

# PHASE ONE HERITAGE IMPACT ASSESSMENT AND PALAEOLOGICAL IMPACT ASSESSMENT

FOR THE PROPOSED OXFORD FRESHMARKET DEVELOPMENT ON  
PORTION 2453 OF UMLAZI LOCATION NO. 4676 IN AMANZIMTOTI,  
ETHEKWINI MUNICIPALITY, KWAZULU-NATAL



Prepared for:  
**T and A Town Planning Consultants**  
Tel: 078 528 6838  
Email: talisen@tnaplanning.co.za

Prepared by:  
**Land Matters Environmental Consulting**  
Tel: 082 408 6545  
Email: phillipa@lmenvironmental.co.za

Final Version  
**11 August 2023**



**LAND MATTERS**  
ENVIRONMENTAL CONSULTING

---

<b>Document Title:</b>	Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment for the Proposed Oxford Freshmarket Development on Portion 2453 of Umlazi Location No. 4676 in Amanzimtoti, eThekweni Municipality, KwaZulu-Natal
<b>Author:</b>	Dr Phillipa Harrison – Land Matters Environmental Consulting (Pty) Ltd
<b>Prepared For:</b>	T and A Town Planning Consultants (Pty) Ltd
<b>Date:</b>	11 August 2023

**GENERAL DECLARATION:**

I, **Dr Phillipa Harrison**, declare that –

- I act as the independent specialist in this application in terms of Section 12 and 13 of the regulations;
- 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 the specialist study relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- 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;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.

**REPORTING CONDITIONS:**

- The findings, results, observations, conclusions, and recommendations provided in this report are based on the author's best scientific and professional knowledge as well as information available at the time of compilation.
- The author accepts no liability for any actions, claims, demands, losses, liabilities, costs, damages, and expenses arising from or in connection with services rendered, and by the use of the information contained in this document.
- No form of this report may be amended without the prior written consent of the author.



**Dr. Phillipa Harrison - BA Hons (Archaeology); PhD (Geog Sci); Reg - ASAPA**  
**Archaeologist/Heritage Consultant**  
**Tel: 082 408 6545**  
**Email: phillipa@lmenvironmental.co.za**

Refer to Appendix A for the CV of the Heritage Consultant

## EXECUTIVE SUMMARY

Land Matters Environmental Consulting was appointed by T and A Town Planning Consultants to conduct a Phase 1 Heritage Impact Assessment (HIA) and Palaeontological Impact Assessment (PIA) as part of a Section 24G Application under the National Environmental Management Act (NEMA) (Act 107 of 1998), for the rectification of unlawful activities on Portion 2453 of Umlazi Location No. 4676 in Amanzimtoti, eThekweni Municipality, KwaZulu-Natal.

Based on the information provided it is understood that the Applicant commenced with the clearing of 20 000 m<sup>2</sup> of indigenous vegetation prior to obtaining the necessary authorisations in terms of the Environmental Impact Assessment (EIA) Regulations 2014 (amended 2017) under NEMA, for the following proposed development:

- The construction of a new Oxford Freshmarket Shop;
- The widening of the existing access road to the entrance of the site; and
- The construction of a new stormwater attenuation dam to accommodate the increase in stormwater resulting from the widened road and development.

The widening of the access road is nearly complete, and the clearing of vegetation, as well as the stripping and stockpiling of the topsoil and subsoil has already taken place on the site.

This Phase 1 HIA is being undertaken in accordance with the requirements of Section 41(1)(c) of the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act 5 of 2018). The project site is located within an area that is designated as “high” in terms of palaeontological sensitivity according to the SAHRIS palaeo-sensitivity map. As such a PIA is also required to be undertaken as part of the Section 24G Application process under NEMA.

The Phase 1 HIA and PIA included a desktop assessment and review of relevant current and historical aerial imagery of the study site. The SAHRIS website and Provincial Heritage Register were consulted for data on the presence and significance of any heritage sites within the project area and immediate surrounds. In addition, the available heritage literature covering the larger study area was also consulted. The PIA included the consultation of the relevant geological maps, paleontological databases, records, relevant literature, and existing paleontological assessment studies for the larger study area, to determine the likelihood of fossils being present within the project site and immediate surrounds.

A ground survey of the study site was conducted on the 03<sup>rd</sup> of August 2023 following standard archaeological survey procedures. The consultant liaised with the project manager and some of the construction staff present on the site regarding the site history and if any heritage or palaeontological resources had been unearthed during the stripping and stockpiling of the topsoil and subsoil on the site. None of the persons interviewed were aware of the presence of any heritage or palaeontological features on the project site.

According to the 3030 Port Shepstone 1:250 000 Geological map series (Council for Geosciences) the project site is located within the coastal margin of upper southern KwaZulu-Natal where younger Maputaland sands unconformably overlie older Ecca Group rocks of the Karoo Supergroup. The

project site is underlain by Quaternary aged aeolian sands of the Umkwelane Formation (formerly Berea Formation) of the Uloa Subgroup, Maputaland Group.

It is possible that very small fragments of wind transported bone, wood, rhizoliths, and invertebrate shells may be preserved in Umkwelane Formation sands. However, this is very rare, and any such fossils would be very small, and occur out of context (Bamford, 2022). Only under very special conditions in palaeo-pans and springs would more complete fossils be likely to form (Bamford, 2022). In addition, there are no records to date of plant or animal fossils from the Umkwelane Formation sands in this region of the KwaZulu-Natal coastline. As such, it is extremely unlikely that any fossils are present on the study site. In the very unlikely event that the development exposes fossil material, the chance find protocol in Appendix C must be implemented.

No heritage or palaeontological resources were identified on the project site during the Phase 1 HIA and PIA, and the site does not form part of any known cultural or heritage landscape. The heritage consultant is of the opinion that the proposed Oxford Freshmarket Development may proceed on the proposed site, subject to the implementation of the recommendations as outlined in Section 11 of this Report. The proposed project must adhere to the requirements of the National Heritage Resources Act (NHRA), 1999 (Act 25 of 1999) and the KwaZulu-Natal Amafa and Research Institute Act which states that all operations that expose graves, fossils or heritage features must cease immediately, pending an investigation by the provincial heritage resource authority.

**CROSS REFERENCE TABLE TO APPENDIX 6 OF THE EIA REGULATIONS**

<b>Minimum Report Content Requirements as per Appendix 6 of the EIA Regulations</b>	<b>Cross Reference in this Report</b>
1. (1) A specialist report prepared in terms of these Regulations must contain - (a) details of (i) the specialist who prepared the report; and (ii) the expertise of that specialist to compile a specialist report including a curriculum vitae;	Declaration of Independence by Specialist (pg. ii). Specialist CV in Appendix A.
(b) a declaration that the specialist is independent in a form as may be specified by the competent authority;	Declaration of Independence by Specialist (pg. ii).
(c) an indication of the scope of, and the purpose for which, the report was prepared; (cA) an indication of the quality and age of base data used for the specialist report; (cB) a description of existing impacts on the site, cumulative impacts of the proposed development and levels of acceptable change;	Section 2: Scope of the Assessment. Section 5: Study Methodology. Section 10: Impact Assessment.
(d) the duration, date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 5: Study Methodology.
(e) a description of the methodology adopted in preparing the report or carrying out the specialised process inclusive of equipment and modelling used;	Section 5: Study Methodology.
(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 9: Assessment Results.
(g) an identification of any areas to be avoided, including buffers;	N/A
(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;	N/A
(i) a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3: Assumptions and Limitations.
(j) a description of the findings and potential implications of such findings on the impact of the proposed activity or activities;	Section 9: Assessment Results. Section 10: Impact Assessment.
(k) any mitigation measures for inclusion in the EMPr;	Section 11: Recommendations and Conclusion.
(l) any conditions for inclusion in the environmental authorisation;	Section 11: Recommendations and Conclusion.
(m) any monitoring requirements for inclusion in the EMPr or environmental authorisation;	Section 11: Recommendations and Conclusion.
(n) a reasoned opinion - (i) whether the proposed activity, activities or portions thereof should be authorised; (iA) regarding the acceptability of the proposed activity or activities; and (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 11: Recommendations and Conclusion.
(o) a description of any consultation process that was undertaken during the course of preparing the specialist report;	Section 5: Study Methodology.
(p) a summary and copies of any comments received during any consultation process and where applicable all responses thereto; and	N/A

Minimum Report Content Requirements as per Appendix 6 of the EIA Regulations	Cross Reference in this Report
(q) any other information requested by the competent authority.	N/A
(2) Where a government notice gazetted 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.	N/A

**CONTENTS**

<b>1</b>	<b>INTRODUCTION AND DEVELOPMENT BACKGROUND .....</b>	<b>1</b>
<b>2</b>	<b>SCOPE OF THE ASSESSMENT.....</b>	<b>1</b>
<b>3</b>	<b>ASSUMPTIONS AND LIMITATIONS.....</b>	<b>2</b>
<b>4</b>	<b>LEGISLATIVE REQUIREMENTS .....</b>	<b>2</b>
4.1	National Environmental Management Act (NEMA) 1998 (Act 107 of 1998) .....	2
4.2	National Heritage Resources Act (NHRA) 1999 (Act 25 of 1999) .....	3
4.3	KwaZulu-Natal Amafa and Research Institute Act 2018 (Act 5 of 2018).....	3
4.4	Minimum Standards for Heritage Specialist Studies .....	4
4.5	KwaZulu-Natal Amafa and Research Institute Regulations, 2021 (Draft Regulations)	4
<b>5</b>	<b>STUDY METHODOLOGY .....</b>	<b>5</b>
5.1	Desktop Assessment.....	5
5.2	Ground Survey .....	5
<b>6</b>	<b>SITE DESCRIPTION AND LOCALITY .....</b>	<b>5</b>
<b>7</b>	<b>CULTURAL OVERVIEW OF THE STUDY AREA .....</b>	<b>8</b>
<b>8</b>	<b>GEOLOGY AND PALAEOLOGY .....</b>	<b>9</b>
8.1	Geology.....	9
8.2	Palaeontology .....	11
<b>9</b>	<b>ASSESSMENT RESULTS .....</b>	<b>12</b>
9.1	Desktop Study.....	12
9.2	Ground Survey .....	14
<b>10</b>	<b>IMPACT ASSESSMENT .....</b>	<b>15</b>
<b>11</b>	<b>RECOMMENDATIONS AND CONCLUSION .....</b>	<b>17</b>
<b>12</b>	<b>REFERENCES.....</b>	<b>19</b>

**APPENDICES**

Appendix A: Short CV of Heritage Consultant

Appendix B: Site Photographs

Appendix C: Chance Find Procedures for Heritage / Palaeontological Resources

## **LIST OF ABBREVIATIONS**

EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
HIA	Heritage Impact Assessment
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PHRA	Provincial Heritage Resources Authority
PIA	Palaeontological Impact Assessment
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAPS	South African Police Services



# **PHASE 1 HERITAGE IMPACT ASSESSMENT AND PALAEOLOGICAL IMPACT ASSESSMENT FOR THE PROPOSED OXFORD FRESHMARKET DEVELOPMENT ON PORTION 2453 OF UMLAZI LOCATION NO. 4676, AMANZIMTOTI.**

## **1 INTRODUCTION AND DEVELOPMENT BACKGROUND**

Land Matters Environmental Consulting was appointed by T and A Town Planning Consultants on behalf of the Applicant, Arabelia Investments (Pty) Ltd, to conduct a Phase 1 Heritage Impact Assessment (HIA) and Palaeontological Impact Assessment (PIA) as part of a Section 24G Application under the National Environmental Management Act (NEMA) (Act 107 of 1998), for the rectification of unlawful activities on Portion 2453 of Umlazi Location No. 4676 in Amanzimtoti, eThekweni Municipality, KwaZulu-Natal.

Based on the information provided it is understood that the Applicant commenced with the clearing of 20 000 m<sup>2</sup> of indigenous vegetation prior to obtaining the necessary authorisations in terms of the Environmental Impact Assessment (EIA) Regulations 2014 (amended 2017) under NEMA, for the following proposed development:

- The construction of a new Oxford Freshmarket Shop;
- The widening of the existing access road to the entrance of the site; and
- The construction of a new stormwater attenuation dam to accommodate the increase in stormwater resulting from the widened road and development.

The widening of the access road is nearly complete, and the clearing of vegetation, as well as the stripping and stockpiling of the topsoil and subsoil has already taken place on the site. The project site originally comprised KwaZulu-Natal Coastal Belt Grassland vegetation. The site was however previously cleared in 2003 and used as a golf driving range between 2004 and approximately 2011. The site was cleared again in 2015 during the construction of the adjacent Engen Garage.

This Phase 1 HIA is being undertaken in accordance with the requirements of Section 41(1)(c) of the KwaZulu-Natal Amafa and Research Institute Act, 2018 (Act 5 of 2018). The project site is located within an area that is designated as “high” in terms of palaeontological sensitivity according to the SAHRIS palaeo-sensitivity map. As such a PIA is also required to be undertaken as part of the Section 24G Application process under NEMA.

## **2 SCOPE OF THE ASSESSMENT**

The Phase 1 HIA and PIA aims to locate, identify and assess the significance of any heritage resources that may be found on the development footprint, including archaeological and palaeontological deposits / sites, built structures older than 60 years, burial grounds and graves, graves of victims of conflict and basic cultural landscapes and views, as defined and protected by the National Heritage Resources Act (NHRA), 1999 (Act 25 of 1999) and the KwaZulu-Natal Amafa and Research Institute Act.

As per the requirements set out in Section 41(3) of the KwaZulu-Natal Amafa and Research Institute Act, the key terms of reference for the Phase 1 HIA and PIA were as follows:

- The identification and mapping of all heritage and palaeontological resources in the study area.
- Undertaking an assessment of the significance of such resources in terms of the heritage assessment criteria set out in Section 6(2) and/or Section 7 of the NHRA.
- Undertaking an assessment of the impact of the proposed activity on the identified heritage/palaeontological resources.
- An evaluation of the impact of the proposed activity on such identified heritage/palaeontological resources relative to the sustainable social and economic benefits to be derived from the activity.
- Reporting on the results of the consultation with communities affected by the proposed activity and other interested parties regarding the impact of the activity on heritage/palaeontological resources.
- The consideration of alternatives should any heritage/palaeontological resources potentially be adversely affected by the proposed activity.
- The compilation of plans for mitigating of any adverse effects during and after the completion of the proposed activity.

### **3 ASSUMPTIONS AND LIMITATIONS**

It is difficult to apply pure scientific methods within a natural environment without limitations or assumptions. The following apply to this study:

- The widening of the access road was almost complete at the time of the site visit. Heritage and palaeontological site visibility may have been compromised by the presence of the access road.
- The stripping and stockpiling of topsoil and subsoil had taken place on the site. Heritage and palaeontological resources may have been disturbed, damaged, or destroyed by this activity.
- Heritage/palaeontological resources may be present below the surface. No subsurface investigations were undertaken as part of the Phase 1 HIA and PIA.
- The findings, results, observations, conclusions, and recommendations provided in this report are based on the authors' best scientific and professional knowledge as well as available information regarding the perceived impacts on heritage/palaeontological resources.
- The study results are based on a single day field investigation. Once-off assessments such as this may potentially miss certain heritage information, thus limiting accuracy, detail, and confidence.
- Any additional information used to inform the assessment was limited to data and GIS data sets which were available for the area at the time of assessment.

## **4 LEGISLATIVE REQUIREMENTS**

### **4.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA) 1998 (ACT 107 OF 1998)**

This Phase 1 HIA and PIA has been undertaken in compliance with the requirements for specialist studies as contained in the EIA Regulations 2014 (amended 2017) under NEMA, as outlined in Appendix 6 of GNR 326 which provides the requirements for specialist reports, and Section 13 of GNR 326 which provides the general requirements for Environmental Assessment Practitioners (EAPs) and specialists.

## **4.2 NATIONAL HERITAGE RESOURCES ACT (NHRA) 1999 (ACT 25 OF 1999)**

The NHRA makes provisions for the management and protection of heritage resources on a national level in South Africa. Section 3(1-3) of the NHRA defines those heritage resources in South Africa which form part of the national estate due to their cultural significance or other special value for the present community and future generations. Such resources include places, buildings, structures, equipment, oral traditions, historical settlements, townscapes, landscapes, geological sites, archaeological and palaeontological sites, graves and burial grounds and movable objects. Section 4 of the NHRA establishes both the national and provincial systems for the management of heritage resources within the country.

Section 7(1) of the NHRA provides for a three-tier management system which operates at a national, provincial, and local level and distinguishes between three categories for the grading of places and objects which form part of the national estate, as follows:

- National (Grade I) heritage resources, which are resources that are regarded as being of national significance, and are managed at a national level by SAHRA;
- Provincial (Grade II) heritage resources, which have provincial or regional significance and are managed by provincial heritage resources authorities; and
- Local (Grade III) heritage resources which are the responsibility of local authorities.

Sections 34, 35 and 36 of the NHRA provides for the protection of heritage resources from damage, destruction or alteration, and Section 38 of the NHRA sets out the requirements for heritage resources management.

## **4.3 KWAZULU-NATAL AMAFA AND RESEARCH INSTITUTE ACT 2018 (ACT 5 OF 2018)**

The KwaZulu-Natal Amafa and Research Institute Act provides for the recognition of the establishment of the KwaZulu-Natal Amafa and Research Institute as the provincial heritage resources authority for the Province of KwaZulu-Natal, to identify, conserve, protect, manage, and administer heritage resources in the Province of KwaZulu-Natal.

Chapter 7 of the Act provides for the establishment of the Amafa and Research Forum, whose objectives include the compilation of a consolidated register of all heritage resources in the Province of KwaZulu-Natal. Chapter 8 of the Act provides for the general protection of heritage resources, specifically the general protection of structures older than 60 years, graves of victims of conflict, informal and private burial grounds, battlefield sites, archaeological sites, rock art sites, palaeontological sites, historic fortifications, meteorite, and meteorite impact sites. Section 41(1 – 10) of Chapter 8 of the Act sets out the requirements for heritage resources management specifically in terms of the undertaking of developments, and the need and requirements for impact assessment studies and report requirements.

Chapter 9 of the Act provides for the special protection of heritage resources including the designation of protected area, heritage landmark and provincial landmark status, and special protection of graves of members of the Royal Family, battlefields, public monuments and memorials, and heritage objects. Chapter 9 of the Act also makes provision for the establishment of a consolidated register of heritage sites and heritage objects in the Province of KwaZulu-Natal.

Chapter 10 of the Act provides for the determination of criteria for best practice, standards, norms and conditions for the management of heritage resources in the Province of KwaZulu-Natal. Lastly, Chapter 11 outlines the general provisions of the Act and includes allowances for the drafting of Regulations to enable the provincial heritage resources authority to regulate heritage matters in the Province of KwaZulu-Natal.

#### 4.4 MINIMUM STANDARDS FOR HERITAGE SPECIALIST STUDIES

The South African Heritage Resources Agency (SAHRA) Minimum Standards for Heritage Specialist Studies (2007, 2016) in terms of Section 38(1) and 38(8) of the NHRA outlines the requirements for Phase 1 HIA studies, including the requirements for Phase 1 HIA Reports and provides a standardised site significance and field rating methodology.

#### 4.5 KWAZULU-NATAL AMAFA AND RESEARCH INSTITUTE REGULATIONS, 2021 (DRAFT REGULATIONS)

The draft KwaZulu-Natal Amafa and Research Institute Regulations, 2021 in terms of Section 58 of the KwaZulu-Natal Amafa and Research Institute Act, provides for the regulation of heritage matters in the KwaZulu-Natal Province. The Regulations specifically outline the requirements for permit applications and the application procedures to be followed. Section 7 of the Regulations outlines the requirements in terms of the discovery of archaeological or palaeontological material or a meteorite. Section 12 of the Regulations outlines the heritage resources management requirements in terms of undertaking developments, and procedures to be followed to ensure compliance with the requirements of the KwaZulu-Natal Amafa and Research Institute Act and NHRA.

Table 1 below outlines the legislative requirements as applicable to the Phase 1 HIA and PIA study for the proposed Oxford Freshmarket Development in Amanzimtoti.

**Table 1: Applicable Legislative Requirements**

Legislation	Relevant Section	Description
KwaZulu-Natal Amafa and Research Institute Act 2018 (Act 5 of 2018)	Section 41(1)	<p><i>“Any person who intends to undertake a development categorized as –</i></p> <p><i>(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;</i></p> <p><i>(b) the construction of a bridge or similar structure exceeding 50 m in length;</i></p> <p><i>(c) any development or other activity which will change the character of a site - (i) exceeding 5 000 m<sup>2</sup> in extent; or (ii) involving three or more existing erven or subdivisions thereof; or (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or (iv) the costs of which will exceed a sum set in terms of regulations;</i></p> <p><i>(d) the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent; or</i></p> <p><i>(e) any other category of development provided for in regulations, must, at the very earliest stages of initiating such a development, notify the Institute and furnish it with details regarding the location, nature and extent of the proposed development.”</i></p>

## 5 STUDY METHODOLOGY

### 5.1 DESKTOP ASSESSMENT

An initial desktop assessment and review of relevant current and historical aerial imagery of the study site was undertaken at the start of the project. Historical imagery was obtained from the Department of Rural Development and Land Reform and the National Geospatial Information website (<http://cdngiportal.co.za/cdngiportal/>) in order to identify historical land uses associated with the study site and surrounds. The SAHRIS website and Provincial Heritage Register were consulted for data on the presence and significance of any heritage sites within the eThekweni Municipal area, and in particular Amanzimtoti. In addition, the available heritage literature covering the larger study area was also consulted.

The methods employed for the PIA included the consultation of the relevant geological maps, paleontological databases, records, relevant literature, and existing paleontological assessment studies for the larger study area, to determine the likelihood of fossils being present within the project site and immediate surrounds.

### 5.2 GROUND SURVEY

A ground survey of the study site was conducted on the 03<sup>rd</sup> of August 2023 which comprised a walkover and visual survey of the project footprint. The assessment was done by foot and limited to a Phase 1 visual survey. Geographic coordinates were taken using a handheld Garmin Etrek GPS unit (Datum: WGS84). All readings were taken using the GPS unit, and accuracy was to a level of 5m. Photographic documentation of the site was undertaken using a Samsung S21 Smartphone camera. Archaeological, palaeontological and cultural heritage site recording, significance assignation and associated mitigation recommendations were done according to the field rating system prescribed by SAHRA (2007, 2016).

The project site comprises a privately owned property which is inaccessible to the public. As such, no local community members were encountered on the study site during the ground survey. The consultant was accompanied on site by the project manager. The consultant liaised with the project manager and some of the construction staff present on the site regarding the site history and if any heritage or palaeontological resources had been unearthed during the stripping and stockpiling of the topsoil and subsoil on the site. None of the persons interviewed were aware of the presence of any heritage or palaeontological features on the project site.

The relevant site photographs are included in Appendix B.

## 6 SITE DESCRIPTION AND LOCALITY

The project site is approximately 2.6ha in extent and is located at GPS coordinates 30°2'11.75"S and 30°53'42.44"E on the property Portion 2453 of Umlazi Location No. 4676, approximately 22km to the southwest of Durban, in Amanzimtoti, eThekweni Municipality. Amanzimtoti comprises a mix of industrial, retail, and residential areas. The project site is located approximately 450m from the coastline and is surrounded by an Engen Garage and the N2 Highway to the east, Moss Kolnick Drive and Galleria Mall to the northeast, Umdoni Road and Kingsway High School to the south,

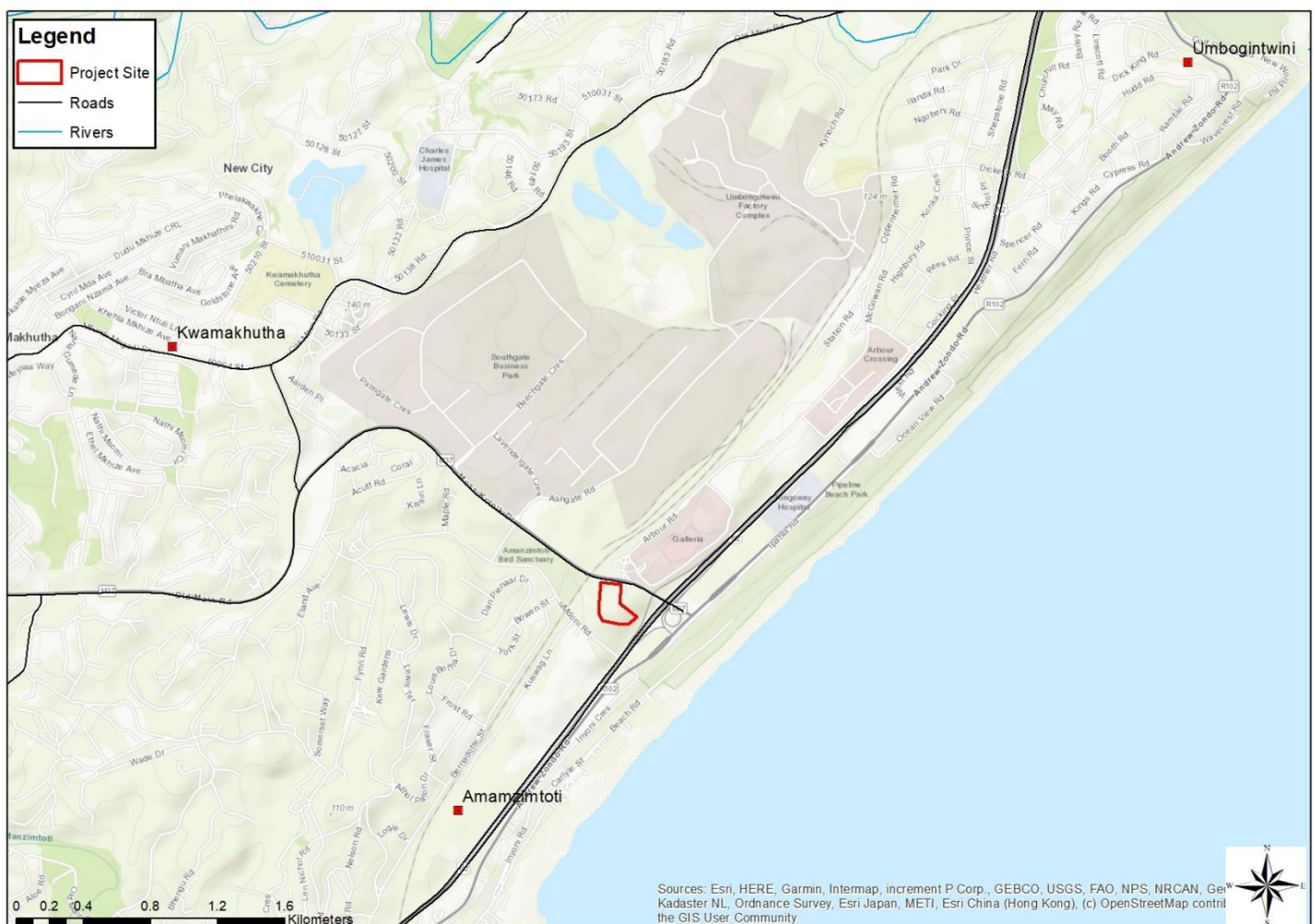
undeveloped land to the north, and the City Fleet Amanzimtoti Depot, a railway line, undeveloped land, and the Amanzimtoti Bird Sanctuary to the west.

The project site originally comprised KwaZulu-Natal Coastal Belt Grassland vegetation. The site was however previously cleared in 2003 and used as a golf driving range between 2004 and approximately 2011. The site was cleared again in 2015 during the construction of the adjacent Engen Garage.

Table 2 below provides the details of the general project area and the specifics of the project, while Figures 1 - 2 below provide locality and layout maps.

**Table 2: Details of the General Project Area and Project Specifics**

Property description	Portion 2453 of Umlazi Location No. 4676
Magisterial District	eThekweni Municipality
1: 50 000 map sheet number	3030BB
Central co-ordinate of the development	30°2'11.75"S and 30°53'42.44"E
Type of development	Retail
Property zoning	Special Zone 27



**Figure 1: Topographical locality map of the Oxford Freshmarket Development site in Amanzimtoti.**



Figure 2: Layout map of the Oxford Freshmarket Development Site in Amanzimtoti.

## 7 CULTURAL OVERVIEW OF THE STUDY AREA

The Stone Age period in South Africa can be divided into three periods and comprises the Early Stone Age (approximately 2 million to 200 000 years ago), the Middle Stone Age (approximately 200 000 to 30 000 years ago), and the Later Stone Age (approximately 30 000 to 2000 years ago). The Early Stone Age is associated with early hominins such as *Homo erectus* or *Homo ergaster*, while the Middle Stone Age is associated with the first anatomically modern humans. The Later Stone Age is associated with the San and their direct ancestors. The Stone Age period ended approximately 2000 years ago when Bantu-speaking farmers from central Africa arrived in southern Africa, heralding the start of the Iron Age. The Iron Age can also be divided into three periods in South Africa, namely the Early Iron Age (dating from AD 200 to AD 900), the Middle Iron Age (dating from AD 900 to AD 1300), and the Late Iron Age (dating from AD 1300 to 1820). From 1820 onwards we see the large-scale arrival of Dutch and British colonists to South Africa and the advent of the colonial and historical periods in the region.

The larger eThekweni Municipal area has been relatively well surveyed for archaeological and heritage sites by the KwaZulu-Natal Museum. Archaeological work has also been undertaken in the larger project area by the Universities of Cape Town and Witwatersrand due to the presence of the Umhlatuzana and Sibudu Rock Shelters in the area. A number of heritage surveys have also been undertaken more recently by private heritage consultants in the Amanzimtoti area. A large number of archaeological sites are recorded in the KwaZulu-Natal Museum and Amafa heritage site inventories for the general study area. These include Early, Middle and Later Stone Age sites; Early and Later Iron Age sites; and more recent sites from the historical period relating to the Zulu Kingdom and the colonial era.

In coastal KwaZulu-Natal, a relatively large number of Early and Middle Stone Age sites are located within the coastal dunes of the Berea Formation within 1-2km of the coastline. Most of these Stone Age sites however comprise the presence of stone flakes or individual stone tools in open air contexts, exposed by erosion. As these Stone Age sites comprise open air surface scatter finds which do not occur in archaeological context, they generally have limited value.

Umhlatuzana Rock Shelter is located approximately 20km to the north of the project site and is one of the most important Stone Age sites identified in KwaZulu-Natal. An impressive assemblage of stone tools from both the Middle and Later Stone Age periods has been uncovered at this site, and the site has also yielded faunal remains of large mammals that became extinct during the early Holocene such as the giant buffalo (*Pelorovis* sp) (Prins, 2015). The Shongweni Later Stone Age shelter is also located to the north of the study site. This shelter was excavated by Dr Oliver Davies in the 1970's. Some of the earliest remains of domesticated cereals in South Africa were discovered at this site, as well as some of the only San rock art found in the greater Durban area (Mazel 1989; Mitchell 2002, Prins, 2015). Four other Middle and Later Stone Age sites occur in close proximity to the project site, as recorded in the KwaZulu-Natal Museum Database, located between 1km to 2km to the north of the project site.

A relatively large number of Early and Later Iron Age sites occur in the general project area, along the coastline. The first Iron Age sites in KwaZulu-Natal date back to approximately 1500 years ago and are situated close to sources of iron ore and within 15km of the coast due to climatic conditions



at that time (eThembeni, 2013). From 650AD onwards climatic conditions improved and Iron Age agriculturalists expanded into the valleys of KwaZulu-Natal where they settled close to rivers in savannah or bushveld environments (eThembeni, 2013). Many of the Iron Age sites along the KwaZulu-Natal coastline occur on hilltops, and typical artefacts associated with these sites include ceramic sherds, marine shell, and grindstones as well as ironworking debris including furnace remains, slag, and bloom (eThembeni, 2013).

In terms of more recent history, the town of Amanzimtoti was founded in 1928 and proclaimed a township in 1939. However, prior to this, Adams College which is a historic Christian mission school was established in 1853 at Amanzimtoti by Reverend David Rood, a missionary of the American Board of Commissioners for Foreign Missions. English trader and colonist Dick King also passed through the Amanzimtoti area on his way to Grahamstown in 1842. The route that Dick King took through Amanzimtoti later became the Kingsway Road. The first railway line which initially ran from Durban to Isipingo was extended to Park Rynie in 1896, passing through Amanzimtoti, with the first train passing through the area in 1897. Subsequent lines were established in the area over the years including the railway line which is located adjacent to the study site, to the west. Several other colonial and historical period sites also occur in the greater Amanzimtoti area. All of these sites are more than 60 years old and are protected by heritage legislation. None of the above-mentioned archaeological or historical sites are known to occur on the project footprint.

## **8 GEOLOGY AND PALAEOLOGY**

### **8.1 GEOLOGY**

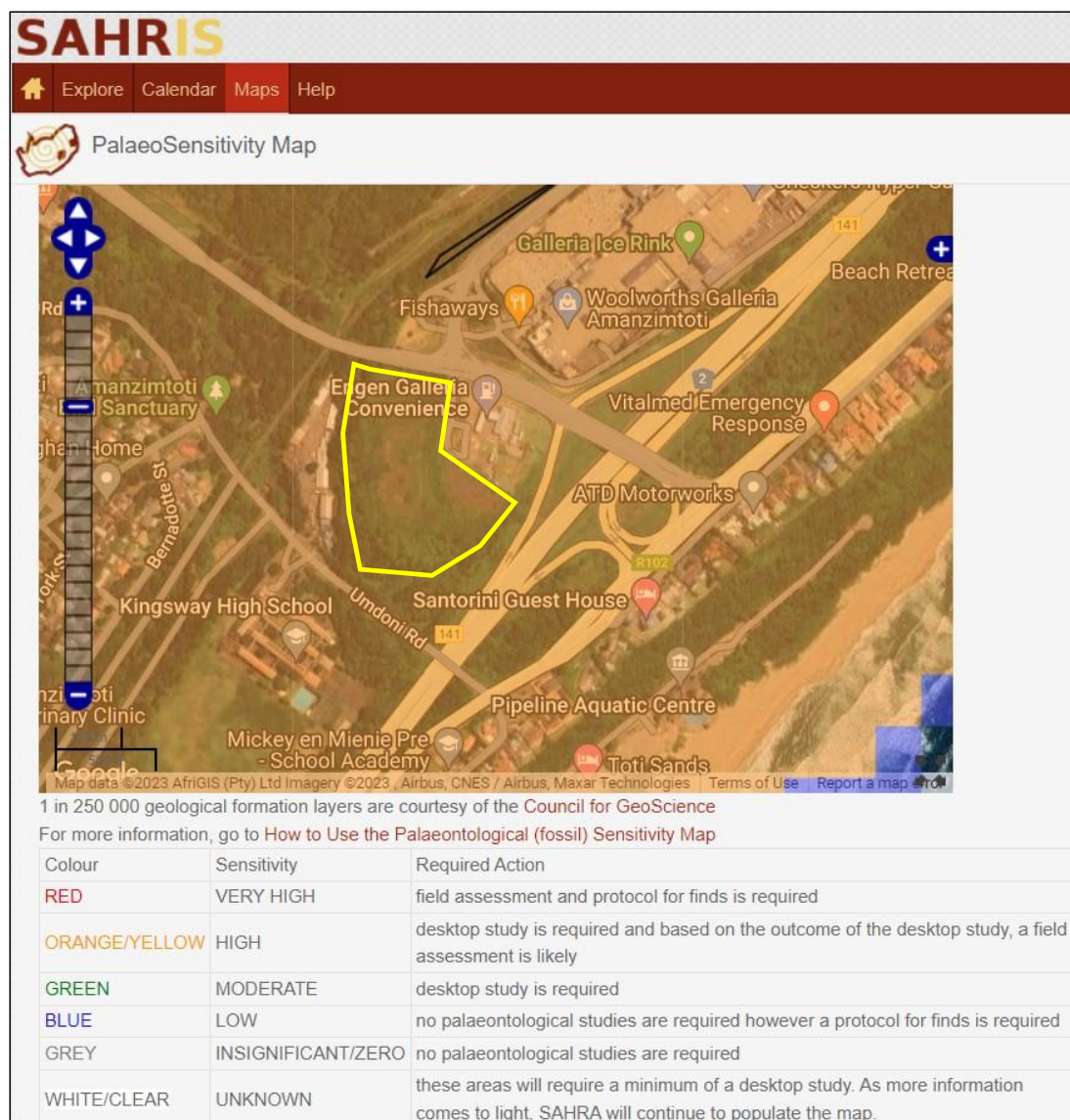
South Africa has a very rich fossil record, dating back over some 3.5 billion years. Fossil heritage is found in all provinces of South Africa. The palaeontological sensitivity of the study site as per the SAHRIS palaeo-sensitivity map is shown in Figure 3 below. The project site is located within an area that has a “high” palaeontological sensitivity.

The 3030 Port Shepstone 1:250 000 Geological map series (Council for Geosciences) was used to identify the general geology of the study area, as shown in Figure 4 below. The project site is located within the coastal margin of upper southern KwaZulu-Natal where younger Maputaland sands unconformably overlie older Ecca Group rocks of the Karoo Supergroup. The project site is underlain by Quaternary aged sands of the Umkwelane Formation (formerly Berea Formation) of the Uloa Subgroup, Maputaland Group.

The study site is located within the eastern part of the main Karoo Basin. The Karoo Basin covers almost two thirds of the present land surface in southern Africa and is bounded along the southern margin by the Cape Fold Belt and along the northern margin by the Transvaal Supergroup rocks. During the Carboniferous period, approximately 300 to 290 million years ago, southern Africa was part of the supercontinent Gondwana and was located in the Antarctic region with much of the land surface covered by ice sheets. As Gondwana drifted northwards, the ice sheets melted and dropped moraine trapped in the ice forming the oldest sediments in the Karoo Supergroup system, namely the Dwyka Group rocks. Dwyka Group sediments are exposed around the outer part of the Karoo Basin. Overlying the Dwyka Group deposits are the Permian-aged Ecca Group rocks, which are in turn overlain by the Late Permian-aged rocks of the Beaufort Group. Intruding through the Karoo

Supergroup deposits are dolerite dykes and sills that formed during the initial breakup of Gondwana and are associated with the eruption of the Drakensberg Basalts (Groenewald, 2017; Bamford, 2021). In KwaZulu-Natal and the Free State there are three formations associated with the Ecca Group. These comprise, from the base upwards, the Pietermaritzburg Formation, the Vryheid Formation, and the Volksrust Formation (Bamford, 2021). All of these formations comprise a combination of sandstone, mudstone, shale or siltstone sediments which were laid down in shallow to deep water depositional environments (Bamford, 2021).

The Maputaland Group sediments along the KwaZulu-Natal coastal region which overlie the older Ecca Group rocks, are the result of a marine transgression (sea level rise) that occurred during the early Miocene (23 – 16 Ma), followed by epeirogenic uplift (upheaval of land) and subsequent eustatic (global) marine regression (exposure of the seafloor) during the mid Miocene (16 – 11.6 Ma) (Botha, 2018). During the marine regression, littoral marine sediments were deposited on the newly exposed coastal platform along the eastern seaboard of southern Africa (Bamford, 2022). The subsequent weathering of the littoral marine sediments led to the deposition of the Umkwelane (Berea) Formation sands, which comprise red, orange, and yellow aeolian (wind-blown) sands, in the form of dune cordons along the KwaZulu-Natal coast (Groenewald, 2016; Bamford, 2022).



**Figure 3: SAHRIS palaeo-sensitivity map for the study site (SAHRIS).**

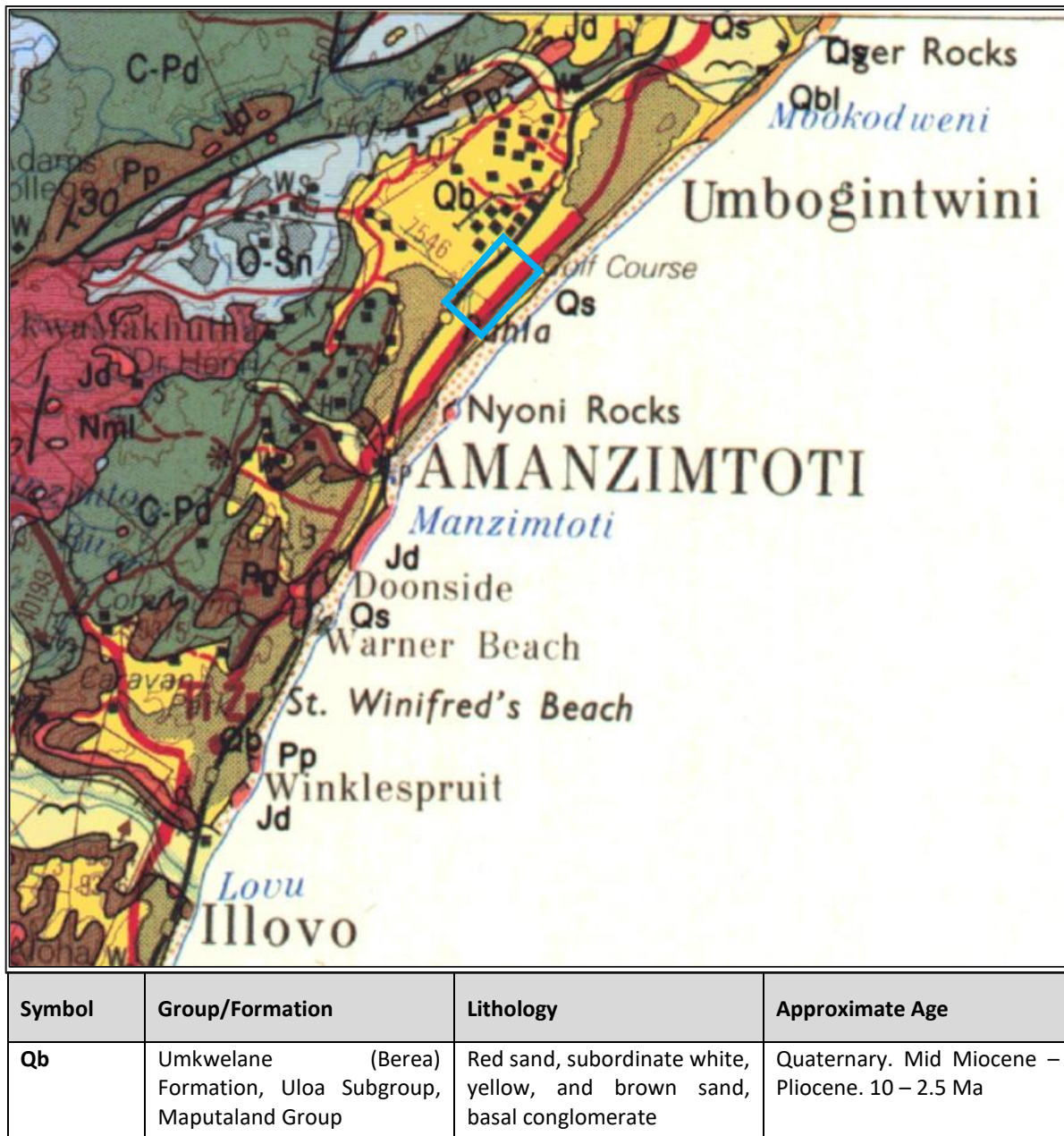


Figure 4: Regional geology of the study area (Council for Geosciences).

## 8.2 PALAEOLOGY

It is possible that very small fragments of wind transported bone, wood, rhizoliths, and invertebrate shells may be preserved in Umkwelane Formation sands. However, any such fossils would be very small, and occur out of context (Bamford, 2019; Bamford, 2022). Only under very special conditions in palaeo-pans and springs would more complete fossils be likely to form (Bamford, 2022). Such pans do occur in the more arid northwestern region of South Africa, but none occur along the southern KwaZulu-Natal coastal region due to the high levels of rainfall in the area. In addition, there are no records to date of plant or animal fossils from the Umkwelane Formation sands in this region of the KwaZulu-Natal coastline. As such, it is extremely unlikely that any fossils are present on the study site.

## 9 ASSESSMENT RESULTS

### 9.1 DESKTOP STUDY

An investigation into historical aerial imagery of the project site was undertaken as part of the Phase 1 HIA. Aerial imagery from 1953, 2004, and 2015 was used to identify past activity on the site and assist in the identification of heritage resources. Aerial imagery from 1953 (Figure 5) shows the study site and immediate surrounds as undeveloped comprising coastal forest vegetation. The railway line is evident to the west of the study site and the R102 Road is present to the east of the study site. There are no buildings present on the site in the 1953 imagery.



**Figure 5: Historic aerial imagery of the project site from 1953 shows the site and immediate surrounds as undeveloped, comprising coastal forest vegetation. There are no buildings present on the project site.**

More recent Google Earth imagery of the site from 2004 (Figure 6) shows the site as cleared of natural vegetation and converted to a golf driving range. A small building associated with the driving range is present on the northern boundary of the site. The use of the site as a driving range ceased in approximately 2011 and the building was demolished in 2013. Later Google Earth imagery shows that the site was cleared again in 2015 likely during the construction of the adjacent Engen Garage (Figure 7).

The results of the desktop assessment show that previous disturbance has taken place on the site, and that no heritage resources are evident on the site surface in the historic aerial imagery.



**Figure 6: Aerial imagery of the project site from 2004 shows that the site was previously cleared of natural vegetation and converted to a golf driving range. There is a building present in the northern portion of the site which was later demolished in 2013.**



**Figure 7: Aerial imagery of the project site from 2015 shows that the site was cleared again during the construction of the adjacent Engen Garage.**

## 9.2 GROUND SURVEY

The ground survey focused on the identification and assessment of both heritage and palaeontological resources. Construction activities associated with the proposed Oxford Freshmarket Development had already begun on the project site at the time of the ground survey. The widening of the access road was almost complete, and the clearing of vegetation, as well as the stripping and stockpiling of the topsoil and subsoil had already taken place on the site. All areas of the project site were visited and visually surveyed for the presence of archaeological, palaeontological or heritage features. No such resources were identified on the project site during the ground survey as outlined in Table 3 below.

Based on the local geology of the area which comprises Quaternary aged red aeolian sands of the Umkwelane Formation of the Maputaland Group, it is extremely unlikely that any fossils are present on the study site. Very small fragments of wind transported bone, wood, rhizoliths, and invertebrate shells can be preserved in Umkwelane Formation sands, however this is very rare, and any such fossils would be very small, and occur out of context (Bamford, 2022). Only under very special conditions in palaeo-pans and springs would more complete fossils be likely to form (Bamford, 2022). In addition, there are no records to date of plant or animal fossils from the Umkwelane Formation sands in this region of the KwaZulu-Natal coastline.

**Table 3: List of Possible Heritage Resources and Assessment Findings**

Heritage Resource Type	Finding
Places, buildings, structures and equipment of cultural significance	None
Places to which oral traditions are attached or which are associated with living heritage	None
Historical settlements and townscapes	None
Landscapes and natural features	None
Geological sites of scientific or cultural importance	None
Archaeological and palaeontological sites	None
Graves and burial grounds	None
Public monuments and memorials	None
Sites of significance relating to the history of slavery in South Africa	None
Movable objects	None

An assessment in terms of the significance criteria outlined in Section 3(3) of the NHRA was also undertaken for the study site as part of the Phase 1 HIA and PIA, as shown in Table 4 below.

**Table 4: Evaluation of Heritage Sites or Objects in terms of Section 3(3) of the NHRA**

Significance criteria for heritage sites or objects in terms of Section 3(3) of the NHRA 1999 (Act 25 of 1999)	Rating
Importance in the community, or pattern of South Africa's history.	None
In possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage.	None
Has potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage.	None
Importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects.	None
Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;	None
Importance in demonstrating a high degree of creative or technical achievement at a particular period.	None
Has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.	None
Has a strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.	None
Sites of significance relating to the history of slavery in South Africa.	None

## 10 IMPACT ASSESSMENT

Any development or anthropogenic activity in a natural system will have an impact on the surrounding environment, usually in a negative way. The assessment criteria as outlined in Table 5 below have been used to identify, predict, and assess the significance of any potential heritage and palaeontological related impacts associated with the proposed Oxford Freshmarket Development in Amanzimtoti.

As no heritage sites or resources have been identified on the development footprint; the area is not part of any known cultural landscape; and it is highly unlikely that fossils will be impacted by the development; the proposed activity poses a minimal risk to heritage and palaeontological resources, as shown in Table 6 below.

**Table 5: Summary of Aspects used for Assessing Heritage / Palaeontological Impacts**

Aspect	Rating	Description
<b>Nature</b>	Positive	The impact on the resource will be positive.
	Negative	The impact on the resource will be negative.
<b>Probability (with / without mitigation)</b>	Definitely	The impact will definitely occur even with mitigation (100%).
	Likely	It is likely that the impact will occur (60%-99%).
	Fair	There is a fair chance that the impact will occur (30% -59%).
	Unlikely	It is unlikely that the impact will occur (0% - 29%).
<b>Reversibility (with / without mitigation)</b>	Possible	It is possible to reverse the impact.
	Partly	It is partly possible to reverse the impact.
	Not possible	It is not possible to reverse the impact.
<b>Extent</b>	Site	The impact will be limited to the site.
	Local	The impact will affect the local area (within a radius of 40km).
	Provincial	The impact will affect areas beyond the site but within the boundaries of KwaZulu-Natal.
	National	The impact will affect areas beyond the Province but within the boundaries of South Africa.
<b>Duration</b>	Short-term	0-5 years (construction phase).
	Medium-term	5-40 years (construction and operation).
	Long-term	(>40 years).
	Permanent	Permanent damage to the resource.
<b>Significance of Impact (with / without mitigation)</b>	Low	Small impact / disturbance.
	Medium	Moderate impact / disturbance expected.
	High	Significant impact / disturbance expected.



**Table 6: Impact Assessment Results for the Proposed Oxford Freshmarket Development Project**

Aspect	Rating	Description
Nature	Positive	-
	Negative	While it is highly unlikely that impacts to fossils or heritage resources will occur, any impacts resulting from the project will be negative.
Probability (without mitigation)	Definitely	-
	Likely	-
	Fair	-
	Unlikely	It is unlikely that the impact will occur (0% - 29%).
Probability (with mitigation)	Definitely	-
	Likely	-
	Fair	-
	Unlikely	It is unlikely that the impact will occur (0% - 29%).
Reversibility (without mitigation)	Possible	-
	Partly	It is partly possible to reverse the impact.
	Not possible	-
Reversibility (with mitigation)	Possible	It is possible to reverse the impact.
	Partly	-
	Not possible	-
Extent	Site	The impact will be limited to the site.
	Local	-
	Provincial	-
	National	-
Duration	Short-term	Short term damage to the heritage resource (construction phase).
	Medium-term	-
	Long-term	-
	Permanent	-
Significance of Impact without Mitigation	Low	Small impact / disturbance.
	Medium	-
	High	-
Significance of Impact Post-Mitigation	Low	Small impact / disturbance.
	Medium	-
	High	-

## 11 RECOMMENDATIONS AND CONCLUSION

The Phase 1 HIA and PIA for the proposed Oxford Freshmarket Development on Portion 2453 of Umlazi Location No. 4676 identified no heritage sites or features on the development footprint. The area also does not form part of any known cultural landscape. It is also highly unlikely that fossils will be negatively impacted by the proposed development, as outlined in Section 8 of this report. In addition, it is highly unlikely that any fossils or heritage resources were negatively impacted as a result of the clearing of vegetation, stripping and stockpiling of topsoil and subsoil on the site as well as the widening of the access road. This is because the site was previously disturbed in 2003 and again in 2015 as outlined in Section 9.1 of this report. The heritage consultant is of the opinion that the Oxford Freshmarket Development may proceed on the study site as no heritage or paleontological features are threatened by the project.

In the unlikely event that the construction activities expose any undetected surface and/or subsurface archaeological or heritage resources, graves, or fossils on the development site, all activity within a 25m radius of the discovery site must cease immediately, and the ECO must be contacted. The ECO must in turn notify the provincial heritage resource authority, the KwaZulu-Natal

Amafa and Research Institute and/or the heritage consultant. Should any human remains be unearthed by construction activities, the South African Police Services (SAPS) and the KwaZulu-Natal Amafa and Research Institute must be contacted immediately. In the very unlikely event that the development exposes fossil material, the chance find protocol in Appendix C must be implemented.

The proposed project must adhere to the requirements of the NHRA and the KwaZulu-Natal Amafa and Research Institute Act, and Draft Regulations, which requires that a person that discovers any archaeological or palaeontological material or a meteorite must immediately cease all operations or activity within a 25m radius of the discovery and must notify the KwaZulu-Natal Amafa and Research Institute. In addition, no structures older than sixty years or parts thereof are allowed to be demolished, altered, or extended without a permit from the KwaZulu-Natal Amafa and Research Institute. Under no circumstances may any heritage material be destroyed or removed from site unless under direction of the KwaZulu-Natal Amafa and Research Institute and appointed heritage consultant.

## 12 REFERENCES

Bamford, M. 2019. Palaeontological Impact Assessment for the proposed development of housing and access gates on Seaton Equestrian Estate, near Ballito, KwaZulu Natal Province. Internal Palaeontological Impact Assessment Reports, SAHRA.

Bamford, M. 2021. Palaeontological Impact Assessment for the proposed Culvert on Road L2013, Bergville, Okhahlamba Local Municipality, KwaZulu Natal Province. Internal Palaeontological Impact Assessment Reports, SAHRA.

Bamford, M. 2021. Palaeontological Impact Assessment for the proposed coalmine on Ogies South Portion 1/5, Mpumalanga Province. Internal Palaeontological Impact Assessment Reports, SAHRA.

Bamford, M. 2022. Palaeontological Impact Assessment for the proposed 1 Edward Place residential Units, Ballito, KwaZulu Natal Province. Internal Palaeontological Impact Assessment Reports, SAHRA.

Botha, G.A., 2018. Lithostratigraphy of the late Cenozoic Maputaland Group. South African Journal of Geology 121, 95-108.

eThembeni Cultural Heritage. 2013. Ugu District Municipality Environmental Management Framework. Heritage Resource Management Report. Unpublished Report, SAHRA.

Groenewald, G. 2016. Desktop Palaeontological Assessment for the Proposed Sibaya Precinct Pipeline Project, eThekweni Metropolitan Municipality, KwaZulu-Natal Province. Internal Palaeontological Impact Assessment Reports, SAHRA.

Groenewald, G. 2017. Desktop Palaeontological Assessment and "Chance Find Protocol" for the Proposed Upgrading and Extension of the L3299 (Gomola) Road, Ladysmith Local Municipality, Uthukela District Municipality, KwaZulu-Natal Province. Internal Palaeontological Impact Assessment Reports, SAHRA.

Groenewald, G. 2017. Desktop Palaeontological Assessment for the Proposed Upgrading and Extension of the Malandeni Road, Okhahlamba Local Municipality, Uthukela District Municipality, KwaZulu-Natal Province. Internal Palaeontological Impact Assessment Reports, SAHRA.

Mazel, A. 1989. The Stone Age peoples of Natal. In Duminy, A & Guest, B.(eds). Natal and Zululand: From Earliest Times to 1910 – A New History: 1 - 27. University of KwaZulu-Natal Press.

Mitchell, P. 2002. *The Archaeology of Southern Africa*. Cambridge University Press: Cambridge.

Prins, F. 2015. Cultural Heritage Impact Assessment of the Proposed Upgrade to the N2 Adams Road Interchange at Amanzimtoti, KwaZulu-Natal. Active Heritage cc. Unpublished Heritage Impact Assessment Report, SAHRA.

South African Heritage Resources Agency. 2007. Minimum Standards for the Archaeological and Heritage Components of Impact Assessments. (Unpublished guidelines).

South African Heritage Resources Agency. 2016. Updated Minimum Standards for the Archaeological and Heritage Components of Impact Assessments. (Unpublished draft guidelines).

<http://cdngiportal.co.za/cdngiportal/>

## APPENDICES

# **APPENDIX A: SHORT CV OF THE HERITAGE CONSULTANT**

## **CURRICULUM VITAE**

### **Dr. Phillipa Harrison – Heritage Consultant / Archaeologist Land Matters Environmental Consulting (Pty) Ltd**

#### **CONTACT DETAILS**

Telephone                      082 408 6545  
E-mail                              phillipa@lmenvironmental.co.za

#### **QUALIFICATIONS**

- 2015 – 2021: Bachelor of Arts Honours (Archaeology), University of South Africa (UNISA)
- 2003 – 2006: Doctor of Philosophy (PhD), University of KwaZulu-Natal
- 2001 – 2002: Master of Arts (MA), University of KwaZulu-Natal
- 2000: Bachelor of Arts Honours (Geography), University of KwaZulu-Natal
- 1997 – 1999: Bachelor of Arts (Geography, English, Geology), University of KwaZulu-Natal

#### **PROFESSIONAL REGISTRATIONS**

Association of Southern African Professional Archaeologists (ASAPA) (No. ASAPA545)

#### **AREAS OF EXPERTISE**

- Heritage Impact Assessment and Palaeontological Impact Assessment Studies;
- EIA and Basic Assessment Processes;
- Environmental Management Programmes;
- Water Use License Applications; and
- Waste Management License Applications.

#### **WORK EXPERIENCE**

Dr Phillipa Harrison holds a Bachelor of Arts Honours Degree in Archaeology from the University of South Africa (UNISA) and a Doctor of Philosophy in Geography from the University of KwaZulu-Natal. She is professionally affiliated to the Association of Southern African Professional Archaeologists (ASAPA) and has eleven years consulting experience in the Environmental Assessment field with experience in conducting Heritage Impact Assessment and Palaeontological Impact Assessments, as well as Basic Assessment and Scoping and EIA processes, compiling Environmental Management Programmes, and undertaking Water Use and Waste Management License Applications.

## EXAMPLES OF RELEVANT PROJECT EXPERIENCE

PROJECT	DATE
<b>Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment:</b> for the Proposed Upgrade of the Water Supply System Between Emmaus and Cathedral Peak in the Okhahlamba Local Municipality, KZN.	August 2023
<b>Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment:</b> for the Proposed Phase 2 Expansion of the Mount Edgecombe Retirement Village in Umhlanga, eThekweni Municipality, KZN.	July 2023
<b>Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment:</b> for the Proposed Rezoning of a 95ha Portion of the Property the Farm Clydesdale No. 18233 in Clydesdale, Umzimkhulu Local Municipality, KZN.	July 2023
<b>Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment:</b> for the Proposed Upgrade of the Winterton Water Treatment Works and Associated Water Reticulation Infrastructure in Winterton, Okhahlamba Local Municipality, KZN.	July 2023
<b>Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment:</b> for the Proposed Upgrade of the Winterton Wastewater Treatment Works and Associated Sewer Reticulation Infrastructure in Winterton, Okhahlamba Local Municipality, KwaZulu-Natal	July 2023
<b>Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment:</b> for the Proposed Cultivation on Highover Farm in the Hela Hela Area of the Dr Nkosazana Dlamini-Zuma Local Municipality, KZN.	July 2023
<b>Phase 1 Heritage Impact Assessment:</b> for the Proposed Panorama Gardens Residential Development on Erf 94 Surrey Park in Panorama Gardens, Pietermaritzburg, Msunduzi Local Municipality, KZN	June 2023
<b>Heritage and Desktop Palaeontological Baseline Report:</b> for the Proposed Residential Development on Portions 82 and 83 of the Farm Ockerts Kraal No. 1336 in Ashburton, Msunduzi Local Municipality, KZN.	June 2023
<b>Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment:</b> for the Proposed Upgrade of the Amabengela to Matshenezimpisi Gravel Road in the Nkandla Local Municipality, KZN.	May 2023
<b>Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment:</b> for the Proposed Upgrade of the Lushaba to Malunga Gravel Road in the Nkandla Local Municipality, KZN.	May 2023
<b>Phase 1 Heritage Impact Assessment and Protocol of Finds:</b> for the eTafuleni Residential Development on Portion 14 (of 6) of the Farm Inanda No. 818, in Inanda, eThekweni Municipality, KZN.	April 2023
<b>Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment:</b> for the Proposed Residential Development on Portion 34 and 64 of the Farm Hilton No. 12304 in Hilton, Umngeni Local Municipality, KZN.	December 2022
<b>Phase 1 Heritage Impact Assessment:</b> for the Operation of the Illovo Quarry on Rem of the Farm Ambleside No. 17474 near Port Shepstone, Ray Nkonyeni Local Municipality, KZN.	November 2022
<b>Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment:</b> for the Unauthorised Dams on the Farm Fouries Kraal No. 1183 located near Ladysmith, Alfred Duma Local Municipality, KZN.	November 2022
<b>Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment:</b> for the Unauthorised Dams and Cultivation on Tullinchinwall Farm located near Geluksburg, Okhahlamba Local Municipality, KZN.	November 2022
<b>Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment:</b> for the Establishment of an Unauthorised Irrigation Dam on Nineveh Farm located near Bergville, Okhahlamba Local Municipality, KZN.	November 2022
<b>Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment:</b> for the proposed Light Industrial Estate on Rem of Lot 20 Marburg Settlement No. 5096, Ray Nkonyeni Local Municipality, KZN.	September 2022
<b>Heritage Comment:</b> for the proposed rectification in terms of Section 24G of NEMA for the unauthorised establishment of a Private Staging Facility on a portion of the property Rem of Portion 55 of the Farm Langewacht No. 2168 near Mooi River, KwaZulu-Natal.	July 2022
<b>Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment:</b> for the proposed installation of an Outfall Sewer Pipeline for the Arbour Arch Mixed-Use Development in the Town Hill Area of Pietermaritzburg, KZN.	July 2022
<b>Phase 1 Heritage Impact Assessment:</b> for the proposed establishment of a Cattle Feedlot on Westlands Farm in the Kokstad Area, Greater Kokstad Local Municipality and Harry Gwala District Municipality, KZN.	July 2022
<b>Phase 1 Heritage Impact Assessment:</b> for the proposed establishment of a Mixed-Use Development on Rem of the Farm Usherwood West No. 303 in Kokstad, Greater Kokstad Local Municipality and Harry Gwala District Municipality, KZN.	July 2022
<b>Phase 1 Heritage Impact Assessment and Desktop Palaeontological Impact Assessment:</b> for the proposed establishment of the Ulundi Crossings Shopping Centre and Service Station on Erf 402 of Ulundi B, Ulundi Local and Zululand District Municipality, KZN.	April 2022

## APPENDIX B: SITE PHOTOGRAPHS



**Plate 1: Photograph showing an overview of the project site where vegetation clearing and stripping of topsoil and subsoil has occurred.**



**Plate 2: Photograph showing the access road to the site which is in the process of being widened.**



**Plate 3: Photograph showing topsoil and subsoil stockpiles on the project site.**



# APPENDIX C: CHANCE FIND PROCEDURES FOR HERITAGE / PALAEOLOGICAL RESOURCES

## 1. INTRODUCTION

The following procedures must be considered in the event that previously unknown heritage resources, including fossils, burial grounds or graves, are exposed or found during the life of the project. The procedures below are based on the National Heritage Resources Act, 1999 Regulations (Reg No. 6820, GNR 548) and the KwaZulu-Natal Amafa and Research Institute Draft Regulations, 2021.

The term 'heritage resource' here includes burial grounds and graves, structures, archaeology, palaeontology, meteors and public monuments. If any sign of the above are uncovered during excavation of the site, the following protocol must be observed:

- All work in the vicinity of the find must immediately cease, with a radius of at least 25 meters of the site or discovery, and further disturbance of the heritage resource must be avoided.
- The ECO and project manager/developer must be notified of the discovery.
- The ECO must arrange for a suitably qualified specialist to consider the heritage resource, either via communicating with the ECO via telephone or email, or based on a site visit.
- The ECO and specialist must advise on the appropriate mitigation measures to be implemented.
- Should the specialist conclude that the find is a heritage resource protected in terms of the NHRA (1999) and the KwaZulu-Natal Amafa and Research Institute Act (2018), a written report must be submitted to the KwaZulu-Natal Amafa and Research Institute within a period of 30 days from the date of making such a discovery.
- The report must include – the names of the person reporting; the object discovered; the time and date of such discovery; the location of such discovery; and the municipal area within which the discovery was made.
- The Provincial Heritage Resource Authority (PHRA) may require that a full Heritage Impact Assessment (HIA) to be conducted and may require rescue excavations to take place.

## 2. BURIAL GROUND AND GRAVE FIND PROCEDURE

In the event that human remains are accidentally exposed, the project manager and / or ECO must immediately be notified of the discovery in order to take the required further steps:

- The local SAPS will be notified on behalf of the Applicant;
- A suitably qualified specialist must be arranged to inspect the exposed burial and determine in consultation with the SAPS:
  - a) The temporal context of the remains, i.e.:
    - forensic
    - authentic burial grave (informal or older than 60 years); or
    - archaeological (older than 100 years).
  - b) If any additional graves or burial sites may exist in the vicinity.
- Should the specialist conclude that the find is a heritage resource protected in terms of the NHRA (1999) and the KwaZulu-Natal Amafa and Research Institute Act (2018), a written report must be submitted to the KwaZulu-Natal Amafa and Research Institute within a period of 30 days from the date of making such a discovery.
- The SAHRA / PHRA may require that interested parties be identified and that consultation and /or grave relocation take place.
- If consultation and / or grave relocation are required, consultation and grave relocation must take place in terms of the NHRA (1999) and the KwaZulu-Natal Amafa and Research Institute Act (2018).

## 3. FOSSIL FIND PROCEDURES

### 3.1 Introduction

In the context of this application, it is unlikely that any fossil finds will require the declaration of permanent "no go" areas and it is likely that if any fossil finds are made, a temporary pause in activity within a particular area will be required. In the event that fossil material is uncovered during excavation, the strategy to be employed will be to rescue the material as quickly as possible.

The procedures outlined below are in general terms and will require adaptation depending on the specifics of type of fossil find. The procedures outlined below are detailed in terms of fossil bone finds, which usually occur sparsely. However, they do serve as a guideline for other fossil material finds, which may occur on the site.

### 3.2 Isolated and Cluster Bone Finds

There are two types of fossil bone finds – 'isolated bone finds' and 'cluster bone finds'. During the excavation process, isolated bones may be found within the walls or base of the excavation, or as they appear on the stockpile or spoil heap. When bones appear singly, in different parts of the excavation site, they are considered 'isolated bone finds', however, when six or more isolated bones / pieces are found, the finds are considered a 'cluster bone find'. A 'cluster bone find' is when several bones are uncovered in the same spot or grouped together within the excavation site. These bones may or may not resemble an intact or partially intact skeleton.

### 3.2.1 Response by Personnel in the Event of an Isolated Bone Find

The following responses should be undertaken by personnel in the event of isolated bone finds:

1. An isolated bone exposed in an excavation or spoil heap must be retrieved before it is covered by further spoil from the excavation and set aside;
2. The site foreman and ECO must be informed;
3. The responsible field person (site foreman or ECO) must take custody of the fossil. The following information is to be recorded:
  - Position (excavation position);
  - Depth of find in hole;
  - Digital image of hole showing vertical section (side); and
  - Digital image of fossil.
4. The fossil should be placed in a bag (e.g. a Ziploc bag), along with any detached fragments. A label must be included with the date of the find, position information, and depth; and
5. The ECO is to inform the Applicant who must then contact the heritage consultant. The ECO is to describe the occurrence and provide images via email.

### 3.2.2 Response by Palaeontologist in the Event of Isolated Bone Finds

The palaeontologist will assess the information and liaise with the Applicant and the ECO and a suitable response procedure will be established.

### 3.3 Response by Personnel in the Event of a Cluster Bone Find

The following responses should be undertaken by personnel in the event of bone cluster finds:

1. Immediately stop excavation in the vicinity of the potential material. Mark or flag the position as well as the spoil heap that may contain fossils;
2. Inform the site foreman and the ECO; and
3. The ECO is to inform the developer who must then contact the heritage consultant. The ECO must then describe the occurrence and provide images via email.

### 3.3.2 Response by Palaeontologist in the Event of a Bone Cluster Find

A palaeontologist must assess the information and liaise with the Applicant and the ECO and a suitable response procedure must be established. It is likely that a Field Assessment by the palaeontologist will be required. The response time / scheduling of the Field Assessment will be decided in consultation with the Applicant and the ECO. The Field Assessment could have the following outcomes:

- If a human burial, the appropriate authority is to be contacted. The find must be evaluated by a human burial specialist to decide if Rescue Excavation is feasible, or if it is a Major Find.
- If the fossils are of an archaeological context, an archaeologist must be contacted to evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find.
- If the fossils are of a palaeontological context, the palaeontologist must evaluate the site and decide if Rescue Excavation is feasible, or if it is a Major Find.

### 3.4 Rescue Excavation

Rescue Excavation refers to the removal of the material from the site excavation. This is applicable if the volume or significance of the exposed material appears to be relatively confined and it is feasible to remove it without compromising the contextual data. The time span for Rescue Excavation should be relatively rapid to avoid any undue delays (e.g. less than one week).

In principle, the strategy during the mitigation is to “rescue” the fossil material as quickly as possible. The strategy to be adopted depends on the nature of the occurrence, particularly the density of the fossils. The methods of collection would depend on the preservation or fragility of the fossil and whether in loose or in lithified sediment.

These could include:

- On-site selection and sieving in the case of robust material in sand; and
- Fragile material in loose sediment would be encased in blocks using Plaster-of-Paris or reinforced mortar.

If the fossil occurrence is dense and is assessed to be a “Major Find”, a carefully controlled excavation is required.

### 3.5 Major Finds

A Major Find is when the occurrence of material that, by virtue of quantity, importance and time constraints, cannot be feasibly rescued without compromising the detailed material recovery and contextual data / observations.

#### 3.5.1 Management Options for Major Finds

In consultation with the Applicant and the ECO, the following options should be considered when deciding on how to proceed in the event of a Major Find.

### **Option 1: Avoidance**

Avoidance of the Major Find through project redesign or relocation. This ensures minimal impact to the site and is the preferred option from a heritage resource management perspective. When feasible, it can also be the least expensive option from a construction perspective. The find site will require site protection measures, such as erecting fencing or barricades. Alternatively, if excavation of the find will be delayed substantially or indefinitely, the exposed finds can be stabilised and the site refilled or capped. Appropriate protection measures should be identified on a site-specific basis and in wider consultation with the heritage and scientific communities. This option is preferred as it will allow the later excavation of the finds with due scientific care and diligence.

### **Option 2: Emergency Excavation**

Emergency excavation refers to the “no other option” situation where avoidance is not feasible due to design, financial and time constraints. It can delay construction and emergency excavation itself will take place under tight time constraints, with the potential for irrevocable compromise of scientific quality. It could involve the removal of a large, disturbed sample by an excavator and conveying this by truck from the immediate site to a suitable place for “stockpiling”. This material could then be processed later. Emergency excavation is not the preferred option for a Major Find due to the loss of contextual data and the loss of sample integrity.

## **3.6 Exposure of Other Fossil Types (e.g. Plants, Fossil Shell Beds)**

### **3.6.1 Response for Personnel in the Event of Other Fossil Finds**

The following responses should be undertaken by personnel in the event of any type of fossil finds:

1. The site foreman and ECO must be informed;
2. The responsible field person (site foreman or ECO) must record the following information:
  - Position (excavation position);
  - Depth of find in hole;
  - Digital image of the hole showing the vertical section (side); and
  - Digital images of the fossiliferous material.
3. A generous quantity of the excavated material containing the fossils should be stockpiled near the site, for later examination and sampling;
4. The ECO is to inform the developer who must then contact the heritage consultant. The ECO is to describe the occurrence and provide images via email.

### **3.6.2 Response by the Palaeontologist in the Event of Other Fossil Finds**

The palaeontologist will assess the information and liaise with the developer and the ECO and a suitable response will be established. This will most likely be a site visit to document and sample the exposure in detail, before it is covered up.

## **4. MONITORING FOR FOSSILS**

A regular monitoring presence over the period during which excavations are made, by either an archaeologist or palaeontologist, is generally not practical.

The field supervisor or foreman and workers involved in digging excavations must be encouraged and informed of the need to watch for potential fossil and buried archaeological material. Workers seeing potential objects are to report to the field supervisor who, in turn, will report to the ECO. The ECO will inform the heritage consultant in the case of fossil finds.

To this end, responsible persons must be designated. This will include hierarchically:

- The field supervisor or foreman who is going to be most often in the field;
- The ECO for the project; and
- The Project Manager.

Should the monitoring of excavations be stipulated in the Archaeological Impact Assessment and / or the Heritage Impact Assessment, the contracted Monitoring Archaeologist (MA) can also monitor for the presence of fossils and make field assessment of any material brought to attention. The MA is usually sufficiently informed to identify fossil material and this avoids additional monitoring by a palaeontologist.

The MA then becomes the responsible field person and fulfils the role of liaison with the palaeontologist and coordinates with the Applicant and the ECO. If fossils are exposed in non-archaeological contexts, the palaeontologist should be summoned to document and sample / collect them.