

**CULTURAL HERITAGE IMPACT ASSESSMENT
OF THE PROPOSED FIBRECO DATA CABLE
PROJECT, ROUTE 5 (INCLUDING REPEATER
SITES).**

ACTIVE HERITAGE cc.

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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 1750 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 (2010).
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 desktop cultural heritage study of the proposed FibreCo Data Cable Project, Route 5 identified 59 heritage sites. The majority of known heritage sites are located in the KwaZulu-Natal section of the proposed route. The Eastern Cape section of the proposed route has been less intensively surveyed in the past and existing data bases are incomplete. The most comprehensive survey along the proposed route in the Eastern Cape region was based on observations made from a helicopter by heritage consultants as part of a previous heritage impact assessment. This methodology contrast with the detailed ground surveys conducted along the N2 over many decades in the KwaZulu-Natal region. The known heritage sites identified in both provinces are either located directly adjacent the old N2 or situated within 200m from the road. Some sites in KwaZulu-Natal have been damaged by construction activities along the coastal N2 in the past. It is suggested that these sites be inspected by a heritage specialist prior to the laying of any cables along the route. Those sites identified in the Eastern Cape section of the proposed route appear to be relatively safe from any cable laying exercise. However, it must be emphasised that our knowledge regarding heritage site distribution and locality is compromised by past survey methodologies and limited ground surveys in this area. It was thus only possible to suggest heritage sensitive areas rather than actual site location for the Eastern Cape section of the route. Ideally the Eastern Cape section of the route, especially the section between East London and Port Elizabeth, should be covered by a systematic ground survey. Archaeological and palaeontological ground surveys conducted near the proposed route in the past suggests that many more heritage sites will surface once a ground survey is conducted. Four of the eight proposed repeater sites were visited and surveyed along the route. A desktop survey, including a survey of available aerial photographs, was conducted on the remainder repeater sites. No heritage sites were identified on any of the proposed repeater sites. Special care must be taken when laying the cables not to not damage or alter any heritage site in any way and it is suggested that buffer zones of 20m are maintained around any identified heritage sites. Attention is drawn to the South African Heritage Resources Act, 1999 (Act No. 25 of 1999) which, requires that operations that expose archaeological or historical remains should cease immediately, pending evaluation by the provincial heritage agency.

1 INTRODUCTION

Active Heritage cc was appointed by SRK to conduct a desktop phase 1 heritage impact assessment (HIA) of Route 5, of the FibreCo National Data Cable Project. Route 5 entails the area between Port Elizabeth and Durban and roughly follows the N2 national road. The desktop study entailed an investigation of relevant literature and heritage data bases. No extensive ground survey was conducted. However, four of the eight proposed repeater sites were visited by the consultant and a ground survey conducted in their immediate environs.

Table 1. Background information

Consultant:	Frans Prins (Active Heritage) for SRK
Type of development:	Laying down of optic fibre cables connecting Durban with Port Elizabeth (Route 5)
Rezoning or subdivision:	na
Terms of reference	To carry out a desktop based Heritage Impact Assessment of proposed route (route 5) as part of a Basic Assessment process. To visit four of the proposed eight repeater sites along the route and extrapolate the recommendations to the other repeater sites along the route.
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) and the KwaZulu-Natal Heritage Act, 1997 (Act No. 4 of 2008)

The project entails the establishment of a long-haul fibre optic data cable network throughout South Africa to carry data communications over long distances and at higher bandwidths than are currently available in the market. Uniquely, capacity on the cable will be made available to the market on an open-access basis, providing the opportunity for a much wider customer base to benefit from the economies of scale inherent within these kinds of networks on the basis of a transparent, non-discriminatory pricing model which is expected to drastically lower broadband access costs to end consumers.

It is intended that the project will result in a maximum capacity of >100 Terabytes per second per duct, with expansion capacity into additional ducts. Due to the nature of telecommunication networks additional routes between the major centres will be required for purposes of providing resilience to the solution. This will entail alternative routes between the centres to provide a geographically diverse path between the end-points. Fibre optic technology allows long distances to be spanned with few repeaters. It is envisaged that a repeater will be situated approximately every 80 to 100km along the route housed in existing base station site infrastructure owned by one of the promoters of the project. Prefabricated Telco grade equipment shelters will be constructed at repeater sites to house approximately 30m² of optical amplification equipment racks (typically 8 racks) with cooling units and backup generator. The facility's primary power source will be the national grid using existing transmission cables.

The process of establishing an optic fibre data cable will include the following:

Planning – will be carried out by the relevant design/civil engineers prior to the commencement of excavation. This phase of the project will include surveying of the route to identify physical features that occur along the route and prepare „as constructed“ records (e.g. layout plans that show the length and depth of cables, indicate places where directional drilling will occur and provide High Voltage cable points and material and equipment schedules, amongst others.) It will also be necessary to obtain information about all utilities that the cable will cross. All approvals and authorisations for development and crossings (e.g. transmission lines, railway lines, telecommunications and water pipes) will be obtained during the planning phase of the project. A management plan will be prepared setting out the measures that aim to avoid and/or mitigate potential risks, hazards and impacts.

Trenching and excavations – will commence once the requisite approvals and authorisations have been obtained from relevant authorities (e.g. South African National Roads Agency Limited (SANRAL) regional managers“ approval of the plans, environmental authorisation and water use licences). Trenches will be excavated to a maximum depth of one metre using various construction methods (e.g. backacter to excavate soil and pecker or jackhammers to break rock before removing with a backacter). Excavation will take place in a manner that aims to avoid damage to existing utilities. Once the excavation has been completed, suitable bedding material

(e.g. soil or sand) will be placed in the bottom of the trench. Where the excavated material is not suitable for this purpose, material will be obtained from existing permitted borrow pits. In urban areas, excavated material will be handled in accordance with the requirements of the relevant local authority. Directional drilling will be undertaken in places where the cable crosses key lines of infrastructure (rail, national roads etc.) and will be suitably aligned and sufficiently deep so as to comply with legislation and authorities' guidelines. Buried hand pulling holes will be established every 900m along the fibre optic data cable route. In addition, round man holes (with visible 600 to 800mm covers) will occur on average every 4km along the cable route or on either side of a physical feature crossing (bridge, rivers etc.), with large man holes (with visible double covers of 1,8mx2m) being installed as required at major junction points and at repeater sites.

Note: the exact location of the trench in the servitude will be determined by the landowner (SANRAL or Department of Transport and Public Works). SANRAL generally require that data cables are installed two metres from the servitude boundary.

Cable laying – will take place directly from a drum spindle mounted on an excavator moving along the trench. To avoid slackness in the cable, cable drums will be positioned in line with the direction of the cable pull. The cable will be kept clear of any abrasive material when being pulled into position to prevent damage to the cable sheath. The cable will be bedded in sand/soil which shall extend 100mm around the cable. The cable will be uniformly bedded in soil free of rocky material. The depth of cover of cables will be approximately 750mm. Conduits will be used where appropriate, notably within a bridge, rail, road and water course crossing. Hand pulling holes will be located approximately every 900m along the data cable route.

Reinstatement – will take place in accordance with authorities' requirements. In urban areas, excavated land will be returned to its original condition. Trenches will be backfilled and compacted to original ground level. Spoil and approved backfill material will be placed in such a manner so as to avoid future subsidence. Stones, rock and paving material will be removed from site. Trees within the affected area will be protected as far as possible.

All activities, notably those involving the installation of the fibre optic data cable, will adhere to the requirements of the legislation dealing with occupational health and safety and public safety. Special attention will be given to these issues when working in close proximity to traffic as well as overhead power transmission lines.

2 OBJECTIVES

Active Heritage cc was subcontracted by SRK to undertake a desktop cultural heritage assessment for Route 5 of the FibreCo National Data Cable Project (Figure 1). This first phase of an HIA is required as a preliminary desktop exercise to identify potential heritage resources which may be impacted during the construction, operation, and decommissioning phases of the proposed project. The conclusions reached are based on the available literature, an investigation of aerial photographs of the study-area and the consultation of accessible heritage databases and registers. The project seeks to assess the value and significance of the known heritage resources found within the study area as well as ensure their protection and conservation. The view is promoted that development should take place in harmony with the sustainable use of heritage resources.

The heritage practitioner is required to provide:

- Review of project information
- Site reconnaissance and preparation of field notes – where relevant
- Review of existing information/data relevant to the study area and section of the route
- Liaise with specialists on other routes to share information sources, research methodologies, observations and initial findings – where relevant
- Drafting of report, including description of the affected environment and assessment
- Recommendations regarding a methodology to be adopted in assessing potentially significant impacts in the EIA Phase.

3 STUDY AREA

The area surveyed consists of almost 927 km of a linear route that broadly runs parallel to the N2 from Durban to Port Elizabeth. It covers two provinces namely KwaZulu-Natal and the Eastern Cape Province (Fig 1). The route will follow national and provincial road servitudes and mainly begin and terminate at a data end point (IS or Teraco site) in a designated city or town. The area and topography varies considerably. The greatest portion of the KwaZulu-Natal section is situated near the coast but it runs inland after Port Shepstone. The Eastern Cape section of the route runs more inland as well but veers of towards the coast after Grahamstown. Various towns, rural villages, indigenous forest patches, farms and plantations are situated on the proposed route.

4 LEGAL FRAMEWORK

According to Section 3 (2) of the NHRA, the heritage resources of South Africa include:

- a. places, buildings, structures and equipment of cultural significance;
- b. places to which oral traditions are attached or which are associated with living heritage;
- c. historical settlements and townscapes;
- d. landscapes and natural features of cultural significance;
- e. geological sites of scientific or cultural importance;
- f. archaeological and palaeontological sites;
- g. graves and burial grounds, including
 - ancestral graves;
 - ii. royal graves and graves of traditional leaders;
 - iii. graves of victims of conflict;
 - iv. graves of individuals designated by the Minister by notice in the Gazette;
 - v. historical graves and cemeteries; and
 - vi. other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
- h. sites of significance relating to the history of slavery in South Africa;
- i. movable objects, including objects recovered from the soil or waters of South Africa, including
 - archaeological and palaeontological objects and material, meteorites and rare

- geological specimens;
- ii. objects to which oral traditions are attached or which are associated with living heritage;
 - iii. ethnographic art and objects;
 - iv. military objects;
 - v. objects of decorative or fine art;
 - vi. objects of scientific or technological interest; and
 - vii. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).”

In terms of section 3 (3) of the NHRA, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of:

- “a. its importance in the community, or pattern of South Africa's history;
- b. its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- c. its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- d. its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- e. its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f. its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g. its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h. its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and
- i. sites of significance relating to the history of slavery in South Africa.”

The National Heritage Resources Act also protects intangible heritage such as traditional activities, oral histories and places where significant events happened.

5 STUDY APPROACH/METHODS

5.1 Methodology

A desktop study was conducted of the archaeological databases housed in the Natal Museum and the SAHRA inventory of heritage sites in KwaZulu-Natal and the Eastern Cape Province. In addition, archaeological and historical literature covering KwaZulu-Natal Eastern Cape was consulted. Available Heritage Impact Assessment reports that covers the close environs of the study area route were also consulted. Some of these reports included desktop surveys based on heritage data housed at the Albany Museum, Grahamstown. Aerial photographs covering the study area was investigated for potential heritage sites. Four of the proposed repeater sites along the route was visited by the consultant and a ground survey conducted in their immediate environs.

Most heritage data obtained for the Eastern Cape section of the study area is based on an aerial survey of the route as conducted by heritage consultants during a heritage impact assessment in 2003 (Van Schalkwyk & Wahl 2003). Although fruitful for certain types of heritage sites, such as historical structures and some Later Iron Age sites, it typically renders many sites invisible. However, it is possible to use aerial surveys for indicating promising areas for certain types of heritage sites but, these observations need to be corroborated with intense ground surveys. No systematic ground surveys have been conducted for the greatest section of the Eastern Cape part of the route. Some surveys conducted by Jim Feely (1987), in the former Transkei, covers sections of the route near the Mbashe, Umtata, Umzimvubu, and Kei River catchment areas. Smaller surveys have also been conducted by archaeologists from the Albany Museum, on areas adjacent to the section between East London and Port Elizabeth. However, most of these are inadequate for the purposes of the present study. The exception being palaeontological research conducted on fossil sites in the immediate vicinity of Grahamstown (McLennan 2006) The KwaZulu-Natal section of the study area, by contrast with the Eastern Cape, has been well covered by various ground surveys during a 50 year period. Most of these surveys were conducted by archaeologist attached or affiliated with the Natal Museum in Pietermaritzburg.

5.2.2 Visibility

The data kept at the Natal Museum indicated relative good visibility when heritage sites were surveyed and recorded in the study area between 1960 and 2008. However, heritage consultants who conducted heritage impact assessments in the Eastern Cape section of the study area indicate dense vegetation during the period of survey that would have impeded archaeological visibility for much of the Eastern Cape section of the route.

5.2.3 Disturbance

Some archaeological sites listed in the Natal Museum data base were damaged and even totally destroyed during building operations of the old N2 along the south coast of KwaZulu-Natal during the 1970's and perhaps even earlier. No evidence for similar disturbance was found for heritage sites in the Eastern Cape Province section of the study area. However, it is possible that palaeontological fossil sites have been disturbed by the initial construction of the N2 outside of Grahamstown some 25 years ago.

6 DESCRIPTION OF THE CURRENT ENVIRONMENT THAT MAY BE AFFECTED BY THE PROPOSED ACTIVITY

6.1 Locational data

Province: Eastern Cape Province and Province of KwaZulu-Natal

Towns: Durban, Margate, Port Shepstone Harding, Mount Frere, Qumbu, Umtata, Qunu, Butterworth, East London, Grahamstown, Port Elizabeth.

6.2 Background to heritage resources of the study area

The archaeological history of the study area dates back to about 2 million years and possibly older, which marks the beginning of the Stone Age. The Stone Age in the Eastern Cape Province was extensively researched by archaeologists attached to the Albany Museum in Grahamstown, the University of Stellenbosch, the then University of Transkei (UNITRA), Fort Hare University and more recently by rock art researchers attached to the Rock Art Research Institute at the University of the Witwatersrand.

The Natal Museum as well as the Archaeology Department of the University of the Witwatersrand maintained strong research interest into the Stone Age of KwaZulu-Natal.

The Stone Age period has been divided into three periods namely: Early Stone Age (ESA) dating between 2 million years ago to about 200 000 years ago, Middle Stone Age (MSA) dating between 200 000 years ago to about 30 000 years ago, and the Later Stone Age (LSA) which dates from 30 000 to about 2 000 year ago. The Stone Age period ends around approximately 2 000 years ago when Bantu-speaking farmers crossed the Limpopo and arrived in southern Africa from East and West Africa respectively. The Iron Age is also divided into three periods, namely: Early Iron Age (EIA) dating between AD 200 and AD 900, Middle Iron Age (MIA) dating between AD 900 and AD 1300, Late Iron Age (LIA) dating between AD 1 300 and 1 820.

6.2.1 Early Stone Age (ESA)

The ESA is considered as the beginning of the stone tool technology. It dates back to over 2 million years ago until 200 000 years ago. This period is broadly divided into the Oldowan and Acheulean industries. The Oldowan Industry, dating to approximately between over 2 million years and 1.7 million years predates the later Acheulean. The Oldowan Industry consists of very simple, crudely made core tools from which flakes are struck a couple of times. To date, there is no consensus amongst archaeologists as to which hominid species manufactured these artefacts. The Acheulean Industry lasted from about 1.7 million years until 200 thousand years ago. Acheulean tools were more specialized tools than those of the earlier industry. They were shaped intentionally to carry out specific tasks such as hacking and bashing to remove limbs from animals and marrow from bone. These duties were performed using the large sharp pointed artefacts known as hand axes. Cleavers, with their sharp, flat cutting edges were used to carry out more heavy duty butchering activities (Esterhuysen, 2007). The ESA technology lasted for a very long time, from early to middle Pleistocene and thus seems to have been sufficient to meet the needs of early hominids and their ancestors. A later development of ESA stone tool technology has been labelled as the Sangoan industry. These tools may indicate a transition between the Early Stone Age and the Middle Stone Age that started some 200 000 years ago. ESA tools occurrence has been reported in various localities in the study area - usually in the close vicinity of water and not too far inland (Derricourt 1977; Feely 1987; Mazel 1989). Rare Sangoan period sites occur in abundance in the south coast of KwaZulu

Natal including a portion of the study area. Apart from stone artefacts, the ESA sites in the study area have produced very little as regards other archaeological remains. This has made it difficult to make inferences pointing to economical dynamics of the ESA people in this part of the world (Mazel 1989).

6.2.3. Middle Stone Age (MSA)

The MSA dates to between 200 000 and 30 000 years ago, and is generally associated with the emergence of anatomically modern humans. The MSA technology is therefore believed to have been manufactured by fully modern humans known as *Homo sapiens* who emerged around 250 000 years ago. While some of the sites belonging to this time period occur in similar contexts as those of ESA, most of the MSA sites are located in rock shelters. Palaeoenvironmental data suggest that the distribution of MSA sites in the high lying Drakensberg and surrounding areas was influenced by the climate conditions, specifically the amount and duration of snow (Carter, 1976). In general, the MSA stone tools are smaller than those of the ESA. Although some MSA tools are made from prepared cores, the majority of MSA flakes are rather irregular and are probably waste material from knapping exercises. A variety of MSA tools include blades, flakes, scrapers and pointed tools that may have been hafted onto shafts or handles and used as spearheads. Between 70 000 and 60 000 years ago new tool types appear known as segments and trapezoids. These tool types are referred to as backed tools from the method of preparation. Residue analyses on the backed tools from South African MSA sites including those in KZN indicate that these tools were certainly used as spear heads and perhaps even arrow points (Wadley, 2007). Derricourt (1977) reported a few MSA sites in the Transkei and the records of the Albany Museum indicate various MSA sites along the coastal regions of the Eastern Cape Province. MSA sites are also abundant in KZN and these include both open air sites and rock shelters with archaeological deposit. Perhaps the best known and most thoroughly investigated MSA sites in KwaZulu-Natal include Border Cave near the Swaziland border, and Segubudu near Stanger.

6.2.4. Late Stone Age (LSA)

Compared to the earlier MSA and ESA, more is known about the LSA which dates from around 30 000 to 2 000 (possibly later) years ago. This is because LSA sites are more recent than ESA and MSA sites and therefore achieve better preservation of a greater variety of organic archaeological material. The Later Stone Age is usually associated with the San (Bushmen) or their direct ancestors. The tools during this

period were even smaller and more diverse than those of the preceding Middle Stone Age period. LSA tool technology is observed to display rapid stylistic change compared to the slower pace in the MSA. The rapidity is more evident during the last 10 000 years. The LSA tool sequence includes informal small blade tradition from about 22 000 – 12 000 years ago, a scraper and adze-rich industry between 12 000 – 8 000 years ago, a backed tool and small scraper industry between 8 000 – 4 000 years and ending with a variable set of other industries thereafter (Wadley, 2007). Adzes are thought to be wood working tools and may have also been used to make digging sticks and handles for tools. Scrapers are tools that are thought to have been used to prepare hides for clothing and manufacture of other leather items. Backed tools may have been used for cutting as well as tips for arrows. It was also during Later Stone Age times that the bow and arrow was introduced into southern Africa – perhaps around 20 000 years ago. Because of the extensive use of the bow and arrow and the use of traps and snares, Later Stone Age people were far more efficient in exploiting their natural environment than Middle Stone Age people. Up until 2 000 years ago Later Stone Age people dominated the southern African landscape. However, shortly after 2 000 years ago the first Khoi herders and Bantu-speaking agro pastoralists immigrated into southern Africa from the north. This led to major demographic changes in the population distribution of the subcontinent. San hunter-gatherers were either assimilated or moved off to more marginal environments such as the Kalahari Desert or some mountain ranges unsuitable for small-scale subsistence farming and herding. The San in the coastal areas of the study area were the first to have been displaced by incoming African agro-pastoralists. However, some independent and sometimes hybrid groups continue to practice their hunter gatherer lifestyle in the foothills of the Drakensberg until the period of white colonisation around the 1840's (Opperman 1987; Wright & Mazel, 2007; Mallen 2008; Henry 2010).

The renowned San rock paintings of the Drakensberg region also belongs to the Later Stone Age period- although the majority were made between 4000 years ago and about 120 years ago. Rock paintings also occur in southern KwaZulu Natal in the environs of Port Shepstone close to the study area. Unfortunately, these coastal rock art sites has not yet been thoroughly researched

6.2.5 Early Iron Age (EIA)

Unlike the Stone Age people whose life styles were arguably egalitarian, Iron Age people led quite complex life styles. Their way of life of greater dependence on

agriculture necessitated more sedentary settlements. They cultivated crops and kept domestic animals such as cattle, sheep, goats and dogs. Pottery production is also an important feature of Iron Age communities. Iron smelting was practised quite significantly by Iron Age society as they had to produce iron implements for agricultural use. Although Iron Age people occasionally hunted and gathered wild plants and shellfish, the bulk of their diet consisted of the crops they cultivated as well as the meat of the animals they kept. EIA villages were relatively large settlements strategically located in valleys beside rivers to take advantage of the fertile alluvial soils for growing crops (Maggs 1989, Huffman 2007). The EIA sites in the Eastern Cape Province dates back between AD 600 to AD 900. Based on extensive research on EIA sites in the eastern seaboard they can be divided along the following typological criteria and time lines according to ceramic styles (Maggs, 1989; Binneman et al 1992; Huffman 2007):

- _ Msuluzi (AD 500-700);
- _ Ndongondwane (AD 700 – 800);
- _ Ntshekane (AD 800 – 900).

The vast majority of Early Iron Age sites occur along the coastal areas of the study area to the north of the Great Fish River and below the 1000m in the large river valleys with a rainfall of less than 700mm a year.

6.2.6 Late Iron Age (LIA)

The LIA is not only distinguished from the EIA by greater regional diversity of pottery styles but is also marked by extensive stone wall settlements in some areas. However, in this part of the world, stone walls were not common as the Nguni people used thatch and wood to build their houses (Derricourt 1977). This explains the failure to obtain sites from the aerial photograph investigation of the study area. LIA sites in KwaZulu-Natal and the Eastern Cape Province occur adjacent to the major rivers in low lying river valleys but also along ridge crests above the 800m contour. The LIA in the project area can be ascribed to various northern and southern Nguni tribal entities and their immediate predecessors (Maggs 1989; Feely 1987). It is also possible that some stone walled sites, especially those incorporating shelters or caves, were constructed by hybrid San/Nguni groups. Trade played a major role in the economy of LIA societies. Goods were traded locally and over long distances. The main trade goods included metal, salt, grain, cattle and thatch. This led to the establishment of economically driven centres and the growth of trade wealth. Keeping of domestic animals, metal work and the cultivation of crops continued with a change in the organisation of economic activities (Maggs, 1989; Huffman 2007). The existing data

base indicates the location of various Later Iron Age sites in the greater project area, with the majority occurring in KwaZulu-Natal.

6.2.7. Historic Period

Oral tradition is the basis of the evidence of historical events that took place before written history could be recorded. This kind of evidence becomes even more reliable in cases where archaeology could be utilised to back up the oral records. Sources of evidence for socio political organization during the mid-eighteenth to early nineteenth century in the study area suggest that the people here existed in numerous small-scale political units of different sizes, population numbers and political structures (Feely 1987; Wright & Hamilton, 1989). This period was largely characterised by rage and instability as political skirmishes broke due to the thirst for power and resources between chiefdoms. During the 2nd half of the eighteenth century, stronger chiefdoms and paramuncies emerged. However, these were not fully grown states as there was no proper formal central political body established. This changed in the 1780's when a shift towards a more centralized political state occurred in parts of northern KwaZulu-Natal. The Zulu kingdom, established by King Shaka however became the most powerful in KwaZulu-Natal in the early years of the 19th century and had a marked influence on the local Nguni chiefdoms of the project area (Feely 1987). Refugees from north of the Umtavuna River such as the Bhaca and Qwabe tribes moved into the Transkei and asked the Mpondo chief for permission to settle in adjacent parts. These refugees were collectively called amaMfengu and many of these people were settled in parts of the project area and the adjacent areas near Qumbu and Mount Fletcher. One group of refugees from the north, the amaNgwane, crossed the Umthatha River in the project area, and fought a decisive battle against British colonial troops and their Thembu and Xhosa allies in 1828 at Mbholompo Point. During this episode the amaNgwane was defeated and the tribe broken-up (Peires 1981).

6.3. Known distribution of heritage sites and their significance (heritage value)

The project area is well known for the occurrence of middens containing Stone Age and Iron Age material adjacent to the N2 along the south coast of KwaZulu-Natal. All these sites may be damaged by the proposed laying of cables and special precaution must be taken when construction takes place in this section of the study area. No significant heritage sites are indicated more inland for the area between Port Shepstone and Harding. Nevertheless, this area does contain Later Stone Age, rock

painting, later Iron Age and historical sites but none occur in the immediate vicinity, within 100m, of the proposed data cable route. The proposed cable route also passes a tribal communal area on the outskirts of Port Shepstone and it is possible that some of the homesteads adjacent to the N2 may contain graveyards, however, no available data base indicate the presence of such graves. The Eastern Cape section of the proposed data cable route is less well known in terms of heritage site distribution.

6.3.1 Heritage sites along the KwaZulu-Natal section of the study area

Table 2 summarises those heritage sites in the KwaZulu-Natal section of the proposed route that may be affected by construction and excavation activities associated with the laying of the data cables. Their exact coordinates are also given in order to aid the developer in identifying the no-go areas in terms of heritage legislation. Figures 2, 3, and 4 indicate the location of the known heritage sites on the ground.

Table 2. Heritage sites between Durban and Harding

No	Heritage Site	Estimated Age	Significance	Requires Mitigation?	Type of Mitigation	GPS Latitude and Longitude
1	ESA (Acheulian site)	Between 300 000 and 1.5 million years ago	High significance locally	No but maintain 20m buffer around site	Not applicable	29 50 12 S 30 58 30 E
2	EIA site	Between 1450 and 1000 years ago	High significance locally	No, but maintain 20 m buffer	Not applicable	29 46 28 S 30 55 39 E
3	LIA and historical period smelting site (Furnace)	800 – 100 years ago	High significance locally	No, but maintain 20 m buffer	Not applicable	29 51 45 S 30 56 49 E
4	LIA surface scatter	800 – 100 years ago	High significance locally	No, but maintain 20 m buffer	Not applicable	29 45 50 S 30 59 54 E
5	LIA smelting site	Approximately 100 - 800 years old	High significance locally	No, but maintain 20 m buffer	Not applicable	29 46 44 S 30 59 36 E
6	LIA smelting site	Approximately 100 – 800 years old	High to medium	No, but maintain 20m buffer	Not applicable	29 46 54 S 30 59 31 E
7	LIA site (potsherds)	Approximately 800 – 100 years old	High to medium	No, but maintain 20m buffer	Not applicable	29 55 27 S 31 00 48 E

8	LIA site (potsherds)	Approximately 100 - 800 years old	High to medium	No, but maintain 20m buffer	Not applicable	29 46 08 S 31 00 07 E
9	LIA site	Approximately 100 - 800 years old	High to medium	No, but maintain 20m buffer	Not applicable	29 46 50 S 31 00 00 E
10	ESA (Sangoan typology), MSA, LSA	Approximately 300 000, 200 - 40 000, and 30 0000 - 2000 years old	High to medium	No, but maintain 20m buffer	Not applicable	30 08 09 S 30 50 16 E
11	Stone Age tool scatter	Unknown (no associated typology)	Medium	No, but maintain 20m buffer	Not applicable	30 14 05 S 30 47 11 E
12	MSA midden	Approximately 40 000 - 200 000 years old	High to medium	No, but maintain 20m buffer	Not applicable	30 14 17 S 30 46 56 E
13	LIA midden	Approximately 100 - 800 years old	High to medium	No, but maintain 20 m buffer	Not applicable	30 00 33 S 30 55 05 E
14	LIA shards	200 - 800 years old	High	No, but maintain 20 m buffer	Not applicable	30 07 58 S 30 50 44 E
15	LSA site	Approximately 10 000 years old	High significance locally	No, but maintain 20m buffer	Not applicable	30 09 24 S 30 49 46 E
16	LIA, ESA, MSA site (midden)	Approximately 1.5 million years - 300 000 years old, 200 000 - 40 000, and 800 - 100 years old	High significance	No, but maintain 20m buffer	Not applicable	30 10 56 S 30 48 48 E
17	EIA site	Approximately 1450 - 1000 years old	High to medium significance	No, but maintain 20 m buffer	Not applicable	30 13 14 S 30 47 53 E
18	EIA and LIA site (cutting in N2)	Approximately 1450 - 100 years old	High to medium	Yes	The present status of this site must be evaluated by a heritage specialist before any construction within 20m of its environs may commence. Here may be a need for a rescue excavation.	30 09 40 S 30 49 23 E
19	ESA	Approximately 300 000 - 1.5 million years old	High significance locally	No, but maintain 20m buffer	Not applicable	30 10 35 S 30 48 52 E
20	EIA and LSA midden	Approximately 30 0000 - 2000 years old	High to medium	No, but maintain 20m buffer	Not applicable	30 10 45 S 30 48 50 E

21	ESA and LSA in midden at cutting in N2	Approximately 1.5 million to 300 000 years old and 30 000 – 2000 years old	High significance	Yes	The present status of this site must be evaluated before any construction within 20m of its environs may commence. Here may be a need for a rescue excavation.	30 12 50 S 30 47 47 E
22	LSA and LIA midden	Approximately 30 000 - 2000 years old	High significance	Yes	The present status of this site must be evaluated before any construction within 20m of its environs may commence. Here may be a need for a rescue excavation.	30 13 26 S 30 47 39 E
23	LIA and historical period	Last 200 years	High to medium significance	No, but maintain a buffer of 20 m around this site	Not applicable	30 06 22 S 30 50 40 E
24	LIA	Between 200 and 1000 years ago	High to medium significance locally	No, but maintain a buffer of 20 m around this site	Not applicable	31 11 36.03 S 28 14 50.39 E
25	LSA	Between 30 000 and 2000 years ago	High to medium significance locally	No, but maintain a buffer of 20 m around this site	Not applicable	30 40 10 S 30 22 19 E
26	Midden with shell no stone tools	unknown	Low significance	No, but maintain a buffer of 20 m around this site	Not applicable	30 20 45 S 30 43 44 E
27	LSA	Between 2000 and 30 000 years old	High to medium significance	Yes	This site is situated in road cutting of N2, need to be evaluated by a heritage specialist prior to any construction activities in its immediate environment.	30 21 25 S 30 42 38 E
28	LSA and EIA ? midden	Between 2000 and 30 000 years old	High to medium significance	No, this site has most probably been destroyed by previous construction activities	Not applicable	30 22 15 S 30 42 16 E
29	EIA (Matola	Approximately	Very high	Yes	Archaeologists at	30 20 31 S

	phase) and LSA material	between 1800 and 1 600 and 2000 and 30 000 year old	significance. Matola phase EIA is very rare thus far south in Africa.		the Natal Museum gave this site a very high rating and suggested rescue excavation prior to any developments within 50 m from its location.	30 42 59 E
30	LIA burial	Approximately 100 – 600 years old	High to medium significance	No, but maintain a buffer of 20 m around this site	Not applicable	30 17 14 S 30 44 30 E
31	LIA surface material	Approximately 100 – 600 years old	High significance	Yes	This site is located on cutting crossing the N2. It will need rescue excavation prior to any developments within 20 m from its immediate environs	30 16 03 S 30 45 24 E
32	Sangoan (ESA) and MSA	Approximately 300 000 – 40 000 years old	High significance	Yes	This site is located on cutting crossing the N2. It will need rescue excavation prior to any developments within 20 m from its immediate environs	30 41 05 S 30 29 30 E
33	EIA midden	Approximately 1450 – 1000 years old	High to medium significance	No, but maintain 20m buffer around this site	Not applicable	30 43 41 S 30 27 58 E
34	MSA and LSA surface material	Approximately 200 000 – 40 000, and 100 – 600 years old	High to medium significance	No, but maintain 20m buffer around this site	Not applicable	30 40 56 S 30 26 46 E
35	LIA and LSA	Approximately 100 – 800 years old, and 2000 – 30 000 years old	High to medium significance	No, but maintain 20m buffer around this site	Not applicable	30 46 07 S 30 26 18 E
36	LSA	Approximately 2000 – 30 000 years old	High to medium	No, but maintain 20m buffer around this site	Not applicable	30 48 27 S 30 24 58 E
37	LSA	Approximately 2000 – 30 000 years old	High to medium	No, but maintain 20m buffer around this site –	Not applicable	30 58 S 30 16 E

				possible that this site has been destroyed by past construction activities		
38	LIA	Approximately 100 – 800 years old	High to medium	No, but maintain 20m buffer around this site	Not applicable	30 36 44 S 30 33 01 E
40	LSA	2000 – 30 000 years old	High to medium	No, but maintain 20m buffer around this site	Not applicable	30 36 48 S 30 32 51 E
41	LSA	2000 – 30 000 years old	High to medium	No, but maintain 20m buffer around this site	Not applicable	30 36 49 S 30 32 52 E
42	LIA	Approximately 200 – 800 years old	High to medium	Yes	Site is situated on N2, need to be evaluated by heritage specialist before any construction can commence. May need to have a rescue excavation.	30 40 32 S 30 30 20 E
43	LSA and LIA ?	Uncertain	Medium	No	Not applicable	30 36 37 S 30 32 49 E
44	Sangoan (ESA),MSA, LSA	Approximately 300 000 – 2000 years ago	High	No, but maintain 20m buffer around this site	Not applicable	30 40 10 S 30 30 42 E

6.3.2 Heritage sites between the Harding and East London section of the proposed data cable route

Only limited and random ground surveys have been conducted in the section between Harding and East London. The most comprehensive surveys have been conducted by Jim Feely in the 1980's (Feely 1987). However, these did not cover the entire route but only sections covering some of the major river valleys of the former Transkei. Additional data has been collected by the author of this document when he was based at the then University of Transkei in 1988-1990. The available data is summarised in Table 3.

Table 3. Heritage sites between Harding and East London

No	Heritage Site	Estimated Age	Significance	Requires Mitigation?	Type of Mitigation	GPS Latitude and Longitude
1	Thaba Ntsizwe (battlefield and living heritage site)	Approximately 1820 for historic battle between Zulu and Bhaca people	High significance locally	No but maintain 20m buffer around site	Not applicable	30 48 36.74 S 29 13 05.27 E
2	Iron Age site	Between 200 and 800 years ago	High to medium significance locally	No, but maintain 20 m buffer	Not applicable	30 51 22.62 S 29 04 00.24 E
3	Old trading store and associated metal bridge	Approximately 70 years old	High to medium significance locally	No, but maintain 20 m buffer	Not applicable	30 50 58.33 S 29 03 58.57 E
4	Old Government buildings	Older than 60 years	High to medium significance locally	No, but maintain 20 m buffer	Not applicable	30 54 02.06 S 28 59 36.57 E
5	Old Magistrates Court buildings	Approximately 100 - years old (built in 1914)	High to medium significance locally	No, but maintain 20 m buffer	Not applicable	30 54 08.51 S 28 59 33.78 E
6	Old trading store and associated metal bridge	Approximately 70 years old	High to medium	No, but maintain 20m buffer	Not applicable	31 04 25.64 S 28 53 34.72 E
7	Iron Age site	Approximately 100 – 800 years old	High to medium	No, but maintain 20m buffer	Not applicable	31 04 34.54 S 28 53 34.72 E
8	Iron Age site	Approximately 100 - 800 years old	High to medium	No, but maintain 20m buffer	Not applicable	31 55 39.25 S 28 27 20.05 E
9	Iron Age site	Approximately 100 – 800 years old	High to medium	No, but maintain 20m buffer	Not applicable	32 30 45.24 S 27 59 52.10 E

A rating method developed by SAHRA was applied to evaluate the significance of each heritage site within 200m from the proposed power line (Table 4). The results are also presented in Table 4.

Table 4. 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

6.3.3 Heritage sites between the East London and Port Elizabeth section of the proposed data cable route

Only limited surveys have been undertaken along the route between East London and Port Elizabeth of the footprint. No heritage site coordinates are available from existing data bases for this area. However, previous surveys (Binneman et al 1992; Van Schalkwyk & Wahl 2003) do indicate heritage site sensitivity along the largest portion of this route. The most detailed survey of this area to date is the survey conducted by Van Schalkwyk & Wahl (2003). Their survey covered the N2 between Harding and Port Elizabeth and it therefore roughly follows the proposed FibreCo Route 5 as discussed in this study. However, this survey is limited as it was conducted from a helicopter that flew over and along the proposed route. No ground surveys were conducted. The information and observations made by Van Schalkwyk and Wahl (2003) is summarised in Table 4. In addition, these observations have also been complemented by available literature on heritage resources in this area.

The only known heritage sites located along this southern section of Route 5 are an important palaeontological fossil occurrence on a bypass of the N2 near Grahamstown. Here, in deposits from the Witteberg Group rocks, scientists from the University of the Witwatersrand and the University of Chicago discovered a 360 million-year-old lamprey fossil - the oldest evidence for this species in the world. The fossil has been named *Priscomyzon riniensis* (from Latin *prisco* (ancient) *myzon* (a lamprey) and *Rini*, the Xhosa name for Grahamstown and surrounds). It is one of a

remarkably diverse fossil fish and invertebrate fauna revealed by palaeontologists during more than a decade of excavations at a locality revealed by road building in 1985. Through the helpful co-operation of the South African National Roads Agency Limited (SANRAL), scientists have been able to preserve this locality through a number of subsequent roadworks and to prepare a large collection of unique fossils for scientific study (Maclennan 2006). Due to the international status and sensitive nature of this particular site its exact GPS coordinates are not available; however, it is not situated on the direct path of the proposed data cables although it is located in the near vicinity.

Although the Witteberg rocks are particularly rich in fossil specimens the same cannot be said for the lowest part of the Beaufort Group succession that occurs along the route between Grahamstown and East London. For the most part, the fossils found in the Beaufort sediments, although not unknown, are rare (de Klerk 2010).

Table 5. Heritage sensitivity and potential site occurrence in Eastern Cape section of proposed cable route.

Section of proposed data cable	Comments	Potential heritage site occurrence
1. Harding to Umtata	This section contains few heritage sites. It is situated on the inland plateau of the former Transkei with few geographical and environmental features that encouraged prehistoric settlement of this area in the past (Feely 1987). Stone Age and Iron Age settlements, however, are fairly common in the river valleys of the Umzinhlava, Umzimvubu, and Umtata Rivers below the 1000m contour to the immediate east of the proposed cable route. The mountain Thaba Ntsizwa, between Mount Ayliff and Mount Frere that overlooks the proposed cable way is a living heritage and a historic battlefield site associated with a battle between the amaBhaca and Zulu around 1820. The foothills of	Low on the actual proposed route although the areas surrounding have a high percentage of Early Iron Age, Later Iron Age, and Later Stone Age sites. Some historical era trading posts occur on the actual route as well as graves associated with peri-urban homesteads.

	<p>the Drakensberg to the west of this area became the last stronghold of the Southern San and this area contains many Later Stone Age sites and historical era (post 1850) African settlements (Feely 1987). Some colonial period and early 20th century trading posts occur adjacent to the proposed route such as at the bridge crossing the Umzimvubu River. It is almost certain that various graves would occur in the peri-urban homesteads all along the route from Mount Ayliff in the north towards the Kei River area in the south.</p>	
<p>2. Umtata to East London</p>	<p>Van Schalkwyk and Wahl (2003) reported peri-urban graves, and old abandoned homesteads with possible graves immediately to the south of Umtata leading towards Qunu. They also report that the Mbashe River Valley to the south of Qunu is likely to contain Early Iron Age sites. Graves are reported by Van Schalkwyk and Wahl (2003) on the outskirts of Butterworth. Feely (1987) reports a smaller number of Early and Later Iron Age sites in the Kei River Valley than further north. However, important Early Iron Age sites do occur in the lower valley (Binneman et al 1992). There is also a possibility that Iron Age sites may occur in the broken landscape leading towards the Gonubie River Valley (Van Schalkwyk and Wahl 2003).</p>	<p>Low on the proposed route for the data cable, however, significant Early and later Iron Age sites do occur in the large River Valleys directly adjacent to the footprint. The peri-urban area in the immediate environs of Butterworth contains relatively recent graves.</p>
<p>3. East London to Port Elizabeth</p>	<p>With the exception of palaeontological fossil occurrences in the near vicinity of Grahamstown (MacLennan 2006) no known heritage sites are recorded in existing data bases along this southern section of the proposed data cable route. Van Schalkwyk and Wahl (2003) reports low</p>	<p>With the exception of fossil sites near Grahamstown low on the remainder of proposed route for the data cable.</p>

	<p>heritage site occurrence for the East London area in the vicinity of the Nahoon river although graves may occur in rural settlements along the route. Nogwaza (1994), however, investigated a very southern Early Iron Age site at Canasta Place near the Buffalo River. According to Van Schalkwyk and Wahl (2003) the area between King Williams Town and Cookhouse includes Late Iron Age features and archaeological material located along slopes and on hilltops. Early Middle and Late Stone Age artefact scatters occur, as well as historical material from the British/Xhosa Frontier Ward (mainly in the King Williams Town and Fort Beaufort areas). Settler and Boer War historical material occurs in the vicinity of Cookehouse. This area is also rich in paleontological fossil remains. Later Stone Age (hunter-gatherer and Khoi pastoralist) sites do occur in abundance in the coastal areas of Port Elizabeth but not on the proposed data cable route.</p>	
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Figure 1 Map showing the approximate locality of the proposed Fibreco Data Cable Route (route 5) between Durban and Port Elizabeth. The route broadly follows the alignment of the new N2.

Figure 2 Map showing the distribution of known heritage sites along the proposed data cable route.

7 DESCRIPTION OF PROPOSED REPEATER SITES

Introduction and summary

On 20 March 2011, four of the eight proposed repeater sites along Route 5, as listed in Table 3 below, were visited and evaluated by the consultant.

Each of the repeater sites are planned to cover a total area of 100 m² in extent, and they are intended to support the following.

- A repeater structure, which is a container-shaped single storey structure (2.5 m x 6 m), with the length sometimes going to 8 m, depending on the equipment that needs to be installed.
- A separate small structure nearby to house a generator.
- Sufficient area to accommodate a second repeater structure, sometime in the future.
- Fencing around the site.

The repeater sites will either be located next to a telecommunications mast or on separate sites closer to the main cable line.

A summary of the repeater sites follows in Table 6 below.

Table 6: Summary of proposed repeater sites on Route 5

No	Name	Latitude (S)	Longitude (E)	Type of Heritage survey	Heritage significance
RE046	Ncanaha 5254	33.60834°	25.92265°	Desktop	None
RE031	Grahamstown 4511	33.28700°	26.56890°	Desktop	None
RE039	Keiskamma 5586	33.03371°	27.25300°	Desktop	None
RE037	Jujuju 5149	32.35291°	28.03844°	Desktop	None
RE041	Qunu 5063	31.78375°	28.61650°	Ground survey	None
RE040	Qumbu 5068	31.14770°	28.85920°	Ground survey	None
RE048	Sipolweni 5610	30.69059°	29.44992°	Ground survey	None
RE038	Freeland Park 7615	30.26800°	30.75610°	Ground survey	None

The proposed repeater sites at Grahamstown, Qunu, Qumbu, and Freeland Park are all located next to existing transmission towers. The proposed repeater sites at Keiskamma and Sipolweni are on disturbed sites within scattered rural settlements. None of the repeater sites contains any heritage sites or material. Each one of these repeater sites will be discussed in turn, with reference to a Google Earth image and photographs.

Ncanaha Hoogte 5254 (RE046)

This proposed repeater site faces the N2/N10/R72 interchange, between Port Elizabeth and Grahamstown, and is below the Namaga Methodist Church and close to the Namaga Farm Stall (Fig 3). It is part of the Albany Coastal Belt (AT9) vegetation unit. The present vegetation is dense and relatively undisturbed. Impacts due to construction of a repeater site will be small, localised destruction of vegetation and alteration of the area. However, the available desktop data suggests that there are no heritage sites or features located on this site. There are no special heritage considerations with regard to placement of the repeater station on this site.



Figure 3: Google view of proposed Ncanaha Hoogte 5254 repeater site, adjacent to N2/N10/R72 interchange

Grahamstown 4511 (RE031)

This proposed repeater site is located next to a cell phone mast, with a security fence around it, and opposite a taxi/bus stop and is within the “township” area of Grahamstown (Fig 4). The site consists of vacant land, which has been completely transformed, with no trees and a patchwork of bare ground and grasses. The available desktop data suggests that there are no heritage sites or features associated with this site. There are no special heritage considerations with regard to placement of the repeater station on this site.



Figure 5: Google view of proposed Grahamstown repeater site in township.

Keiskamma 5586 (RE039)

This proposed repeater site is located within a rural settlement, on a disturbed site, adjacent to the N2 as one climbs away from the Keiskamma River (Fig 6). It falls within Buffels Thicket (AT12), but has been disturbed by rural dwellings and there are a number of small termitaria and also some evidence of previous earthworks on site. The veld has been heavily utilised. The desktop study suggests that there are no heritage sites or features associated with this area. No grave sites were visible from available aerial photographs. There are no special heritage considerations with regard to placement of the repeater station on this site.



Figure 6: Google view of proposed Keiskamma repeater site, adjacent to N2 within a scattered rural settlement

Jujuju 5149 (RE037)

This proposed repeater site is located between the Great Kei River and Butterworth, in relatively undisturbed, though not pristine, grassland, near a water tower and hall, on the edge of a rural settlement (Fig 7). Within the grassland are a few scattered termitaria and rocks. The site falls within Mthatha Moist Grassland (Gs14) and has good grass cover and some alien species. The desktop study suggests that there are no heritage sites or features associated with this area. There are no special heritage considerations with regard to placement of the repeater station on this site.



Figure 7: Google view of proposed Jujuju repeater site, adjacent to water tower in rural settlement

Qunu 5063 (RE041)

The Qunu repeater site was visited by the consultant who also conducted a ground survey of the footprint. This proposed repeater site is located at the Qunu settlement, approximately 30km to the south of Umtata. It is located between a Telkom Microwave tower, a radio tower and an old borrow pit (Figs 8 and 9). The proposed repeater site is situated approximately 200m from the new Nelson Mandela Museum that is a prominent heritage attraction in the settlement.

The footprint is very disturbed and there are a number of small depressions, with standing water. They are not natural, but are evidently a result of the quarry activities, and show signs of being permanently or semi-permanently wet. No heritage sites or features occur on the site. However, old farm house dwellings built in a style reminiscent of the 1920-1940's occur within 100m from the proposed repeater site (Fig 10). These buildings, however, are not in any danger of being damaged or altered by the proposed development. There are no special heritage considerations with regard to placement of the repeater station on this site.

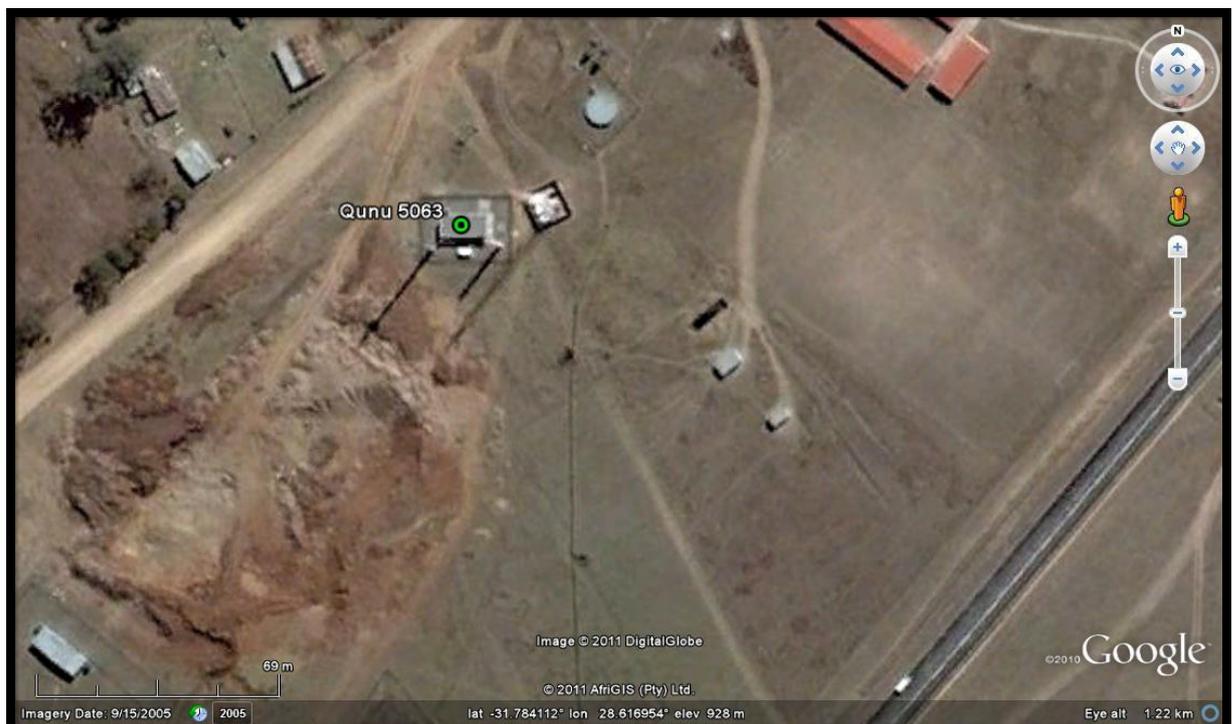


Figure 8: Google image of proposed Qunu repeater site, adjacent to microwave tower and old borrow pit



Figure 9: Proposed Qunu repeater site



Figure 10: Historical farm house/trading store building opposite the proposed repeater site at Qunu

Qumbu 5058 (RE040)

The proposed repeater site at Qumbu was visited by the consultant who also conducted a ground survey of the footprint. The site is located on top of a rocky hilltop/koppie overlooking the town of Qumbu. It is situated to the north of Qumbu (Figs 11 & 12). The footprint is adjacent to an MTN cell phone tower and close to another tower (possibly microwave). There is an Eskom overhead supply coming from a small settlement in the west. To get to the koppie from the N2, the cable will have to traverse unspoilt grassland.

No heritage sites were identified on the footprint or the immediate environs of the proposed repeater site. There are no special heritage considerations with regard to placement of the repeater station on this site.

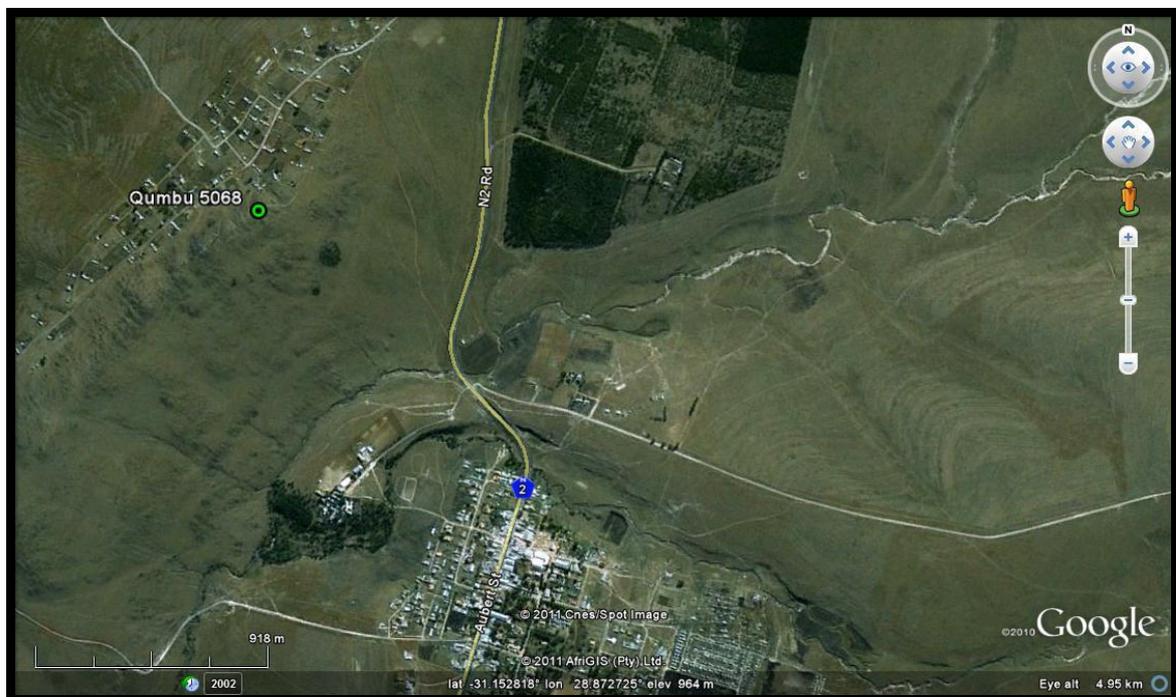


Figure 11: Google view of proposed Qumbu repeater site



Figure 12: Proposed Qumbu repeater site on top of koppie

Sipolweni 5610 (RE048)

The consultant visited this site and conducted a ground survey of the footprint. The site is located on the eastern side of the N2, about 8 km south of Kokstad (Figs 13 & 14). There is a small dwelling on the north side of the site and a dirt track on the south side. The entire area consists of fairly dense rural settlements. The site is eroded around the edges and has bare patches within. The footprint is disturbed from previous building activities. No heritage sites or features were visible on the footprint. There are no special heritage considerations with regard to placement of the repeater station on this site.

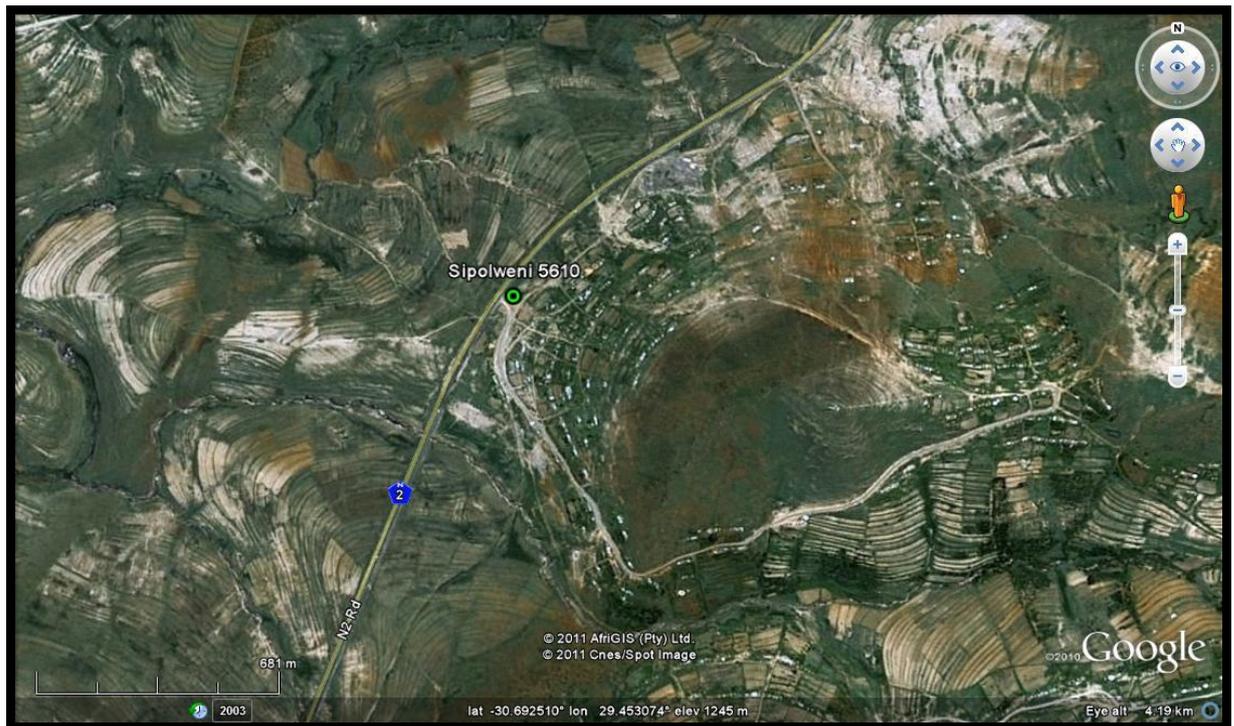


Figure 13: Google view of proposed Sipolweni repeater site.



Figure 14: Proposed Sipolweni repeater site

Freeland Park (RE038)

The consultant visited this site and conducted a ground survey of the footprint. The site is located on the northern edge of the coastal town of Scottburgh, between Freeland Park and the N2 (Figs 15 & 16). The proposed repeater site is situated adjacent to a communications tower, within a closed courtyard, which also had a building, presumably containing communications equipment. There is also a water reservoir east of the site. The site is slightly eroded and due care will therefore have to be taken to ensure that this is not accelerated during the construction process.

Although the Natal Museum records indicate a Stone Age tool scatter approximately 300m to the north of the site no artefacts or other heritage material occur on or near the proposed repeater site. The consultant also visited the area identified as the location by the Stone Age tool scatter but could not find any archaeological remains. It is possible that the site has been destroyed by previous building activities. There are therefore no special considerations with regard to placement of the repeater station on the identified footprint.

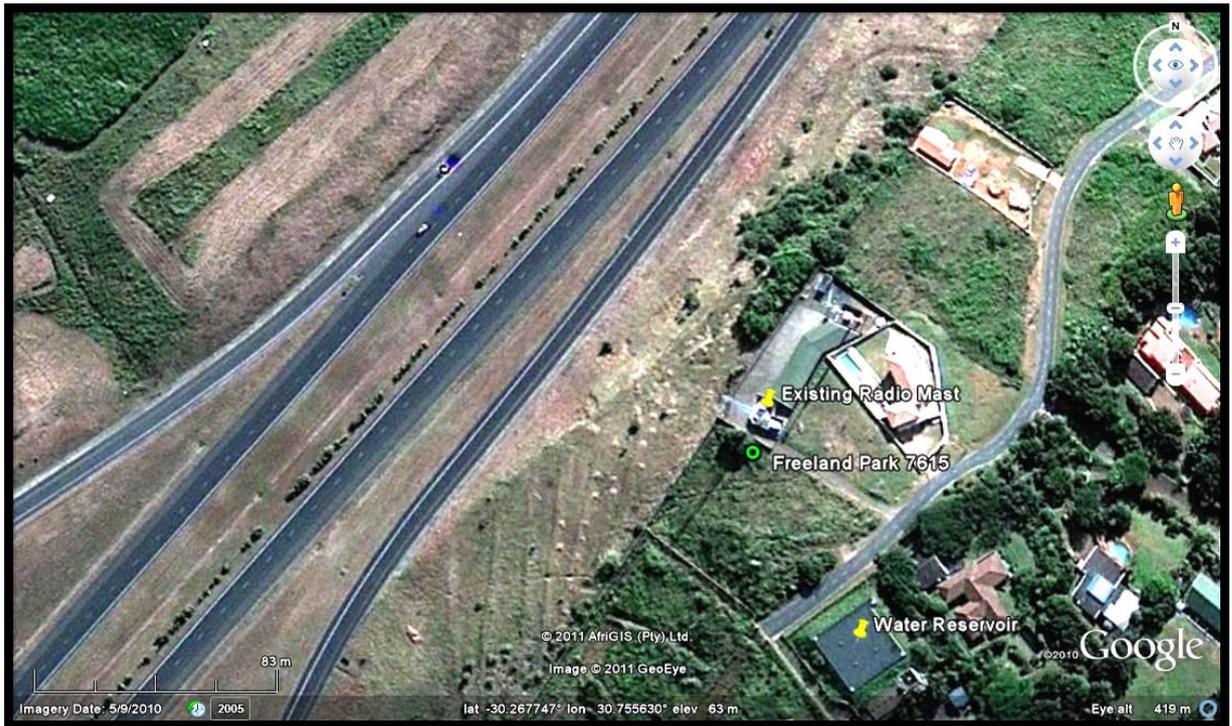


Figure 15: Proposed Freeland Park repeater site outside Scottburgh on eastern side and overlooking N2



Figure 16: View of proposed Freeland Park repeater site from N2



Photo 1: View of proposed Freeland Park repeater site from water reservoir

8 PROJECT ACTIVITIES THAT COULD IMPACT THE RECEIVING ENVIRONMENT

Cultural heritage includes both tangible and intangible aspects. The tangible aspects of heritage such as archaeological sites, palaeontological features or fossils, historical buildings, graves, and to some extent cultural landscapes are for the most part non-renewable. Unlike natural resources tangible cultural heritage cannot be renewed once damaged or destroyed. Land rehabilitation measures will have no effect on tangible cultural heritage once altered or destroyed. Any construction activity that could damage heritage sites or structures such as digging of trenches, laying of cables, drilling operations, potential construction of access roads, erection of on-site infrastructure such as portable offices, should be avoided in the immediate vicinity of heritage sites. In some instances mitigation may be possible and an archaeological or palaeontological rescue excavation may be suggested for particular sites that will be damaged during development. Such excavation can only proceed once a permit has been issued by the relevant heritage agency.

In terms of the FibreCo project it is clearly the digging of trenches, the laying of cables and other related excavations and activities that will pose a threat to heritage sites. A golden rule is to avoid all heritage sites – where possible. However, should any site be on the direct path of the proposed data cable route then it needs to be evaluated by a heritage specialist before any construction may commence. In some circumstances, pending also the decision by the relevant heritage agency, a rescue excavation may be implemented. However, most of the laying of cables will take place within the existing road reserves. These are for the most part already disturbed from a heritage perspective. Likewise, most of the proposed repeater sites occur in locations that have already been disturbed with no identifiable heritage sites and features.

9 ASSESSMENT OF IMPACTS

9.1. During the construction phase

- Transportation of construction equipment should only occur on well defined roads. Large areas of the study area are relatively flat and it would be easy to drive with a high clearance vehicle over these parts. However, stone tool and

potsherd scatters and other heritage features may occur in these flat areas and will be at risk.

- Areas identified for access road construction, where relevant, should be surveyed for heritage sites on the ground before any construction can take place.
- Heritage material may be exposed when digging the trenches for the data cables. Special care must be taken not to alter or damage any heritage material that may be exposed by such excavations.
- An ecologically acceptable practise is to tie cables to existing bridges where they cross wetlands or sensitive water bodies. However, it should be noted that the steel bridge structures as the crossings of the Mzimvubu, Thina and Tsista Rivers are all older than 60 years and therefore protected by heritage legislation. They may not be altered or damaged in any way during the laying of the fibre cables.
- Witteberg sediments in the immediate vicinity of the N2 bypass near Grahamstown may contain palaeontological fossil specimens. It is suggested that a second phase palaeontological heritage impact assessment of the proposed data cable route in the near vicinity of Grahamstown be completed before any trench digging operations commence there.
- Should any heritage site or artefacts be unearthed along any section or locality of the entire route then all activities should stop immediately and the local heritage agencies (i.e. Amafa and/or SAHRA) be contacted for further evaluation.

9.2. During the operational phase

- Digging of trenches and associated earth moving activities could damage heritage sites and features in the near environs of the trenches. Excessive dust created by drilling activities could also damage certain heritage sites such as rock paintings (although none are indicated in existing data bases for the footprint). It would be wise to maintain a buffer zone of at least 20m around any heritage sites in the near vicinity of the trenches identified for the laying of cables.

- Excavation of trenches may unearth heritage material not located during the heritage ground survey. Should any heritage site or artefacts be unearthed then all activities should stop immediately and the local heritage agencies (i.e. Amafa and SAHRA) be contacted for further evaluation.

9.3. Closure

- It is unlikely that the decommissioning phase should have any potentially negative impact on heritage sites and features not previously addressed. However, land rehabilitation processes may have a negative impact on heritage sites in the immediate environs of the rehabilitation site. It is suggested that a buffer zone of at least 20m being maintained around identified heritage sites during the rehabilitation process.

10. MANAGEMENT MEASURES FOR ALL PROJECT PHASES

This report is based on a desktop survey of available heritage data. As such it is limited and incomplete. The Eastern Cape section of the proposed route has never been thoroughly surveyed and available data is largely based on a limited aerial survey and more random ground surveys in the Transkei region of the Eastern Cape. However, the KwaZulu-Natal section of the proposed data cable route has been more thoroughly covered by means of various ground surveys in the past and it is possible to indicate the localities of sensitive heritage sites in the near environs of the proposed data cable route. The following recommendations are suggested:

- Conduct a ground survey of heritage sites along the Eastern Cape section of the proposed data cable route. It is especially the East London to Port Elizabeth section of the proposed cable route that needs to be surveyed. Previous studies have highlighted potentially sensitive heritage areas along this route but these needs to be corroborated with actual field observations and the establishment of the exact GPS coordinates of heritage sites.
- Maintain a buffer zone of at least 20m around all heritage sites identified in this study. This is especially relevant to those sites situated within 50m or less from the proposed data cable route.

- The majority of known heritage sites in the KwaZulu-Natal section of the study area occurs along the old N2 coastal route and may therefore not be in immediate danger of being damaged or altered by the construction of the proposed data cable route that is broadly aligned to the new N2 route. However, care must be taken not to damage any heritage sites in the near vicinity of the data cables.
- No stone robbing or removal of any heritage material or artefacts from these sites for construction purposes or the filling in of trenches is allowed. Any disturbance or alteration of these sites would be illegal and punishable by law.
- Maintain a 20m buffer zone around the identified heritage sites. No dumping of construction material is allowed within this buffer zone and no alteration or damage of these sites may occur.
- It should also be pointed out that the South African National Heritage Act requires that operations exposing archaeological and historical residues should cease immediately pending an evaluation by the heritage authorities.

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