

**GREATER MPOFANA BULK WATER
SUPPLY SCHEME
ENVIRONMENTAL IMPACT ASSESSMENT**

**HERITAGE IMPACT
ASSESSMENT**

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DECLARATION OF INDEPENDENCE

We declare that Len van Schalkwyk, Beth Wahl and eThembeni Cultural Heritage have no financial or personal interest in the proposed development, nor its developers or any of its subsidiaries, apart from in the provision of heritage assessment and management consulting services.

MANAGEMENT SUMMARY

eThembeni Cultural Heritage was appointed by Terratest Pty Ltd. to undertake a Heritage Impact Assessment (HIA) of the proposed Mpofana Bulk Water Supply Scheme, in terms of the National Heritage Resources Act, No 25 of 1999.

The purpose of the HIA was to determine whether the proposed project would impact on any heritage resources, to fulfil the requirement of the KwaZulu-Natal Heritage Act, and to provide recommendations to mitigate any impacts.

eThembeni staff members inspected the area on 4 August 2009, and completed a controlled-exclusive surface survey, as well as a database and literature search. The findings are as follows:

- Pipeline route option 3 is preferable from a heritage perspective, since it is located in an area with similar infrastructure, with the least requirement for new supporting infrastructure, such as access roads.
- We identified no heritage resources within the areas affected by the proposed water treatment works and the seven reservoirs.
- We identified two heritage resources within the area affected by the proposed pipeline route:
 - The bridge over the Lion's River near Caversham Mill has low heritage significance at all levels for its historic and aesthetic values. It has been proposed that the Mpofana pipeline will be affixed to the bridge, which activity will require a permit from Amafa aKwaZulu-Natali. If at all feasible, we suggest that the pipeline is rerouted to avoid any direct alteration to the bridge.
 - The public participation process elicited the information that portions of the original Voortrekker trail are visible on Portion 16705 of the Farm Poynton. This heritage resource constitutes a structure older than sixty years with at least medium significance at all levels for its historic value. It is not clear whether the proposed pipeline route will affect the Voortrekker trail directly, and accurate maps of the trail's location are not readily available. Accordingly, we recommend that a heritage practitioner, preferably from Amafa aKwaZulu-Natali or the Natal Museum, should undertake a site visit and map the trail at an appropriate scale. Furthermore, the pipeline route should not affect the trail directly in any way.
- The exact pipeline route should be chosen to minimise the requirements for new infrastructure.
- A heritage practitioner should complete a 'walk-through' of the final selected pipeline route and all other activity areas (access roads, construction camps, etc.) prior to the start of any construction activities.

We recommend that the development proceed with the proposed heritage mitigation and have submitted this report to Amafa aKwaZulu-Natali in fulfilment of the requirements of the KwaZulu-Natal Heritage Act.

The client may contact Ms Wesuwe Tshabalala at Amafa's Pietermaritzburg office (Telephone 033 3946 543) in due course to enquire about the Council's decision.

If permission is granted for the development to proceed, the client is reminded that the Act requires that a developer cease all work immediately and notify Amafa aKwaZulu-Natali should any heritage resources, as defined in the Act, be discovered during the course of development activities.



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1. INTRODUCTION

eThembeni Cultural Heritage was appointed by Terratest Pty Ltd. to undertake a Heritage Impact Assessment (HIA) of the proposed Mpofana Bulk Water Supply Scheme, in terms of the National Heritage Resources Act, No 25 of 1999¹.

1.1 Terms of Reference

The Terms of Reference for the HIA was defined as follows:

Desired Outcomes

- An assessment of likely heritage, cultural or archaeological resources within the study area.
- An application to AMAFA to comply with SAHRA requirements (as stipulated in the National Heritage Resources Act of 1999).

Tasks

- This study should review existing records, studies and data on the historical, cultural and archaeological context of the study area and surrounds. The study must then provide an overview of the study area including:
 - The archaeological and palaeontological history of the area
 - Areas that could potentially contain sites of archaeological and/or palaeontological importance
 - A description of settler and indigenous history
 - Identify sites of historical importance
- Determine if the project is located on or near any sites of historical value.
- Identify and assess the potential impacts on sensitive sites using the prescribed methodology.
- The study shall provide recommendations and mitigation measures that will reduce negative impacts on the any sensitive historical or archaeological sites.

1.2 Specialist Expertise

Len van Schalkwyk is accredited by the Cultural Resources Management section of the Association of South African Professional Archaeologists to undertake heritage impact assessments in South Africa.

Mr van Schalkwyk has a master's degree in archaeology (specialising in the history of early farmers in southern Africa) from the University of Cape Town and 20 years' experience in heritage management. He has worked on projects as diverse as the establishment of the Ondini Cultural Museum in Ulundi, the cultural management of Chobe National Park in Botswana and various archaeological excavations and oral history recording projects. He was part of the writing team that produced the KwaZulu-Natal Heritage Act 1997. He has worked with many rural communities to establish integrated heritage and land use plans and speaks good Zulu.

Mr van Schalkwyk left his position as assistant director of Amafa aKwaZulu-Natali, the provincial cultural heritage authority, to start eThembeni. During the past ten years he has directed more than 500 heritage impact assessments throughout South Africa, as well as in Mozambique.

¹ The KwaZulu-Natal Heritage Act No 4 of 2008 has repealed the eponymous Act No 10 of 1997. In the absence of a heritage resources management section in the 2008 legislation, Section 38(1) of the National Heritage Resources Act No 25 of 1999 governs heritage impact assessments in KwaZulu-Natal and elsewhere in South Africa.

1.3 Legal Framework

Section 38(1) of the National Heritage Resources Act No 25 of 1999, requires an HIA in case of:

- *the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;*
- *the construction of a bridge or similar structure exceeding 50 m in length;*
- *any development or other activity which will change the character of a site—*
 - (i) exceeding 5 000 m² in extent; or*
 - (ii) involving three or more existing erven or subdivisions thereof; or*
 - (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- *the re-zoning of a site exceeding 10 000 m² in extent; or*
- *any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.*

The Act defines a heritage resource as any place or object of cultural significance i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. This includes, but is not limited to, the following wide range of places and objects:

- living heritage as defined in the National Heritage Council Act No 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);
- places, buildings, structures and equipment;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds;
- sites of significance relating to the history of slavery in South Africa;
- movable objects, but excluding any object made by a living person;
- battlefields; and
- traditional building techniques.

Furthermore, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of:

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

A 'place' is defined as:

- a site, area or region;
- a building or other structure which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure;
- a group of buildings or other structures which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures;
- an open space, including a public square, street or park; and
- in relation to the management of a place, includes the immediate surroundings of a place.

'Structures' means any building, works, device or other facility made by people and which is fixed to land, and includes any fixtures, fittings and equipment associated therewith.

'Archaeological' means –

- material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;
- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years including any area within 10 m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artifacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- features, structures and artefacts associated with military history which are older than 75 years and the sites on which they are found.

'Palaeontological' means any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.

'Grave' means a place of interment and includes the contents, headstone or other marker of and any other structures on or associated with such place. Amafa aKwaZulu-Natali and / or the South African Heritage Resources Agency will only issue a permit for the alteration of a grave if they are satisfied that every reasonable effort has been made to contact and obtain permission from the families concerned. eThembeni adheres to the following procedures:

- Notification of the impending removals (using appropriate language media and notices at the grave site);
- Consultation with individuals or communities related or known to the deceased;
- Satisfactory arrangements for the curation of human remains and / or headstones in a museum, where applicable;
- Procurement of a permit from Amafa aKwaZulu-Natali and / or the South African Heritage Resources Agency;
- Appropriate arrangements for the exhumation (preferably by a suitably trained archaeologist) and re-interment (sometimes by a registered undertaker, in a formally proclaimed cemetery);
- Observation of rituals or ceremonies required by the families.

2. NATURE OF PROPOSED ACTIVITY

Umgeni Water is proposing the development of a Bulk Water Supply Scheme to service the Mpfana and uMngeni Local Municipalities in the KwaZulu-Natal Midlands. The aim of this project is to improve the security of supply of potable water to the towns of Mooi River, Rosetta, Nottingham Road, Balgowan, Lidgetton, Lions River, Mount West and the surrounding areas.

However, before the project may commence it requires environmental authorisation from the Department of Agriculture and Environmental Affairs (DAEA) in compliance with the Environmental Impact Assessment Regulations of 2006. In order to obtain this authorisation a Full Scoping and Environmental Impact Assessment (EIA) is currently being undertaken by Terratest on behalf of Umgeni Water.

The proposed project is located in the Nottingham Road area in the KwaZulu-Natal Midlands within the uMngeni and Mpfana Local Municipalities, in the uMgungundlovu District Municipality. The Nottingham Road area has seen increased growth in the past and this is likely to continue in the foreseeable future. A major constraint in promoting economic development in the area is the shortage of a reticulated source of potable water.

In response, Umgeni Water has proposed the establishment a bulk water supply scheme to source and treat water from the proposed Spring Grove Dam. Potable water will then be piped to the towns and surrounding areas of Mooi River, Rosetta, Valekop, Nottingham Road, Lidgetton, Lions River and Mount West.

At this early planning stage this scheme will include:

1. Water Treatment Works and Pumpstation

The water treatment works and associated infrastructure is proposed to be located close to the expected Spring Grove Dam, at S29 19 15.35; E29 57 53.4. The works will have a 25 to 30 Megalitre capacity and required approximately 7 hectares of land.

2. Bulk Water Pipeline and Servitudes

Approximately 60 kilometres of pipeline will be required. This pipeline will be made of 100mm to 600mm diameter steel or PVC pipes that will be buried. A servitude of 12 metres will be required during construction but will be reduced to approximately 6 metres for operation and maintenance. Considerable planning has been undertaken in terms of the appropriate routing of the pipeline. This planning process has resulted in three possible routes (see following map) that extend from Mooi River to Lions River and with secondary branches to Vaalekop and Mount West.

3. Reservoirs

Seven reservoirs with storage capacity ranging from 1 to 22 Megalitres will be established near Spring Grove Dam, Rosetta, Mooi River, Nottingham Road, Balgowan, Lions River and Mount West. Their locations are as follows:

S30 01 12.024; E29 13 20.247
S29 18 01.36; E 29 59 54.11
S29 18 23.2; E30 04 31.54
S29 21 09.90; E30 00 24.47
S29 19 43.81; E29 55 06.17
S29 22 28.17; E30 04 46.49
S29 27 37.50; E30 09 53.29

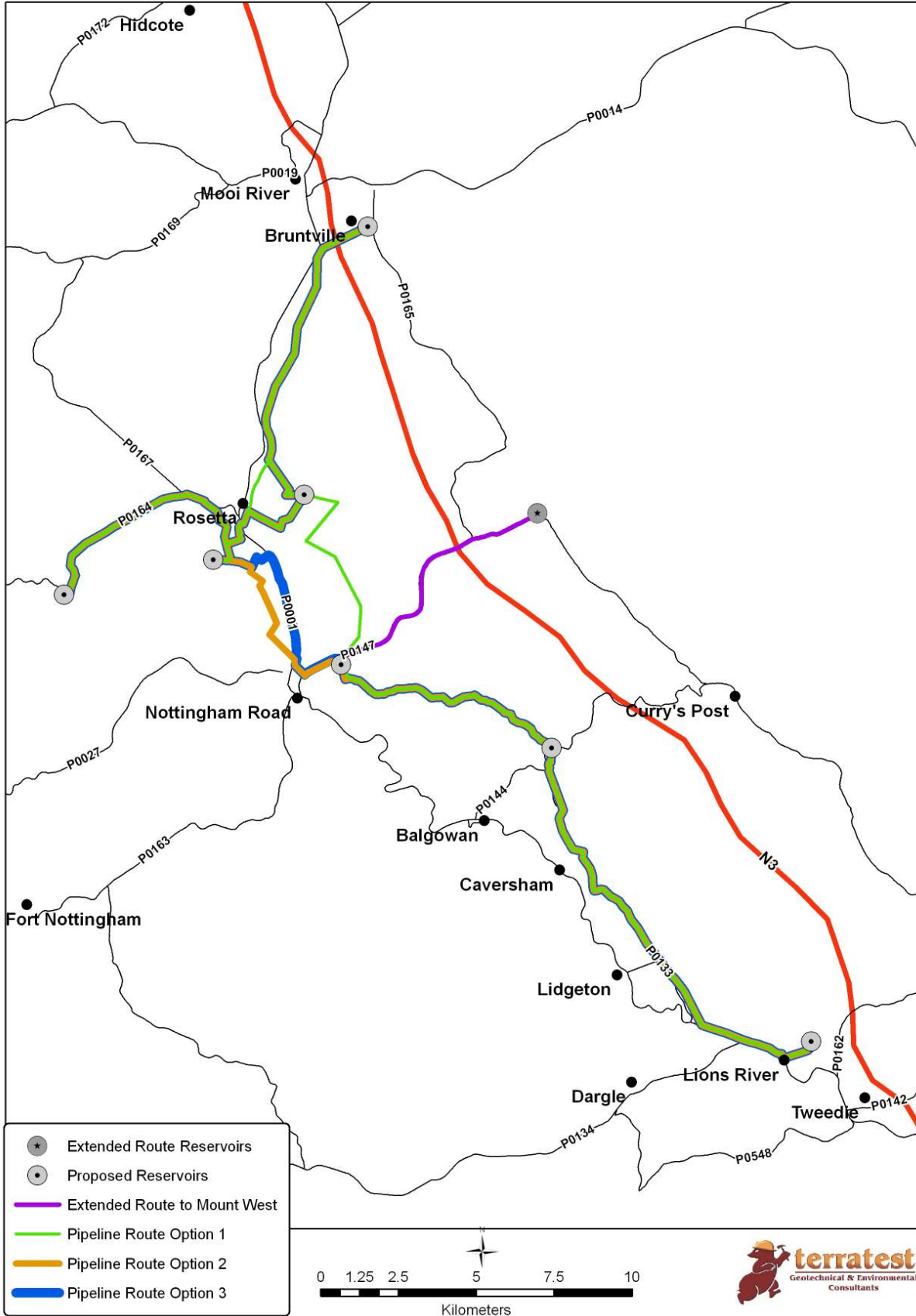


Figure 1: The proposed pipeline route alternatives

3. SITE ACCESS, DESCRIPTION & ENVIRONMENTAL ISSUES

The KwaZulu-Natal Midlands is well known for its mild climate and fertile soils that support agriculture and forestry. The landscape is dominated by rolling hills with steep ridges. A number of rivers, tributaries and drainage lines are present notably the Mooi, Mpofana, Lions and Umgeni Rivers. The local landscape also supports a range of wetlands, marshes and vleis. Local farmers have also established a number of small dams that have become important sanctuaries for local wildlife.

Four major vegetation biomes are found in the study area and include the Mooi River Highland Grassland, Midlands Mistbelt Grassland, Drakensberg Foothill Moist Grassland and Southern Mist Belt Mixed Podocarpus Forest. The Midlands Mistbelt Grassland is considered threatened and of conservation importance.

Faunal species of special concern have been identified in the area. The Wattled Crane and the White-winged fluff tail are considered endangered as well as a number of amphibians, reptiles and large mammals. The local landscape has been impacted by agriculture and natural vegetation is fragmented. There is one formal nature reserve in the area, and a number of conservancies have been declared in promoting conservation.

The Nottingham Road area is largely rural with small towns/villages servicing the local agricultural industry. Tourism has become a major activity with the development of the Midlands Meander. The rural, cultural and historical value of the area has become increasingly important in promoting tourism along side its natural and rural landscape. The Nottingham Road area is however also becoming increasingly popular in terms of housing development and has been identified by the local authorities as a potential growth area. The shortage of reliable potable water is seen as a major constraint to development in the area. The establishment of this proposed scheme will provide a catalyst for greater development and the improvement of basic services in the area.

At this early stage, some of the potential effects of the project include:

Negative Impacts

- **Soil erosion:** Although likely to be limited in extent, the required pipeline trenching may result in soil erosion notably during storm events on steep slopes.
- **Loss of natural vegetation:** Natural vegetation has been impacted by farming however some patches remain and are considered of high conservation importance. The pipeline may impact on sensitive grassland and forests.
- **Loss of fauna:** Loss of natural vegetation will result in a decrease in faunal diversity and numbers. Sensitive faunal species notably birdlife are found within the area and may be impacted during vegetation / habitat removal.
- **Wetlands, dams and rivers:** The proposed pipelines may impact on local wetlands, dams and rivers. Pipeline routes options have been planned in order to avoid, to the maximum extent possible, major wetlands, farm dams and rivers.
- **Loss of land:** The establishment of the pipelines, servitudes and reservoirs will result in a limited loss of land for alternate development. The use of servitudes for agriculture of short root crops is still permitted. A number of private and public landowners will be affected and landowners will be consulted in this regard.
- **Visual Impact:** The proposed pipeline will be buried however the reservoirs may impact on the local scenic environment. The overall visual impact will likely be limited through careful placement of structures.



Positive Benefits

- **Improvement in basic services:** Supply of water in the area is poor and unable to meet demand. The proposed activity will likely provide significant benefits in terms of a reliable and improved potable water supply.
- **Economic development:** Poor water supply is a major constraint to economic development. The introduction of the proposed scheme will promote greater investment and economic development in the area.

4. METHODOLOGY

eThembeni staff members inspected the area on 4 August 2009. We completed a controlled-exclusive surface survey of the water treatment works and reservoir locations, where ‘sufficient information exists on an area to make solid and defensible assumptions and judgements about where [heritage resource] sites may and may not be’ and ‘an inspection of the surface of the ground, wherever this surface is visible, is made, with no substantial attempt to clear brush, turf, deadfall, leaves or other material that may cover the surface and with no attempt to look beneath the surface beyond the inspection of rodent burrows, cut banks and other exposures that are observed by accident’ (King 1978²).

We examined the proposed pipeline routes primarily by vehicle, but also on foot, as accurately as possible given the maps and information available at the time of our fieldwork, with the intention of determining a preferred route.

We consulted various provincial databases, including historical, archaeological and geological sources and sourced a concise account of South Africa’s pre and postcolonial history. We assessed the value and significance of heritage resources, as defined in the National Heritage Act 1999 and the criteria contained in Appendix A. Culturally significant landscapes were assessed according to the criteria in Appendix B.

Geographic coordinates were obtained with a handheld Garmin 60 global positioning unit. Photographs were taken with a Nikon Coolpix S200 digital camera. A statement of independence and a summary of our ability to undertake this HIA are available on request.

We had to take the following factors into consideration:

- The constraints of fieldwork and a desktop study of an approximately 20 metre wide servitude over routes in excess of 70 kilometres;
- The linear nature of the project where pipeline routes and the locations of water treatment works and reservoirs can be altered (within limits) to avoid direct impacts on heritage resources;
- The greatest impact on landscapes and natural features is created by access roads and other construction and maintenance infrastructure, which alter the landscape permanently and irreversibly; and
- The locations of new access and maintenance roads, construction camps and other infrastructure associated with the project have not yet been identified and we were thus unable to inspect them.

Further assumptions and limitations of this heritage impact assessment are as follows:

- We have assumed that the description of the proposed project, provided by the client, is accurate.
- At this stage of the project the pipeline routes are identifiable only from maps, rather than precise geographic coordinates or survey points on the ground. Accordingly, we have examined the proposed pipeline route options as precisely as possible.
- We have assumed that the public consultation process undertaken as part of the Environmental Impact Assessment is sufficient and adequate and does not require repetition as part of the heritage impact assessment.
- Soil surface visibility was moderate to poor. Heritage resources might be present in densely vegetated areas and we remind the client that the Act requires that a developer cease all work immediately and notify Amafa should any heritage resources, as defined in the Act, be discovered during the course of development activities.
- No subsurface investigation (including excavations or sampling) were undertaken, since a permit from Amafa aKwaZulu-Natali or SAHRA is required to disturb a heritage resource.

² King, T. F. 1989. The archaeological survey: methods and uses. Quoted in Canter, L. W. 1996. Environmental Impact Assessment. Second Edition. New York: McGraw-Hill, Inc.

5. OBSERVATIONS AND RECOMMENDATIONS

No development activities associated with the proposed project had begun at the time of our visit, in accordance with national heritage legislation.

5.1 Historical background

The general area is one of variable heritage resource significance and the following tables provide a brief summary of archaeological time periods:

Early Stone Age	1.5 million to 180 000 years ago	Only stone artefacts remain from this time period, including large choppers, cleavers and hand axes
Middle Stone Age	180 000 to 35 000 years ago	Stone tools smaller than in ESA; include blades and flakes; human and animal remains also found
Later Stone Age	35 000 years ago to the time of European settlement	Variety of artefacts made from organic and inorganic materials; human remains, shell middens etc

Early Iron Age	400 – 500 AD	Mzonjani phase
	500 – 700 AD	Msuluzi phase
	700 – 900 AD	Ndondondwane phase
	900 – 1200 AD	Ntshekane phase
Late Iron Age	1200 – 1500 AD	Settlement by Nguni speakers
	1500 – 1700 AD	Introduction of maize
	1700 – 1850 AD	Pre-European settlement
	1850 AD to present	Historical

Stone and Iron Age and historical sites are fairly common within the study area. However, many decades of agricultural and other activities have obliterated more ephemeral traces of particularly Stone Age sites, favouring the preservation of the stone walling common to the Iron Age.

5.2 Stone Age

Early Stone Age stone scatters occur in raised beach gravels, eroded areas and ancient coastal dunes. No information is available on the foods eaten by the Early Stone Age people in Natal, but it can be assumed on the basis of evidence on Early Stone Age people elsewhere that their diet consisted primarily of animals and plant foods. It was also during this period that people learnt to control fire' (Mazel 1989: 3-53).

'Clear technological differences separate the Middle Stone Age from the Early Stone Age. Whereas Early Stone Age tools were generally core tools [choppers, handaxes, cleavers], Middle Stone Age tools were made of flakes and blades detached from the core [trapezoids, segments, scrapers, points, flakes, blades]. Handaxes and cleavers were absent...

'Relatively little is known about the particular types of food that the Middle Stone Age hunter-gatherers ate. Border Cave [situated in the Lebombo Mountains on the border between South Africa and Swaziland] is the only site from which information is at present available...Small quantities of a wide variety of animals were found in the Border Cave excavations. These included honey badger, dassie, Burchell's zebra, bushpig, warthog, hippopotamus, steenbok, oribi, mountain reedbuck, waterbuck,

³ Mazel, A. 1989. The Stone Age peoples of Natal. In Duminy, A. and Guest, B. (eds) Natal and Zululand from earliest times to 1910. A new history pp. 1-27. Pietermaritzburg: University of Natal Press.

roan / sable, impala, blesbok, hartebeest / tsessebe, blue wildebeest, springbok, greater kudu, nyala, bushbuck, eland, Cape buffalo and possibly an extinct giant Cape horse (*Equus capensis*).

'A handful of seeds was also found at Border Cave, while grindstones, which may have been used in the processing of plant foods, have been recovered from the Middle Stone Age layers at Umhlatuzana Shelter [located between Durban and Pietermaritzburg]...

'Evidence of the manufacture of cultural articles from materials other than stone first appears during the Middle Stone Age. So also does evidence concerning religious practices, the final Middle Stone Age stage at Border Cave producing the earliest known burial so far attributed to the Middle Stone Age' (Mazel 1989: 6-8).

Recent excavations at Sibhudu Shelter, a near-coastal site located between the uMvoti and uMngeni Rivers, promise to shed more light on the Middle Stone Age of KwaZulu-Natal.

Later Stone Age sites occur throughout the province, with high concentrations in places such as the uKhahlamba Mountains where rock shelters suitable for occupation are plentiful.

'Stone artefacts are overwhelmingly the most common cultural item recovered from the excavations that have been carried out, followed by pottery (belonging to the last 2 000 years), ground, polished and shaved bone, beads and ostrich eggshell... [Stone] scrapers were probably used for removing the fat from animal skins before these were pegged out to dry. Adzes were probably used for shaving wood and, to a lesser extent, bone; while backed pieces, of which there are different types, were probably employed in hunting and cutting up carcasses.

'A great deal of information about the foods Later Stone Age hunter-gatherers ate has been obtained from animal, plant and marine and freshwater shell remains. In some cases, it has been possible to identify the remains of individual species. As small animals in particular are sensitive to environmental fluctuations, these remains can also tell us much about past environments. Botanical remains are also very useful, for seeds can indicate which fruits and berries Later Stone Age people ate. And, because fruits and berries are seasonal, they can also provide information about the months during the year when sites were occupied' (Mazel 1989: 11-12).

'One of the main themes of Later Stone Age research in South Africa, including Natal, has been that of seasonality. It has been hypothesized, on the basis of the analysis of the seasonal movements of large antelope, that the food resources of southern Natal would have been exploited on a seasonal basis by hunter-gatherers. According to this hypothesis, they would have occupied the Drakensberg in summer and the Thornveld and coastal areas during winter, traversing the Midlands along ridges rather than in the valleys.

'Recent field-work based on this hypothesis has suggested that in southern Natal during the last 3 500 years, hunter-gatherers would have occupied the Drakensberg in spring and summer (October to March), the coastal zone in winter (April / May to August), and the Midlands in autumn and late winter (March / April to September). This seasonal hypothesis...has given rise to the speculation that while they were in the Drakensberg, the hunter-gatherers would have lived in large groups and would have operated from large home-base sites.

'One of the results of the formation of these larger social units could have been an increase in ritual activity. Social organisation in the Midlands, however, would have been characterized by the small mobile groups that traversed the zone, while in the coastal zones larger groups, but not as large as those in the Drakensberg, would have been found' (Mazel 1989: 17).

Very few hunter-gatherer rock painting sites are known in the KwaZulu-Natal Midlands. One such site is located within the study area and was identified during the Environmental Impact Assessment for the Mooi-Mgeni Transfer Scheme Phase 2, Spring Grove Dam and Appurtenant Works⁴. eThembeni

⁴ DWAF 2004. Department of Water Affairs and Forestry: MMTS-2 Feasibility Study: Bridging Study 4 – Identification of Historical and Cultural Sites as well as Graves that may be affected by the construction of the proposed Spring Grove Dam, Report Number 07/V/20/00/0704, November 2004.

reassessed this site and made recommendations for its management in a report to Amafa dated 21 May 2007. It will not be affected by the Mpofana Bulk Water Supply Scheme. Similarly, another hunter-gatherer rock painting site known on the farm Middlefield, west of the proposed Spring Grove Dam (see DWAF 2004), will not be affected.

5.3 Iron Age

‘The advent of the Iron Age saw not only the introduction of metallurgy. Of even greater significance was the introduction of agriculture, necessitating a settled, village way of life instead of the nomadic patterns of the Stone Age. It also provided for an appreciable increase in population density, as well as a more complex life-style. Richly decorated pottery is a hallmark of these early settlements. Domestic animals including cattle, sheep, goats and dogs were also a feature of the Iron Age, although current information indicates that they had already reached parts of South Africa, but apparently not Natal, during the Late Stone Age, through the agency of Khoisan herders...

‘,,, the earliest Iron Age sites in South Africa, including Natal, relate to an eastern coastal and lowland cultural tradition with links as far north as the Kwale sites of eastern Kenya. This tradition has been named ‘Matola’, after a site in southern Mozambique, which provided close typological links between the Natal and eastern Transvaal sites⁵. [In KwaZulu-Natal] almost all of them are on the belt of ancient dunes, which would have been covered by coastal forest at the time.

‘In the St. Lucia area especially, sites are concentrated at the inland foot of the dunes, where they meet seasonally flooded grassland. It has been argued that these sites were the first choice of immigrant farmers because they afforded some open, but not flooded, space. The sandy soils are poor and leached but the accumulated forest humus would have ensured good crops for the first year or two after they had been cleared. Apart from being attracted by this agricultural potential, the [Mzonjani] people exploited the wild plant and animal resources of the forest and adjacent sea-shore.

‘Although no direct evidence of agriculture has as yet been obtained from Natal sites, seeds of bulrush millet (a tropical African cultigen) have been recovered from [an Mzonjani] site in the Transvaal. Bulrush millet is still a favoured crop on the dunes around Kosi Bay. Evidence of domestic animals has yet to be found on any [Mzonjani] site and it seems likely that they were rare, if present at all. The forest environment would certainly have been unsuitable as pasture for domestic animals. Marine mussels may therefore have played an important part as a protein source in place of meat or milk’ (Maggs 1989: 29-316).

‘Most Early Iron Age sites in Natal are later than the [Mzonjani] period and are classified according to ceramic styles [refer to the table above]...By this time villages, often about eight hectares in size and probably containing a hundred or more people, had become common in the lower-lying and savannah areas, below an altitude of 1 000 metres. They were most common along the major rivers and in the coastal belt, where there was good, deep soil, sweet year-round grazing, and timber for building and fuel...

‘Diet was based on agriculture and pastoralism, with a little supplementary hunting, fishing and gathering of wild plants and shellfish. Crops identified from seeds include several grains (bulrush millet, finger millet and probably sorghum), and probably the African melon... Most villages had one or more iron smelting areas and therefore produced their own requirements’ (Maggs 1989: 31-32).

The beginning of the Late Iron Age marked a period of significant change in pottery styles, attributable to both socio-political and demographic factors (Maggs 1989). Settlements were no longer located in river valleys, but were built on higher ground where homesteads would benefit from cooling breezes and good views for strategic purposes.

⁵ This tradition is now known as Mzonjani in KwaZulu-Natal.

⁶ Maggs, T. 1989. The Iron Age farming communities. In Duminy, A. and Guest, B. (eds) Natal and Zululand from earliest times to 1910. A new history pp. 28-48. Pietermaritzburg: University of Natal Press.

Steep slopes, wetlands and marshy areas were used for grazing domestic animals and gathering wild food and medicinal plants. Settlements appear to have been much smaller, implying that ‘society underwent a change away from the large Early Iron Age villages and towards the individual family homesteads of the historic Nguni-speaking peoples (Maggs 1989: 35).

Artefacts on Iron Age homestead sites include ceramic sherds, upper and lower grindstones and human and animal bones. Metalworking sites are often located in areas where iron ore is available and associated debris includes furnace remains, slag, bloom and ceramic sherds.

‘The evidence or written sources [from shipwrecked Portuguese and other European mariners, who traversed lowland and coastal Natal on their way northwards to Mozambique] shows that, by the 1550s, while the coastal sourveld of Pondoland was thinly inhabited, coastal Natal from the Mtamvuna northwards was already well populated. A settlement of twenty hemispherical huts built of poles and thatch is described as being typical of the coast at that time. A later report confirms that such ‘small villages’ were the homes of kinship groups, each under the authority of a senior man. There can have been little difference between these homesteads and those of the nineteenth century in Natal and Zululand.

‘The agro-pastoral economy of the Iron Age prevailed throughout the coastal regions, with cultivation typically a combination of grains, legumes and vegetables of the pumpkin-melon family. There were three types of grains, one being sorghum and another a smaller-seeded millet, specific identification being difficult to establish from the old Portuguese documents. Vegetables included beans, African groundnuts (both legumes), gourds, watermelons and pumpkins, while sorghum was cultivated for its sweet pith as well as for its seeds...There is evidence to show that tobacco was being cultivated and smoked by 1686. Cattle, sheep and goats were seen in quantities, as were chicken from southern Natal northwards’ (Maggs 1989: 39).

Various Iron Age sites are present in the KwaZulu-Natal Midlands, including agriculturist rock paintings dating to the nineteenth century (DWAf 2004). However, the most common heritage resource dating to this time period comprises stone walling structures, including walls and livestock enclosures. Many have been destroyed by agricultural and construction activities, while the stone from others has been culled for use as a building material.

5.4 Historical period

‘Four main defensive African state clusters had emerged in eastern South Africa by the 1820s: the [Pedi](#) (led by Sekwati) in the Steelpoort valley, the Ngwane (led by [Sobhuza](#)) in the eastern [Transvaal](#), the Mokoteli (led by [Moshoeshe](#)) in the Caledon River region, and the [Zulu](#) (led by [Shaka](#)) south of the Swart-Mfolozi River. From 1824 the Zulu began to clash with Cape colonists who came to Port Natal (renamed Durban in 1835) and organized mercenary armies. Conflicts split the Zulu elite into rival factions and led to Shaka’s assassination in 1828. Shaka’s half brother [Dingane](#) became the Zulu leader, but his succession was accompanied by civil wars and by increasing interference in the Delagoa Bay trading alliances.

‘By the mid-1830s a coalition of Cape merchants had begun planning for the formal colonization of Natal, with its superb agricultural soils and temperate climate. The British left the less-desirable malaria-ridden Delagoa Bay region to the Portuguese, who traded slaves out of Lourenço Marques (now Maputo, Mozambique) for another half century.

‘A few [Boer](#) settlers had moved north of the Orange River before 1834, but after that the number increased significantly, a migration later known as the [Great Trek](#). Some Boers turned east into [Natal](#) and allied themselves with the resident British settlers. Farms developed slowly and, as had been the case in the Cape prior to the 1830s, depended on [forced labour](#).

‘The appearance of thousands of British settlers in Natal in the 1840s and ’50s meant that for the first time Africans and European settlers lived together—however uneasily—on the same land. The Boers began to carve out farms in Natal as they had done along the eastern frontier, but further slave and cattle raids on the Bhaca south of the Mzimkulu provided the pretext for British annexation of Natal in

1843. [Theophilus Shepstone](#) received an appointment in 1845 as a diplomatic agent (later secretary for native affairs), and his position served as a prototype for later native commissioners.

‘The Harding Commission (1852) set aside reserves for Africans, and [missionaries](#) and pliant chiefs were brought in to persuade Africans to work. After 1849 Africans became subject to a hut tax intended to raise revenue and drive them into labour. Roads were built, using forced labour, and Africans were obliged to pay rent on state land and European farms. To meet these burdens some African cultivators grew surplus crops to sell to the growing towns of Pietermaritzburg and Durban⁷.’

5.5 The study area

‘Mooi River ([Afrikaans](#): Mooirivier) is a small town situated 160km from the coast in [KwaZulu-Natal](#). The first European settlement in the area was at Mooi River Drift in 1852. This was formally named Weston in 1866 after the first Governor of Natal, Martin West. In 1879, an Irishman named Alexander Lawrence purchased the farm "Grantleigh" upstream from Weston, on the banks of the Mooi River. In 1884, the railway line from Durban, on the coast, to Johannesburg, in the interior, reached the area and was built across Alexander Lawrence's land. He subsequently laid out and established the village of Lawrenceville on his farm "Grantleigh" and so is known as "The Father of Mooi River". In 1921, the village was renamed Mooi River when it was declared a town.

‘In the hills of the small game park within [Treverton Preparatory School and College](#) near Mooi River there lie some trenches used in the Boer wars. From these the Boers observed English movements at Weston - their remount depot⁸. Weston Agricultural College is also located on the outskirts of the town and was established in 1914. A number of its buildings are older than sixty years and protected in terms of the KwaZulu-Natal Heritage Act.

‘The town of Balgowan in the [KwaZulu-Natal Midlands](#) is not much more than an old trading store and a train station where locally grown timber is picked up. However, nearby is [Michaelhouse](#), the [Anglican](#) boarding school for boys in the Diocese of Natal, an exclusive private boarding school. The school complex, built in the English gothic style from red [Pietermaritzburg](#) brick, includes a chapel featuring a stained glass rose window by Ervin Bossanyi⁹.’

Heritage resources typical of this time period surviving today include buildings and structures, as well as the cultural landscape in which they are situated. In some areas stone walling was constructed either by early European farmers in the valley (emulating the stone wall farm boundaries in their countries of origin, including Ireland and Scotland), or by Italian prisoners-of-war during the Second World War.

⁷<http://www.britannica.com/EBchecked/topic/555568/South-Africa/44057/Pastoralism-and-early-agriculture#tab=active~checked%2Citems~checked&title=South%20Africa%20%3A%3A%20Pastoralism%20and%20early%20agricultu re%20--%20Britannica%20Online%20Encyclopedia>. The authors of this document are Colin J. Bundy, Julian R. D. Cobbing, Martin Hall and Leonard Monteath Thompson.

⁸ <http://wikipedia.com>

⁹ <http://wikipedia.com>

5.6 Observations

We identified no heritage resources within the areas affected by the proposed water treatment works and the seven reservoirs. Photographs of a few of their locations are as follows:



Figure 2. The location of Reservoir 1 near Bruntville, Mooi River.



Figure 3. The location of reservoir 5 near Vaalekop, Rosetta



Figure 4. The location of reservoir 6 near Balgowan.



Figure 5. The location of reservoir 7 near Lions River.

We identified two heritage resources within the area affected by the proposed pipeline route.

A bridge over the Lion's River near Caversham Mill, located at S29 24 56.99; E30 05 40.88 comprises a structure older than sixty years (refer to Figure 6).



Figure 6: A Google Earth image of the bridge near Caversham Mill

The bridge has low heritage significance at all levels for its historic and aesthetic values. It has been proposed that the Mpfana pipeline will be affixed to the bridge, which activity will require a permit from Amafa aKwaZulu-Natali. If at all feasible, we suggest that the pipeline is rerouted to avoid any direct alteration to the bridge.

In addition, the public participation process elicited the information that portions of the original Voortrekker trail are visible on Portion 16705 of the Farm Poynton, belonging to Mr John Doran. This heritage resource constitutes a structure older than sixty years with at least medium significance at all levels for its historic value.

It is not clear whether the proposed pipeline route will affect the Voortrekker trail directly, and accurate maps of the trail's location are not readily available. Accordingly, we recommend the following:

- A heritage practitioner, preferably from Amafa aKwaZulu-Natali or the Natal Museum, should undertake a site visit and map the trail at an appropriate scale.
- The pipeline route should not affect the trail directly in any way.



Due to the constraints described in the methodology section above, we recommend the following:

- Pipeline route option 3 is preferable from a heritage perspective, since it is located in an area with similar infrastructure, with the least requirement for new supporting infrastructure, such as access roads. The area traversed by route option 2 north of Nottingham Road will probably require new supporting infrastructure for access and maintenance, whereas route 3 to the east continues to follow the R103 provincial road. The same argument pertains to route option 1 north of Nottingham Road.
- The exact pipeline route should be chosen to minimise the requirements for new infrastructure.

Furthermore, the following management actions should be included in the Environmental Management Plan, to ensure the effective protection of any heritage resources encountered during construction:

- An independent practitioner should undertake a complete 'walk-through' of the final pipeline route and all other activity areas (access roads, construction camps, etc.) once their precise locations have been finalised and surveys undertaken but prior to the start of any construction activities.
- Any discoveries made during construction must result in the cessation of construction while heritage resources are investigated. The ECO or contractor should immediately inform the proponent and Amafa if any heritage resources are discovered.
- An independent heritage practitioner should be contracted to advise in terms of the regulations and permits that are required in terms of any discoveries.
- There are very specific regulations regarding the procedures to be followed when graves are discovered and Amafa should be contacted immediately if graves are encountered.

6. CONCLUSIONS

We recommend that the development proceed with the proposed heritage mitigation and have submitted this report to Amafa aKwaZulu-Natali in fulfilment of the requirements of the National Heritage Act. According to Section 38(4) of the Act the report shall be considered timeously by the Council which shall, after consultation with the person proposing the development, decide –

- whether or not the development may proceed;
- any limitations or conditions are to be applied to the development;
- what general protections in terms of this Act apply, and what formal protections may be applied to such heritage resources;
- whether compensatory action shall be required in respect of any heritage resources damaged or destroyed as a result of the development; and
- whether the appointment of specialists is required as a condition of approval of the proposal.

The client may contact Ms Wesiwe Tshabalala at Amafa's Pietermaritzburg office (telephone 033 3946 543) in due course to enquire about the Council's decision



APPENDIX A: SIGNIFICANCE AND VALUE OF HERITAGE RESOURCE SITES

The following guidelines for determining site significance were developed by the South African Heritage Resources Agency in 2003. We use them in conjunction with tables of our own formulation (see that for the Southern African Iron Age, below) when considering intrinsic site significance and significance relative to development activities, as well as when recommending mitigatory action.

Type of Resource
 Place
 Structure
 Archaeological Site
 Palaeontological Site
 Geological Feature
 Grave

➤ Type of Significance

1. Historical Value

- It is important in the community, or pattern of history
 - Importance in the evolution of cultural landscapes and settlement patterns
 - Importance in exhibiting density, richness or diversity of cultural features illustrating the human occupation and evolution of the nation, Province, region or locality.
 - Importance for association with events, developments or cultural phases that have had a significant role in the human occupation and evolution of the nation, Province, region or community.
 - Importance as an example for technical, creative, design or artistic excellence, innovation or achievement in a particular period

It has strong or special association with the life or work of a person, group or organisation of importance in history

- Importance for close associations with individuals, groups or organisations whose life, works or activities have been significant within the history of the nation, Province, region or community.

- It has significance relating to the history of slavery
 - Importance for a direct link to the history of slavery in South Africa.

2. Aesthetic Value

It is important in exhibiting particular aesthetic characteristics valued by a community or cultural group

- Importance to a community for aesthetic characteristics held in high esteem or otherwise valued by the community.
- Importance for its creative, design or artistic excellence, innovation or achievement.
- Importance for its contribution to the aesthetic values of the setting demonstrated by a landmark quality or having impact on important vistas or otherwise contributing to the identified aesthetic qualities of the cultural environs or the natural landscape within which it is located.
- In the case of an historic precinct, importance for the aesthetic character created by the individual components which collectively form a significant streetscape, townscape or cultural environment.

3. Scientific Value

It has potential to yield information that will contribute to an understanding of natural or cultural heritage

- Importance for information contributing to a wider understanding of natural or cultural history by virtue of its use as a research site, teaching site, type locality, reference or benchmark site.
- Importance for information contributing to a wider understanding of the origin of the universe or of the development of the earth.
- Importance for information contributing to a wider understanding of the origin of life; the development of plant or animal species, or the biological or cultural development of hominid or human species.
- Importance for its potential to yield information contributing to a wider understanding of the history of human occupation of the nation, Province, region or locality.

It is important in demonstrating a high degree of creative or technical achievement at a particular period

- Importance for its technical innovation or achievement.



4. Social Value

It has strong or special association with a particular community or cultural group for social, cultural or spiritual reasons

- Importance as a place highly valued by a community or cultural group for reasons of social, cultural, religious, spiritual, symbolic, aesthetic or educational associations.
- Importance in contributing to a community’s sense of place.

Degrees of Significance

Rarity

It possesses uncommon, rare or endangered aspects of natural or cultural heritage

- Importance for rare, endangered or uncommon structures, landscapes or phenomena.

Representivity

It is important in demonstrating the principal characteristics of a particular class of natural or cultural places or objects

Importance in demonstrating the principal characteristics of a range of landscapes or environments, the attributes of which identify it as being characteristic of its class.

Importance in demonstrating the principal characteristics of human activities (including way of life, philosophy, custom, process, land-use, function, design or technique) in the environment of the nation, Province, region or locality.

Sphere of Significance	High Medium Low					
International	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
National				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provincial			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Regional				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Local	<input type="checkbox"/>	<input type="checkbox"/>				
Specific Community	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			-----

What other similar sites may be compared to this site?

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➤ **Southern African Iron Age**

	Significance		
	- low	- medium	- high
Unique or type site			Yes
Formal protection			Yes
Spatial patterning	?Yes	?Yes	?Yes
Degree of disturbance	75 – 100%	25 – 74%	0 – 24%
Organic remains (list types)	0 – 5 / m ²	6 – 10 / m ²	11 + / m ²
Inorganic remains (list types)	0 – 5 / m ²	6 – 10 / m ²	11 + / m ²
Ancestral graves			Present
Horizontal extent of site	< 100m ²	101 – 1000m ²	1000 + m ²
Depth of deposit	< 20cm	21 – 50cm	51 + cm
Spiritual association			Yes
Oral history association			Yes
➤ Research potential			High
➤ Educational potential			High

Please note that this table is a tool to be used by qualified heritage practitioners who are also experienced site assessors.



APPENDIX B: THE MANAGEMENT OF CULTURAL LANDSCAPES

The Cultural Landscape Foundation¹⁰ defines cultural landscapes as follows:

A cultural landscape is a geographic area that includes resources and natural resources associated with a historic event, activity, or person. Sometimes cultural landscapes are the result of one person or group of people acting upon the land. Other times they are the result of an idea one person or a group had and then created at that time. Cultural landscapes can range from thousands of acres of rural lands to a small homestead with a front yard of less than one acre. They include grand estates, farmland, public gardens and parks, college campuses, cemeteries, scenic highways and even industrial sites.

Four general types of Cultural Landscapes, not mutually exclusive, are:

- Historic Sites
- Historic Designed Landscapes
- Historic Vernacular Landscapes
- Ethnographic Landscapes

Cultural Landscapes can:

- Be man-made expressions of visual and spatial relationships.
- Serve as texts and narratives of cultures.
- Be valuable expressions of regional identity.
- Be works of art that are part of our national heritage.
- Exist in relationship to their ecological contexts.

What are cultural landscapes? by Alice E. Ingerson, Institute for Cultural Landscape Studies¹¹

Virtually all landscapes have cultural associations, because virtually all landscapes have been affected in some way by human action or perception. Therefore, the Institute for Cultural Landscape Studies does not use the phrase "cultural landscape" to mean a special type of landscape. Instead, we use "cultural landscape" to mean a way of seeing landscapes that emphasizes the interaction between human beings and nature over time. ICLS also works with many other organizations, some of which have contrasting or even conflicting definitions of "cultural landscape":

individual, special, aesthetic, collective, representative, useful, cultural, related to the arts (consciously designed objects), ideas of enduring value related to the everyday beliefs and practices of a group of people, the work of landscape architects or garden designers, scenery portrayed in a painting or photograph, or that is seen as worth painting or photographing, the land that can be seen from a single vantage point (usually larger than a "site", smaller than a "region"), "nearly everything we see when we go outdoors" — Peirce Lewis 1979

The National Park Service and the National Register of Historic Places, as well as organizations that look to these agencies for management models and standards, use the operational definition of "cultural landscape" from the 1996 Secretary of the Interior's . . . Guidelines for the Treatment of Cultural Landscapes:

¹⁰ Though professional techniques for identifying, documenting, and managing cultural landscapes have evolved rapidly in the past 30 years, the results of the professionals' work often fails to reach the general public. Consequently, many of the places in which we live, work, and play often change considerably—sometimes over years and sometimes overnight! The Cultural Landscape Foundation is the only not-for-profit foundation in America dedicated to increasing the public's awareness of the importance and irreplaceable legacy of cultural landscapes. Through education, technical assistance, and outreach, the Cultural Landscape Foundation aims to broaden the support and understanding for cultural landscapes nationwide in hopes of saving our priceless heritage for future generations. The CLF achieves this mission by: (1) heightening the awareness of those who impact cultural landscapes; (2) assisting those groups and organizations who are working to increase the appreciation and recognition of cultural landscapes; and, (3) developing educational tools for young people to better connect them to their cultural landscape environs.

¹¹ From the website of the Institute for Cultural Landscape Studies of the Arnold Arboretum (<http://www.icls.harvard.edu>), © The President and Fellows of Harvard College. The Institute for Cultural Landscape Studies was formed in 1997 to support the emerging community of professionals and volunteers who manage and interpret landscapes with a significant history of human use, particularly in the northeastern United States. These practitioners work with a wide variety of places, from historic gardens and public parks to urban streetscapes, broad agricultural or industrial regions, and conservation or ecological reserves. These landscapes are neither static nor self-contained. Managing them requires active experimentation and continuous learning, to understand how past events and decisions produced today's landscapes, and how today's decisions and events are already producing tomorrow's landscapes. The Institute for Cultural Landscape Studies worked with nonprofit organizations, public agencies, and colleges and universities to capture place-based knowledge about cultural landscapes, and to respond to emerging issues.



a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein), associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

Historic landscapes, unlike works of art, have to function as contemporary environments — we have literally to enter and become involved with them. — Catherine Howett 1987

Much public discussion about cultural landscapes is about preserving special or historic places. Yet the definition of "special" varies over time, among different cultures, and in different places. A landscape valued by one group may be simply invisible, or even offensive, to another. Next to an official historic district may be a neighbourhood that is not eligible for any special treatment but has deep meaning and associations for the people who live there. Mobile homes may be critical to a farm economy, though they jar the sensibilities of visitors expecting to see only white clapboard houses and wooded hillsides from a "scenic overlook" in a state forest. The historic district and the ordinary neighbourhood, working farms and protected forests, are all cultural landscapes.

Even when landscape preservation standards are broadened to include a wide range of landscape types, strict preservation is not always an appropriate stance. Designers and communities may also choose to transform existing landscapes or create new ones. Managing cultural landscapes thus involves planning for positive change as well as preventing negative change.