that the treatment plant buildings could be of Grade III (local) or Grade II (Provincial) significance and should be formally protected. The final alignment of the pipeline must be adjusted to avoid any impact.



Figure 22: View of the main building showing the strong vertical elements reminiscent of the Art Deco style, although the yellow and purple brickwork indicates a more likely date of c1940s-1950



Figure 23: View of the west elevation of the Main building



Figure 24: View of East wing of main building



Figure 25: View of building situated to southeast of the main building with similar detailing



Figure 26: View of Building southeast of the Main building, from the Water treatment area



Figure 27: View of two buildings to the north of the Main building at the water treatment area



Figure 28: View of the second building located north of the Main Building



Figure 29: View of separate building situated south of the Main complex



Figure 30: View of outbuildings located to the south of the main complex



Figure 31: View of house situated near to the entrance to the Water Treatment Plant, showing the similar brickwork to the main complex



Figure 32: View of the same house from the entrance gate



Figure 33: View of another building located to the north of the waterworks buildings

Site Name	UMZ-P05
GPS Coordinates	30°44'4.02"S, 30°23'37.76"E
Site Description	Informal church site
Approximate Age	60 years or older
NHRA, No. 25	Section 34
Field Grading and Ratings	
Site context and description	The site is an informal church comprising a tented structure set in an open, cleared area. It is located along the gravel road leading to the Bhobhoyi WTW.
Site Density	.N/A
Uniqueness	Low
Heritage Significance	Low- GP.C/ IIIC
Mitigation	To be avoided with a buffer of 10-20m as well as community consultation regarding the possible impact.



Figure 34: View of possible informal church site, situated on the road leading to the Water Treatment Plan

Site Name	UMZ-P06
GPS Coordinates	30°44'2.43"S, 30°23'35.90"E
Site Description	Possible Historical house
Approximate Age	60 years or older
NHRA, No. 25	Section 34
Field Grading and Ratings	
Site context and description	The existing house is situated in the location marked on the 1972 topographical map, but seems to have been altered.
Site Density	.N/A
Uniqueness	Low
Heritage Significance	Low- GP.C/IIIC
Mitigation	If it is confirmed as 60 years or older a permit would need to be obtained for any destruction or further alteration.



Figure 35: View of house in location where a structure is depicted on the 1972 topographic map

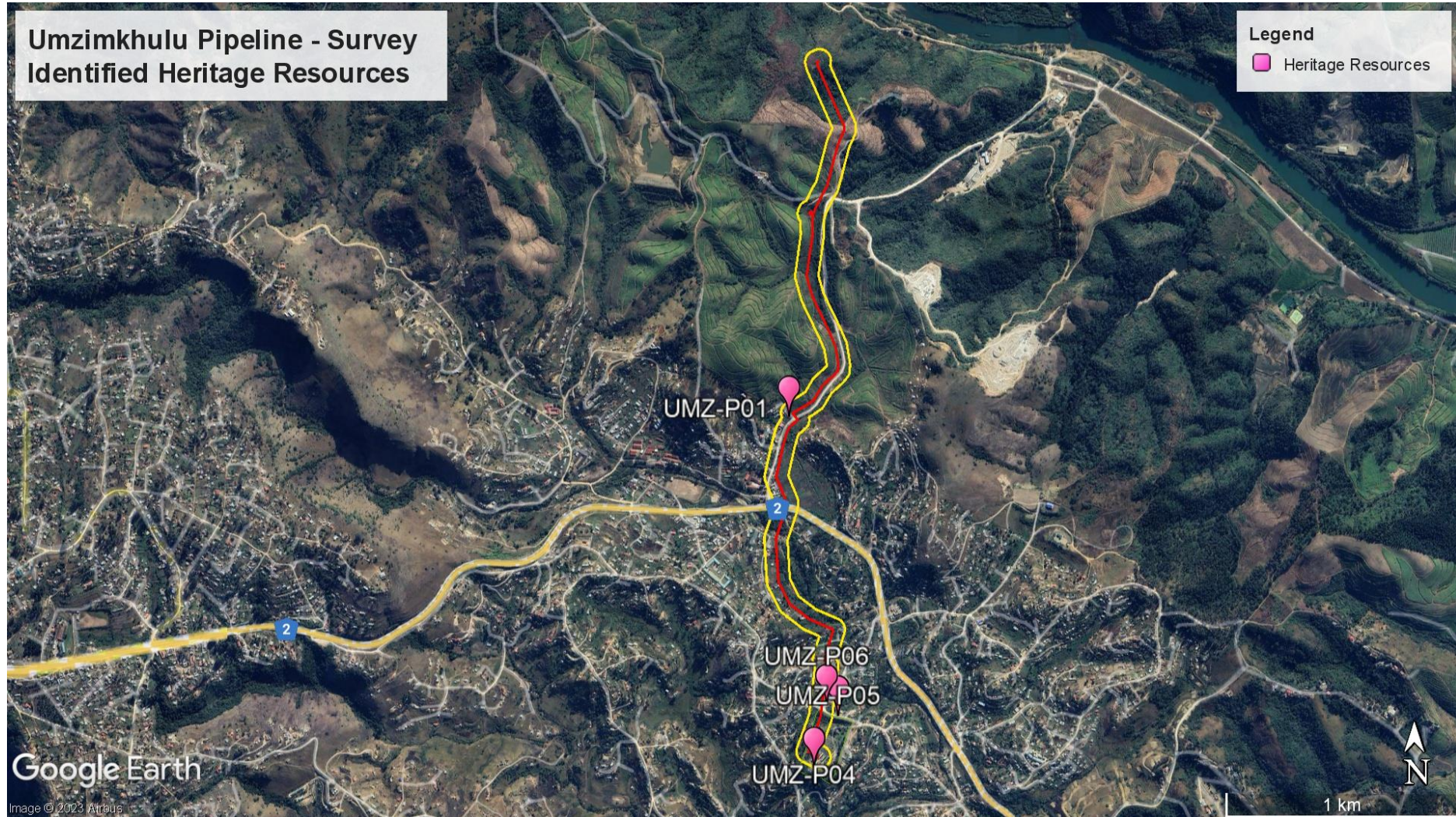


Figure 36: Identified Heritage Sites (pink icons) overlaid on the uMzimkhulu Pipeline Route Corridor (Red and yellow polygon)

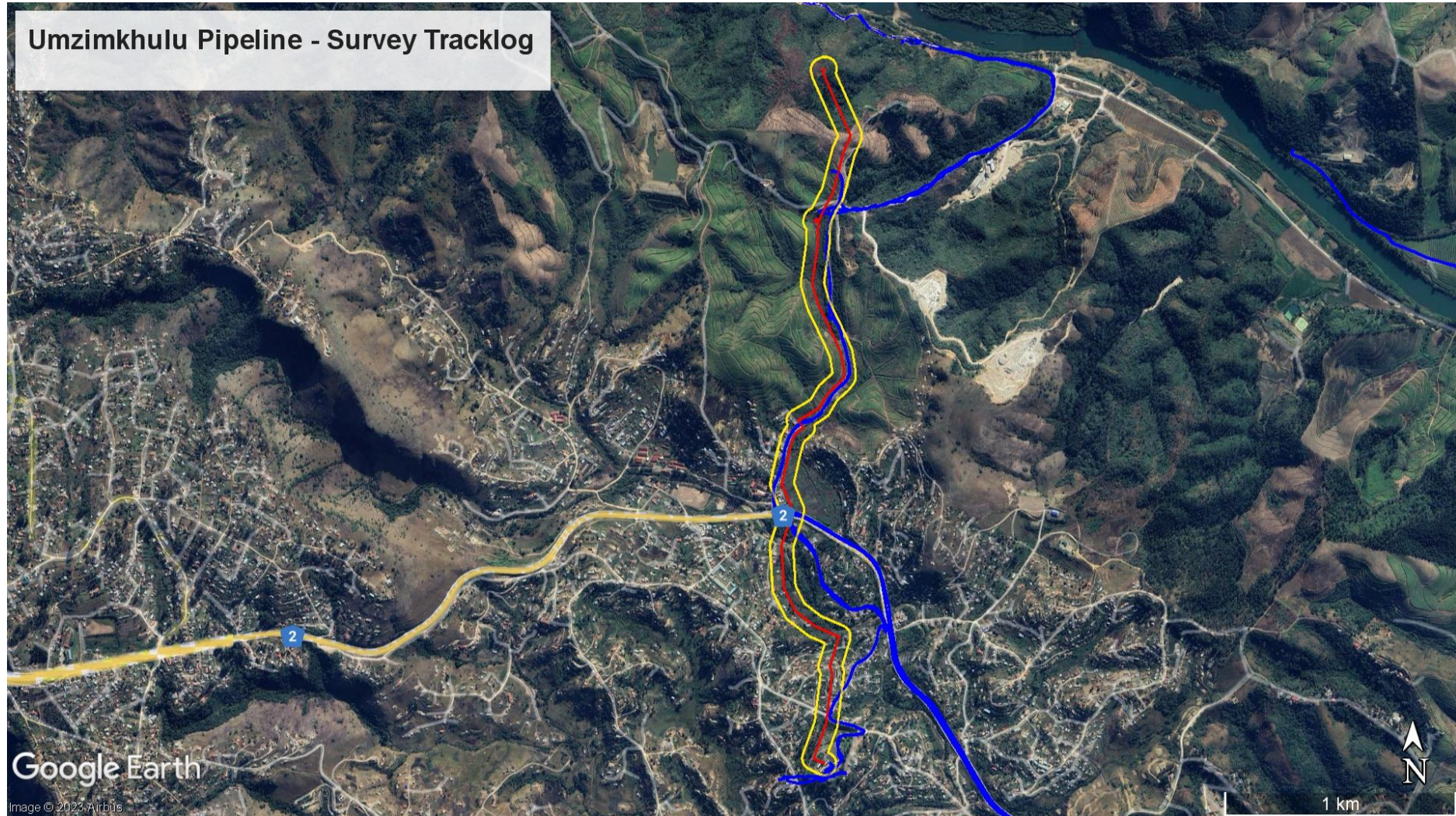


Figure 37: Site Survey Tracklog (blue line) overlaid on the uMzimkhulu Pipeline Route Corridor (Red and yellow polygon) .

7 SIGNIFICANCE ASSESSMENT

Methodology for Assessing Heritage Site Significance

The applicable maps, tables and figures are included, as stipulated in NHRA and NEMA. The HIA process consists of three steps:

Literature Review

The desktop literature review provided information on the Heritage Background of the general region and project area. This included investigating published sources as well as past HIA studies conducted for the project area and surrounding region. An examination of historical 1:50 000 topographical maps and/or archival maps (if available) was also undertaken. The relevant early editions of the 3030CBCD topographical map sheets were obtained from the Department of Rural Development & Land Reform, Cape Town.

Literature resources accessed are listed in Table 3.

Table 3: Literature sources accessed

Source	Information
Background Information Document - Nemaï	Project location and description details
Published sources and Past HIAs	Historical and archaeological background on Port Shepstone and Natal
Directorate: National Geo-spatial Information of the Department of Rural Development & Land Reform, Cape Town	Historical topographic maps, 1:50 000 Port Shepstone 3030CB Edition 1 1972, Edition 2 1996, Edition 3 2004, Edition 4 2013

Field Survey

A physical Site Inspection or Field Survey was conducted, predominantly by vehicle and on foot through the project area by an experienced heritage specialist and a community facilitator. This focussed on identifying and documenting heritage resources situated within and immediately adjacent to the proposed project area footprint, such as graves, historical structures or remains and archaeological sites or material.

HIA Report

The final step involved the recording and documentation of the identified heritage resources, the assessment of such resources in terms of heritage significance and impact assessment criteria, producing a heritage sensitivity map and compiling the heritage impact assessment report with constructive recommendations for mitigation, if required.

Impacts on these sites by the development will be evaluated as follows:

Site Significance

Site significance classification standards use is based on the heritage classification of s3 in the NHRA and developed for implementation keeping in mind the grading system approved by SAHRA for archaeological impact assessments. The update classification and rating system as developed by Heritage Western Cape (2021) is implemented in this report.

Site significance classification standards prescribed by the Heritage Western Cape Guideline (2016), were used for the purpose of this report (**Table 4** and **Table 5**).

Table 4: Rating system for archaeological resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Langebaanweg (West Coast Fossil Park), Cradle of Humankind	May be declared as a National Heritage Site managed by SAHRA. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Highest Significance
II	Heritage resources with special qualities which make them significant, but do not fulfil the criteria for Grade I status. Current examples: Blombos, Paternoster Midden.	May be declared as a Provincial Heritage Site managed by Provincial Heritage Authority. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	Exceptionally High Significance
III	Heritage resources that contribute to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. Current examples: Varschedrift; Peers Cave; Brobartia Road Midden at Bettys Bay	Resource must be retained. Specific mitigation and scientific investigation can be permitted in certain circumstances with sufficient motivation.	High Significance
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree.	Resource must be retained where possible where not possible it must be fully investigated and/or mitigated.	Medium Significance
IIIC	Such a resource is of contributing significance.	Resource must be satisfactorily studied before impact. If the	Low Significance

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
		recording already done (such as in an HIA or permit application) is not sufficient, further recording or even mitigation may be required.	
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant or the consultant and approved by the authority.	No research potential or other cultural significance

Table 5: Rating system for built environment resources

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
I	Heritage resources with qualities so exceptional that they are of special national significance. Current examples: Robben Island	May be declared as a National Heritage Site managed by SAHRA.	Highest Significance
II	Heritage resources with special qualities which make them significant in the context of a province or region, but do not fulfil the criteria for Grade I status. Current examples: St George's Cathedral, Community House	May be declared as a Provincial Heritage Site managed by Provincial Heritage Authority.	Exceptionally High Significance
II	Such a resource contributes to the environmental quality or cultural significance of a larger area and fulfils one of the criteria set out in section 3(3) of the Act but that does not fulfil the criteria for Grade II status. Grade III sites may be formally protected by placement on the Heritage Register.		
IIIA	Such a resource must be an excellent example of its kind or must be sufficiently rare. These are heritage resources which are significant in the context of an area.	This grading is applied to buildings and sites that have sufficient intrinsic significance to be regarded as local heritage resources; and are significant enough to warrant that any alteration, both internal and external, is regulated. Such buildings	High Significance

Grading	Description of Resource	Examples of Possible Management Strategies	Heritage Significance
		and sites may be representative, being excellent examples of their kind, or may be rare. In either case, they should receive maximum protection at local level.	
IIIB	Such a resource might have similar significances to those of a Grade III A resource, but to a lesser degree. These are heritage resources which are significant in the context of a townscape, neighbourhood, settlement or community.	Like Grade IIIA buildings and sites, such buildings and sites may be representative, being excellent examples of their kind, or may be rare, but less so than Grade IIIA examples. They would receive less stringent protection than Grade IIIA buildings and sites at local level.	Medium Significance
IIIC	Such a resource is of contributing significance to the environs These are heritage resources which are significant in the context of a streetscape or direct neighbourhood.	This grading is applied to buildings and/or sites whose significance is contextual, i.e., in large part due to its contribution to the character or significance of the environs. These buildings and sites should, as a consequence, only be regulated if the significance of the environs is sufficient to warrant protective measures, regardless of whether the site falls within a Conservation or Heritage Area. Internal alterations should not necessarily be regulated.	Low Significance
NCW	A resource that, after appropriate investigation, has been determined to not have enough heritage significance to be retained as part of the National Estate.	No further actions under the NHRA are required. This must be motivated by the applicant and approved by the authority. Section 34 can even be lifted by the PHRA for structures in this category if they are older than 60 years.	Not Conservation worthy – no research potential or other cultural significance

Table 6: Site significance classification standards as prescribed by SAHRA.

FIELD RATING	GRADE	SIGNIFICANCE	RECOMMENDED MITIGATION
National Significance (NS)	Grade 1	Very High - of National Significance	Conservation; National Site nomination
Provincial Significance (PS)	Grade 2	Very High – of Provincial Significance	Conservation; Provincial Site nomination
Local Significance (LS)	Grade 3A	High Significance	Conservation; Mitigation not advised
Local Significance (LS)	Grade 3B	High Significance	Mitigation (Part of site should be retained)
Generally Protected A (GP.A)		High / Medium Significance	Mitigation before destruction
Generally Protected B (GP.B)		Medium Significance	Recording before destruction
Generally Protected C (GP.C)		Low Significance	Destruction

8 IDENTIFICATION OF IMPACTS

8.1 Impacts and Mitigation Framework

All impacts are analysed in the section to follow with regard to their nature, extent, magnitude, duration, probability and significance.

ISO 14001-2004 defines impacts as “any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization’s environmental aspects”.

When considering an assessment of the impacts and their mitigation, the following definitions as per Table 7 apply.

Table 7: Impact and Mitigation Quantification Framework

Nature	The project could have a positive, negative or neutral impact on the environment.
Extent	<p>Local – extend to the site and its immediate surroundings.</p> <p>Regional – impact on the region but within the province.</p> <p>National – impact on an interprovincial scale.</p> <p>International – impact outside of South Africa.</p>

Magnitude	<p>Degree to which impact may cause irreplaceable loss of resources:</p> <p>Low – natural and socio-economic functions and processes are not affected or minimally affected.</p> <p>Medium – affected environment is notably altered; natural and socio-economic functions and processes continue albeit in a modified way.</p> <p>High – natural or socio-economic functions or processes could be substantially affected or altered to the extent that they could temporarily or permanently cease.</p>
Duration	<p>Short term – 0-5 years.</p> <p>Medium term – 5-11 years.</p> <p>Long term – impact ceases after the operational life cycle of the activity either because of natural processes or by human intervention.</p> <p>Permanent – mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient.</p>
Probability	<p>Almost certain – the event is expected to occur in most circumstances.</p> <p>Likely – the event will probably occur in most circumstances.</p> <p>Moderate – the event should occur at some time.</p> <p>Unlikely – the event could occur at some time.</p> <p>Rare/Remote – the event may occur only in exceptional circumstances.</p>
Significance	<p>Provides an overall impression of an impact’s importance, and the degree to which it can be mitigated. The range for significance ratings is as follows-</p> <p>0 – Impact will not affect the environment. No mitigation necessary.</p> <p>1 – No impact after mitigation.</p> <p>2 – Residual impact after mitigation.</p> <p>3 – Impact cannot be mitigated.</p>
Mitigation	<p>Information on the impacts together with literature from socio-economic science journals, case studies and field work will be used to provide mitigation recommendations to ensure that any negative impacts are decreased and positive benefits are enhanced.</p>
Monitoring	<p>Monitoring usually involves developing and implementing a monitoring programme to identify deviations from the proposed action and to manage any negative impacts. The recommended mitigation measures will also include monitoring measures.</p>

Table 8: Impact Methodology Table

Nature			
Negative	Neutral	Positive	
-1	0	+1	
Extent			
Local	Regional	National	International
1	2	3	4
Magnitude			
Low	Medium	High	
1	2	3	
Duration			
Short Term (0-5yrs)	Medium Term (5-11yrs)	Long Term	Permanent
1	2	3	4

Probability				
Rare/Remote	Unlikely	Moderate	Likely	Almost Certain
1	2	3	4	5
Significance				
No Impact/None	No Impact After Mitigation/Low	Residual Impact After Mitigation/Medium	Impact Cannot be Mitigated/High	
0	1	2	3	

8.2 Identification of Activities and Aspects

An “Activity” is defined as a distinct process or risks undertaken by an organisation for which a responsibility can be assigned. Activities also include facilities or pieces of infrastructure that are possessed by an organisation (International Organization for Standardization, 2011).

An aspect is defined as elements of an organisation’s activities or products or services that can interact with the environment.

In order to capture the impacts associated with the proposed infrastructure, an activity – aspect – impact table was created refer to Table 9 below.

Table 9: Activity, Aspects and Impacts of the Project

Activity	Aspect	Potential Impact – Positive	Potential Impact – Negative
Site clearance/ construction camp	Heritage		Damage to existing historical structures or unidentified graves
Construction	Heritage	Positive - if historical structures are reused	Damage to existing historical structures
Operation	Heritage	N/A	N/A

8.3 Impact and Mitigation Assessment

The proposed route corridor that will be impacted by the Umzimkhulu pipeline project traverses property that includes informal residential areas, agricultural areas and currently undeveloped areas.

The impact significance of the proposed project on protected historical structures is medium to high as several historical structures were identified, including historical houses (UMZ-P01, UMZ-P02, UMZ-P03, UMZ-P06) and the existing historical Bhobhoi Water Treatment Plant buildings (UMZ-P04).

The impact significance of the project on graves and cemeteries is low as no definite grave sites were identified during the field survey. However, in this region it is common for deceased family members to be buried within the *imizi* homestead property. Since the route traverses a community residential area, the presence of grave sites will need to be verified by consultation with the community regarding measures to avoid such graves, before or during the detailed design stage.

The impact significance of the project on intangible and living heritage resources is low as one informal church site was identified. The site is situated just outside (within 15m) and east of the pipeline route corridor and roughly 65m from the centre line (UMZ-P05).

The impact significance of the proposed project on archaeological resources is low as no archaeological sites or material were identified.

8.4 Impacts During the Planning, Construction and Operational Phases

As a result of the analysis above, the following impact/mitigation tables have been generated.

Table 10: Heritage Resources – Historical Structures Mitigation Table

Environmental Feature	Heritage resources – Historical structures					
Project life cycle	Planning, Construction and Operation					
Potential Impact	Proposed Management Objectives / Mitigation Measures					
Possible damage to or destruction of extant historical structures	<ul style="list-style-type: none"> • A buffer of at least 20-30m must be placed around all identified historical houses and structures to ensure that during construction, these sites are not damaged • The material demarcating the buffer must be highly visible and made of durable material to ensure that they are still in place during the operation of the PV site so that maintenance crews are aware of the sites. • All historical buildings are protected and any proposed destruction will require a permit from Amafa KZN • The Historical Bhubhoyi WTW buildings must be avoided as no-go areas • It is recommended that a Phase II mitigation study should be undertaken to record the buildings and research the history of the site. It is possible that the treatment plant buildings could be of Grade III (local) or Grade II (Provincial) significance and should be formally protected. 					
Possible destruction of demolished remains of historical structures	<ul style="list-style-type: none"> • A buffer of at least 20-30m must be placed around such sites to ensure that during construction, no historical-archaeological material is damaged • The materials demarcating the buffer must be highly visible and made of durable material • A permit will be required for the destruction/clearance of the area (from Amafa) 					
	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Negative	Local	Medium	Permanent	High	2
After Mitigation	Positive	Local	Low	Short-term	Low	1
Significance of Impact and Preferred Alternatives	Assuming that the recommended mitigation measures of demarcation and avoidance are implemented, then the impact would be reduced to low.					

Table 11: Heritage Resources – Historical Graves Mitigation Table

Environmental Feature	Heritage resources – Graves and burial grounds					
Project life cycle	Planning, Construction and Operation					
Potential Impact	Proposed Management Objectives / Mitigation Measures					
Potential unidentified graves	<ul style="list-style-type: none"> • After final design of the route alignment and prior to construction, a walk-down of the final alignment must be undertaken by a heritage specialist to identify any unidentified grave sites and cemeteries • A buffer of at least 30m must be placed around the site to ensure that during construction, these sites are not damaged 					
	Nature	Extent	Magnitude	Duration	Probability	Significance
Before Mitigation	Negative	Local	High	Permanent		3
After Mitigation	Negative	Local	Low	Long- term	Unlikely	2
Significance of Impact and Preferred Alternatives	Assuming that the recommended mitigation measures are implemented, then the impact would be reduced to low (as any graves that are identified should be avoided by the route design).					

8.5 Cumulative impacts

The project area and surrounding region has been affected by impacts of activities occurring in the past, current activities and proposed future developments. These will be discussed below.

Past impacts: The past HIA reports recovered from the SAHRIS database indicated that the proposed corridor footprint and surrounding region has been affected by several development and other activities that would have disturbed the heritage resources which occur in the area. These include: the development and later expansion of various formal and informal settlement areas as well as the agricultural activities of sugar cane farming and the construction of the N2 highway.

Current impacts: the immediate area of the corridor is affected by a wide range of activities including informal settlements, formal residential developments, agricultural activities of sugar cane farming and sand mining.

The baseline impacts for the project area are considered to be medium for Heritage resources, and additional project impacts (if no mitigation measures are implemented) will increase the significance of the existing baseline impacts, where the cumulative unmitigated impact will probably be of a - moderate significance. The impact is going to happen and will be long-term in nature, therefore the impact risk class will be Moderate. However, with the implementation of the recommended management and mitigation measures this risk class can be minimized to a Low rating.

9 ANALYSIS OF ALTERNATIVES

- Alternatives to be considered

10 ALTERNATIVES

10.1 Introduction

Alternatives are the different ways in which the Project can be executed to ultimately achieve its objectives. Examples could include carrying out a different type of action, choosing an alternative location or adopting a different technology or design for a project.

10.2 Site Alternatives

No site alternatives are proposed for this Project as the aim is to strengthen the existing water supply network in this area.

10.3 Layout / Design Alternatives

It is expected that the combined results of the specialist studies regarding sensitive areas will be taken into consideration in designing the final pipeline alignment within the general route corridor.

10.4 No-Go Option

As standard practice and to satisfy regulatory requirements, the option of not proceeding with the Project is included in the evaluation of the alternatives.

The no-go alternative can be regarded as the baseline scenario against which the impacts of the Project are evaluated. This implies that the current status and conditions associated with the proposed Project footprint will be used as the benchmark against which to assess the possible changes (impacts) associated with the Project.

In contrast, should the proposed Project not go ahead, any potentially significant environmental issues would be irrelevant, and the status quo of the local receiving environment would not be affected by the project-related activities. The objectives of the Project, including the benefits (such as provision and increased security of water supply) in this area will not materialise.

The no-go alternative will be assessed during the EIA Phase, taking into consideration the findings of the specialist studies and the outcomes of public participation (amongst others).

11 STATEMENT OF IMPACT SIGNIFICANCE

The project area that will be impacted by the proposed Umzimkhulu pipeline contains some areas that are currently disturbed by semi-rural residential settlement, informal and formal agricultural activities, sand mining and some undeveloped areas.

The impact significance of the project on graves and cemeteries is low as no definite grave sites were identified during the field survey. However, in this region it is common for deceased family members to be buried within the *imizi* homestead property. Since the route traverses a community residential area, the presence of grave sites will need to be verified by consultation with the community regarding measures to avoid such graves, before or during the detailed design stage. One possible grave site was noted by a previous HIA report as located just outside the Bhubhoi WTW.

The impact significance of the project on intangible and living heritage resources is low as one informal church site was identified. The site is situated just outside (within 15m) and east of the pipeline route corridor and roughly 65m from the centre line (UMZ-P05).

The impact significance of the proposed project on protected historical structures is medium to high as several historical structures were identified within or close to the pipeline route (UMZ-P01, UMZ-P02, UMZ-P03, UMZ-P06) specifically, the historical buildings of the Bhubhoi Water Treatment Plant (UMZ-P04).

The impact significance of the proposed project on archaeological resources is low as no archaeological sites or material were identified.

12 HERITAGE MANAGEMENT GUIDELINES

12.1 General Management Guidelines

1. The National Heritage Resources Act (Act 25 of 1999) states that, any person who intends to undertake a development categorised as-
 - a) the construction of a road, wall, transmission line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
 - b) the construction of a bridge or similar structure exceeding 50m in length;
 - c) any development or other activity which will change the character of a site-
 - d) exceeding 5 000 m² in extent; or
 - e) involving three or more existing erven or subdivisions thereof; or

- f) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
- g) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- h) the re-zoning of a site exceeding 10 000 m² in extent; or
- i) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

In the event that an area previously not included in an archaeological or cultural resources survey is to be disturbed, the SAHRA or the Amafa KwaZulu Natal Research Institute (Amafa) needs to be contacted. An enquiry must be lodged with them into the necessity for a Heritage Impact Assessment.

2. In the event that a further heritage assessment is required it is advisable to utilise a qualified heritage practitioner, preferably registered with the Cultural Resources Management Section (CRM) of the Association of Southern African Professional Archaeologists (ASAPA).

This survey and evaluation must include:

- a) The identification and mapping of all heritage resources in the area affected;
 - b) An assessment of the significance of such resources in terms of the heritage assessment criteria set out in section 6 (2) or prescribed under section 7 of the National Heritage Resources Act;
 - c) An assessment of the impact of the development on such heritage resources;
 - d) An evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
 - e) The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources;
 - f) If heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
 - g) Plans for mitigation of any adverse effects during and after the completion of the proposed development.
3. It is advisable that an information section on cultural resources be included in the SHEQ training given to contractors involved in surface earthmoving activities. These sections must include basic information on:
 - a. Heritage;
 - b. Graves;
 - c. Archaeological finds; and
 - d. Historical Structures.

This module must be tailor made to include all possible finds that could be expected in that area of construction. Possible finds include:

- a. Remains of historical structures
 - b. Palaeontological deposits.
 - c. Informal, unidentified graves.
4. In the event that a possible find is discovered during construction, all activities must be halted in the area of the discovery and a qualified archaeologist contacted.
 5. The archaeologist needs to evaluate the finds on site and make recommendations towards possible mitigation measures.
 6. If mitigation is necessary, an application for a rescue permit must be lodged with Amafa.
 7. After mitigation, an application must be lodged with Amafa for a destruction permit. This application must be supported by the mitigation report generated during the rescue excavation. Only after the permit is issued may such a site be destroyed.
 8. If during the initial survey sites of cultural significance are discovered, it will be necessary to develop a management plan for the preservation, documentation or destruction of such a site. Such a program must include an archaeological/palaeontological monitoring programme, timeframe and agreed upon schedule of actions between the company and the archaeologist.
 9. In the event that human remains are uncovered, or previously unknown graves are discovered, a qualified archaeologist needs to be contacted and an evaluation of the finds made.
 10. If the remains are to be exhumed and relocated, the relocation procedures as accepted by SAHRA and Amafa need to be followed. This includes an extensive social consultation process.

13 RECOMMENDED MITIGATION AND CONCLUSION

The proposed Bhoibhoyi pipeline project will impact on certain heritage resources identified within and adjacent to the route corridor. A total of six heritage resources were identified within or adjacent to the route corridor area. These resources include: four historical houses (UMZ-P01, UMZ-P02, UMZ-P03, UMZ-P06) and the historical buildings of the Bhoibhoyi Water Treatment Plant (UMZ-P04) as well as one informal church site (UMZ-P05).

The recommendations below are provided to mitigate the potential impact of the proposed pipeline project on the identified heritage resources:

- All historical structures identified and near to the route corridor must be protected with a 10-30m buffer, depending on significance and distance from the final line alignment.
- All identified historical structures are protected and any proposed destruction will require a permit from Amafa KZN.

- The Historical buildings of the Bhubhoyi Water Treatment Works at UMZ-P04 must be avoided as “no-go” areas and protected from any damage. It is recommended that a Phase II mitigation process should be undertaken to research the history of the historical buildings and provide recommendations on the feasibility of possible formal protection as a Grade II or Grade III heritage site. The final alignment of the pipeline should be adjusted to avoid any negative impact to individual buildings.
- The informal church site (UMZ-P05) should be avoided with a buffer of 10-20m and there should be community consultation regarding the possible impact.
- After final design of the route alignment and prior to construction, a walk-down of the final alignment must be undertaken by a heritage specialist to identify any unidentified grave sites and cemeteries. If any grave sites are identified, a buffer of at least 30m must be placed around the grave site to ensure that during construction, these sites are not damaged.
- A separate palaeontological desktop assessment has been undertaken as the project area falls into an area where the underlying geology is mostly of Moderate to Low/Insignificant fossil sensitivity. The assessment will indicate if significant/sensitive fossils will be impacted by the proposed project and provide mitigation measures and the way forward in this regard.

No fatal flaws were identified during this study, therefore, it is the considered opinion of the heritage specialist that the construction of the proposed Bhubhoyi pipeline within the route corridor can proceed. There are no objections from a heritage perspective if the recommendations and mitigation measures contained in this report and in the desktop palaeontological assessment are implemented where necessary.

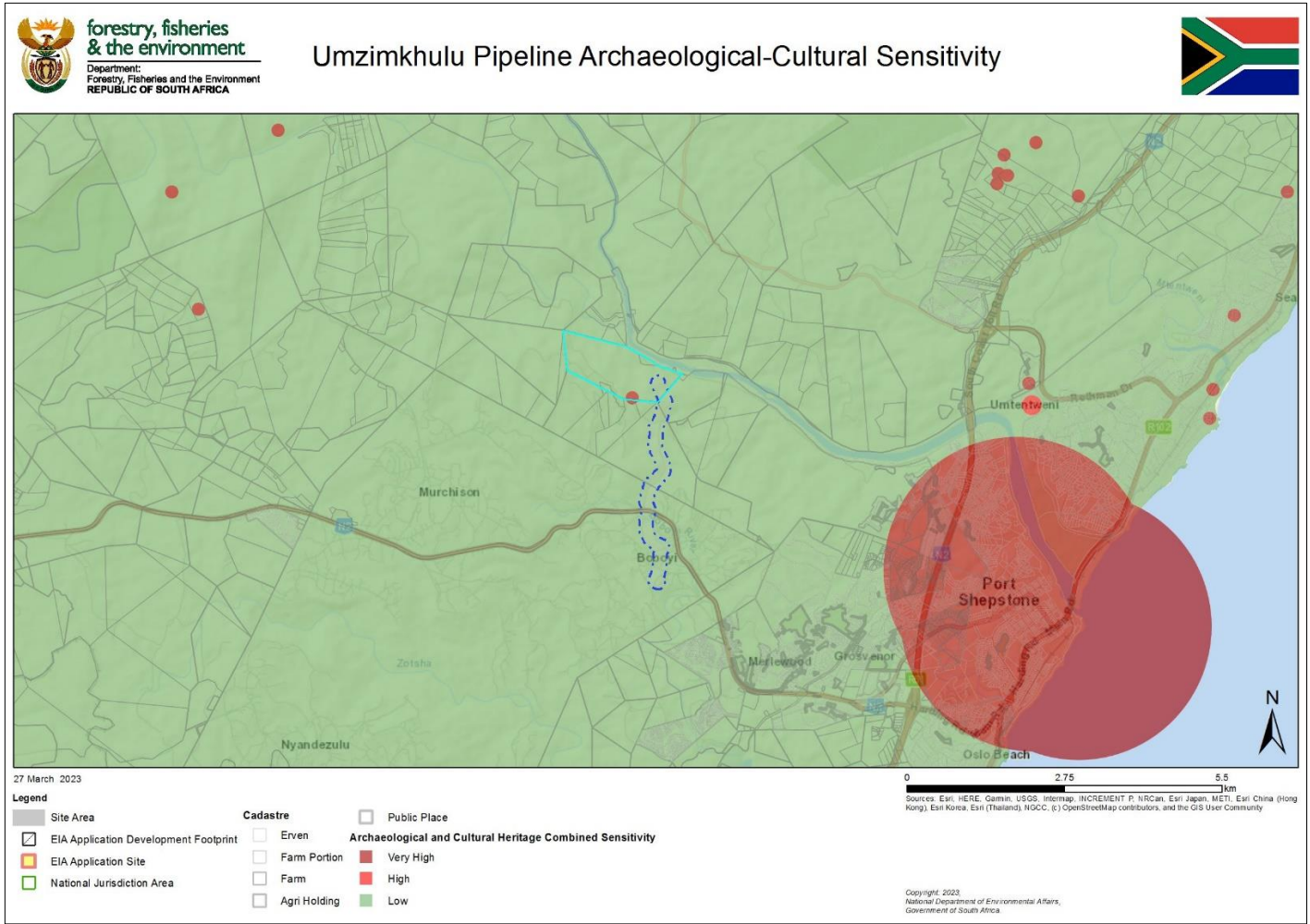
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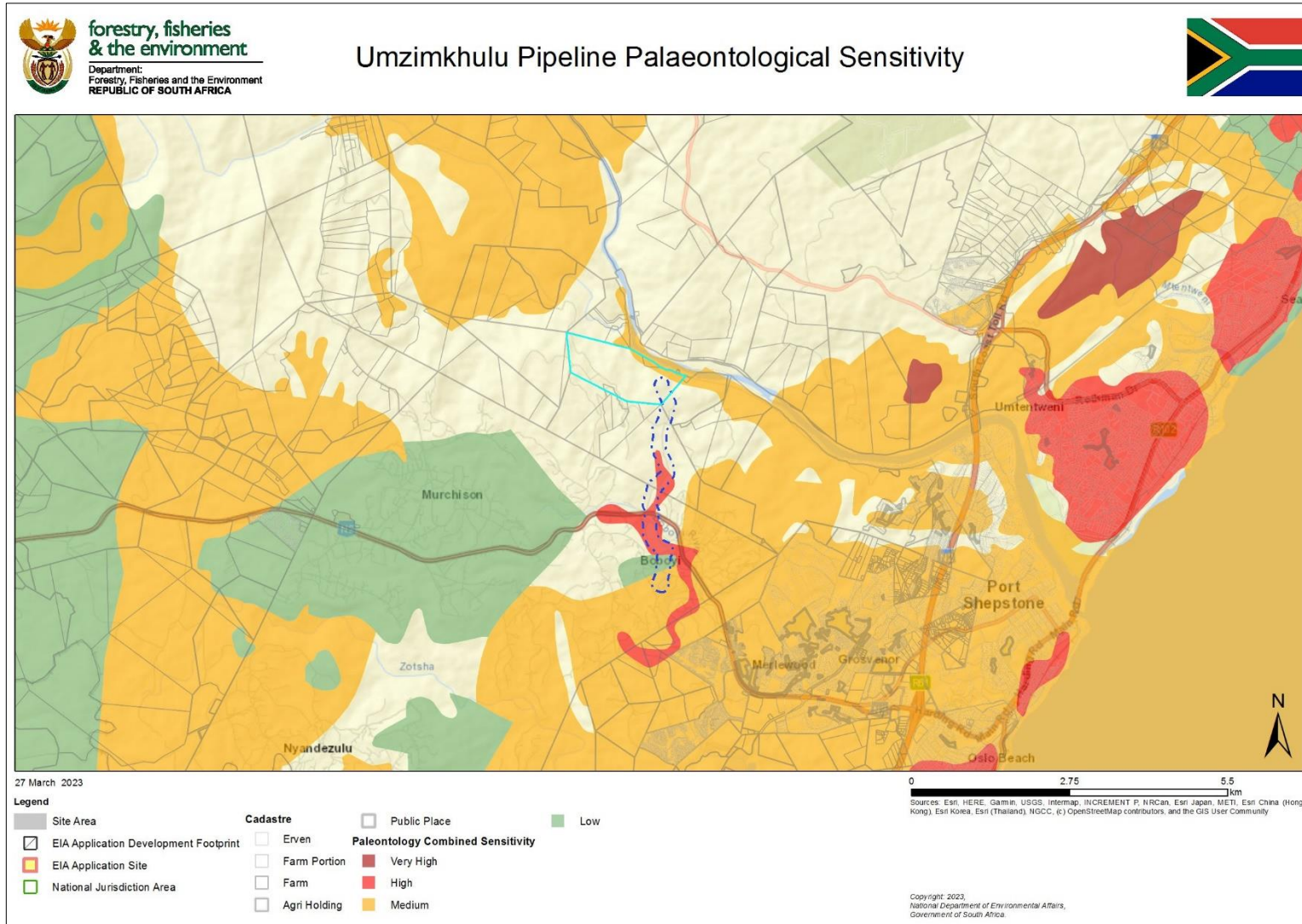
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APPENDIX 1: HERITAGE SENSITIVITY MAP/S

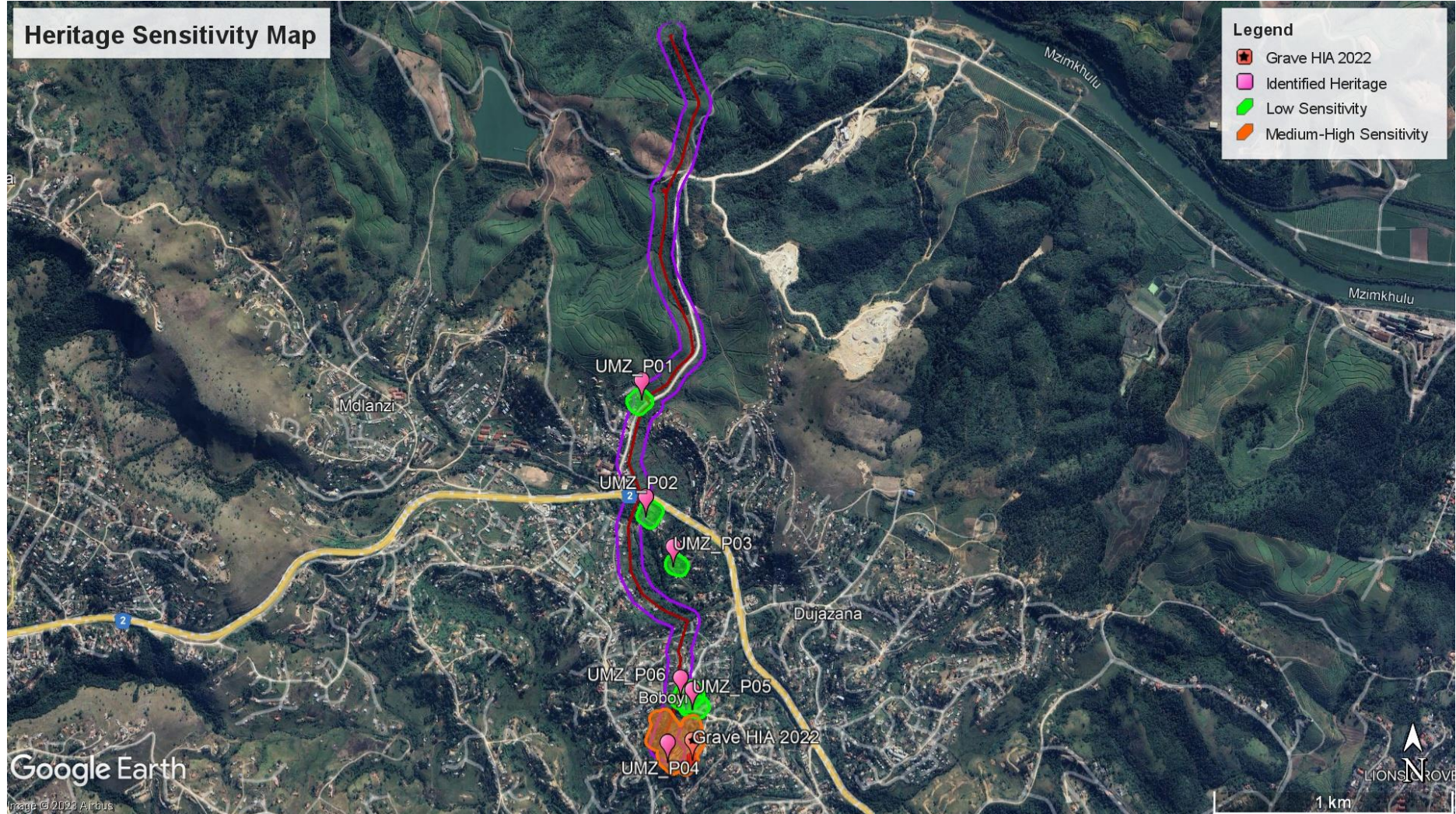
1. Cultural Heritage Sensitivity map from DFFE screening tool



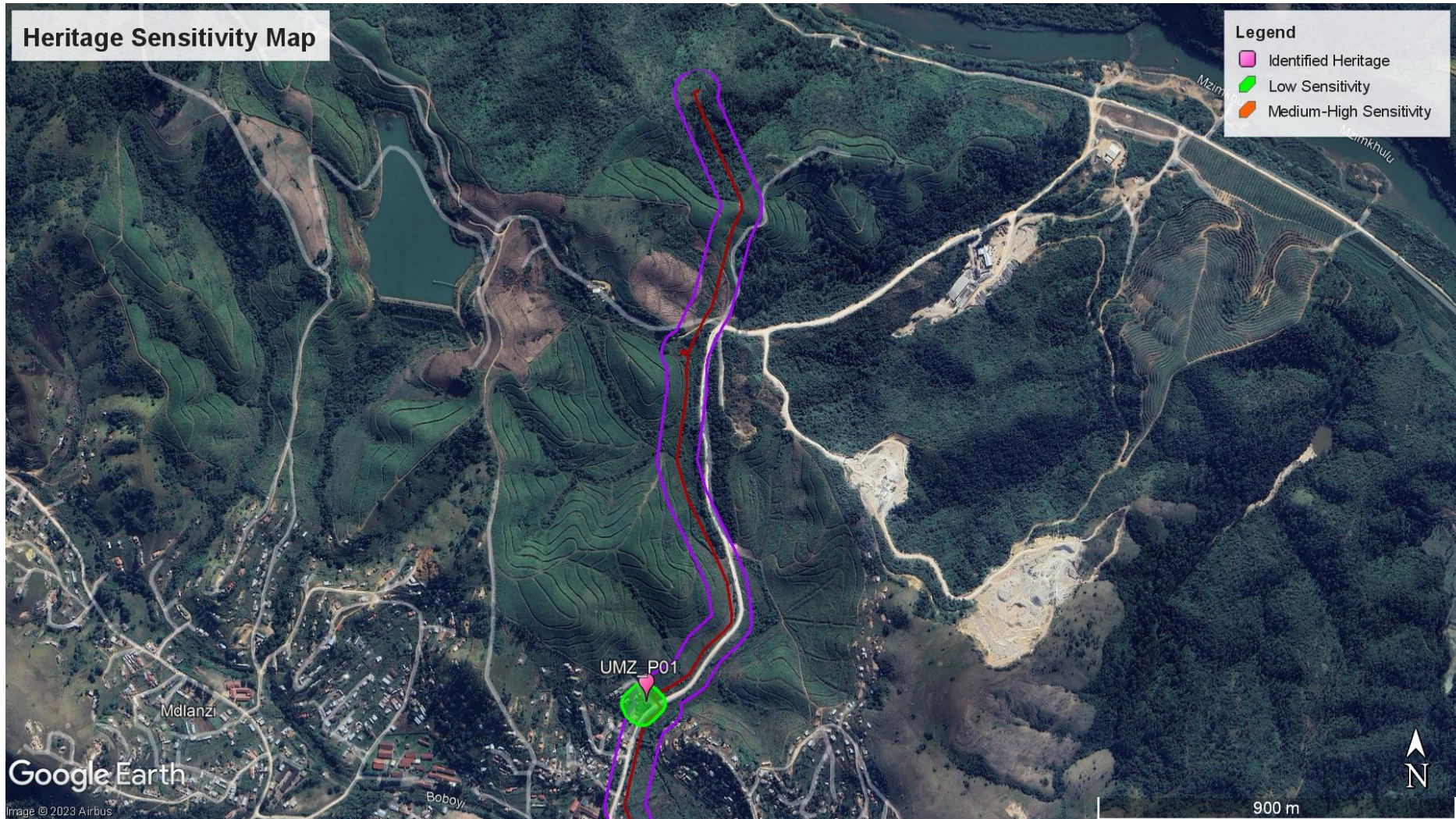
2. Palaeontological Sensitivity map from DFFE screening tool



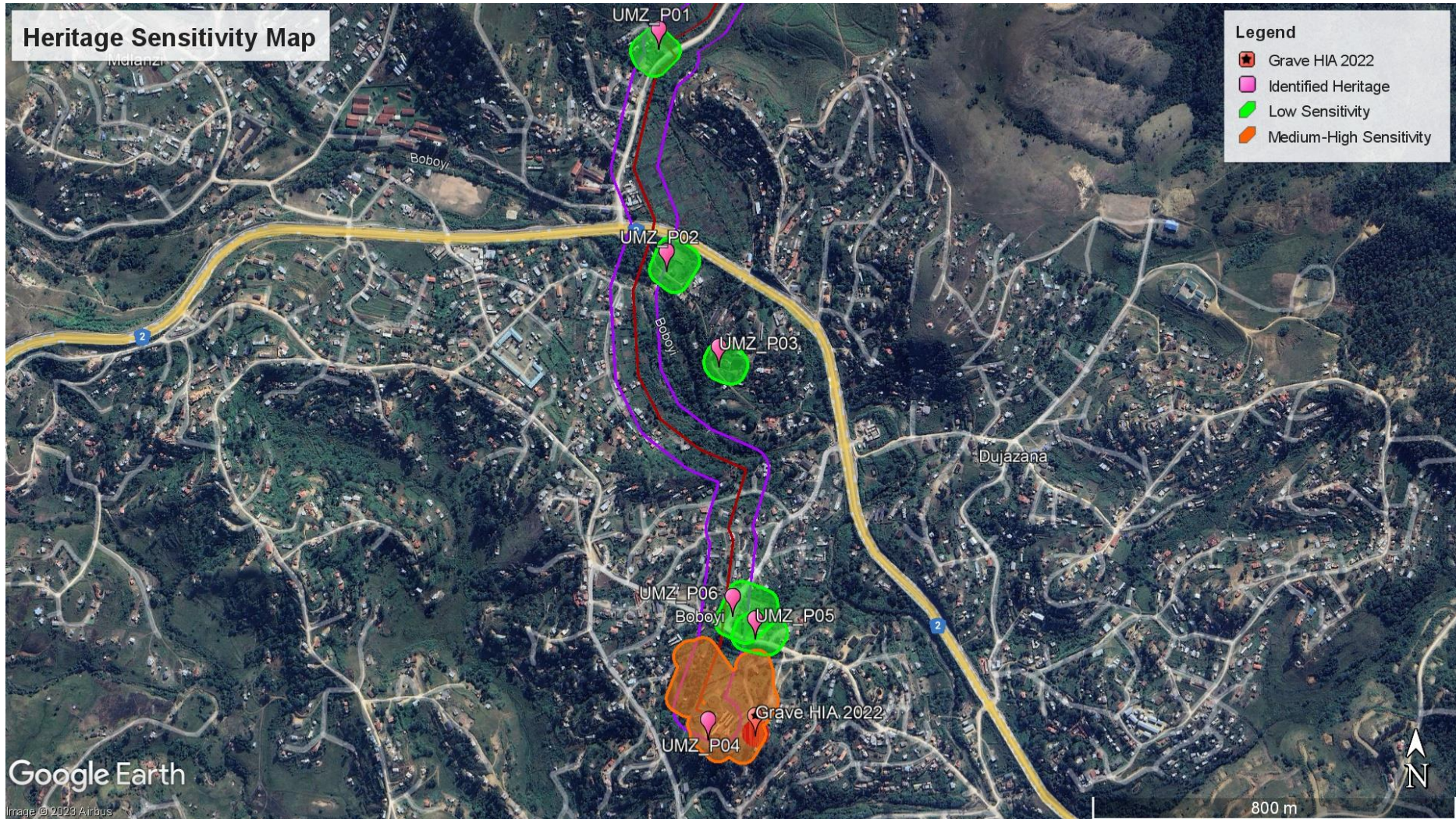
3. Heritage Sensitivity Maps based on the Site Inspection / Field survey and Past HIA



Heritage Sensitivity Enlarged –Northern section of Pipeline Corridor (purple polygon) and centre line (red line)



Heritage Sensitivity Enlarged - –Southern section of Pipeline Corridor (purple polygon) and centre line (red line)



APPENDIX 2: CURRICULUM VITAE OF HERITAGE SPECIALIST

1 Personal Particulars

Profession:	Heritage Specialist
Date of Birth:	11 September 1966
Name of Firm:	Nitai Consulting
Name of Staff:	Jennifer Kitto
Nationality:	RSA
Membership of Professional Societies	Association of Southern African Professional Archaeologists (444); IAIAsa (7151)

2 Education:

BA Hons Social Anthropology, WITS, South Africa, 1994

BA. Archaeology and Social Anthropology, WITS, South Africa, 1993

Higher National Diploma, Practical Archaeology, Dorset Institute for Higher Education (now Bournemouth University), UK, 1989

3 Employment Record:

2022 – Present Heritage Specialist, Nitai Consulting

Conduct Heritage Impact Assessments;

2012 – 2021 Heritage Specialist, PGS Heritage (Pty) Ltd

Conduct Heritage Impact Assessments

Compile Desktop Historical Research

Compile Heritage Audit and Management Plans

Compile and submit permit applications to National and Provincial Heritage Authorities for Section 34 building alterations and demolitions (under National Heritage Resources Act, 25 of 1999)

Compile and submit permit applications to Provincial and Municipal Health Authorities for Section 36 relocations of graves and burial grounds (under National Heritage Resources Act, 25 of 1999 and National Health Act, No 61 of 2003)

2008 – 2011 Cultural Heritage Officer (National), Burial Grounds and Graves Unit: South African Heritage Resources Agency (SAHRA)

Review and assessing permit applications for relocation of historical graves and burial grounds

1998 – 2008 Cultural Heritage Officer (Provincial), Provincial Office – Gauteng: SAHRA

Review and comment on heritage and archaeological impact reports

Research for the nomination and grading process for related to the declaration of specific heritage resources as National Heritage Sites

Monitoring of certain archaeological and built environment National Heritage Sites (e.g. The Cradle of Humankind World Heritage Site)

4 Selected Consultancies

4.1 GDID East Corridor, OHS Implementation, Tambo Memorial Regional Hospital (as sub-contractor to PGS Heritage (Pty) Ltd

2022 Independent Heritage Specialist. Compile Historical Archival Report of Tambo Hospital Boksburg, Gauteng for PGS Heritage (Pty) Ltd, Finalise HIA Report and submit HIA report to Gauteng Provincial Heritage Resources Authority

4.2 GDID East Corridor, OHS Implementation, Tembisa Regional Hospital (as sub-contractor to PGS Heritage (Pty) Ltd

2022 Independent Heritage Specialist. Compile Historical Archival Report of Tembisa Hospital, Ekurhuleni, Gauteng for PGS Heritage (Pty) Ltd, Finalise HIA Report and submit HIA report to Gauteng Provincial Heritage Resources Authority.

4.3 Kroonstad Solar PV Facilities

2022/2023 Heritage Specialist, Development of three Solar PV facilities near Kroonstad, Free State Province, South Africa, Identify, assess and map all heritage resources associated with the three solar PV facilities

4.4 Kroonstad South Solar PV Facilities

2022/2023 Heritage Specialist, Development of five Solar PV facilities near Kroonstad, Free State Province, South Africa, Undertake Heritage Impact Assessment of all heritage resources associated with the five solar PV facilities

4.5 Rustenburg Solar PV Facilities

2022/2023 Heritage Specialist, Development of three Solar PV facilities near Rustenburg, North West Province, South Africa, Undertake Heritage Impact Assessment all heritage resources associated with the three solar PV facilities.

4.6 Seelo Solar PV Facilities

2022/2023 Heritage Specialist, Development of three Solar PV facilities near Carletonville, North West Province, South Africa, Undertake Heritage Impact Assessment all heritage resources associated with the three solar PV facilities.

5 Languages:

English - excellent speaking, reading, and writing

Afrikaans –fair speaking, reading and writing