N2 WILD COAST TOLL HIGHWAY
SUPPLEMENTARY ARCHAEOLOGICAL SURVEY
FIELD SURVEY CONDUCTED FROM
24 TO 28 OCTOBER 2011
FINAL REPORT DECEMBER 2012

Prepared for:
South African Heritage Resources Agency (SAHRA)
Contact person: Mariagrazia Galimberti
111 Harrington Street
Cape Town
8001

On behalf of:
CCA Environmental (Pty) Ltd
Contact person: Fuad Fredericks
Unit 35, Roeland Square
30 Drury Lane, Cape Town
8001
Tel: 021 461 1118; Fax: 021 461 1120

For:
South African National Roads Agency (State Owned Company) Limited
Contact person: Ron Harmse
48 Tambotie Avenue, Val de Grace
Pretoria
0184
Tel: 012 844 8000; Fax: 012 844 8200

Prepared by:
Andrie Meyer
30th Avenue 323
Villieria
Pretoria
0186
Tel: 012 333 7296; Cell: 082 557 2777; E-mail: eduviron@gmail.com

Copyright © SANRAL 2012

N2 Wild Coast Toll Highway Supplementary Archaeological Survey 2011-2012

All rights reserved

No part of this report may be published or reproduced, transmitted or made known in any form or by any means, electronically or mechanically, including photocopying, recording, or by means of any other storage or retrieval system, without the prior written permission of SANRAL. SANRAL owns the copyright to all reproductions, photographs, maps, satellite imagery, illustrations and texts unless otherwise stated by SANRAL.

N2 WILD COAST TOLL HIGHWAY SUPPLEMENTARY ARCHAEOLOGICAL SURVEY FIELD SURVEY CONDUCTED FROM 24 TO 28 OCTOBER 2011 FINAL REPORT DECEMBER 2012

Executive summary

Preamble

During the compilation of the Final Environmental Impact Report (FEIR) for the N2 Wild Coast Toll Highway (N2WCTH) (see Figure 1 below), the South African Heritage Resources Agency (SAHRA) requested that an additional archaeological investigation of some sections of the proposed N2WCTH be undertaken for further consideration and comment. SAHRA made this request after SAHRA had studied the original Heritage Impact Assessment (HIA) report commissioned as part of the Environmental Impact Assessment (EIA) for the project. Subsequent discussions between SAHRA, CCA Environmental (Pty) Ltd, SANRAL and a heritage specialist clarified what additional information SAHRA required. It was agreed that a Supplementary Archaeological Survey (SAS) of the new road sections (or greenfields sections) between the Ndwalane Interchange in the south and the Mtamvuna River Bridge in the north should be undertaken to review and to add to the information of the two previous Archaeological Impact Assessment (AIA) surveys done by Binneman (2002a, 2002b) and eThembini Cultural Heritage (2008a, 2008b).

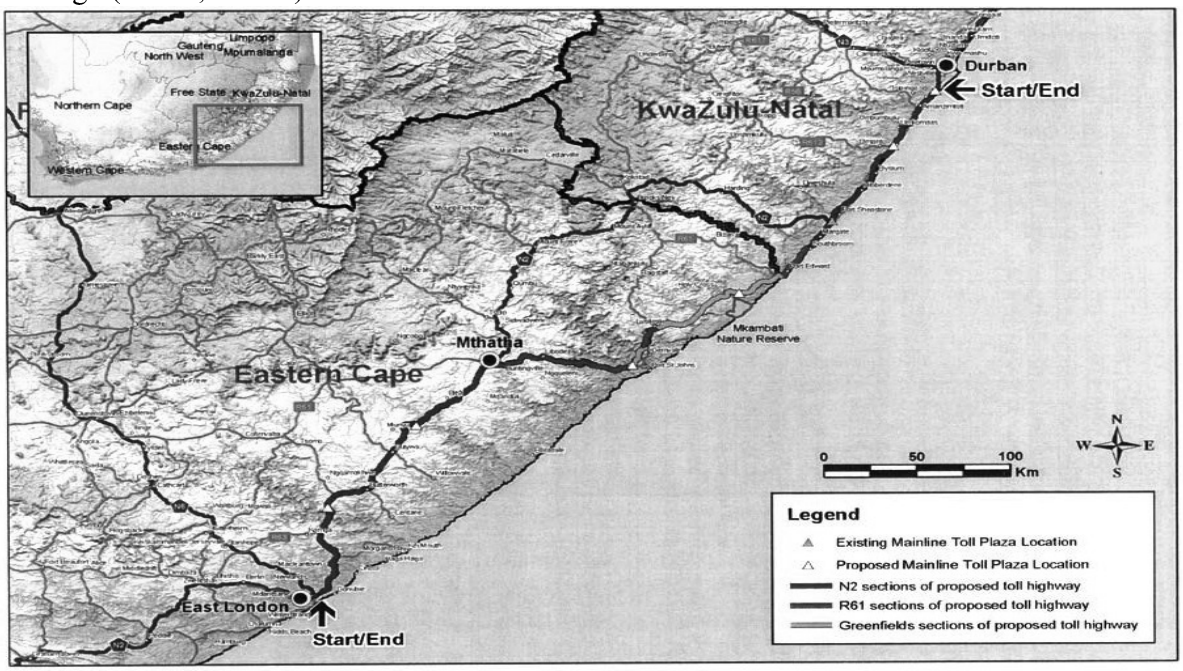

Figure 1. The N2 Wild Coast Toll Highway between East London and Durban, showing the locality of the greenfields sections (indicated in green) between the Ndwalane Interchange in the south and the Mtamvuna River Bridge in the north (CCA Environmental, 2009: Fig 1.1).

Objectives

The objectives of the SAS are the following:

(a) Confirming the geographic location of the proclaimed N2WCTH road reserve in relation to the locations of all the identified archaeological sites (including artefacts referred to in the previous archaeological field survey reports) and finally determining the possible impact of the road construction on these sites.

(b) Looking for and describing any additional archaeological sites, settlement features and artefacts within the proclaimed road reserve, particularly in areas identified as sensitive areas.

(c) Looking within the greenfields road reserve for any evidence of cultural landscapes, settlement patterns or traditions relating to the Stone Age, the herder period, the Iron Age and the historical period.

(d) Determining whether there are any areas and terrain types in the proclaimed road reserve that will require special vigilance during construction.

(e) Assisting with the formulation of relevant cultural heritage management measures or guidelines for inclusion in an Environmental Management Programme (EMP) for the N2WCTH.

Survey methods and processes

In view of the objectives of the SAS as described above, appropriate survey methods and processes include the following:

(a) Reviewing the FEIR, including the heritage resource-related provisions of the Record of Decision, previous heritage impact reports and peer reviews concerning the N2WCTH. This includes reviewing comments and recommendations by SAHRA and reports of similar investigations containing relevant information which can be accessed through the SAHRA website.

(b) Studying the literature on the characteristics of the natural environment and local human settlement during different cultural periods in the region of the proclaimed N2WCTH road reserve.

(c) Studying the satellite imagery and photographic records (such as aerial photographs) of the greenfields sections of the proclaimed N2WCTH road reserve in order to identify the presence of cultural landscape patterns from the Stone Age, the herder period, the Iron Age, and/or the historical period in the proclaimed road reserve.

(d) Visually inspecting the on-site surface of specific site locations in the proclaimed N2WCTH road reserve construction sites for any evidence of human and cultural remains - this inspection includes the sites of accessible, proposed new road sections, interchanges and intersections, as well as already existing bridges, road cuttings, quarries, borrow pits and other excavations.

(e) Visually inspecting exposed landscape surfaces such as farm-road sections or vehicle tracks and footpaths, eroded land-surfaces and ploughed agricultural fields within or close to the proclaimed road reserve for any evidence of human and cultural remains.

(f) Referencing observed heritage sites and objects in relation to the proclaimed road reserve by using GPS-based navigation equipment and software such as a Garmin Montana 650 GPS camera combination, a Canon EOS 400D digital camera, the Google Earth and KMZ format databases, coordinates from previous reports, SANRAL's aerial survey reference markers and the final N2WCTH bridge abutment foundation borehole markers.

(g) Determining soil types and depths by using an auger to inspect soil samples from the auger boreholes and data from a SANRAL test pit report.

(h) Obtaining information regarding sites of settlement remains and graves in the vicinity of observed archaeological sites or the likely locations of earlier settlements within the proclaimed road reserve from interviews with local inhabitants.

(i) Examining 1:50 000 scale topo-cadastral maps, geological maps and N2WCTH layout drawings for information regarding landscape and human settlement patterns.

Findings of the Supplementary Archaeological Survey

(a) Location of the N2WCTH reserve in relation to previously recorded archaeological sites

By confirming the geographic location of the proclaimed N2WCTH road reserve greenfields sections in relation to the locations of the identified archaeological sites and artefacts referred to in the previous AIA reports, it was established that all of these heritage remains are located outside the proclaimed N2WCTH road reserve, and will thus not be affected by the construction of the highway.

Details which confirm the above finding are the following (see Figure 2 below):

(i) The historical trading store to the south-west of the Mzimvubu River located by Binneman (2002a:29, 2002b:2) and eThembeni Cultural Heritage (2008b:11) at 31˚36'02"S; 29˚29'14"E is positioned, according to satellite imagery, approximately 2.5 km to the east of the proclaimed N2WCTH road reserve, adjacent to the Alternative 1B route alignment which was assessed in the AIA reports.

(ii) The potsherds located by Binneman and eThembeni to the west and north of the Mzimvubu River Bridge site are outside the proclaimed N2WCTH road reserve. The details are the following:

- The potsherds located by Binneman (2002a:29) at 31˚31'53"S; 29˚29'27"E near the existing Ntili Neck road north of the Mzimvubu River are located, according to satellite imagery, approximately 60 m to the east of the N2WCTH road reserve.
- The scattered potsherds observed by Binneman (2002b:2) and also located by eThembeni (2008b:11) at 31˚32'53.0"S; 29˚28'42"E near Ngqotsini, to the west of the adjacent Mzimvubu River bend are located, according to satellite imagery next to the Alternative 1B route alignment, approximately 1 km to the west of the N2WCTH road reserve.

(iii) Coordinates were provided by eThembeni Cultural Heritage (2008b) for the King Faku burial heritage site in the vicinity of Section 6 of the NWCTH road reserve (the section of the road reserve from the Ntafufu Interchange up to and including the Magwa Interchange). The locality lies to the east of the existing Mzintlava River Bridge, as determined by eThembeni Cultural Heritage by means of Google Earth imagery, at

approximately 31˚25'36.93"S; 29˚33'18.93"E (eThembeni 2008b: Appendix I). Current Google Earth satellite imagery indicates that this locality is positioned near or in a bend of the Mzintlava River on the northern side of the river, approximately 1.75 km to the east of the Mzintlava River Bridge and approximately 1.37 km to the east of the nearest point of the proclaimed N2WCTH road reserve.

Note that Section 6 of the N2WCTH follows the existing R61 main road. Section 6 is not a greenfields section, and in that sense cannot pose a threat to the King Faku heritage site.

(iv) The four stone cairns in the proclaimed Mpahlane River Bridge area that Binneman reported (Binneman 2002a) at 31˚06'21"S; 30˚08'10"E could not be found. Local inhabitants who were interviewed during the SAS were unable to confirm that such cairns previously existed in the area. Current Google Earth satellite imagery shows their recorded location to be outside, and some 120 m to the west, of the proclaimed N2WCTH road reserve.

(v) The proclaimed road reserve alignment at the Mnyameni River crossing is positioned well away from the rock shelters and the nearby site where Binneman (2002a) found the ceramic pot fragments in a ploughed field during a previous AIA survey. In line with the locations recorded during the previous AIA surveys, the locations of these rock shelters/caves are shown by current Google Earth satellite imagery to be the following:

- Rock Shelter Site 1 (31˚08'51"S; 30˚03'05"E) is situated approximately 415 m to the west of the road reserve.
- Rock Shelter Site 2 (31˚08'52"S; 30˚03'54"E) is situated approximately 600 m to the east of the road reserve.
- Rock Shelter Site 3 (31˚08'54"S; 30˚03'59"E) is situated approximately 750 m to the east of the road reserve.
- Rock Shelter Site 4 (31˚08'55"S; 30˚04'01"E) is situated approximately 800 m to the east of the road reserve.
- The site location of the potsherds (31˚09'2"S; 30˚03'49"E) is situated approximately 640 m to the east of the road reserve.

(b) Supplementary sites and features found and described during the SAS

(i) In the vicinity of Subsection 9.3 (which is the road reserve section from the site of the proposed Kulumbi River Bridge site up to and including the Mpahlane River Bridge site) on the southern side of the Mpahlane River ravine near the Mpahlane River and the Mpahlane River Bridge site, there are four previously unrecorded small stone mounds which are located safely outside the road reserve. They are located, according to current Google Earth satellite imagery, as follows:

- Outside and approximately 5 m to the east of Subsection 9.3, there are three of these mounds, located close together at approximately 31˚06'25.6"S; 30˚08'18.2"E. These mounds, which were not observed during the previous surveys, consist of rock fragments that appear to have been broken off a nearby rock outcrop not long ago. They must therefore be of recent origin. A local inhabitant explained that these were stone stockpiles for construction purposes.

- The fourth stone mound, located at approximately 31˚06'22.2"S; 30˚08'13.0"E, outside and approximately 40 m to the west of Subsection 9.3, appears to be older and smaller.

Note that because these mounds are located outside the proclaimed road reserve, they will not be affected by the road construction.

Note:
Although these four stone mounds which were discovered during the SAS are located in the same area as those reported earlier by Binneman (2002a, 2002b) and eThembeni Cultural Heritage (2008b), neither Binneman nor eThembeni Cultural Heritage located these four mounds and they did not mention them in their reports. According to SANRAL, neither the team which compiled the Land Audit Report nor the team which investigated the site of the proposed Mpahlane River Bridge and adjacent sections of the road reserve for the purposes of road and bridge construction, found any such structures in the area of the construction site. The stone mounds found there during the SAS are therefore likely to be of more recent origin, making it improbable that they are *isivivane* (stone mounds belonging to the Eastern Cape herder period or the Late Iron Age). One possible alternative explanation for their presence is that they are piles of stones collected by local inhabitants for use elsewhere, as a local inhabitant stated to SANRAL personnel during the SAS.

(ii) Two modern-type graves were observed at 31˚06'28.8"S; 30˚08'16.0"E, approximately 40 m outside and to the east of Subsection 9.3 (the road reserve section from the Kulumbi River Bridge site up to and including the Mpahlane River Bridge site) near an abandoned homestead to the south of the Mpahlane River Bridge site. These graves are probably recent, as they were not recorded during the land audit by MANCO (2003). The homestead consists of the ruin of a recently abandoned rondavel-type structure outside and approximately 6 m to the east of the road reserve.

(iii) No other additional archaeological sites, features or artefacts were found during the SAS.

(c) Cultural landscapes, settlement patterns or traditions

(i) Subsection 5.2 (the road reserve section from the Ndwalane Interchange up to, but excluding, the Mzimvubu River Bridge):

A farmhouse was located at 31°33'45.67"S; 29°28'40.01"E during the SAS satellite imagery survey and the SAS field survey. The house which is indicated as “Retreat” on the 1:50 000 topo-cadastral map (WGS3129CB Thombo, date 2004), is located within the historical British colonial enclave of privately owned farms. The farm is situated in the Mzimvubu River bend to the south of the proposed Mzimvubu River Bridge. The house is part of the existing commercial farm infrastructure. The original core structure of the house may be older than 60 years, but it seems to have been added onto substantially in more recent years. Apart from the house itself and possible historical household refuse dumps that may be associated with it, no historical colonial heritage remains have been identified or are expected in the greenfields road reserve sections.

(ii) Subsection 5.6 (the road reserve section from Ntili Neck up to the Ntafufu Interchange):

Ntili Neck may be a possible Late Iron Age or historical period settlement location. An area in the vicinity of the existing Mntafufu River causeway and the proposed new

Mntafufu River Bridge may possibly be a typical settlement locality for Early and Late Iron Age subsistence farmers, as it offers reasonable accessibility, gentle terrain, plentiful water resources and a flood plain consisting of alluvial soils suitable for agriculture. Although no archaeological evidence of human settlement has been found during the SAS, this site may possibly yield some Iron Age settlement remains such as potsherds or bone fragments during the construction phase. As a precaution, two potentially sensitive locations were identified at the site of the proposed Mntafufu River Bridge at 31°30'6.97"S; 29°30'40.01"E, and the location north-west of the Mntafufu River bend around 31°29'37.06"S; 29°31'3.74"E respectively. These locations therefore need to be regarded as potentially sensitive areas with regard to mitigation measures that may be required during the construction phase.

(iii) Sub-section 9.6 (the road reserve section from the site of the proposed Casino Interchange up to and including the Mtamvuna River Bridge):

At the site of the proposed new Casino Interchange, a red soil deposit could possibly be the minor remains of a Pleistocene coastal red dune, in which case the deposits could contain Early and Middle Stone Age artefacts. However, no such artefacts were found on the site during the SAS.

(iv) As recorded in the SANRAL Land Audit documentation (MANCO 2003) there are a number of existing homesteads (dwellings) that must be relocated from the proclaimed road reserve. This may include homestead units, graves, cattle kraals, wells, pipe and power lines and cultivated fields. Examples of such homesteads observed during the SAS field survey and on satellite imagery are located in a number of subsections, listed below as follows:

- Subsection 5.4 (the road reserve section from the Mzimvubu River Bridge up to and including Esipati Village): Esipati Village.
- Subsection 5.6 (the road reserve section from Ntili Neck up to the proposed Ntafufu Interchange): The Mntafufu River Bridge area.
- Subsection 8.2 (the road reserve section from the Kwadlambu River Bridge site up to and including the Mtentu River Bridge site): homesteads on the site of the proposed N2WCTH/Holy Cross-Mkambati Road Intersection.
- Subsection 9.1 (the road reserve section from the Mtentu River Bridge site up to and including the Mnyameni River Bridge site): homesteads recorded for reference purposes as HS9.1.1 to HS9.1.5.
- Subsection 9.3 (the road reserve section from the Kulumbe River Bridge site up to and including the Mpahlane River Bridge site): homesteads on the site of the proposed Kulumbe Interchange and homesteads recorded for reference purposes as HS9.3.1 to HS9.3.3.

(v) Historical evidence in the form of observations by 16th century European shipwreck survivors indicates that the Pondoland-Ugu Sandstone Coastal Sourveld on which a substantial part of the greenfields road reserve is located was sparsely inhabited (typically by scattered family units) during the Late Iron Age (Maggs 1989:39; eThembeni Cultural Heritage 2008b:33). This evidence is corroborated by similar observations of current settlement patterns during the SAS.

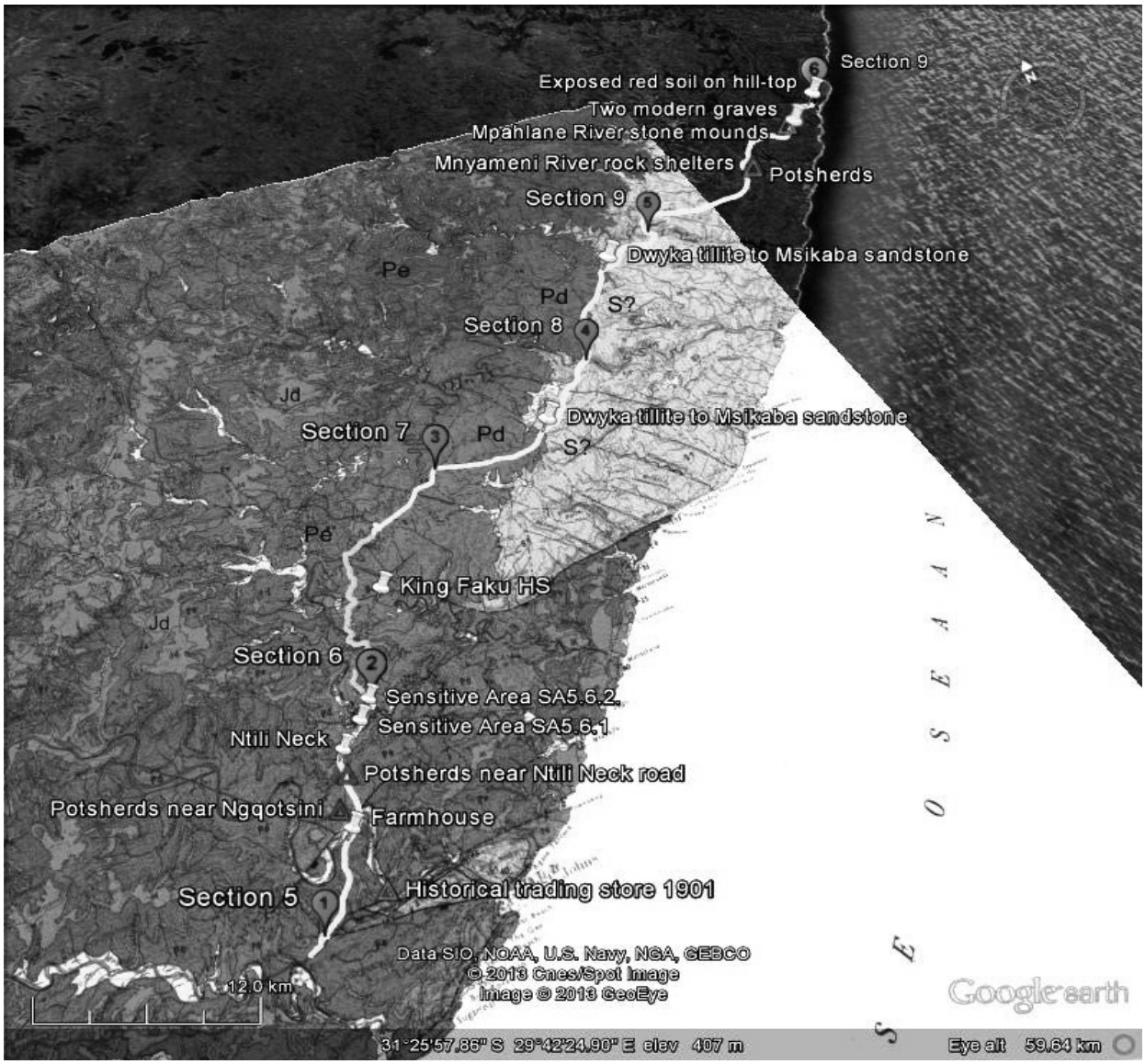

Figure 2. Sections 5 to 9 of the N2WCTH road reserve: the locations of the archaeological sites, which are all located outside the road reserve, and possible sensitive areas.

1 Section 5: Ndwalane IC to Ntafufu IC
- Historical trading store dated to 1901
- Farmhouse in the historical Port St Johns enclave
- Potsherds near Ngqotsini
- Potsherds near the Ntili Neck road
- Ntili Neck
- Possible sensitive areas SA5.6.1 and SA5.6.2

2 Section 6: Ntafufu IC to Magwa IC
- Indicated location of the King Faku heritage site

3 Section 7: Magwa IC to Msikaba RB (none)

4 Section 8: Msikaba RB to Mtentu RB (none)

IC = Interchange RB = River Bridge

5 Section 9: Mtentu RB to Mtamvuna RB
- Rock shelters near the Mnyameni River Bridge
- Potsherds near the Mnyameni River Bridge
- Stone mounds (*isivivane*) near the Mpahlane River Bridge
- Red soil on the hill within the Casino Interchange

Geology

S?: Msikaba sandstone

Pd: Underlying Dwyka tillite of the Dwyka Group

Pe: Overlying Ecca Group shale

Jd: Drakensberg Group dolerite

Google Earth imagery date: 2/20/2013; ©2013. Viewed towards the north-east. Scale: 12.0 km. With geological overlay.

Conclusions of the Supplementary Archaeological Survey

(a) The proclaimed alignment of the N2WCTH greenfields road reserve will not have any impact on the known heritage sites and features identified during the previous archaeological heritage field surveys, and there are no immediate threats to these sites and features, all of which are outside the proclaimed road reserve.

(b) The SAS did not reveal or uncover any additional cultural heritage resources within the proclaimed N2WCTH road reserve.

(c) The only evidence of visible cultural landscapes or settlement patterns or traditions located within the proclaimed road reserve is the following:

(i) The core section of the existing farmhouse, located in Subsection 5.2 (the road reserve section from the site of the approved Ndwalane Interchange up to, but excluding, the Mzimvubu River Bridge) within the historical British colonial enclave of privately owned farms, may be older than 60 years. This core section should be further investigated and dealt with suitably by the Land Acquisition (LAC) team.

(ii) There are a number of existing rural homesteads/dwellings and associated graves, as recorded in the SANRAL Land Audit documentation, which must be

- relocated from the proclaimed road reserve, which would be one of the LAC team's responsibilities; and
- regarded as similar (to some extent) to Late Iron Age or colonial period homesteads, the remains of which may be discovered during land clearing or road construction, and must be dealt with in the EMP and monitored for by the Environment Control Officer (ECO).

(iii) The Pondoland-Ugu Sandstone Coastal Sourveld on which a major part of the greenfields sections of the road reserve are located was, and to some extent still is, sparsely inhabited.

(d) Possible sensitive areas and terrain types within the N2WCTH road reserve where heritage resources may potentially be found during land-clearing and construction are the following:

(i) Subsection 5.3 (the Mzimvubu River Bridge site and Mzimvubu River flood plain at the site):

The alluvial floodplains and adjacent higher ground at the northern bend of the Mzimvubu River may be a sensitive area, in the sense that there are some indications of Iron Age farming activities. However, the proposed new Mzimvubu River Bridge will be constructed at a safe distance from these locations and will cross the river at a high elevation.

(ii) Subsection 5.6 (the road reserve section from Ntili Neck up to the site of the approved Ntafufu Interchange):

The potentially sensitive areas at Ntili Neck are located in the area of the current soccer field, where Late Iron Age remains can be expected, and in the vicinity of the existing Mntafufu River causeway and approved Mntafufu River Bridge, where Early Iron Age and Late Iron Age settlement remains may be present.

(iii) Subsection 9.1 (the road reserve section from the Mtentu River Bridge site up to and including the Mnyameni River Bridge site):

The few thin-walled potsherds found by Binneman (2002a, 2002b) at 31˚09'2"S; 30˚03'49"E to the south of the Mnyameni River, in the vicinity of the rock shelters and the site of the approved Mnyameni River Bridge, could possibly indicate evidence of a Late Iron Age settlement.

(iv) Subsection 9.6 (the road reserve section from the Casino Interchange up to and including the Mtamvuna River Bridge):

The possible remains of Pleistocene coastal red dunes in Subsection 9.6 at the site of the proposed new Casino Interchange.

Recommendations of the Supplementary Archaeological Survey

In the light of the findings and conclusions of the SAS, it is recommended that the following be taken into consideration:

(a) Specific heritage management guidelines and construction mitigation measures to be included in the EMP and to be referred to the appointed ECOs for their attention are as follows:

(i) Subsection 5.2 (the road reserve section from the Ndwalane Interchange up to the Ntafufu Interchange):

The age of the farmhouse located at 31°33'45.67"S; 29°28'40.01" in the Mzimvubu River bend south of the approved Mzimvubu River Bridge must be determined by the LAC team. If the house is older than 60 years, SANRAL must obtain the necessary permits for its demolition. During land clearing of the site, the ECO should routinely monitor for former rubbish and ash dumps which could contain cultural heritage material.

(ii) Subsection 5.2 (the road reserve section from Ntili Neck up to the approved Ntafufu Interchange):

The following possible sensitive areas in the road reserve must be carefully monitored by the ECO for heritage resources such as potsherds, bone fragments, ash and human grave remains during the clearing of vegetation or topsoil and subsequent earthworks operations:

- Ntili Neck in the area of the current soccer field where Late Iron Age remains can be expected; and
- the vicinity of the existing Mntafufu River Bridge where Early Iron Age and Late Iron Age remains can be expected.

(iii) Subsection 9.1 (the road reserve section from the Mtentu River Bridge up to and including the Mnyameni River Bridge):

To the south of the Mnyameni River in the vicinity of the rock shelters and the site of the approved Mnyameni River Bridge, where potsherds could possibly indicate evidence of a Late Iron Age settlement, construction phase measures must provide for monitoring the possible presence of heritage resources such as potsherds and human remains.

(v) Subsection 9.3 (the road reserve section from the Kulumbe River Bridge site up to and including the Mpahlane River Bridge site):

The two modern type graves, which were observed at 31˚06'28.8"S; 30˚08'16.0"E, to the east of Subsection 9.3 near an abandoned homestead south of the Mpahlane River Bridge site, must be added to the Land Audit List of graves during the updating of the list and must be appropriately dealt with by the LAC team during the land acquisition process.

(vi) Subsection 9.6 (the road reserve section from the Casino Interchange site up to and including the Mtamvuna River Bridge):

At the site of the approved Casino Interchange, the exposed red soil deposit, which could be the minor remains of a Pleistocene coastal red dune and could contain Early and Middle Stone Age artefacts, should be monitored for Stone Age artefacts during land-clearing and the construction phase.

(b) SANRAL has completed its obligations in terms of the pre-construction conditions of the Record of Decision and SAHRA's requirements, therefore SANRAL may proceed with the land acquisition of the N2WCTH road reserve.

(c) The relocation of identifiable and known graves in the proclaimed road reserve must be implemented as part of the land acquisition process. This relocation must be a separate process and must precede any construction activities.

(d) The above recommendations must be included in the EMP in conjunction with the palaeontology mitigation measures specified in the palaeontology impact assessment report dated May 2012 (Gess 2012).

Key conclusions and recommendations

A synthesis of the key recommendations and mitigation measures arising from the AIA Reports and Reviews and the SAS report is provided below.

(a) Heritage mitigation procedures of the N2WCTH project design phase prior to construction

(i) EMP: The mitigation measures included in the EMP must be updated according to the recommendations of the Supplementary Archaeological Survey and must be implemented by the road construction contractors and workers in the event that any human and cultural heritage remains are discovered during construction activities.

(ii) ECO: A full-time ECO is required on each construction site during vegetation-clearing and commencement of the construction, to monitor and manage human and cultural heritage remains that may be discovered.

(iii) The ECOs, contractors and construction teams must be briefed, and where necessary must be trained, by an archaeologist regarding the relevant heritage legislation, heritage remains and mitigation measures. This briefing and training should be conducted in conjunction with the palaeontology mitigation briefing and training specified in the paleontological impact assessment report dated May 2012 (Gess 2012).

(b) N2WCTH project road construction phase: Routine monitoring and inspection

(i) Monitoring: Constant monitoring by the ECOs of the construction sites and processes for investigating for the presence of human and cultural heritage remains is required.

(ii) Possible sensitive areas: Selected construction sites in areas considered to be sensitive in terms of the presence of human and cultural heritage remains, such as the bridge sites where heritage remains have previously been found, may require inspection by an archaeologist after surface clearing.

(c) Management mitigation measures regarding the discovery of further heritage sites during construction:

(i) In the event of the discovery of human and cultural heritage remains at any site, all work on that site must be stopped immediately and an archaeologist must be appointed to investigate the remains and to submit a report with the relevant findings.

(ii) The ECOs and contractors must ensure that workers do not disturb, damage or collect any heritage material from any existing sites or from new sites that may be identified during the construction.

Contents

Chapter 1. Terms of Reference

The Terms of Reference of the Supplementary Archaeological Survey (SAS) of the N2 Wild Coast Toll Highway (N2WCTH) greenfields sections is a response on behalf of the South African National Roads Agency Limited (SANRAL) to

- the Record of Decision which was granted by Department of Environmental Affairs (2010) in 2010 and which authorizes SANRAL to proceed with the implementation of the N2WCTH project (Department of Environmental Affairs 2010a, 2010b);
- requirements and recommendations contained in the Archaeological Impact Assessment (AIA) reports by Binneman (2002a, 2002b) and eThembeni (2008a, 2008b) – in this regard, the final eThembeni report (2008b) is particularly important, as it is the peer reviewed AIA incorporated into the Final Environmental Impact Report (FEIR); and
- the South African Heritage Resources Agency's (SAHRA's) comments and requirements regarding the AIA reports.

These documents are referred to and quoted from below.

(a) Record of Decision (environmental authorisation)

Notice must be taken of the stipulations of the environmental Record of Decision pronounced by the Department of Environmental Affairs (2010a, 2010b) in terms of Section 22(3) of the Environment Conservation Act 73 of 1989 (South Africa, 1989) for the construction of the N2WCTH. This Record of Decision is important because it authorizes SANRAL to implement the proposed N2WCTH project and regulates key environmental management practices, some of which are directly applicable to the management of archaeological or heritage remains on construction sites in terms of the Environment Management Plan (EMP) and through the Environmental Control Officers (ECOs). Below, relevant extracts from the Record of Decision (Department of Environmental Affairs, 2010b:8, 9, 15, 16) are cited verbatim for purposes of clarification:

> 6.2.2. Compliance with other legislation
>
> The requirements of [...] the National Heritage Resources Act, 1999 (Act 25 of 1999) […]
>
> 6.2.3. Monitoring and auditing
>
> 6.2.3.1. A monitoring and auditing programme must be developed and implemented to assess compliance with the conditions stipulated in this ROD [Record of Decision], the EMP and any other required plans prior to construction taking place. This monitoring and auditing programme must be included in the final construction and operation EMPs.
>
> […]
>
> 6.2.3.5. The applicant must appoint Independent Environmental Control Officers (ECOs) for the duration of the project.
>
> […]
>
> 6.2.3.7. The ECOs must be suitably qualified and the terms of reference of the ECOs must comply with the draft EMP and any subsequent amendments approved by the department.

[…]
6.2.12. Vegetation
6.2.12.1. Disturbance to vegetation must be restricted to the absolute minimum and areas disturbed as a result of construction activities must be rehabilitated as soon as possible to the satisfaction of this department, the relevant authorities, the ECOs, the EMP and the independent environmental auditor.
[…]
6.2.14. Heritage
6.2.14.1. A heritage practitioner must be appointed to undertake a supplementary inspection of limited sections of the approved alignment; in different terrain types, with the objective of determining areas identified as sensitive in terms of the discovery of (any) heritage resources.
6.2.14.2. The Department must be kept informed of all issues related to and discussed with SAHRA.

(b) Summary of comments and recommendations in the AIA reports

(i) Relevant recommendations made by Binneman (2002b:10) (boxes section cited verbatim):

- Permits must be obtained from SAHRA before any archaeological sites are disturbed or destroyed.
- A full-time Environmental Control Officer (ECO) is required in the study area during vegetation clearing and implementation of the project [...] the ECO must be well briefed by a professional archaeologist.
- Archaeologists must be informed immediately of any new sites found during construction so that they can investigate the importance of the sites and excavate or collect material before it is destroyed.
- Archaeologists should meet with the ECO, contractors and construction staff prior to construction to inform them of the possible heritage sites and cultural material they may encounter and the procedures to follow when they find sites.
- Heritage remains uncovered or disturbed during vegetation clearing and earthworks should not be further disturbed until inspected by the ECO and [...] a professional archaeologist.
- [The] ECO and contractors must ensure that workers do not disturb, damage or collect cultural material from sites if they are located during the construction phase.

(ii) Comments and recommendations by eThembeni Cultural Heritage (2008b:20, 21) regarding the greenfields sections (boxed sections are cited verbatim):

- A permit from SAHRA is required for the alteration or destruction of any archaeological sites with scientific or cultural importance.

In general, a heritage practitioner should:

- Compile a protocol to be followed by the road construction contractors in the event that any heritage resources are discovered during construction activities.
- Compile and conduct training courses for all relevant personnel to enable them to participate effectively in heritage resource management.
- Undertake regular monitoring as construction activities proceed.

(iii) In his peer review of the AIA by eThembeni (2008b), Prof. H.J. Deacon (2008:46 to 48) recommends the following (cited verbatim):

- It is recommended that when the road alignments and river crossings are finalised and visibility is increased by some clearing of vegetation a supplementary inspection by a heritage specialist be carried out. This supplementary inspection could be of sections of the final route in different terrain types with the objective determining the degree to which the vegetation cover has limited the discovery of any heritage resources.
- The eThembeni report recommends monitoring of construction and training of workers to minimise impacts on heritage resources. This recommendation would represent a further stage in assessment process to cope with later chance discoveries.
- The field observations have been limited because subsurface exposures are few and the vegetation rank. This is particularly relevant to recording occurrences of what may be expected to be the most common heritage objects in the landscape, Stone Age artefacts and Iron Age pottery. Provision for such recording will have to be made in a follow up stage and supplemented by environmental monitoring during the construction phase.
- The archaeology of the former Transkei is poorly known but it is apparent that Early Iron Age settlement was primarily in the valleys whereas Later Iron Age settlements occur on the interfluves as well. The report [eThembeni Cultural Heritage, 2008b] does mention the valley association with the Early Iron Age but this predictive model indicates the need once the route is finalised to flag all bridge construction locations as potentially sensitive.
- The eastern bank of the Mzimvubu River gets special mention requiring a heritage practitioner to be present at the onset of earthworks for this river crossing. It would be appropriate to suggest all river crossings deserve to be monitored.
- Human burials can occur anywhere in the landscape and are not predictable. In as far as possible avoidance is the principle to adopt in road alignment. There are established protocols for reporting them given in the report.

With regard to the statement by Deacon above that all river crossings deserve to be monitored, note that with the exception of the Mntafufu River Bridge, all the river bridges will pass the river gorges at high level. The Mpahlane River Bridge will rest on piers and abutments high up on the river valley slopes. The Msikaba River Bridge will rest only on pylon bases on top of the Msikaba Gorge banks. However, the Mzimvubu, Mntafufu, Kwadlambu, Mtentu, Kulumbe, Mnyameni and Mzamba River Bridges will rest on vertical piers which will be driven into the slopes above the river banks and into alluvial river

deposits, in order to rest on underlying bedrock with minimal damage to the surrounding land-surfaces.

(c) SAHRA's comments and requirements regarding the AIA

Against the background of (a) the Record of Decision and (b) the summary of the requirements and recommendations in the AIA reports (Binneman 2002a, 2002b; eThembeni Cultural Heritage 2008a, 2002b) given above, and with regard to the Terms of Reference of the SAS, the following letters from SAHRA were considered and are cited and/or quoted below in respect of specific aspects:

- SAHRA APM Unit, 2003 (see Appendix 3.1);
- SAHRA APM Unit, 2007 (see Appendix 3.2);
- SAHRA APM Unit, 2009a (see Appendix 3.3);
- SAHRA APM Unit, 2009b (see Appendix 3.4);
- SAHRA APM Unit, 2010a (see Appendix 3.5);
- SAHRA APM Unit, 2010b (see Appendix 3.6);
- SAHRA APM Unit, 2010c (see Appendix 3.7);
- SAHRA APM Unit, 2012 (see Appendix 3.8); and
- SAHRA BBG Unit, 2009 (see Appendix 3.9).

(i) General requirements:

- The relevant legislation that is to be considered is the National Heritage Resources Act, 1999 (Act 25 of 1999, Section 35).
- SAHRA's Minimum Standards guidelines for surveys, impact assessments and site mitigation measures for the protection of all heritage, including archaeological sites and objects, graves, structures over 60 years old, living heritage and oral histories, historical settlements and landscapes, as well as geological sites, palaeontological sites and objects (the last of which is not in the domain of Archaeology) and documentation quality of the report (see SAHRA APM Unit 2007 and 2012; Winter and Baumann 2005).

It should be borne in mind that there are a number of factors that may generally have a limiting or regulatory influence on the types of archaeological surveys to be done, including the following:

- low conservation or survival potential of some archaeological materials;
- unknown age of sites, architecture and graves (older or younger than 60 years);
- dense surface vegetation cover;
- disturbed land-surfaces and later building-over of previously occupied land-surfaces;
- restricted or prohibited access to property;
- the physical inaccessibility of rugged terrain;
- protective environment conservation legislation;
- vegetation clearing rights subject to prior acquisition of land and ownership; and
- EMP prescriptions and requirements.

(ii) Outstanding archaeological survey requirements:

Making the N2WCTH SAS road reserve alignment coordinates available as required by SAHRA APM Unit (2010a:1) (cited verbatim):

> GPS coordinates of the final route must be made available to the professional archaeologist to clarify any possible doubts regarding the final alignment.

Note that the N2WCTH road reserve alignment was planned and proclaimed as follows (see Table 1):

- The Land Audit of the N2WCTH road reserve and the process of community and grave relocation is managed by SANRAL's land acquisition service provider, MHP Consulting (PTY) LTD trading as MANCO.
- A Land Audit on the proposed Wild Coast Toll Road was prepared by MANCO in 2003 (MANCO 2003). The Land Audit includes detailed descriptions of the proposed N2WCTH route.
- The N2WCTH road reserve was proclaimed in the Government Gazette 467 No 26330 on 7 May 2004.
- The preferred road reserve alignment and alternative route sections were specified in the *Final Environmental Impact Report: Proposed N2 Wild Coast Toll Highway*, presented by CCA Environmental (2009).
- A Record of Decision was granted by the Minister of Environmental Affairs, authorizing SANRAL to proceed with the implementation of the N2WCTH project (Department of Environmental Affairs, 2010a, 2010b). In the Record of Decision it is stipulated that a heritage practitioner must be appointed to undertake a supplementary inspection of limited sections of the approved N2WCTH road reserve alignment.

(iii) Mitigation measures during road construction site clearing and road construction:

The vegetation clearing requirements by SAHRA APM Unit (2010c) stipulate the following (cited verbatim):

> (a) During the process of land acquisition an archaeologist conducts a walk-through on site possibly performing vegetation clearing when necessary. At the end of this process the specialist must submit a report to SAHRA with the outcome of the walk-through.
>
> (b) After assessing the report, SAHRA might require further vegetation clearing with smaller mechanical machines on chosen test areas […]

Note with regard to (a) and (b) quoted above that within the overall legal and practical framework of the Record of Decision and EMP, vegetation clearing is a specified process within a specific road construction project phase, subject to environment related legislation and prescriptions. It may commence after the completion of archaeological impact surveys and subsequent land acquisition processes as regulated by the Record of Decision (see Department of Environmental Affairs, 2010b: Par. 6.2.12, Par. 6.2.14). The SAHRA APM Unit (2010b, 2010c) requires that if any evidence of archaeological sites or artefacts (e.g. concentrations of indigenous ceramics, bones, stone tools, ancient

stone wall structures), unmarked human burials and fossilized bones are found during construction and related activities in the absence of an archaeologist, the SAHRA APM Unit must be alerted immediately, and an accredited professional archaeologist must be contacted to inspect the findings. If newly discovered heritage resources prove to be of archaeological significance, a Phase 2 rescue operation might be necessary.
Relevant comments by SAHRA Burial Grounds and Graves Unit (BGG) (2009:1, 3) in its response to the Draft Environmental Impact Assessment Report and associated reports, received by SAHRA BBG Unit on 29 August 2009, are cited verbatim below.

- […] it is clear that a large number of graves would be affected, either due to relocation of existing settlements or the negative impact of road construction activities on ancestral graves located at abandoned homesteads.
- The specific grave site of King Faku of the amaPondo and the graves of other members of the Sigcau Royal Family have also been identified as being potentially negatively affected.

[…]

4.7 We [SAHRA BGG Unit] also require that specific details on the locations of all known graveyards of existing settlements and possible graves at old, abandoned homesteads be obtained by consultation with the local communities during the process of finalization of the road alignments and associated infrastructure (this information needs to be shown on a map).

With regard to SAHRA BBG Unit's concerns cited above, note that:

- The grave heritage site of King Faku and other members of the Sigcau royal family of the amaPondo were located during the field work in November 2007 (eThemeni Cultural Heritage (2008b:18; 2008b:45, Appendix I). The King Faku grave site is located at 31˚25'36.93"S; 29˚33'18.93"E, approximately 1.75 km to the east of the Mzintlava River Bridge and 1.37 km to the east of the nearest point of the proclaimed N2WCTH road reserve. The location of the King Faku heritage site in relation to the proclaimed road reserve should be confirmed with the Sigcau family.
- The relocation of all known graves within the proclaimed N2WCTH road reserve is part of the land acquisition and community relocation process which involves public participation and the acquisition of the necessary permits.
- Relevant paragraphs in the Land Audit report regarding grave relocation (MANCO 2003:21, 22) are cited verbatim below:

3.5 **Relocation of graves**

3.5.1 The communities we [MANCO] have met with have indicated that graves may be relocated, provided this matter is approached with sensitivity.

[…]

3.5.3 We [MANCO] have identified 17 graves within the proposed road reserve. There are undoubtedly other graves, including unmarked graves, which will only be identified after the road reserve has been staked and possibly only during the construction phase.

3.5.4 In order to relocate graves, a meeting must be arranged with the relevant headman in order to identify the family of the buried person.

3.5.5 Alternative land for a grave must be identified in agreement with these parties.

Chapter 2. Objectives, methods and processes of the Supplementary Archaeological Survey (SAS)

2.1 Objectives

The objectives of the SAS are the following:

(a) Confirming the geographic location of the proclaimed N2WCTH road reserve in relation to the locations of all the identified archaeological sites (including artefacts referred to in the previous archaeological field survey reports) and finally determining the possible impact of the road construction on these sites.

(b) Looking for and describing any additional archaeological sites, settlement features and artefacts within the proclaimed road reserve, particularly in areas identified as sensitive areas.

(c) Looking within the greenfields road reserve for any evidence of cultural landscapes, settlement patterns or traditions relating to the Stone Age, the herder period, the Iron Age and the historical period.

(d) Determining whether there are any areas and terrain types in the proclaimed road reserve that will require special vigilance during construction.

(e) Assisting with the formulation of relevant cultural heritage management measures or guidelines for inclusion in an Environmental Management Programme (EMP) for the N2WCTH.

2.2 Survey methods and processes

In view of the objectives of the SAS as described above, appropriate survey methods and processes include the following:

(a) Reviewing the FEIR, including the heritage resource-related provisions of the Record of Decision, previous heritage impact reports and peer reviews concerning the N2WCTH. This includes reviewing comments and recommendations by SAHRA and reports of similar investigations containing relevant information which can be accessed through the SAHRA website.

(b) Studying the literature on the characteristics of the natural environment and local human settlement during different cultural periods in the region of the proclaimed N2WCTH road reserve.

(c) Studying the satellite imagery and photographic records (such as aerial photographs) of the greenfields sections of the proclaimed N2WCTH road reserve in order to identify the presence of cultural landscape patterns from the Stone Age, the herder period, the Iron Age, and/or the historical period in the proclaimed road reserve.

(d) Visually inspecting the on-site surface of specific site locations in the proclaimed N2WCTH road reserve construction sites for any evidence of human and cultural remains – this inspection includes the sites of accessible, proposed new road sections, interchanges and intersections, as well as already existing bridges, road cuttings, quarries, borrow pits and other excavations.

(e) Visually inspecting exposed landscape surfaces such as farm-road sections or vehicle tracks and footpaths, eroded land-surfaces and ploughed agricultural fields within or close to the proclaimed road reserve for any evidence of human and cultural remains.

(f) Referencing observed heritage sites and objects in relation to the proclaimed road reserve by using GPS-based navigation equipment and software such as a Garmin Montana 650 GPS camera combination, a Canon EOS 400D digital camera, the Google Earth and KMZ format databases, coordinates from previous reports, SANRAL's aerial survey reference markers and the final N2WCTH bridge abutment foundation borehole markers.

(g) Determining soil types and depths by using an auger to inspect soil samples from the auger boreholes and data from a SANRAL test pit report.

(h) Obtaining information regarding sites of settlement remains and graves in the vicinity of observed archaeological sites or the likely locations of earlier settlements within the proclaimed road reserve from interviews with local inhabitants.

(i) Examining 1:50 000 scale topo-cadastral maps, geological maps and N2WCTH layout drawings for information regarding landscape and human settlement patterns.

Chapter 3 The Supplementary Archaeological Survey from 2011 to 2012

3.1 Background: The N2 Wild Coast Toll Highway (N2WCTH) project

3.1.1 N2WCTH project timeline

The aspects of the timeline of the N2WCTH project that involve the AIAs and heritage mitigation within the broader context of the ongoing project are summarized in Table 1, below.

Table 1. Timeline of the N2 Wild Coast Toll Highway (N2WCTH) project relating to the archaeological field surveys and cultural heritage management/mitigation

Time	Process
2000	○ SANRAL initiates the N2WCTH project.
2001	○ A desktop archaeological scoping survey of the proposed N2WCTH is conducted by Binneman (2001).
2002	○ An archaeological field survey of the proposed N2WCTH is conducted by Binneman (2002a, 2002b). ○ A desk-top palaeontological study is conducted by Dr B. de Klerk (2002).
7/10/2003	○ Land Audit on the proposed N2WCTH by MANCO (2003).
3/12/2003	○ Environmental Record of Decision authorizes SANRAL to undertake the N2WCTH project, incorporating the findings and recommendations of Binneman'sAIA (Binneman 2001).
9/12/2004	○ The Minister of Environmental Affairs and Tourism upholds appeals against the authorization and sets aside the Record of Decision.
7/5/2004	○ The N2WCTH road reserve is proclaimed in Government Gazette 467 No 26330, 7 May 2004.
5/5/2005	○ SANRAL appoints CCA Environmental (Pty) Ltd to undertake a final Environmental Impact Assessment (EIA) (CCA Environmental 2009).
8/4/2008	○ eThembeni Cultural Heritage completes the Heritage Impact Assessment (AIA) of the proposed N2WCTH (eThembeni Cultural Heritage 2008b).
12/3/2008	○ Prof. H.J. Deacon's peer review (2008) recommends that the above study by eThembeni Cultural Heritage (2008b) be seen as fulfilling the terms of reference of the study.
Dec 2009	○ The *Final Environmental Impact Report: Proposed N2 Wild Coast Toll Highway* (CCA Environmental 2009) is released.
19/4/2010	○ A Record of Decision is granted by the Minister of Environmental Affairs, authorizing SANRAL to proceed with the implementation of the N2WCTH. (Department of Environmental Affairs, 2010a, 2010b).
26/8/2011	○ The Minister of Environmental Affairs dismisses all appeals against the Record of Decision.
10/2011-12/2012	○ A Supplementary Archaeological Survey (SAS) is conducted, including a field survey of the N2WCTH greenfields sections and an extended desktop study.
May 2012	○ N2 Wild Coast Toll Highway Palaeontology Impact Assessment Report by R. Gess (2012)
2013-	○ Final agreement between SANRAL and SAHRA: - The AIAs and SAS are concluded and SAHRA approves final acceptance of the reports and EMP mitigation proposals. - The archaeological mitigation protocol and procedures set out in the reports are applied by SANRAL, in line with the agreed EMP during the pre-construction and construction phases. - SAHRA issues heritage-related permits when and where required. ○ Implementation of the land acquisition phase and relevant heritage mitigation processes which are included in the EMP.

3.1.2. N2WCTH greenfields sections and field surveys

The approved N2WCTH road reserve will extend over a distance of approximately 560 kilometres between the N2 Gonubie Interchange near East London and the N2 Isipingo Interchange south of Durban. For the most part, the proposed N2WCTH project involves upgrading existing road alignments. New road sections (called the greenfields sections in this report) will be constructed between Ndwalane and the bridge over the Mtamvuna River. Several alternative routes or route sections were considered and the final road reserve alignment has been determined.

As part of the EIA process of the N2WCTH project, several archaeological surveys of the greenfield sections were undertaken. The reports on these surveys are the following:

- a desk-top Scoping Report by Binneman (2001);
- AIA reports by Binneman (2002a, 2002b)(see Table 2, Column D, below);
- AIA reports by eThembeni Cultural Heritage (2008a, 2008b) (see Table 2, Column E, below).
- SAS report (see Table 2, Column C, below).

The greenfield sections of the N2WCTH road reserve are referred to differently in the various archaeological reports. For the purposes of the current SAS report and for clarity, it is therefore necessary to compare the subdivisions of the greenfields part of the N2WCTH road reserve as referred to in the various reports, as set out in Table 2, below.

Table 2. Comparative summary of N2WCTH road reserve sections as referred to in the different AIA surveys and the SAS

A Greenfields	B Existing & new sections	C SAS 2011	D Binneman 2002a, 2002b	E eThembeni 2008a, 2008b
Ndwalane IC to Ntafufu IC		**Section 5**	**Section 5**	**Section 4**
Ndwalane IC	New +R61	5.1		(± 16.5km)
Ndwalane IC to Mzimvubu RB	New	5.2		
Mzimvubu RB	New	5.3		
Esipati Village	New	5.4		
Ntili scarp forest to Ntili Neck	New	5.5		
Ntili Neck to Ntafufu IC	New	5.6		
Ntafufu IC to Magwa IC		**Section 6**	**Section 6**	**Section 5**
Ntafufu IC to Lusikisiki IC	Existing R61	6.1	(Not surveyed)	(±24.5km)
Lusikisiki IC to Magwa IC	Existing DR	6.2		(Not surveyed)
Magwa IC to Msikaba RB		**Section 7**	**Section 7**	**Section 6**
Magwa IC to Ntlavukazi IC	Existing DR	7.1		(±73.5km)
Ntlavukazi IC to Msikaba RB	New	7.2		
Msikaba RB to Mtentu RB		**Section 8**	**Section 8**	
Msikaba RB to Kwadlambu RB	New	8.1		
Kwadlambu RB to Mtentu RB	New	8.2		
Mtentu RB to Mtamvuna RB		**Section 9**	**Section 9**	
Mtentu RB to Mnyameni RB	New	9.1		
Mnyameni RB to Kulumbe RB	New	9.2		
Kulumbe RB to Mpahlane RB	New	9.3		
Mpahlane RB to Mzamba RB	New	9.4		
Mzamba RB to Casino IC	New	9.5		
Casino IC to Mtamvuna RB	New + R61	9.6		

Abbreviations: IC=Interchange; IS=Intersection; RB=River Bridge.

3.1.3 Summary of survey locations and methods

The field surveys by Binneman (2002a, 2002b) and eThembeni (2008a, 2008b) consisted of spot checks and inspections on foot, whereas the SAS combined spot checks, auger tests and walk-through surveys with the study of photographs taken from a helicopter, satellite (Google Earth) imagery and interviews. During the SAS field survey the researcher was guided to the selected locations by SANRAL staff. The survey methods used in the various surveys are summarised in Table 3, below.

Table 3. Summary of on-land and aerial field survey locations and methods

A Greenfields	B SAS field survey in 2011 Proclaimed road reserve	C Binneman (2002a, 2002b) Greenfields corridor	D eThembeni (2008a, 2008b) Greenfields corridor
Ndwalane IC to Ntafufu IC	**Section 5**	**Section 5**	**Section 4** (± 16.5km)
Ndwalane IC	5.1 Satellite, helicopter photos	Mzimvubu River flood plain (greenfields corridor) field survey	Mzimvubu River flood plain (greenfields corridor) field inspection
Ndwalane IC to Mzimvubu RB	5.2 Satellite, helicopter photos, vehicle drive and walk-through of northern part		
Mzimvubu RB	5.3 Satellite, helicopter photos, walk-through, agricultural fields surface inspection, auger tests		
Esipati Village	5.4 Satellite, helicopter photos, walk-through, interview		
Ntili scarp forest to Ntili Neck	5.5 Satellite, helicopter photos, walk-through		Ntili road area inspection
Ntili Neck to Ntafufu IC	5.6 Satellite, helicopter photos		
Ntafufu IC to Magwa IC	**Section 6**	**Section 6**	**Section 5** (±24.5km)
Ntafufu IC to Lusikisiki IC	6.1 Satellite, helicopter photos, spot checks	(Not surveyed)	(Not surveyed)
Lusikisiki IC to Magwa IC	6.2 Satellite, helicopter photos, spot checks		
Magwa IC to Msikaba RB	**Section 7**	**Section 7**	**Section 6** (±73.5km)
Magwa IC to Ntlavukazi IC	7.1 Satellite, helicopter photos, spot checks		
Ntlavukazi IC to Msikaba RB	7.2 Satellite, helicopter photos, spot checks, Msikaba RB site walk-through	Msikaba River spot checks	
Msikaba RB to Mtentu RB	**Section 8**	**Section 8**	
Msikaba RB to Kwadlambu RB	8.1 Satellite, helicopter photos		
Kwadlambu RB to Mtentu RB	8.2 Satellite, helicopter photos, spot check	Mtentu River spot checks	
Mthentu RB to Mtamvuna RB	**Section 9**	**Section 9**	
Mtentu RB to Mnyameni RB	9.1 Satellite, helicopter photos, Mnyameni RB (southern side) walk-through	Sections on foot Mnyameni River spot checks	Mnyameni River to Mtentu River spot checks
Mnyameni RB to Kulumbe RB	9.2 Satellite, helicopter photos, Kulumbe RB site spot check		
Kulumbe RB to Mpahlane RB	9.3 Satellite, helicopter photos, Interchange walk-through, auger tests, Mpahlane RB site walk-through, interview	Mzamba River to Mpahlane River sections on foot	Mzamba River to Mpahlane River sections on foot
Mpahlane RB to Mzamba RB	9.4 Satellite, helicopter photos,		
Mzamba RB to Casino IC	9.5 Satellite, helicopter photos		
Casino IC to Mtamvuna RB	9.6 Satellite, helicopter photos, walk-through		

3.1.4 Archaeological sites and features observed during the field surveys

The archaeological sites, features and artefacts observed and noted by the field survey teams during the various archaeological field surveys are summarized in Table 4, below.

For clarity's sake it should be noted that in his initial field report of August 2002, Binneman (2002a) numbered (most of) the archaeological sites from north to south along the N2WCTH alignment. In the final report, at SANRAL's request and in line with SANRAL's general practice, Binneman renumbered the sites from south to north (Binneman 2002b). In his initial report, dated August 2002, Binneman (2002a) provided satellite coordinates for the sites, but not in his final report (Binneman 2002b). In the report by eThembeni (2008, 2008b), two more sites were added, namely a site where potsherds were found near Ngqotsini, and the King Faku heritage site, both of which are outside the proclaimed N2WCTH road reserve. During the SAS field survey, four additional stone mounds were recorded near the Mpahlane River Bridge site.

Table 4. Comparative summary of the archaeological site/feature references 2002-2011

A Archaeological sites and features	B Binneman (2002a)	C Binneman (2002b)	D eThembeni (2008a, 2008b)	E SAS (2011)
Mzimvubu River valley Alternative Route 1B	**Section 5**	**Section 5**	**Section 4**	**Section 5**
Trading store (1901) near Riverside Primary School (Alternative route 1B)	***Historical site*** 31˚36.02"S; 29˚29.14"E	***Historical site*** (Oral data)	***Historical site*** 31˚36'02"S; 29˚29'14"E	
Potsherds near Ngqotsini (Alternative route 1B)			***Site*** 31˚32'53"S; 29˚28'42"E	
Potsherds near path to Mzimvubu River	***Site 6, LIA?*** 31˚31.53"S; 29˚29.27"E	***Site 1***		
Mzintlava R / Ntafufu R	**Section 6**	**Section 6**	**Section 5**	**Section 6**
King Faku burial ground heritage site			***King Faku HS*** 31˚25'36.93"S; 29˚33'18.93"E	
Mnyameni RB	**Section 9**	**Section 9**	**Section 6**	**Section 9**
Rock shelter Rock paintings	***Site 1*** 31˚08' 51"S; 30˚03'05"E	***Site 2***		
Rock shelter	***Site 2*** 31˚08'52"S; 30˚03'54"E	***Site 3***		
Rock shelter Fairly large	***Site 3*** 31˚08'54"S; 30˚03'59"E	***Site 4***		
Rock shelter Large, semi-circular	***Site 4*** (p16) 31˚08'55"S; 30˚04'01"E	***Site 5***		
Potsherds in ploughed field	***Site 5*** 31˚09'2"S; 30˚03'49"E	***Site 6***		
Mpahlane RB	**Section 9**	**Section 9**	**Section 6**	**Section 9**
Four stone cairns (*isivivane*)	31˚06'21"S; 30˚08'10"E	31˚06'21"S; 30˚08'10"E	31˚06'21" S; 30˚08'10"E	
Three stone mounds				31˚06'25.6"S; 30˚08'18.2"E
Single stone mound				31˚06'22.2"S; 30˚08'13.0"E
Two recent graves				31˚06'28.8"S; 30˚08'16.0"E

3.1.5 Land acquisition and the relocation of dwellings and graves

Regarding the major and complex processes of land acquisition and relocation of dwellings and graves, SANRAL states as follows (Harmse, 2012) (cited verbatim):

> The land acquisition process for a new greenfields road reserve is a well tested procedure that is constantly required and carried out for many years by SANRAL. The ultimate outcome is that SANRAL must have a cleared road reserve, cleared in the sense that it must not contain any occupied dwellings, graves or any encumbrance that could compromise its contractual obligations and undertakings when it hands the road reserve over to a contractor for actual construction of the national road infrastructure. The relevant impacts/recommendations of the Environmental Impact Assessment including heritage and other specialist assessments are made known and reviewed by the land acquisition service provider. In the case of privately owned land, the land owner is compensated for that land at market related prices including any other value that may be agreed upon for such loss. Any graves or other cultural heritage that is impacted upon are relocated/removed from the road reserve. The necessary permits are applied for and obtained by SANRAL's land acquisition service provider on its behalf.
>
> In the case of communal land (such as is mostly the case for the N2WCTH) the procedure is different. During the actual acquisition process all dwellings, graves, services, fields etc. are relocated outside the road reserve in agreement with the land user, the community, the community/political leaders and with the Department of Land Affairs. The necessary notices are given and posted and a new detailed land audit is carried out locating all known dwellings and graves, marked or unmarked, older or younger than 60 years, all services and cultivated fields etc. The necessary permits are applied for and obtained by SANRAL's land acquisition service provider on its behalf and the land is then cleared.
>
> If an unknown grave of unknown age is unearthed during the construction of the road then heritage legislation provides for a prescribed procedure that SANRAL must follow. This will include appointing suitably qualified service providers, if required, to apply for and obtain the necessary permits on SANRAL's behalf and then to carry out the necessary actions as required. Similarly, for any heritage resource that is uncovered during construction such a prescribed procedure will apply.

3.2 Landscape and human settlement in the N2WCTH road reserve area

3.2.1. The natural landscapes

The natural landscape of the Wild Coast was the environment to which the earlier human inhabitants of the area adapted and in which they left some evidence of their existence (in the form of the archaeological remains found in the area today) and which has been investigated from an ecological perspective (McKenzie 1984). The Wild Coast landscape is composed of at least three main interactive ecological components, namely the climate, the area's geology and its vegetation (see De Klerk 2001, 2002; McCarthy & Rubidge 2005; Merryweather 2008).

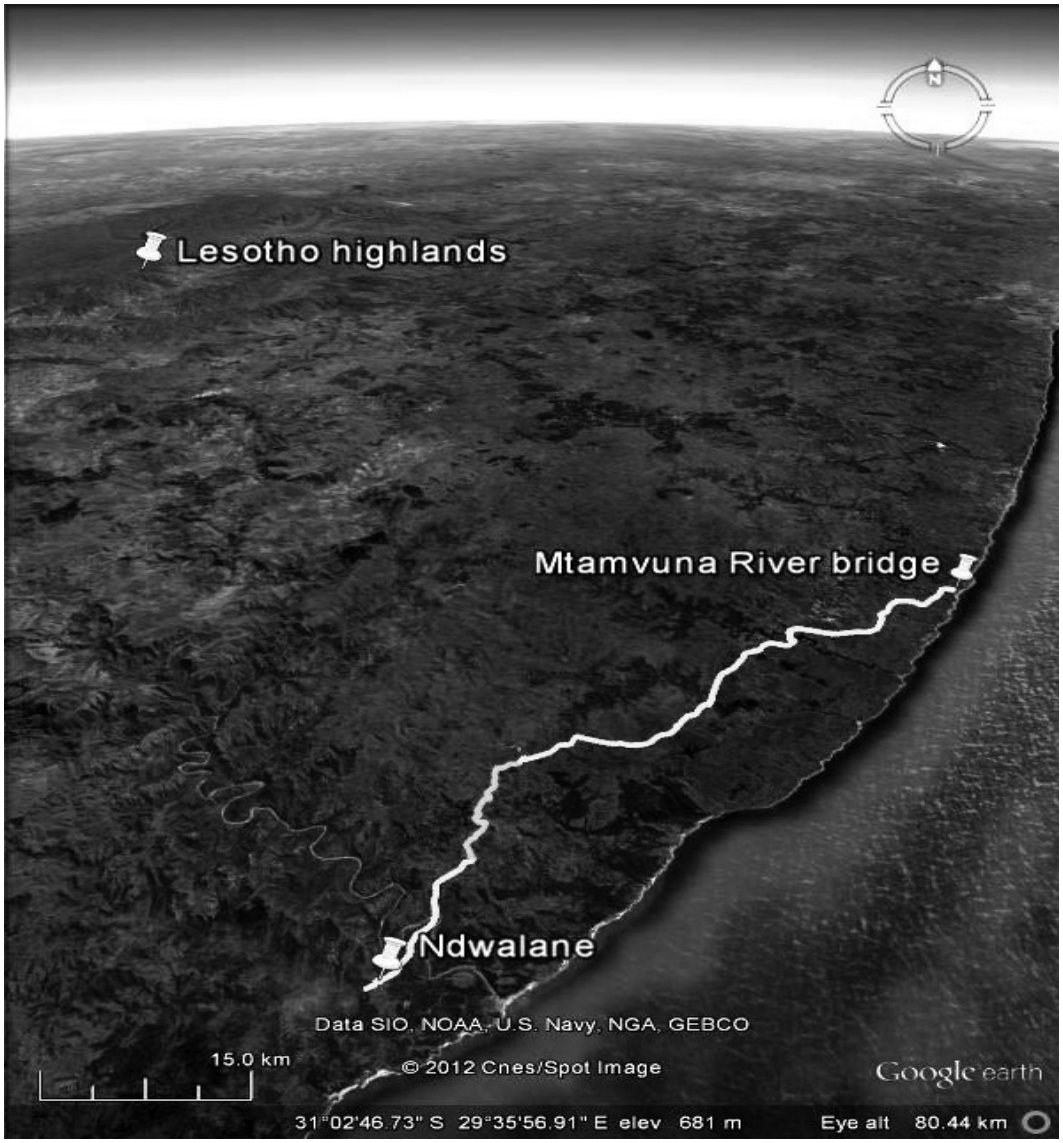

Figure 3. The N2WCTH greenfields road reserve between Ndwalane and the Mtamvuna River Bridge, situated within the coastal zone, which has a subtropical climate and fairly high rainfall all year round.

Google Earth imagery date: 2/20/2013; ©2013. Viewed towards the north-east. Scale: 15.00 km.

- **Climate**

  The current climate of the Wild Coast is subtropical. The weather along the coast is influenced by the warm Mozambique-Agulhas current which flows from north to south. The weather along the east coast tends to be hot and humid throughout the year with an average high temperature of 28°C (82°F) in summer and 23°C (73°F) along the coast during the winter months. The eastern escarpment, including the Lesotho highlands, acts as a barrier to the wind-borne moisture from the Indian Ocean. The moisture is consequently released as

rain along the Wild Coast throughout the year, but mainly during the summer months. (http://www.climateandweather.com/weather-in-south-africa).

This climate enabled Iron Age subsistence farmers in the area to raise indigenous crops which were adapted to summer rainfall conditions in subtropical East Africa.

- **Geological features**

The proposed N2WCTH greenfields sections traverse three major sedimentary rock formations: the Msikaba Formation (which is the oldest and is considered a member of the Cape Supergroup) and the Dwyka Formation and Ecca Group, with intrusions of Drakensberg Group dolerite belonging to the Karoo Supergroup, all of which are less than 543 million years old (see Figures 4, 5 and 18; Table 5; De Klerk 2001, 2002; King 1982:11-13; McCarthy & Rubidge 2005).

The principal geology to the north-east is classified as the Msikaba Sandstone Formation, which is a mature sedimentary marine rock believed to have formed about 350 million years ago. It can be described as a gently sloping plateau with an elevation ranging from about 450 m inland to about 80 m at the coastal escarpment (see Figures 4, 5 and 7, below). Characteristic features are gently rolling hills, flat grassy plains and the deeply incised, often inaccessible gorges of the Msikaba, Mtentu, Mnyameni, Mzamba and Mtamvuna River systems. The soils overlying the sandstone are described by Van Wyk and Smith (2001) as sandy, highly leached, acidic and often relatively shallow. Rocky sandstone outcrops are common. According to SANRAL's soil test trench results, the soil cover on the Msikaba sandstone is typically 1.5 m to 2 m deep, varying from moist, dark brown, loose sandy topsoil to very moist, dark yellowish-orange, clayey, highly weathered sandstone at a depth of 1.5 m to 2 m (see Figure 42). The Msikaba Formation and its acidic soils are covered by fairly dense Pondoland Ugu Sandstone Coastal Sourveld, which belongs to the southern African grassland biome.

Sections 5 to 7 of the approved N2WCTH road reserve are aligned between Ndwalane and Lusikisiki and beyond, towards Ntlavukazi, up to approximately 31°20'45.43"S and 29°43'46.22"L. The glacial Dwyka Formation (designated "Pd" on the geological map) and the Ecca Group of sediments (designated "Pe" on the geological map) of the Karoo Supergroup dominate the southern and eastern landscapes of Pondoland (see Figures 4 to 6, below). The sediments of this highly eroded Karoo sequence were deposited in an intra-cratonic basin on the African plate that commenced with the Dwyka Formation. This formation consists of tillite formed by glaciers during the Permo-Carboniferous glaciations, and is followed by the shallow, dark-grey marine shales and interbedded sandstone of the Ecca Group.

The main land surface contact zone between the Dwyka Formation and Ecca Group to the south-west and the Msikaba Formation to the north-east is the Egossa Fault, which runs from around Mbotyi on the coast, to south-east of Lusikisiki in the interior (see Figures 4 and 5).

During the Quaternary Period which began approximately 1.8 million years ago, changing sea levels came close to the present water level along the coastline (Deacon and Deacon 1999:23). New coastal sand dunes, typically red, developed along the Natal coast and the Wild Coast at that time and sometimes contain Sangoan type hand-axes (see Figures 8 and 9) thought to be around 40 to 50 thousand years old; while Middle Stone Age tools associated

with these dunes have been dated with radio-carbon methods to approximately 29 000 years old (King 1982:20-21).

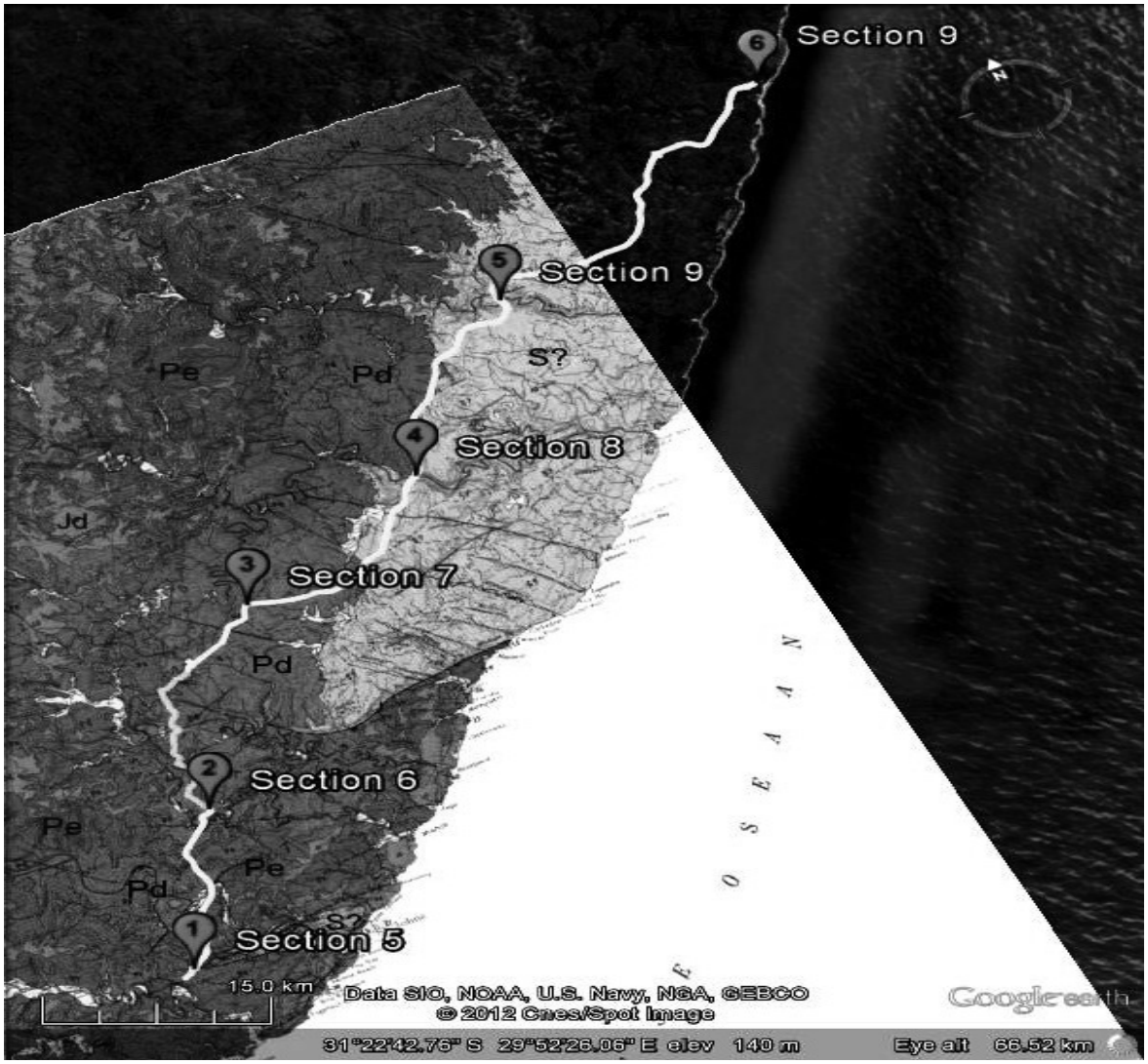

Figure 4. N2WCTH Sections 5 to 9 cross the geological landscape, traversing the Dwyka Group and Ecca Group formations in the south from the Ndwalane Interchange up to around the Magwa Interchange and the Msikaba Sandstone Formation from the Magwa Interchange area up to the Mzimvubu River Bridge (see also Figure 5, below; Table 5).

1 Section 5: Ndwalane IC up to Ntafufu IC
2 Section 6: Ntafufu IC up to Magwa IC
3 Section 7: Magwa IC up to Msikaba RB
4 Section 8: Msikaba RB up to Mtentu RB
5 Section 9: Mtentu RB up to Mtamvuna RB
6 Section 9: Mtamvuna RB

S? Msikaba quartzitic sandstone
Pd Underlying Dwyka Group tillite
Jd Drakensberg Group dolerite
Pe Overlying Ecca Group shale
Alluvium (yellow) River flood-plains

Google Earth imagery date: 2/20/2013; ©2013. Viewed towards the north-east. Scale: 15.0 km. With geological overlay.

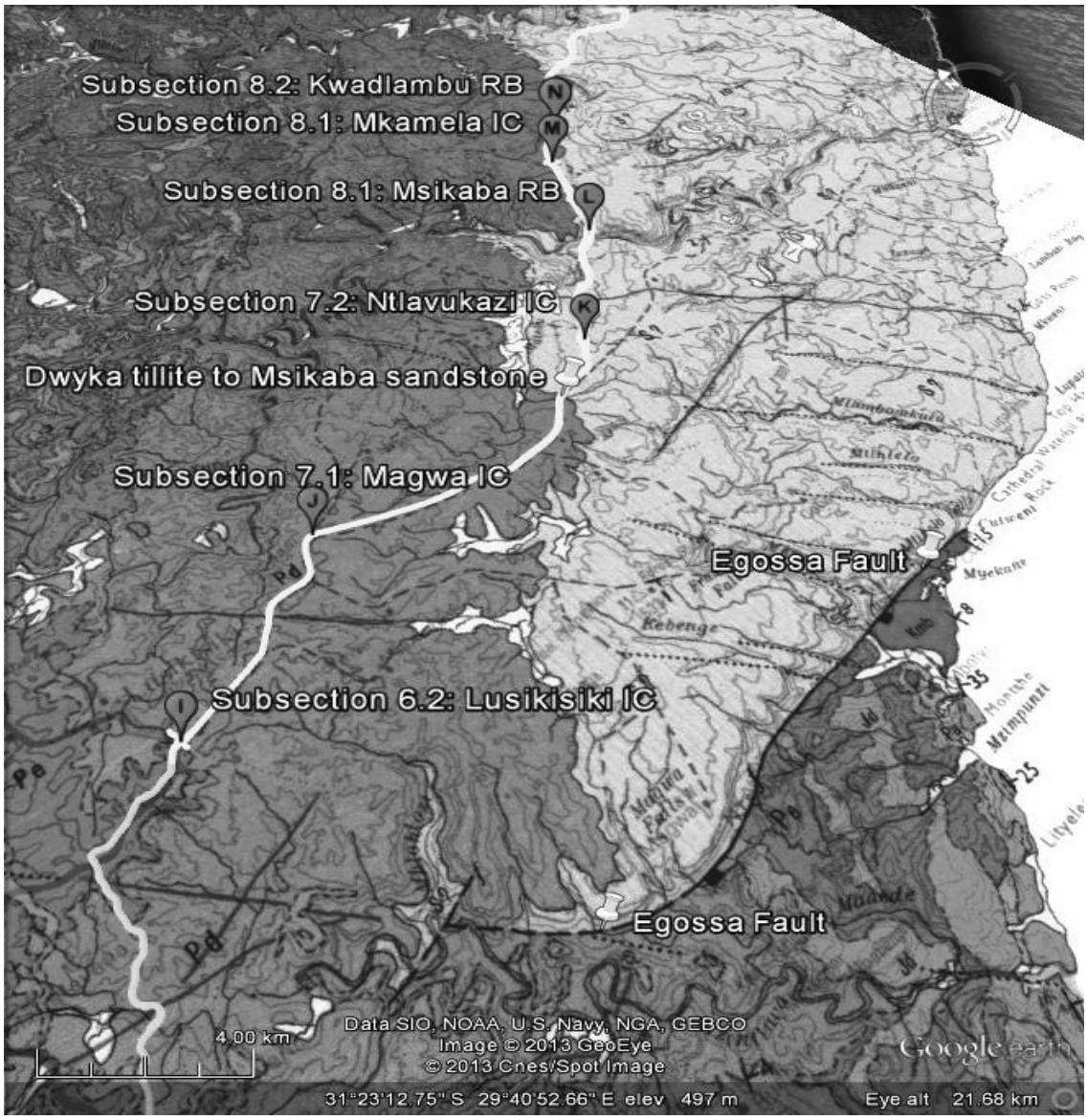

Figure 5. Topography and rock formation transitions between the Lusikisiki Interchange (I) at 31°22'37.60"S; 29°34'41.64"E, the Kwadlambu River Bridge (N) at N: 31°14'28.63"S; 29°50'1.06"E, and the Egossa Fault (The Egossa Fault is also sometimes referred to as the Mbotyi Fault). (SeeTable 5).

I Subsection 6.2: Lusikisiki IC
J Subsection 7.1: Magwa IC
K Subsection 7.2: Ntlavukazi IC
L Subsection 8.1: Msikaba RB
M Subsection 8.1: Mkamela IC
N Subsection 8.2: Kwadlambu RB

S? Msikaba quartzitic sandstone
Pd Underlying Dwyka Group tillite
Pe Overlying Ecco Group shale
Jd Drakensberg Group dolerite
Kmb Mbotyi Conglomerate
Alluvium (pale yellow) River flood-plains

Google Earth image date: 8/15/2012; ©2013. Viewed towards the north-east. Scale: 4.00 km. With geological overlay.

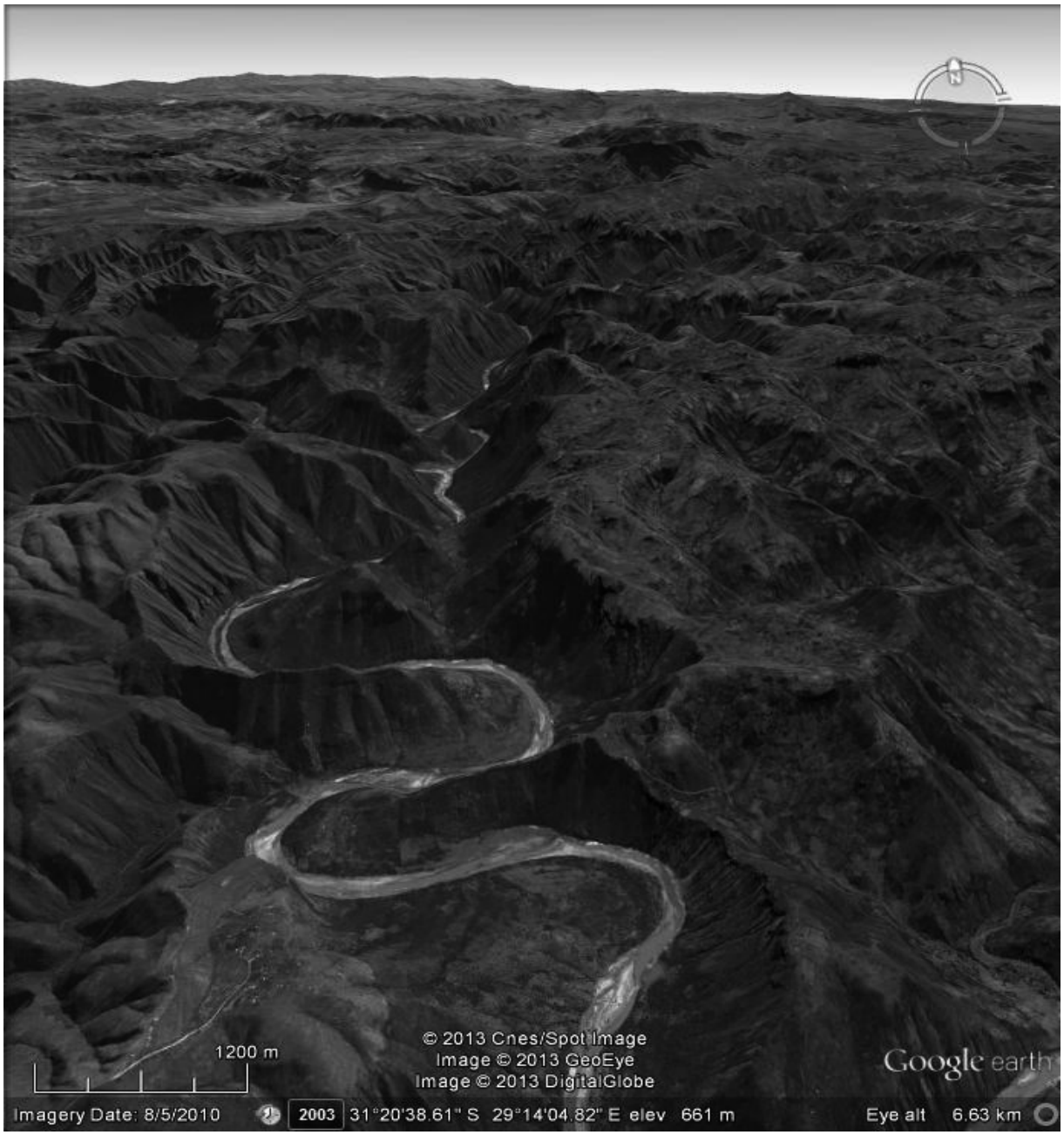

Figure 6. Eroded valleys of the Karoo Supergroup geological landscape in the upper catchment area of the Mzimvubu River. This erosion contributes considerably to the formation of the alluvial flood plains of the Mzimvubu River. The alluvial flood plains of the Mntafufu River in the same geological environment are formed in a similar way. Typical vegetation in this landscape is the Transkei Coastal Belt, with scarp forest on some mountain valley slopes.

Google Earth imagery date:8/5/2010; ©2013. Viewed towards the north. Scale: 1200 m.

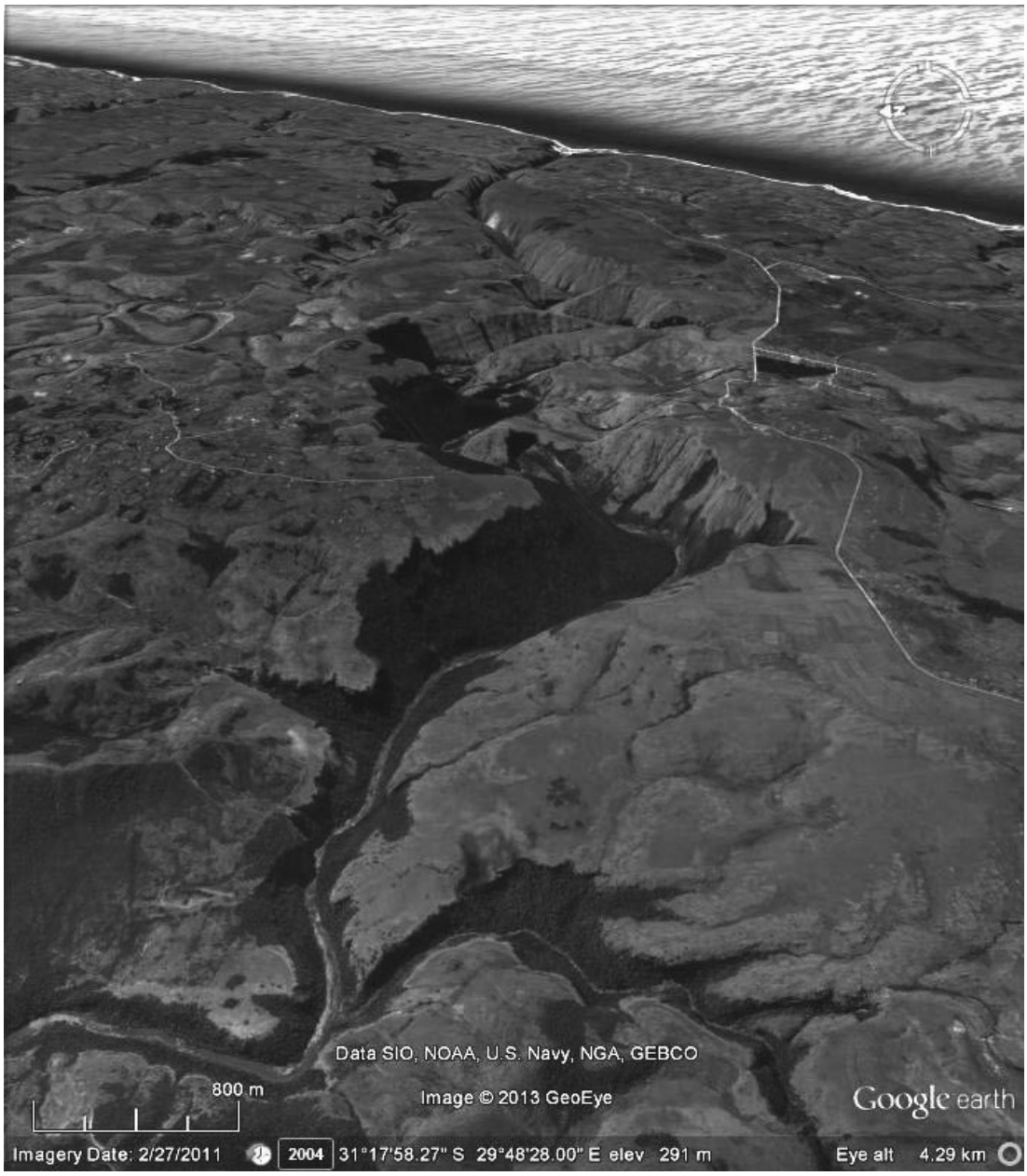

Figure 7. The eroded plateau of the Msikaba Sandstone Formation geological landscape, featuring the deep gorge of the Msikaba River, east of the approved Msikaba River Bridge, with dense scarp forest in sections of the ravine and Pondoland Ugu Sandstone Coastal Sourveld cover on the plateau. The Msikaba Formation slopes gently towards the Indian Ocean.

Google Earth imagery date:2/27/2011; © 2013. Viewed towards the east. Scale: 800 m

3.2.2 Evidence of human settlement

Some archaeological remains dated to major cultural periods are present to a lesser or larger extent in the Eastern Cape region (see the timeline in Table 5). These periods are the Stone Age (ca 1.7 million years to 200 years ago), the Iron Age (ca 1 600 years to 300 years ago) and the historical period (ca 300 years to 100 years ago).

- **Stone Age hunter-gatherer sites**

  Late Early Stone Age and Middle Stone Age artefacts in this region tend to occur within the context of the coastal red dunes (see Figures 8 and 9, below).

Figure 8. Red dune on the Kwazulu-Natal side of the Mtamvuna River to the north of the proposed N2WCTH Casino Interchange. The northern bank of the Mtamvuna River is visible in the foreground.

Google Earth imagery date: 10/23/2012; © 2013. Viewed towards the east. Scale: 40 m.

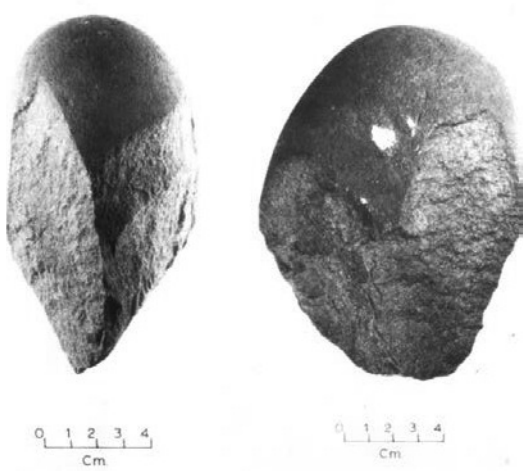

Figure 9. Sangoan type hand-axe made of Table Mountain sandstone, possibly approximately 50 000 years ago, associated with coastal red dune deposits. Found in Durban. (King 1982:22, Figure 10).

Scale 4.0 cm.

- **Campsites of the Khoikhoi herders during the Late Stone Age and the historical period**

  The Khoikhoi people of southern Africa were herders (pastoralists). Typical Khoikhoi structures were temporary beehive-shaped transportable huts constructed of light wooden frames covered with reed mats; it is unlikely that the remains of such Khoikhoi campsites would have been preserved over time.

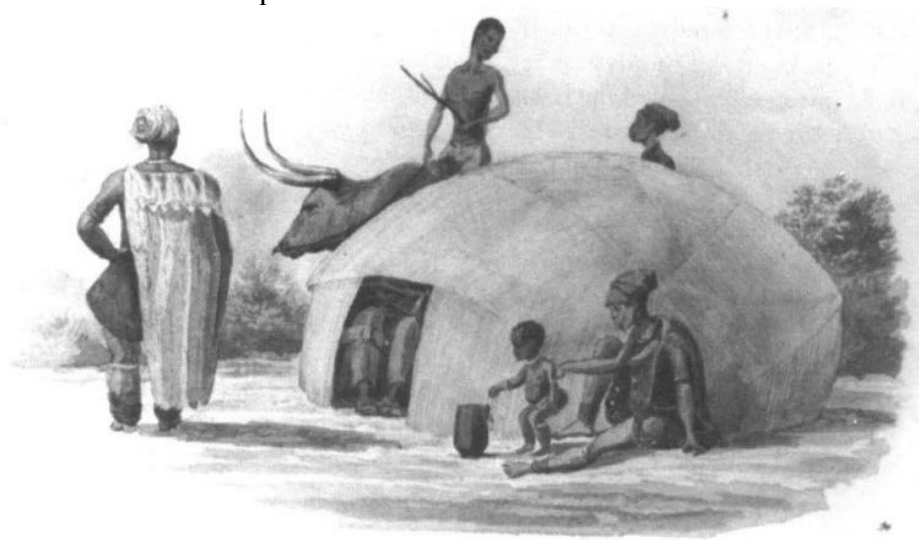

Figure 10. Traditional Khoikhoi herder reed mat hut and other possessions typical of the Cape region of South Africa (Boonzaier, Malherbe, Smith and Behrens 1996:106). When the pastoral Khoi migrated with their herds of domestic stock, they dismantled the huts and transported the wooden hut frames and mats to their next campsite. These materials are not very durable and Khoi campsites were not usually inhabited for long periods.

- **Iron Age and historical period (indigenous/traditional) settlement**

  Research on the chiefdoms and farming communities of Pondoland or the area of the former Transkei resulted in publications such as those by Beinart (1980), Feely (1978), Maggs (1989), and Prins and Granger (1993), referred to by eThembeni Cultural Heritage (2008b). Archaeological studies had been undertaken on the settlement sites of Early Iron Age subsistence farming communities along the middle reaches of the Mzimvubu River valley; and similar findings may to some extent be expected in the coastal region (eThembeni Cultural Heritage 2008b:33). During the Late Iron Age and the historical period the subsistence farmer settlement patterns in the coastal region changed significantly (Maggs 1989:35 to 29; see eThembeni Cultural Heritage 2008b:32, 33):

  - Since the beginning of the Late Iron Age, settlements were no longer built in river valleys, but were built on higher ground.
  - According to the written narratives of shipwrecked Portuguese and other Eureopean mariners, the coastal sourveld of Pondoland was thinly populated by the 1550s.
  - Typical settlements of the coastal areas were small, consisting of up to twenty hemispherical huts built of poles and thatch and were the homes of kinship groups, each under the authority of a senior man.
  - Steep slopes, wetlands and marshy areas were utilized for grazing animals and gathering wild food and medicinal plants.
  - The agro-pastoral economy of the Iron Age throughout the coastal regions typically included the cultivation a combination of grains, legumes and vegetables of the pumpkin-melon family; and the herding of cattle, sheep and goats.

  The villages of the Early Iron Age subsistence farming communities in the river valleys of the Wild Coast area have not yet been reconstructed, but the settlements of the subsistence farmers which existed in the Eastern Cape area during the Late Iron Age and historical period must have been relatively similar to those recorded on paintings and photographs during the eighteenth to early 20th centuries (see Figures 21 to 26).

  Typical site features in a southern African context are graves (see Figures 11, 12 and 35), *isivivane* (see Figure 13), mounds of stones cleared from agricultural fields (see Figure 14) and kraals or byres for domestic stock, some of which are known to also exist in the Eastern Cape.

  Graves are often found near homesteads in many areas where subsistence farmers settled during the Late Iron Age and later cultural periods. Earlier grave stone mounds tended to be roughly circular, as the bodies were buried in pits in a curled up position, lying down or in a sitting position, in the case of some traditional customs, and some of their material possessions were buried with them (see, for example, Figure 11 below). In more recent times, the deceased were buried in the Western way in trench-type graves, often with cultural objects placed outside on top of the grave, and often with headstones or 'n built grave cover (see, for example, Figure 35). The age and/or identity of graves on deserted settlement sites are often unknown.

Figure 11. Remains of a human skeleton and ceramic burial vessel found in an Iron Age grave in an old excavation trench at Mapungubwe in the Limpopo River valley. The numerous graves found on this site complex were not marked on the settlement site surface and their locations could not be easily predicted. (Meyer, 1998:103, Figure 3.40)

Figure 12. Stone-packed graves located near an agricultural field along the alignment of a proposed water supply pipeline in Gauteng and North West Provinces. (Van der Walt & Fourie, 2005:54, Figure 18).

Figure 13. A stone cairn, *seotlo* (or *isivivane* in the Nguni languages), covered with leaves and branches at 24°29'13.1"S; 30°02'39.8"E, at Sefateng on the Farm Djate 249 KT, Sekhukhune, Limpopo Province. (Küsel, 2008:15, 32; Photograph 18).

According to Küsel (2008:15), these stone cairns originated along footpaths following major routes throughout southern and eastern Africa, when a passing traveller added a stone and some grass or leaves to these stone mounds to ensure a safe passage; while in Bopedi it is believed that a brave soldier died at the spot.

Figure 14. Stone mounds near Lake Fundudzi, Limpopo Province (Van der Waal, 1977). These stones are on record as having been collected in the process of clearing agricultural fields.

- **Historical period: British colonial governance and trade during the 19th Century**

  During the British colonial period in the Cape region, the harbour town of Port St Johns, commercial farms and a river trade network developed in the Port St Johns enclave.

Figure 15. Historic Port St Johns: The Mzimvubu coaster at the jetty (http://www.portstjohns.org.za/historyphotos.htm, date of photo unknown).

Around 1845, European traders settled at the mouth of the Mzimvubu River to open a harbour for trade with inhabitants of the interior, and Port St Johns was established. When the territory of Port St Johns and a surrounding enclave were annexed by the British Cape colonial government to effect control over the area in 1884, a steamboat river trade network developed from Port St. Johns upstream into the interior. (http://www.portstjohns.org.za/historyphotos.htm; www.openafrica.org/route/Port-St-Johns-Open-Africa-Route).

Within this context, commercial farms developed along the Mzimvubu River. A trading store was established in 1901 at the south-western end of the Mzimvubu River bend, in the N2WCTH road reserve corridor which was surveyed by archaeologists (see Table 3, above, and Figures 16 and 29, below; Binneman 2002a, 2002b; eThembeni 2008b).

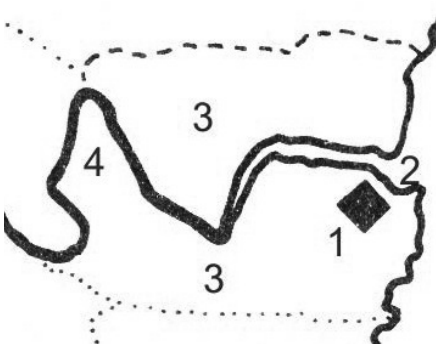

Figure 16. The historical Port St Johns enclave

1 Port St Johns.

2 Mouth of the Mzimvubu River.

3 The Port St Johns/Mzimvubu River enclave (Van Warmelo, 1935: Map 6).

4 The Mzimvubu River bend within the enclave (also see Figures 12, 25 and 26). The approved highway reserve crosses the observed buildings of a commercial farm establishment in the bend (also see Figures 52, 53, 60, 61, below).

- **Cultural landscapes**

  The cultural landscapes of the inhabitants of Pondoland were largely formed by high rainfall, the geology, the topography, the vegetation, community environmental economics and cultural traditions. The settlement patterns which seem to correlate to some extent with the geological landscapes are those on the Msikaba Sandstone Formation, which is the earliest geological formation (see Figures 17 to 21), and those on the later Dwyka Tillite and Ecca Group formations (see Figures 22, 27and 32).

Figure 17. Satellite image of current human rural settlement in the rugged Msikaba Sandstone landscape, from the Msikaba River Bridge northwards to the Mkamela Interchange. Note the typical exposed sandstone and the deep gorge of the Mzikaba River and agricultural fields on shallow soil. (More detail can be seen in Figures 18 to 21 below).

Google Earth imagery date: 4/30/2012; ©2013. Viewed towards the north-east. Scale: 400 m.

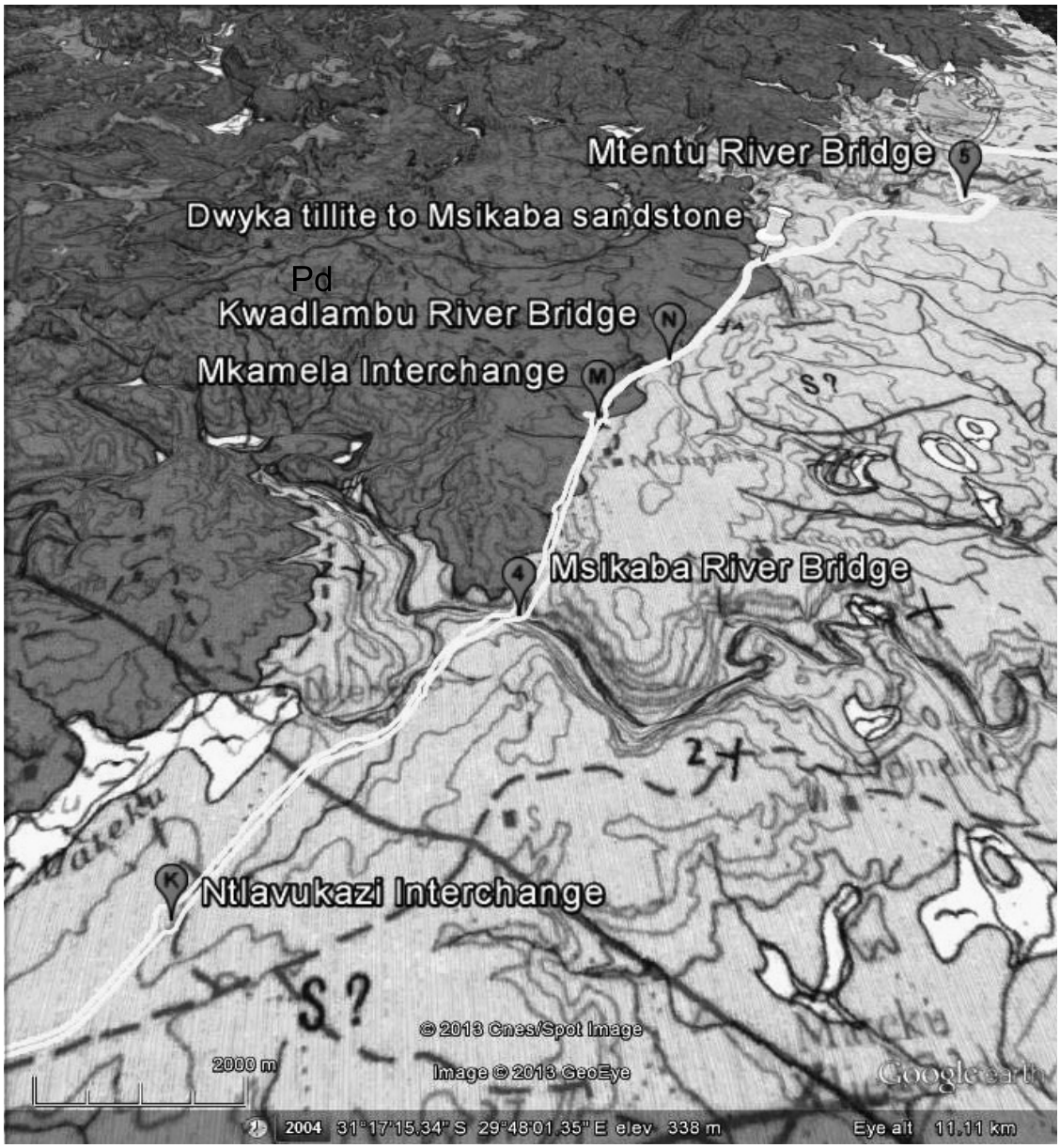

Figure 18. Geology of the Msikaba River confluence area: Dwyka tillite ("Pd") top, left; and Msikaba sandstone ("S?") right.

Google Earth image date: 4/30/2012; © 2013. Viewed towards the north. Scale: 2000 m. With geological overlay.

A comparison of the geological map above with the human settlement data on the corresponding topo-cadastral maps (see Figure 19 below) indicates that the current population density on the acid soils of the underlying and largely exposed Msikaba sandstone formation south-east of the N2WCTH road reserve in this area appears to be lower than on the Dwyka tillite landscape to the north-west of the road reserve. This observation corresponds with observations of early shipwreck survivors (see Maggs 1989) that the coastal landscape of what is currently known as the Pondoland Ugu Sandstone Coastal Sourveld was sparsely populated towards the sixteenth century AD.

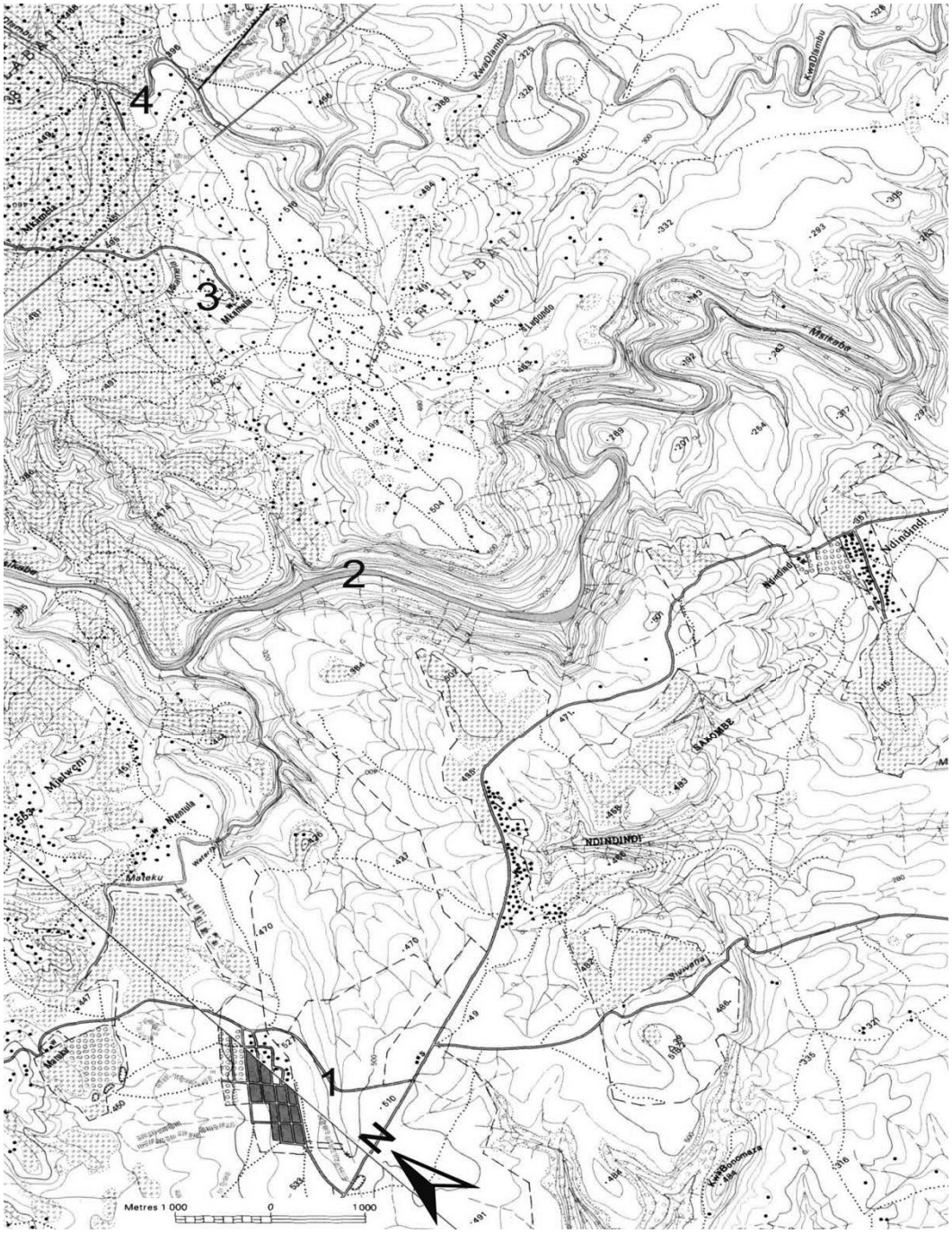

Figure 19. Population density shown on this map is generally higher to the north-west where the geological landscape is Dwyka tillite, but lower to the south-east where the geological landscape is Msikaba sandstone (see Figures 17 and 18 above). Approximate site locations of the approved N2 WCTH road reserve as indicated on the map:

1 Ntlavukazi Interchange	**3** Mkamela Interchange
2 Msikaba River Bridge	**4** Kwadlambu River Bridge

1:50 000 topo-cadastral maps WGS3129BC and 3129BD. Scale 1 000 m. Date 1982.

Figure 20. Subsection 8.2: Typical water seepage from the shallow underground water table in shallow soil on the Msikaba Sandstone Formation, surrounded by dense grass veld and exposed sandstone. The water in a typical seepage is usually clear, but in this case the water is muddy, as it has been churned up by cattle.

Photo: SAS DSC00144, October 2011. Viewed towards the north-east. Photographed at 31°12′21.53″S; 29°51′45.10″E.

The Wild Coast landscape was typically used as follows (Maggs 1989):

- The written evidence of shipwrecked Portuguese and other European mariners indicates that by the 1550s the coastal sourveld of Pondoland was thinly inhabited (also see Figures 18 and 19 above).
- Steep slopes, wetlands and marshy areas were used for agriculture, grazing for domestic animals, and sources of wild food and medicinal plants.

Individual homesteads and gardens are still found in association with water sources and marshy areas or wetlands in the area (see Figure 21, below).

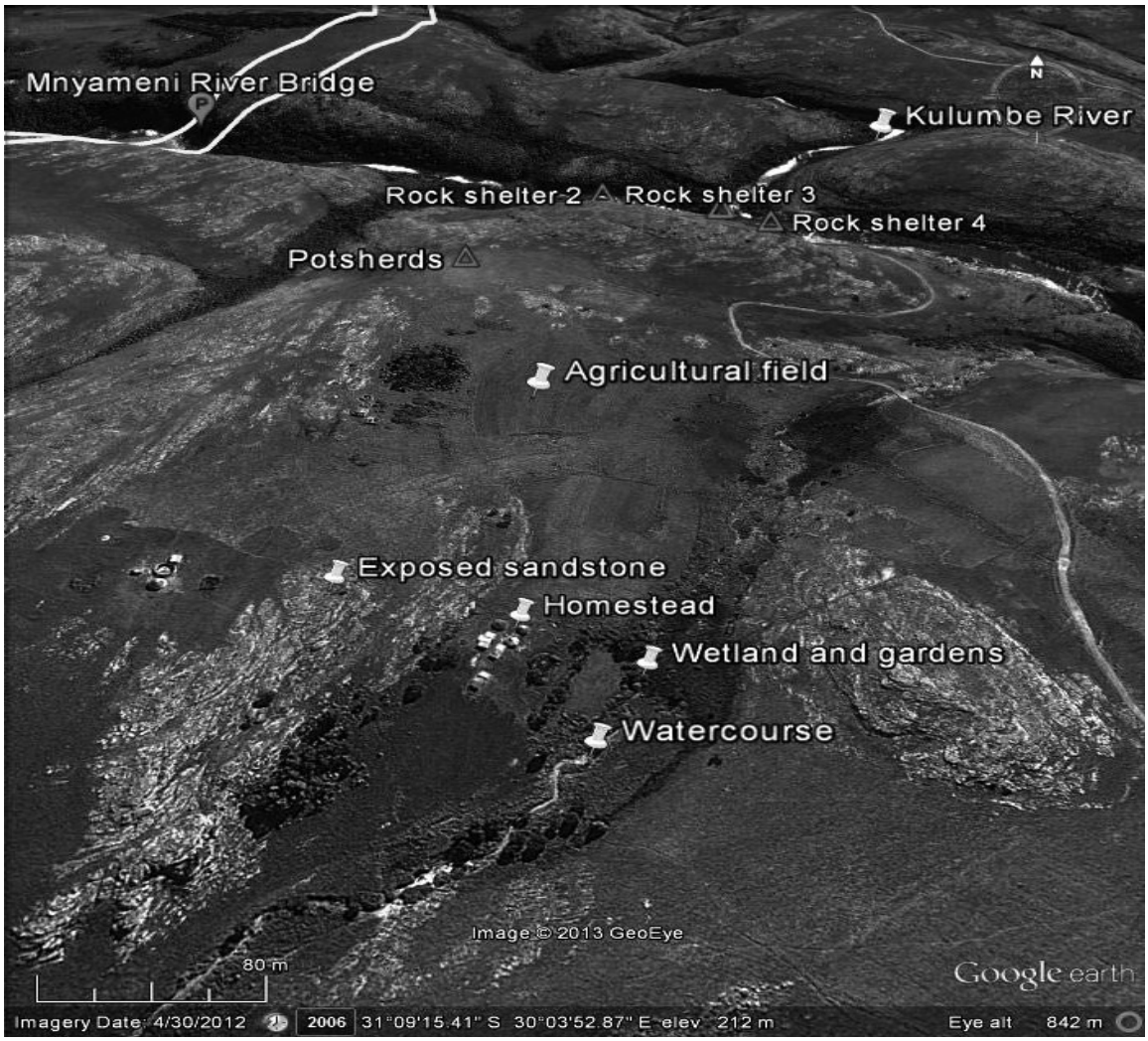

Figure 21. Satellite image of the Msikaba sandstone landscape at the southern bank of the Mnyameni River ravine, where Binneman (2002a, 2002b) and eThembeni (2008b) observed and recorded potsherds (thought to belong to the Late Iron Age) in an agricultural field (Binneman's Site 6 at 31°9'2.00"S; 30°3'49.00"E, approximately 650 m to the east of the N2WCTH road reserve, near several rock shelters. Rock Shelter 2 is located at 31° 8'52.00"S; 30° 3'54.00"E, Rock Shelter 3 at 31° 8'54.00"S; 30° 3'59.00"E and Rock Shelter 4 at 31°8'55.00"S; 30°4'1.00"E.

Google Earth imagery date: 4/30/2012; ©2013. Viewed towards the north. Scale: 80 m.

From Figure 21 above, it can be concluded that the potsherds may be associated with a Late Iron Age or historical period homestead site, which must have looked fairly similar to and must have functioned much like the currently inhabited homestead (recorded during the SAS as homestead HS9.1.5) at 31°9'19.14"S; 30°3'51.62"E. This homestead is associated with adjacent agricultural fields and a nearby watercourse at 31°9'22.02"; 30°3'53.09"E. The homesteads of the subsistence farmers during the Late Iron Age and historical period would probably have been similar to the Nguni houses depicted in Figures 23 to 26 below, although there is little if any remaining evidence of them.

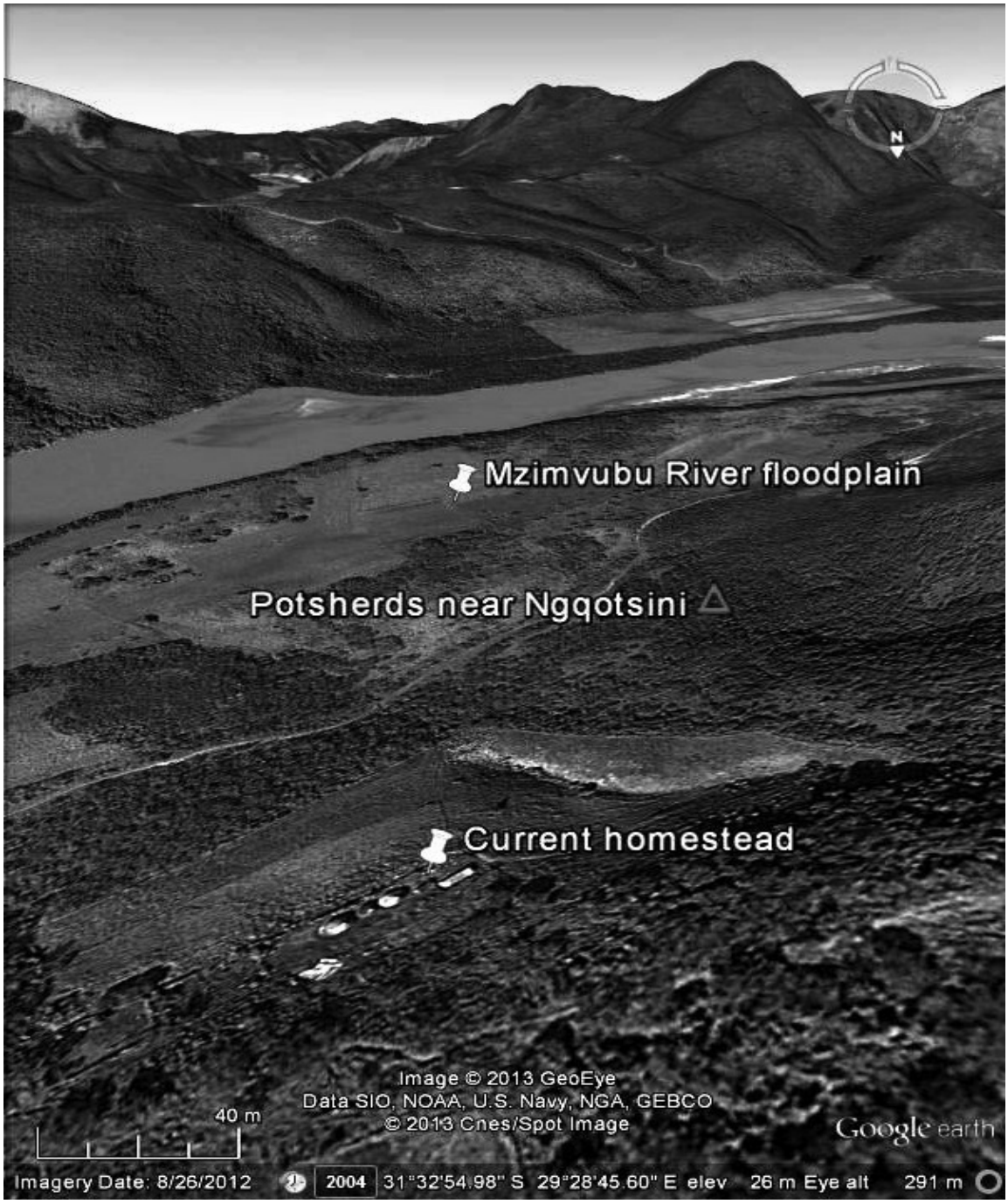

Figure 22. Satellite image of the extensive floodplains of the Mzimvubu River and surrounding slopes near Ngotsini to the west of the N2WCTH, looking towards the south. The alluvial soils of such floodplains have been used for agriculture by subsistence farmers since the Early Iron Age. The location of the potsherd site was located by eThembeni Cultural Heritage (2008a; 2008b) at 31°32'53"S; 29°28'42"E.

Google Earth imagery date: 8/26/2012; ©2013. Viewed towards the south. Scale: 40 m.

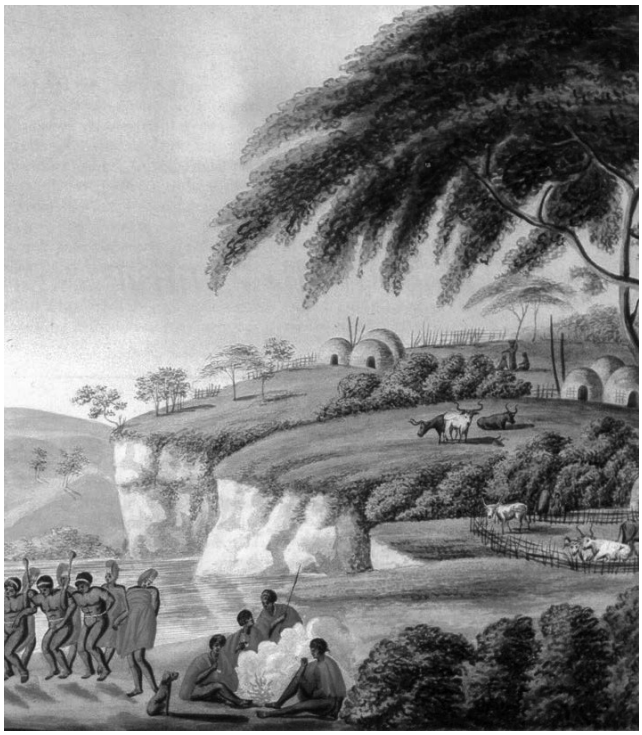

Figure 23. Painting of a Southern Nguni settlement by Ludwig Alberti (1758-1812). (Bergh & Bergh 1984:13)

During the 19th century, contemporary southern Nguni or Cape Nguni settlements were portrayed by artists as small clusters of bee-hive (dome-shaped) grass huts in hilly landscapes. The inhabitants are shown as pastoralists and are performing typical social activities.

Figure 24. "Cape Nguni huts", by Thomas Baines (1820-1875) (Walton 1956:Fig. 66).

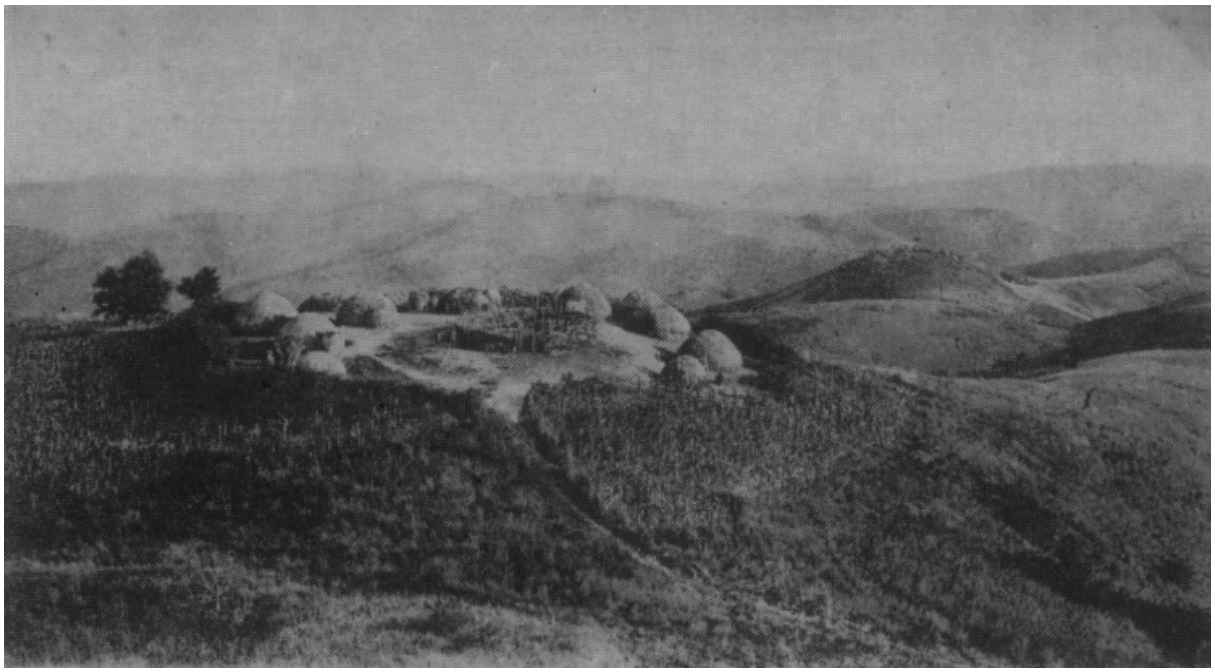

Figure 25. A traditional Nguni homestead unit or small village landscape on the crest of a hill or watershed around the beginning of the 20th century. The bee-hive type grass huts encircling a central cattle kraal are a typical feature. An outside pathway leads to what could be the formal entrance. There are surrounding agricultural fields on the upper slope of the hill, and natural grassland that would have been used for grazing for domestic stock in the background. Postcard ca. 1910 (Frescura, 1981:160, Figure a).

Figure 26. Construction of a traditional Nguni beehive (dome-shaped) hut with a circular floor plan. Villagers are erecting the light wooden hut framework, with its base in a shallow circular hut-wall trench. This frame is covered with grass (thatch), which is tied to the frame. The hut is typically situated on the crest of a hill. Postcard ca 1910 (Frescura, 1981:40, Figure c).

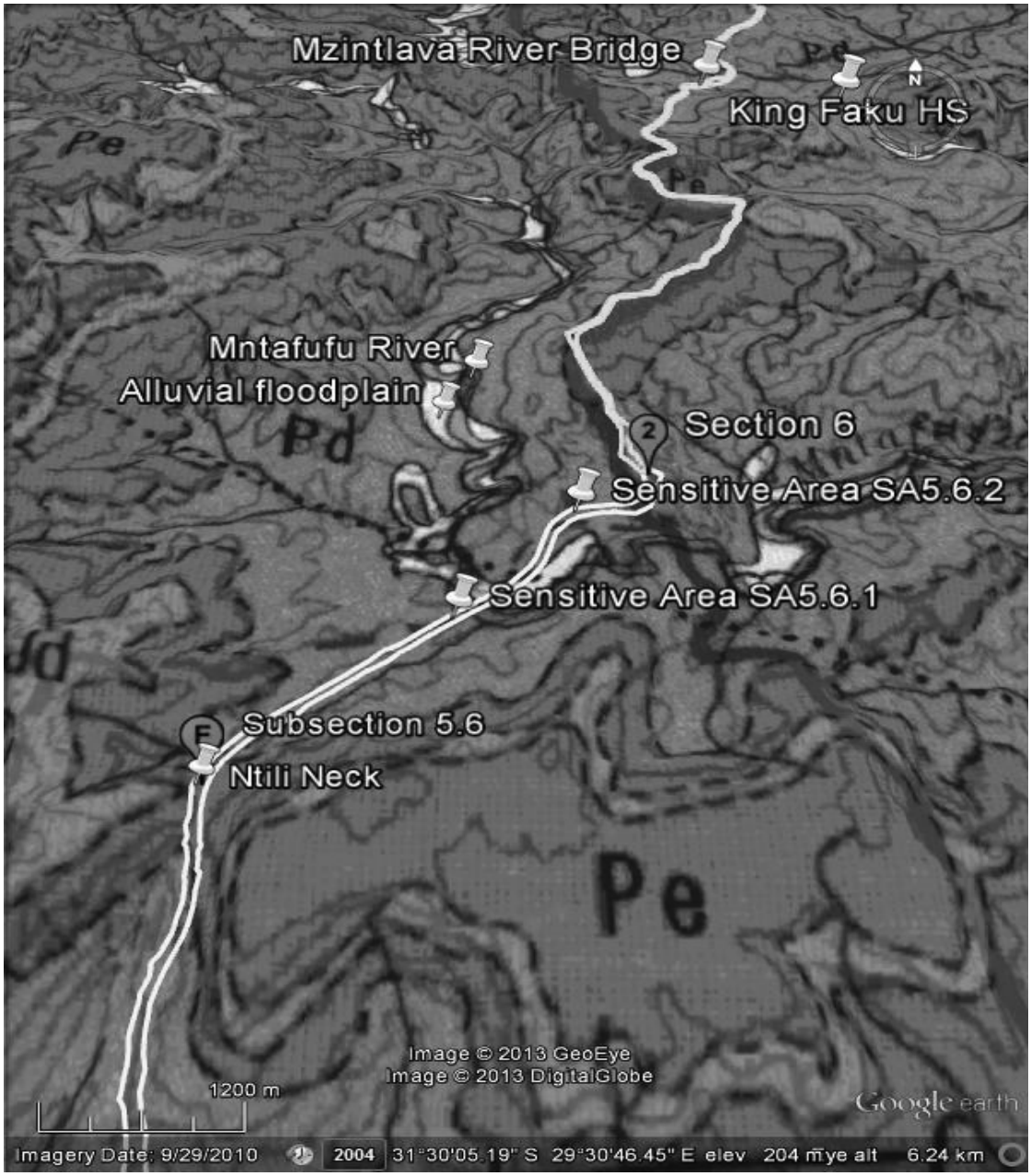

Figure 27. Geological landscape of the Mntafufu River Bridge environment. The Mntafufu River and its tributaries developed as the processes of erosion carved the Mntafufu River valley into its present shape. One locality where the approved road reserve will cross and affect a possible Iron Age flood plain farming type of environment is the landscape around the Mntafufu River Bridge site in Subsection 5.6, near the Ntafufu Interchange (see Figures 105 to 110).

Pd Underlying Dwyka tillite of the Dwyka Group in the Karoo Supergroup sequence.
Pe Overlying Ecca Group shale of Karoo Supergroup sequence.
Jd Drakensberg Group Dolerite
Alluvium indicated in pale yellow Waterborne soils from the eroding river catchment areas

Google Earth imagery date: 9/29/2010; ©2012. Viewed towards the north. Scale: 1200 m. With geological overlay.

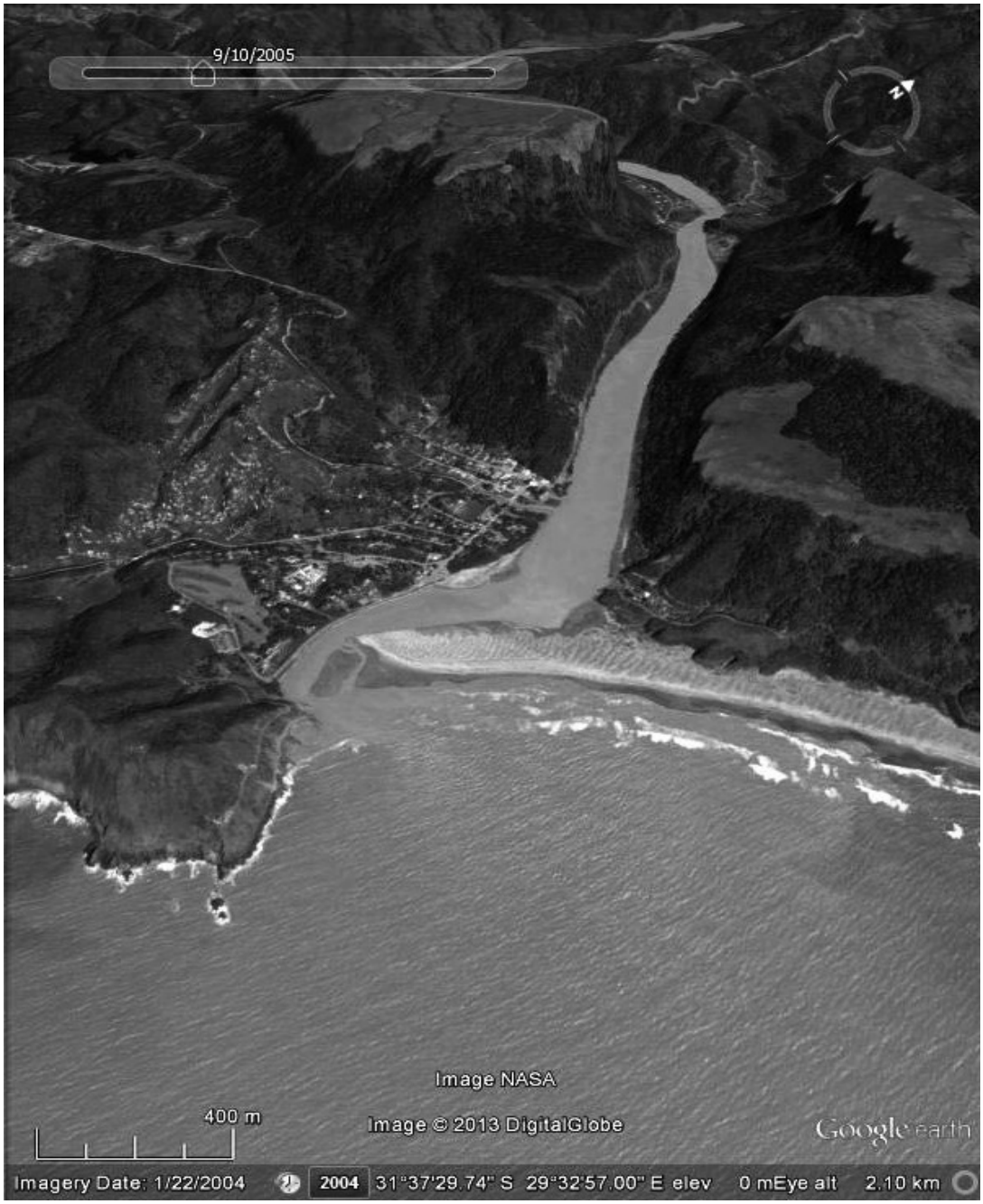

Figure 28. Port St Johns, situated at the southern side of the Mzimvubu River mouth, 2004. This satellite image shows muddy water flowing from the interior past Port St Johns and the well-known mud- and sand-bar in the mouth of the Mzimvubu River into the Indian Ocean.

Google Earth imagery date: 1/22/2004; ©2013. Viewed towards the north-west. Scale: 400 m.

Periodic river floods of muddy water such as this form the alluvial soils along the river banks, and must have influenced the settlement of subsistence farmers upstream during the Iron Age and historical period, as well as of commercial farmers during the historical period.

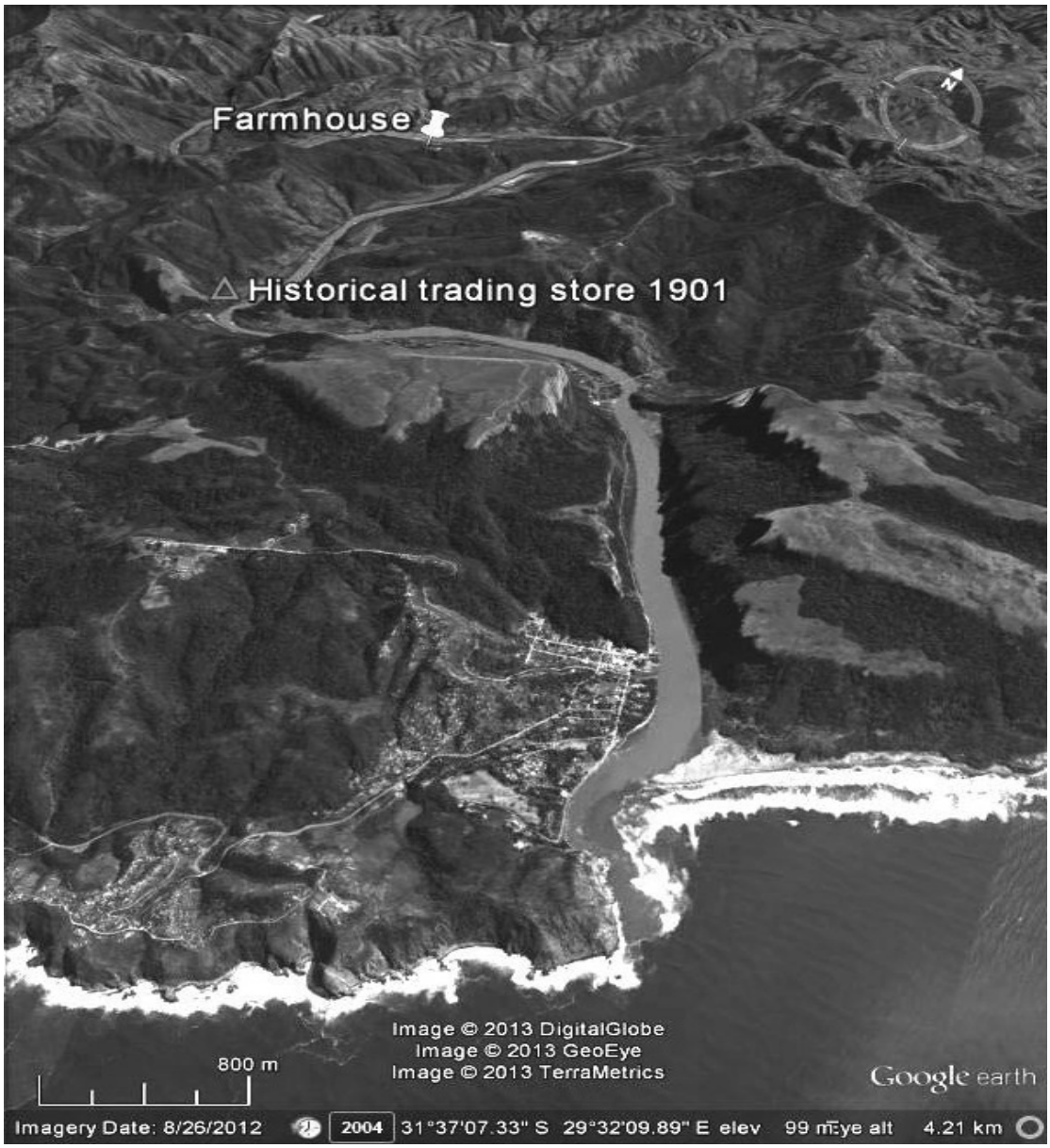

Figure 29. The lower Mzimvubu River valley and eastern part of the historical Port St Johns/Mzimvubu River enclave. The enclave included Port St Johns, as well as Mount Sullivan and Mount Thesinger, which are visible on both sides of the river in the middle background, and the first southern bend of the Mzimvubu River (also see Figure 16). Landscape features are commercial farmland on riverside alluvial soils, and the location of the historical trading store which has been dated to 1901 (also see Figure 50) and which is located along N2WCTH alternative route 1B (CCA Environmental 2009:viii, Figure 5).

The river steamboat trading route from Port St Johns probably went upstream as far as the trading store. Numerous mud-banks are visible above the shallow river surface at the date of this satellite image.

Google Earth imagery date: 8/26/2012; ©2012. Viewed towards the north-west. Scale: 800 m.