HERITAGE IMPACT ASSESSMENT (INCLUDING PHASE ONE PALEONTOLOGY DESKTOP ASSESSMENT) OF THE PROPOSED PROPOSED REFURBISHMENT AND ADDITIONS TO THE EMONDLO BULK WATER SUPPLY SCHEME LOCATED AT EMONDLO TOWN IN THE ABAQULUSI LOCAL AND ZULULAND DISTRICT MUNICIPALITY, KWAZULU-NATAL.

ACTIVE HERITAGE cc.

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Frans received his MA (Archaeology) from the University of Stellenbosch and is presently a PhD candidate on social anthropology at Rhodes University. His PhD research topic deals with indigenous San perceptions and interactions with the rock art heritage of the Drakensberg.

Frans was employed as a junior research associate at the then University of Transkei, Botany Department in 1988-1990. Although attached to a Botany Department he conducted a palaeoecological study on the Iron Age of northern Transkei - this study formed the basis for his MA thesis in Archaeology. Frans left the University of Transkei to accept a junior lecturing position at the University of Stellenbosch in 1990. He taught mostly undergraduate courses on World Archaeology and research methodology during this period.

From 1991 – 2001 Frans was appointed as the head of the department of Historical Anthropology at the Natal Museum, Pietermaritzburg. His tasks included academic research and publication, display conceptualization, and curating the African ethnology collections of the Museum. He developed various displays at the Natal Museum on topics ranging from Zulu material culture, traditional healing, and indigenous classificatory systems. During this period Frans also developed a close association with the Departments of Fine Art, Psychology, and Cultural and Media Studies at the then University of Natal. He assisted many post-graduate students with projects relating to the cultural heritage of South Africa. He also taught post-graduate courses

on qualitative research methodology to honours students at the Psychology Department, University of Natal. During this period he served on the editorial boards of the *South African Journal of Field Archaeology* and *Natalia*.

Frans left the Natal Museum in 2001 when approached by a Swiss funding agency to assist an international NGO (Working Group for Indigenous Minorities) with the conceptualization of a San or Bushman museum near Cape Town. During this period he consulted extensively with various San groupings in South Africa, Namibia and Botswana. During this period he also made major research and conceptual contributions to the Kamberg and Didima Rock Art Centres in the Ukhahlamba Drakensberg World Heritage Site.

Between 2003 and 2007 Frans was employed as the Cultural Resource Specialist for the Maloti Drakensberg Transfrontier Project – a bilateral conservation project funded through the World Bank. This project involved the facilitation with various stakeholders in order to produce a cultural heritage conservation and development strategy for the adjacent parts of Lesotho and South Africa. Frans was the facilitator for numerous heritage surveys and assessments during this project. This vast area included more than 2000 heritage sites. Many of these sites had to be assessed and heritage management plans designed for them. He had a major input in the drafting of the new Cultural Resource Management Plan for the Ukahlamba Drakensberg World Heritage site in 2007/2008. A highpoint of his career was the inclusion of Drakensberg San indigenous knowledge systems, with San collaboration, into the management plans of various rock art sites in this world heritage site. He also liaised with the tourism specialist with the drafting of a tourism business plan for the area.

During April 2008 Frans accepted employment at the environmental agency called Strategic Environmental Focus (SEF). His main task was to set-up and run the cultural heritage unit of this national company. During this period he also became an accredited heritage impact assessor and he is rated by both Amafa and the South African Heritage Resources Agency (SAHRA). He completed almost 50 heritage impact assessment reports nation-wide during an 18th month period.

Frans left SEF and started his own heritage consultancy called “Active Heritage cc” in July 2009. Although mostly active along the eastern seaboard his clients also include international companies such as Royal Dutch Shell through Golder Associates, and UNESCO. He has now completed almost 1000 heritage conservation and management reports for various clients since the inception of “Active Heritage cc”. Amongst these was a heritage study of the controversial fracking gas exploration of the Karoo Basin and various proposed mining developments in South Africa and proposed developments adjacent to various World Heritage sites. Apart from heritage impact assessments (HIA’s) Frans also assist the National Heritage Council (NHC) through Haley Sharpe Southern Africa’, with heritage site data capturing and analysis for the proposed National Liberation Route World Heritage Site and the national intangible

heritage audit. In addition, he is has done background research and conceptualization of the proposed Dinosaur Interpretative Centre at Golden Gate National Park and the proposed Khoi and San Interpretive Centre at Camdeboo, Eastern Cape Province. During 2009 he also produced the first draft dossier for the nomination of the Sehlabathebe National Park, Lesotho as a UNESCO inscribed World Heritage Site.

Frans was appointed as temporary lecturer in the department of Heritage and Tourism, UKZN in 2011. He is also a research affiliate at the School of Cultural and Media Studies in the same institution.

Frans's research interests include African Iron Age, paleoecology, rock art research, San ethnography, traditional healers in South Africa, and heritage conservation. Frans has produced more than fourty publications on these topics in both popular and academic publications. He is frequently approached by local and international video and film productions in order to assist with research and conceptualization for programmes on African heritage and culture. He has also acted as presenter and specialist for local and international film productions on the rock art of southern Africa. Frans has a wide experience in the fields of museum and interpretive centre display and made a significant contribution to the conceptual planning of displays at the Natal Museum, Golden Horse Casino, Didima Rock Art Centre and !Khwa tu San Heritage Centre. Frans is also the co-founder and active member of "African Antiqua" a small tour company who conducts archaeological and cultural tours world-wide. He is a Thetha accredited cultural tour guide and he has conducted more than 50 tours to heritage sites since 1992.

Declaration of Consultants independence

Frans Prins is an independent consultant to Green Door Environmental and has no business, financial, personal or other interest in the activity, application or appeal in respect of which he was appointed other than fair renumeration for work performed in connection with the activity, application or appeal. There are no circumstances whatsoever that compromise the objectivity of this specialist performing such work.

Frans Prins

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LIST OF ABBREVIATIONS AND ACRONYMS

EIA	Early Iron Age
ESA	Early Stone Age
HISTORIC PERIOD	Since the arrival of the white settlers - c. AD 1820 in this part of the country
IRON AGE	Early Iron Age AD 200 - AD 1000 Late Iron Age AD 1000 - AD 1830
LIA	Late Iron Age
LSA	Late Stone Age
MSA	Middle Stone Age
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998 and associated regulations (2006)).
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999) and associated regulations (2000))
SAHRA	South African Heritage Resources Agency
STONE AGE	Early Stone Age 2 000 000 - 250 000 BP Middle Stone Age 250 000 - 25 000 BP Late Stone Age 30 000 - until c. AD 200

EXECUTIVE SUMMARY

A heritage survey of the proposed eMondlo Bulk Water Supply, Zululand District Municipality, KwaZulu-Natal identified no heritage sites along the proposed pipelines and associated structures. In addition, no heritage sites occur within 50m from the footprint. The greater area is also not part of any known cultural landscape. The desktop paleontology assessment indicate a low fossil sensitivity for the area. No paleontological studies are required for the footprint. Attention is drawn to the South African Heritage Resources Act, 1999 (Act No. 25 of 1999) and the KwaZulu-Natal Heritage Act (Act No. 4 of 2008), which requires that operations that expose archaeological or historical remains as well as graves and fossil material should cease immediately, pending evaluation by the provincial heritage agency.

1 BACKGROUND INFORMATION ON THE PROJECT

Table 1. Background information

Consultant:	Frans Prins (Active Heritage cc) for Green Door Environmental
Type of development:	The Zululand District Municipality has identified the need to undertake the refurbishment and additions to the existing eMondlo Bulk Water Supply Scheme located at eMondlo Town, south of Vryheid, in the Abaqulusi Local and Zululand District Municipality, KwaZulu-Natal. The existing eMondlo Water Supply Scheme consists of a water abstraction tower in the Mvunyane Dam from which water is pumped via a pump station and steel and ductile iron pipeline to the eMondlo Water Treatment Works for purification. Once the water is purified it is then distributed to the greater eMondlo Area. Urgent refurbishment is required at the Mvunyane Dam abstraction tower and pump station as the bulk suction pipe is leaking and the impellers of the pump are damaged. Major leaks have also been noted on the older sections of the bulk rising main, which needs to be replaced. In addition, the capacity of the Mvunyane Dam has decreased primarily due to the accumulation of silt especially in the surroundings of the abstraction tower. An area of approximately 3000m² needs to be dredged around the abstraction tower.
Rezoning or subdivision:	Not Applicable
Terms of reference	To carry out a Heritage Impact Assessment
Legislative requirements:	The Heritage Impact Assessment was carried out in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and following the requirements of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and the KwaZulu-Natal Heritage Act, 1997 (Act No. 4 of 2008)

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1.1. Details of the area surveyed:

The project area is situated between Dundee and Vryheid adjacent to the Mondlo Village in the Zululand District Municipality (Figs 1 - 3). Urgent refurbishment is required at the Mvunyane Dam abstraction tower (Figs 3 & 11) and pump station (Figs 3 & 10) as the bulk suction pipe is leaking and the impellers of the pump are damaged. Major leaks have also been noted on the older sections of the bulk rising main, which needs to be replaced. In addition, the capacity of the Mvunyane Dam (Figs 3 & 9) has decreased primarily due to the accumulation of silt especially inthe surroundings of the abstraction tower. An area of approximately 3000m² needs to be dredged around the

abstraction tower. In addition to the above, two sections of proposed pipeline was surveyed for potential heritage sites (Figs 3, 5, 6, 7, 8). The GPS coordinates for the two pipelines surveyd are:

a) 4km Replacement Pipeline

Start: S 28° 01' 30.91" E 30° 44' 43.53"
End: S 28° 02' 14.14" E 30° 46' 38.15"

b) 2.7km Replacement Pipeline

Start: S 28° 01' 25.83" E 30° 46' 41.43"
End: S 28° 00' 16.47" E 30° 46' 26.92"

1.1.1 Activities Planned by Developer

Dredging of the Mvunyane Dam:
The accumulation of silt in the Mvunyane Dam is currently obstructing the intake of water at the abstraction tower. An area of approximately 3000m2 around the abstraction tower requires dredging, with the silt to be disposed of in a disposal lagoon (coffer dam) to be located adjacent to the Mvunyane Dam wall.

Refurbishment of the Abstraction Tower and Pump Station:
The abstraction tower requires refurbishment with respect to the isolating valve and replacement of the existing suction and scour pipe. Four new pumps need to be installed in the existing pump station and the pump station building requires refurbishment, with the construction of a new office.

Installation of a new 4km Section of Rising Main:
Approximately 4km of the existing Steel Rising Main linking Mvunyane Dam and the eMondlo Water Treatment Works has numerous leaks and has come to the end of its lifespan. A new 4km section of 450mm/500mm diameter Ductile Iron/PVC-o pipeline needs to be installed to replace the existing section of pipeline, including new air and scour chambers as required.

Installation of a new 2.7km Section of Pipeline:

Approximately 2.7km of the existing bulk water pipeline linking Mvunyane Dam to Purim has come to the end of its lifespan. A new 2.7km section of 125mm diameter uPVC pipeline needs to be installed to replace the existing section of pipeline, including new air and scour chambers as required.

Refurbishment of the eMondlo Water Treatment Works:

Several electrical and mechanical components need to be refurbished or replaced at the existing eMondlo Water Treatment Works. Some refurbishment of the building works is required as well as the replacement of the wash water recovery sump.

2 BACKGROUND TO ARCHAEOLOGICAL HISTORY OF AREA

Portions of the greater Vryheid and Nqutu areas have been systematically surveyed for archaeological and heritage sites in the past. These were mostly conducted by archaeologists attached to the then Natal Museum as well as by Amafa staff. Sixty sites are recorded in the data base of the KwaZulu-Natal Museum (Fig 1). These include fourteen Early Stone Age sites, eight Middle Stone Age sites, ten Later Stone Age sites, three rock painting sites, and forty Later Iron Age sites. The majority of the Early Stone Age sites occur in open air context in large dongas. Middle and Later Stone Age sites occur in context in four rock shelters. Two of these shelters also contain typical San fineline paintings. The majority of the known Later Iron Age sites are situated to the south east of Nqutu. They were located during a large scale survey of the area by archaeologists who were interested in the Later Iron Age ecology of Zululand (Hall 1980). They are demarcated by characteristic stone walling. Three stone walling typologies have been identified in the area namely Type A, C, and D (ibid).

The San were the owners of the land for almost 30 000 years but the local demography started to change soon after 2000 years ago when the first Bantu-speaking farmers crossed the Limpopo River and arrived in South Africa. Around 800 years ago, if not earlier, Bantu-speaking farmers also settled in the greater Vryheid area. Although some of the sites constructed by these African farmers consisted of stone walling not all of them were made from stone. Sites located elsewhere in the KwaZulu-Natal show that many settlements just consisted of wattle and daub

structures. These Later Iron Age sites were most probably inhabited by Nguni-speaking groups who were the direct ancestors of the Zulu (Bryant 1965). However after 1840 some Southern Sotho-speaking Tlokwe people also settled in the area towards Nqutu. With the expansion of the Zulu kingdom of King Shaka in the early 1820's the study area became firmly incorporated into this pre-capitalist kingdom. It is not surprising that this area played such a central part in the colonial period history of KwaZulu-Natal. The Battle of Blood River, between Boer and Zulu, took place to the immediate west of the study area in 1838 (Derwent 2006). In addition, the Anglo-Zulu War of 1879 was also acted out in large areas adjacent to the study area (ibid). These battle field sites as well as associated graves and buildings of the era are proclaimed heritage sites and are protected by legislation.

The aftermath of the Anglo Zulu War of 1879 left the remnants of the Zulu Kingdom in the hands of Uzibhebhu, Dinizulu's uncle. Dinizulu, the rightful heir, enlisted military support from the Boers in restoring him as king. After a successful campaign Dinuzulu was sworn in and in return the Boers were granted a large tract of land.

On August 16 1884 this land was proclaimed as the Nieuwe Republiek with Vryheid as the capital and Lucas Meijer as the president. A raadsaal for the town fathers, a presidency for Lucas Meijer and a goal for miscreants were built. The fate of the tiny republic followed that of many others and by 1888 it had been absorbed by its neighbour, the Zuid Afrikaansche Republiek. The moederkerk, which occupies pride of place in the centre of town, was completed in 1894.

At the outbreak of the Anglo Boer War on October 20 1899, the Vryheid Commando swung into action and, led by General Lucas Meijer, fought at the battle of Thalana. They went on to take part in the siege of Ladysmith and had the honour of capturing the British guns at Colenso.

Vryheid itself was left relatively unscathed by the big battles fought against the British forces to the west, but smaller skirmishes with the Imperial forces did occur at Scheepersnek, as well as a major Boer attack on the British garrison stationed on Lancaster Hill just north of Vryheid. During this battle Lt Col Gawne was mortally wounded and a cairn demarcating the place where he fell, as well as the British fortifications, can be viewed on the hill. General Louis Botha, one of five famous generals from Vryheid, tested the British lines the next year and led a successful

invasion into Natal via Bloemfontein, drawing thousands of imperial troops from the Transvaal and the Free State in a desperate attempt to trap him.

The incursion finally ended at Italeni and Fort Prospect where the Boers were defeated, however General Botha managed to elude the pursuing British as he led his men back to the Transvaal.

At the culmination of the Anglo Boer war, chief uSkhobobo Sibiya, encouraged by the British civil authorities, attacked a Boer camp on the eastern slopes of Holkrans Mountain (KwaMthashana), killing 56 burgers of Commandant Jan 'Mes' Potgieter's commando. After the Anglo Boer War the town was incorporated into the colony of Natal. The Carnegie library (presently the Information Bureau) was built with funds from the Carnegie Foundation and houses started springing up along Bree, Kerk and Hoog streets, as well as above the railway line at the base of the hill. 1910 saw the Natal Colony join the Union of South Africa and in 1912 the town was granted municipal status. It gradually grew into an agricultural market-place for maize, sheep and cattle. The Empire Theatre in Hoog Street, the site of many musicals and revues, was completed in 1927.

Coal, which had been used by the early residents of the area east of Vryheid, became commercially viable from 1908 onwards, with the construction of a rail link to the coalfields. Two mines, Coronation and Hlobane, in time grew to provide thousands of jobs for the inhabitants of the area. With the increase in population so the need for water led to the construction of the Grootgewacht, Bloemveld and Klipfontein dams.

The present municipal building complex was completed in 1957 and the post office in 1980. Mondlo was established to house those who were evicted in the late 1960's from their lands in the neighbourhood of the town of Vryheid and their re-settlement at Trado farm, subsequently known as Mondlo Township. The forced removal was in accordance with the then Government's policy of separate development, but initially no funds were provided for essential infrastructures in the township, such as schools and clinics. Lack of major industries at nearby Nqutu and Vryheid also limited the opportunity of Mondlo inhabitants to find work. During the early 1970's the township was transferred to the KwaZulu Government. Subsequent political resistance in the form of rent and bus boycotts culminated in the murder of Mr Ngobese, the township manager, in 1983 (Zungu n.d. 1)

After the national elections in 1994, political development of the greater Vryheid area followed a peaceful route with the creation of a Transitional Local Council and the birth of the AbaQulusi Municipality in 2001 (www.vryheidtourism.co.za).

3 BACKGROUND INFORMATION OF THE SURVEY

3.1 Methodology

A desktop study was conducted of the archaeological databases housed in the KwaZulu-Natal Museum. The SAHRIS website was consulted for previous heritage surveys and heritage site data covering the project area. Various heritage surveys have been conducted in the greater Vryheid region. However, only two of those occurred in the near environs of the project area (Prins 2012; Beater 2017). These studies did not indicate any heritage sites or features on the footprint. In addition, the available archaeological and heritage literature covering the greater Vryheid region was consulted Aerial photographs covering the area were scrutinised for potential Iron Age and historical period structures and grave sites. A ground survey, following standard and accepted archaeological procedures, was conducted on 6 April 2019.

3.1.1 Guidance from Desktop Study

- The desktop study indicates that Stone Age Sites of all periods and traditons may occur in the greater project area.
- Middle Stone Age tools have been found in context in three rock shelter sites in the greater area. However, no rocky outcrops that may harbour such shelters with deep cave deposits occur on the footprint.
- Later Stone Age sites, including associated rock art, also occur in the area. Again these are associated with shelters – none of whch occur on the footprint.
- Early Iron Age Sites typically occur along major river valleys below the 700 m contour in KwaZulu-Natal. It is very unusual to find sites above the 1000m contour. The project area is situated above the 1000m contour far removed from a major river valley setting. It is therefore most unlikely to expect Early Iron Age sites on the footprint.

- Later Iron Age sites may occur in the project area. These sites were occupied by the ancestors of the first Nguni-speaking agriculturists as well as their descendants who settled in KwaZulu-Natal. The majority of these occur near Nquto but there is a distinct possibility that such sites may also occur at or close to the project area.
- Historical buildings, structures, mission stations and farmsteads do occur scattered throughout the greater Vryheid region. The desktop study indicated that various historical buildings occur in the nearby towns of Vryheid and Dundee. Historical era buildings and structures could occur at or near the project area.
- The greater Vryheid area also figured prominently during the Anglo-Zulu and Anglo Boer Wars. It is possible that activities relating to these conflicts also took part at the project area.

3.2 Restrictions encountered during the survey

3.2.1 Visibility

Visibility was good but compromised by dense grassland cover over a section of the footprint.

3.2.2 Disturbance

No disturbance of any potential heritage features was noted.

3.3 Details of equipment used in the survey

GPS: Garmin Etrek

Digital cameras: Canon Powershot A460

All readings were taken using the GPS. Accuracy was to a level of 5 m.

4 DESCRIPTION OF SITES AND MATERIAL OBSERVED

4.1 Locational data

Province: KwaZulu-Natal
Closest Towns: Vryheid, Dundee
Municipality: Zululand District Municipality, Abaquolusi Local Municipality

4.2 Description of the general area surveyed

4.2.1 Backgound

The desktop study did not locate any heritage sites on the footprint. The results of the desktop study was echoed by the ground survey of the project area. No heritage and archaeological sites was observed during the ground survey. Large sections of the proposed pipeline route was walked by foot. No heritage sites occur along the visible portions of the existing pipeline (Figs 5 & 8). Rural homesteads are situated adjacent to the existing roads along the pipeline trajectory in the western section of the project area. However, none of these and other rural homesteads adjacent to the footprint had any associated graves or other heritage features (Figs 7 & 8). None of these homesteads appear to be older than 60 years old. No heritage sites occur adjacent to the Mvunyane Dam and the associated Pump House (Fig 10) and the Abstraction Tower (Fig 11). In addition, the consultant also spoke to local pedistrians who were passing by on the local road during the survey. None of them were aware of any potential heritage sites or graves on the footprint. The area is also not part of any known cultural landscape (Table 3).

4.2.2 Desktop Paleontology Assessment

A previous study in the area indicated that the western section of Mondlo Villlage is higly sensitive in terms of paleontological sensitivity (Beater 2017). However the areas to the east, including the present project areas, has a low paleontological sensitivity. This is indicated by the updated fossil sensitivity map, as provided by the SAHRIS website (Fig 4). There is no need for any paleontological study. However, a protocol of finds will be required.

5 STATEMENT OF SIGNIFICANCE (HERITAGE VALUE)

5.1 Field Rating

Not applicable as no heritage sites are known to occur on the proposed development plot (Tables 2 & 3).

Table 2. Field rating and recommended grading of sites (SAHRA 2005)

Level	Details	Action
National (Grade I)	The site is considered to be of National Significance	Nominated to be declared by SAHRA
Provincial (Grade II)	This site is considered to be of Provincial significance	Nominated to be declared by Provincial Heritage Authority
Local Grade IIIA	This site is considered to be of HIGH significance locally	The site should be retained as a heritage site
Local Grade IIIB	This site is considered to be of HIGH significance locally	The site should be mitigated, and part retained as a heritage site
Generally Protected A	High to medium significance	Mitigation necessary before destruction
Generally Protected B	Medium significance	The site needs to be recorded before destruction
Generally Protected C	Low significance	No further recording is required before destruction

Table 3. Evaluation and statement of significance.

Significance criteria in terms of Section 3(3) of the NHRA		
	Significance	**Rating**
1.	**Historic and political significance -** The importance of the cultural heritage in the community or pattern of South Africa's history.	None.
2.	**Scientific significance** – Possession of uncommon, rare or endangered aspects of South Africa's cultural heritage.	None.
3.	**Research/scientific significance** – Potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage.	None.
4.	**Scientific significance** – Importance in demonstrating the principal characteristics of a particular class of South Africa's cultural places/objects.	None.
5.	**Aesthetic significance** – Importance in exhibiting particular aesthetic characteristics valued by a community or cultural group.	None.
6.	**Scientific significance** – Importance in demonstrating a high degree of creative or technical achievement at a particular period.	None.
7.	**Social significance** – Strong or special association with a particular community or cultural group for social, cultu-ral or spiritual reasons.	None.
8.	**Historic significance** – Strong or special association with the life and work of a person, group or organization of importance in the history of South Africa.	None.
9.	The significance of the site relating to the history of slavery in South Africa.	None.

6 RECOMMENDATIONS

No heritage sites, features or graves occur at or near environs of the proposed development plot.. It is important to take note of the KwaZulu-Natal Heritage Act that requires that any exposing of graves and archaeological and historical residues as well as fossils should cease immediately pending an evaluation by the heritage authorities.

For any chance finds of heritage resources, such as graves or archaeological residues, all work must cease in the area affected and the Contractor must immediately inform the Project Manager. A registered heritage specialist must be called to site for inspection. The provincial heritage resource agency (Amafa) must also be informed about the finding. The heritage specialist will assess the significance of the resource and provide guidance on the way forward.

Written permission must be obtained from Amafa if heritage resources are to be removed, destroyed or altered.

All heritage resources found in close proximity to the construction area must be protected by a 5m buffer in which no construction can take place. The buffer material (danger tape, fencing, etc.) must be highly visible to construction crews.

Under no circumstances may any heritage material be destroyed or removed from site unless under direction of a heritage specialist.

Should any remains be found on site that is potentially human remains, the South African Police Service (SAPS) should also be contacted. No SAPS official may disturb or exhume such remains, whether of recent origin or not, without the necessary permission.

The paleontological desktop evaluation indicates no additional paleontological assessment will be required before any development may proceed. However, there must also be a protocol of finds.

7 MAPS AND FIGURES

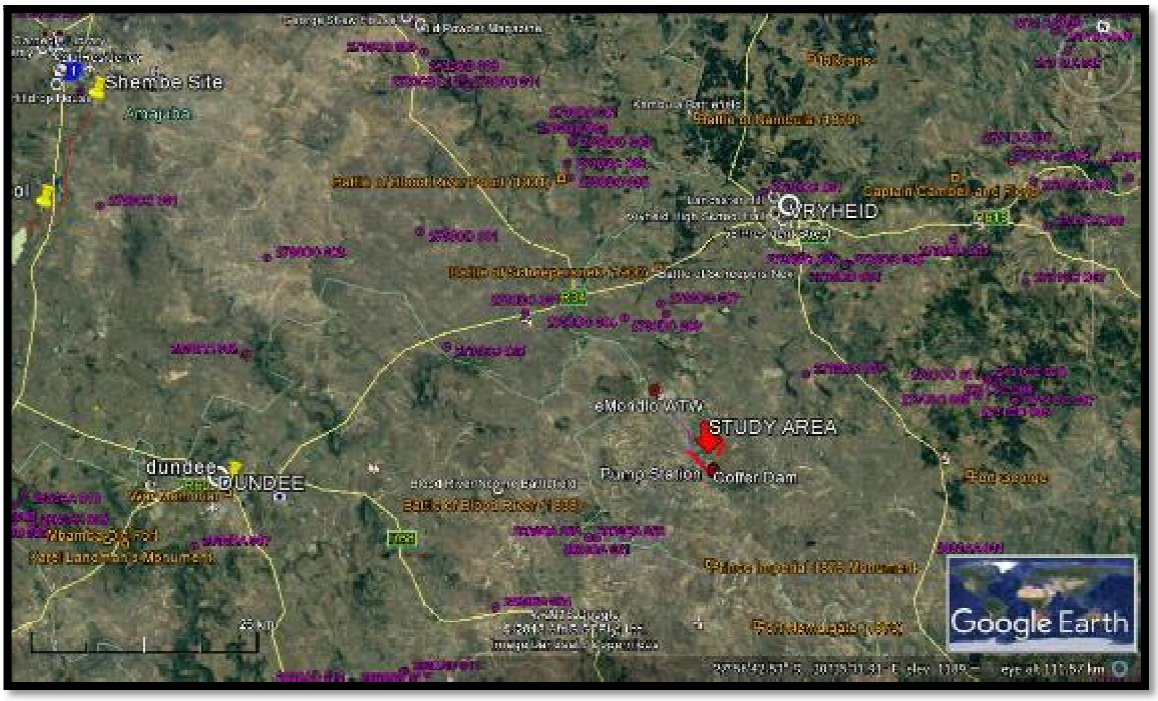


Figure 1. Google Earth Imagery showing the location of the study area (red arrow) near Vryheid. The orange markers indicate the location of known historical period sites. The purple markers indicate the location of known archaeological sites. None occur on the immediate environs of the study area.

Figure 3. Google Earth Imagery showing the location of the eMondlo Bulk Water Supply Scheme. The white lines indicate the two pipelines surveyed.

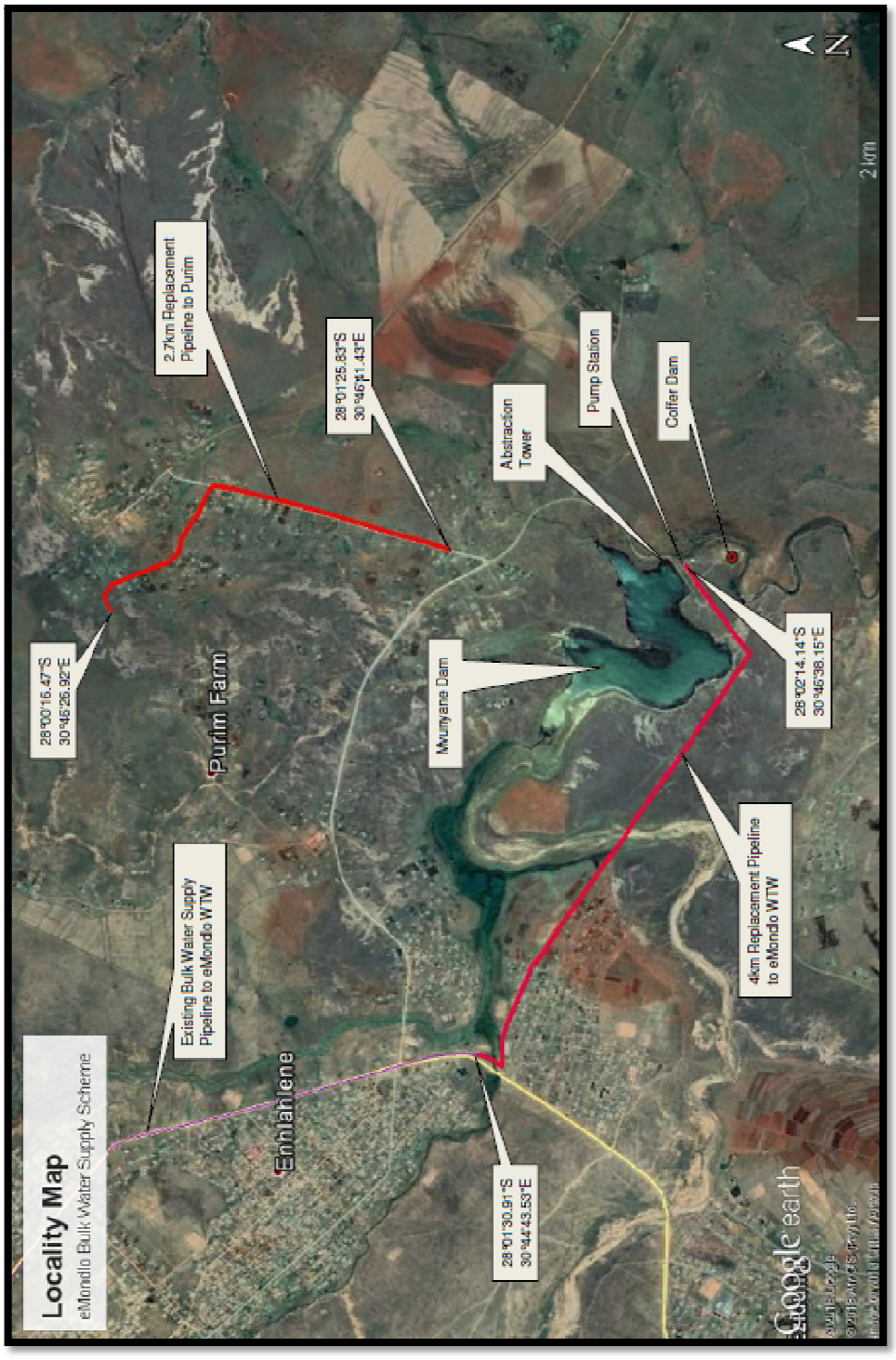
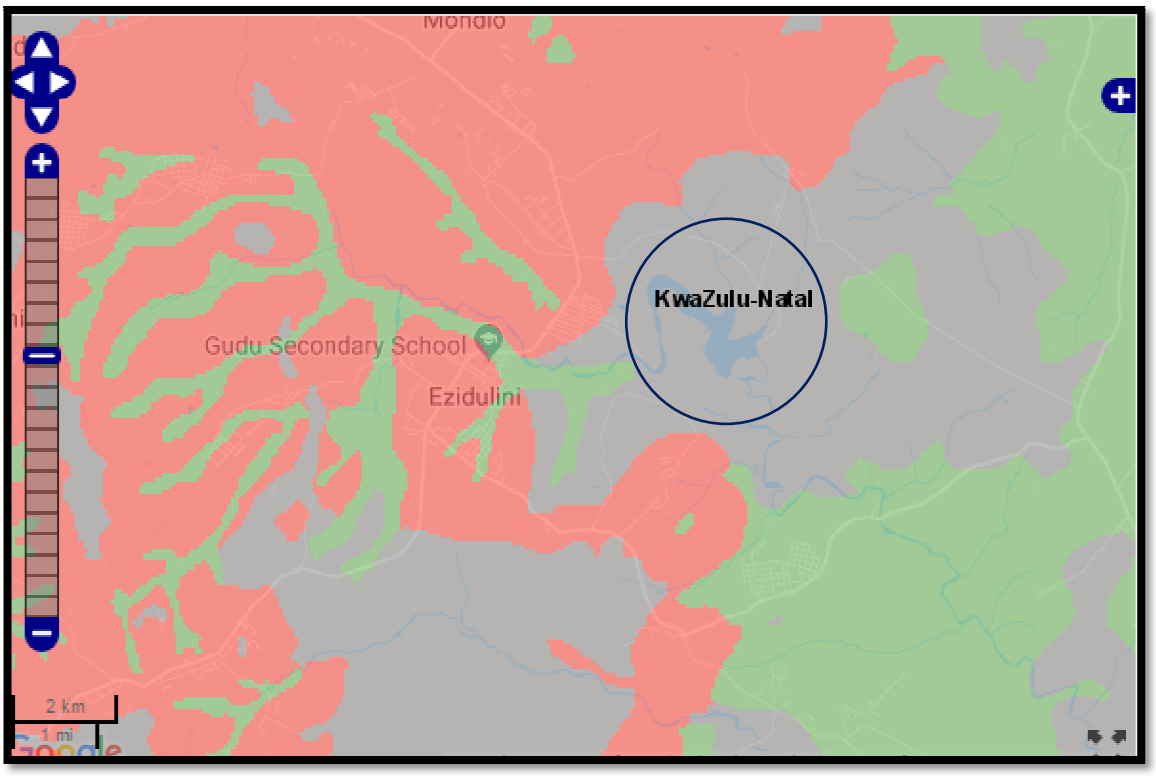


Figure 3. Aerial photograph showing the location of the eMondlo Bulk WaterSupply Scheme and associated features investigated (Source: Green Door).



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
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 comes to light, SAHRA will continue to populate the map.

Figure 4. Fossil Sensitivity Map of the project area: The location of the proposed development site is indicated by the black polygon (Source: SAHRIS website). The blue background colour indicates that the area has a low paleontological sensitivity.

Figure 5. Exposed section of the 4km replacement pipeline.

Figure 6. Rural homesteads along the 4km pipeline trajectory. None of these buildings appeared to be older than 60 years old. No graves were visible.

Figure 7. Northern section of the 2.7 km pipeline trajectory. Rural homesteads appear to be youngert than 60 years old. No graves are visible.

Figure 8. Section of the exposed and existing pipeline near Mvunyane Dam. No heritage sites or graves occur adjacent to the pipeline.

Figure 9. The Mvunyane Dam.

Figure 10. Mvunayane Dam Pump Station.

Figure 11. Abstraction Tower.

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