

**Phase 1 Archaeological Impact Assessment of a
proposed new water pipeline between the Meulspruit
Dam and Ficksburg, Free State Province.**

Report prepared for
NSVT Environmental Consultants

by
L Rossouw
Archaeological Impacts Unit
National Museum
PO Box 266
Bloemfontein
9300

Executive Summary

At the request of NSVT Environmental Consultants, a Phase 1 Archaeological Impact Assessment was carried out for a proposed new 8km long water pipeline between the Meulspruit Dam and the water treatment works in Ficksburg, Free State Province. Divided into three sections for the purposes of the report Footprint A - B is considered to be of low archaeological significance. Potential impact on vertebrate fossil resources within the Quaternary alluvial overburden along the Meulspruit is considered unlikely. It is advised that the circular brick-built structure at the historical Anna Maria Mill site is strictly avoided during the construction phase of this section. The section is assigned the rating of Generally Protected C (GP.C). Footprint B – C is located on degraded terrain formerly altered by road construction activities and is considered to be of low archaeological significance. Potential impact on Quaternary vertebrate fossil resources within the superficial overburden is considered unlikely. The section is assigned the rating of Generally Protected C (GP.C). Footprint C – D is located on degraded terrain in a built-up area, and on land formerly altered by road construction activities and is considered to be of low archaeological significance. Potential impact on Quaternary vertebrate fossil resources within the superficial overburden is considered unlikely. The section is assigned the rating of Generally Protected C (GP.C). Declared heritage sites in Ficksburg, including the 130 year old house at 81 McCabe Street, the Town Hall and General Fick Museum on Old Market Square, the Nederduitse Gereformeerde Mother Church in Voortrekker Street and the Old Prison Cells on Brand Street will not be impacted by the proposed development.

Table of Contents

Executive Summary	2
Introduction.....	4
Methodology	4
Description of the Affected Area.....	5
Locality data.....	5
Geology.....	6
Background.....	6
Field Assessment	9
Impact Statement and Recommendation	9
References.....	10
Tables and Figures	12

Introduction

At the request of NSVT Environmental Consultants, a Phase 1 Archaeological Impact Assessment was carried out for a proposed new 8km long water pipeline between the Meulspruit Dam and the water treatment works in Ficksburg, Free State Province (**Fig. 1**). The National Heritage Resources (NHR) Act (Act No 25 of 1999) identifies what is defined as a heritage resource, the criteria for establishing its significance and lists specific activities for which a heritage specialist study may be required. In this regard, categories of development listed in Section 38 (1) of the NHR Act are:

- The construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- The construction of a bridge or similar structure exceeding 50m in length;
- Any development or other activity which will change the character of the site;
- Exceeding 5000 m² in extent;
- Involving three or more existing erven or subdivisions thereof;
- Involving three or more subdivisions thereof which have been consolidated within the past five years;
- Costs of which will exceed a sum set in terms of regulations by the South African Heritage Resources Agency (SAHRA).
- The rezoning of a site exceeding 10 000 m².
- Any other category of development provided for in regulations by the South African Heritage Resources Agency (SAHRA).

The significance or sensitivity of heritage resources within a particular area or region can inform the EIA process on potential impacts and whether or not the expertise of a heritage specialist is required. A range of contexts can be identified which typically have high or potential cultural significance and which would require some form of heritage specialist involvement (**Table 1**). This may include formally protected heritage sites or unprotected, but potentially significant sites or landscapes (**Table 2**).

Methodology

The archaeological significance of the affected area was evaluated through a desktop study and carried out on the basis of existing field data, database information and

published literature. This was followed by a field assessment by means of a pedestrian survey. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes. Relevant archaeological information, aerial photographs and site records were consulted and integrated with data acquired during the on-site inspection.

The task also involved identification and assessment of possible archaeological heritage within the proposed project area, in accordance with section 9(8) and appendix 6 (“Specialist reports”) of the NEMA EIA Regulations, 2014 , whereby the specialist report takes into account the following terms of reference:

- Identify and map possible archaeological sites and occurrences using available resources.
- Determine and assess the potential impacts of the proposed development on potential archaeological resources;
- Recommend mitigation measures to minimize potential impacts associated with the proposed development.

The study area is rated according to field rating categories as prescribed by SAHRA (**Table 3**) as well as a probability of impact methodology for assessing the Duration (time scale), Extent (spatial scale), and Irreplaceable loss of resources, Reversibility of the potential impacts and the Probability of occurrence of potential impacts (**Table 4**).

Description of the Affected Area

Locality data

1 : 50 000 scale topographic map: 2827 DD Ficksburg associated

Pipeline coordinates (**Fig. 1**):

- A) 28°52'51.82"S 27°50'6.52"E
- B) 28°53'34.52"S 27°50'47.25"E
- C) 28°52'51.90"S 27°52'33.77"E
- D) 28°52'42.06"S 27°53'31.79"E

The town of Ficksburg is situated between the foot of the Mpharane Mountain and the Caledon River (**Fig. 1**). The proposed pipeline will run from the Meulspruit Dam,

situated on the southwestern flank of the Mpherane Mountain, to the water treatment works located next to the Caledon River on the eastern outskirts of the town.

Geology

The footprint is underlain by the upper Triassic to lower Jurassic Elliot Formation that made up of siltstones and mudstones and fine grained sandstones with a high potential for fossils of the Massospondylus and Euskelosaurus Range Zones that could be characterised as rare but highly significant. Damage to or loss of these fossils resulting from excavations into sedimentary bedrock will be considered as highly detrimental. However, given the nature of fossil distribution within the sedimentary rocks, it is not possible to exactly predict the buried fossil content of an area other than in general terms unless fresh exposures indicate otherwise. Also, in most cases, sampling of fossils for the purpose of palaeontological mitigation cannot usually be conducted prior to the commencement of construction / excavation activities. The exposure and subsequent reporting of fossils to the relevant heritage authorities for excavation and recording is therefore considered a positive palaeontological impact.

Background

The archaeological footprint in the area are primarily represented by Stone Age archaeological localities, rock art sites and an extensive footprint related to the distribution of Iron Age settlements and early history of Sotho-speaking communities in the Caledon Valley. A transitional Middle/Later Stone Age buried sequence on the farm Sunnyside 1425, located about eight kilometers southeast of Clarens, yielded a date of around 30 ka obtained by optically stimulated luminescence. Alluvial and swamp deposits from several sites in the region have previously also provided evidence about the Late Quaternary history of the region. Previously recorded Stone Age sites in the region are found at Bokpoort, Orange Springs Fort Savange, Leliehoek and Rose Cottage Cave. In addition to Later Stone Age levels with European and Iron Age artifacts, Rose Cottage Cave also has a long cultural sequence incorporating several MSA and LSA industries ranging from ca. 70 ka to around 10 ka ago. Rock shelters associated with more recent hunter – gatherer activities are found at Rooikrans, Mauermanshoek, Westbury and Tienfontein. Historical accounts of the middle Caledon Valley indicate that hunter-gatherers survived as communities until the end of the Basuto Wars and the establishment of European farms in 1869.

Stow (1905) records traditions about the last "Bushmen" inhabitants of the Korannaberg (Mequatling) and the Platberg situated about 4 km south of Ladybrand. A number of Iron Age settlements, which resemble Maggs's Type V settlement pattern in many aspects of their material culture, are found in the Caledon Valley. They appear to date from the seventeenth century. According to historical accounts, the southward migration of early Sotho-speaking communities led to at least one group reaching the Caledon Valley about the mid-seventeenth century and occupying most of the upper and middle parts of the valley by 1800 AD. A major event to take place among the indigenous tribes of the interior highveld of South Africa before the coming of European settlers was the Difaqane raids and wars. Precipitated by the rise of Shaka's Zulu empire among the coastal Nguni-speaking peoples, it resulted in the creation of large-scale refugee communities that were continued and extended over the whole interior by resident Southern Sotho-speaking peoples who could not resist the advanced military and political system of the Nguni invaders, but rather led to the segmentation of the Southern Sotho into numerous antagonistic communities scattered along the Caledon River Valley. Invading groups (aTlokwa) occupied and ruled the Golden Gate region during the 1830's after their chief Sekonyela established his first permanent capital (Marabeng) in the Ficksburg district. Another group was the Leghoya who in 1810 or 1812, were finally conquered and completely absorbed by the Taung under their chief, Moletsane, with whom they settled at Mequatling, to the west of Ladybrand, in 1837. Although the Leghoya were subjects of Moletsane they lived as separate pockets among the Taung and actually retained their own chief. In 1869, by the Treaty of Aliwal North, Moletsane's territory, which had previously been part of Basutoland, was ceded to the Orange Free State, and Moletsane with his Taung and Leghoya followers moved into south Basutoland, between Mafeteng and Mohale's Hoek, where he was granted land by Moshesh.

The first Europeans to settle in the Ficksburg area were Reverend James Allison and his wife. He established the Imperani Wesleyan mission station in 1834. The mission station was apparently situated on the northeastern flank of Imperani (Mpherane) Mountain. The missionary operated amongst the local tribes under the chieftainship of Sekonyela whose stronghold, Marabeng, was situated to the east of Imperani. A few years after the established of the mission station, a small group of Piet Retief's Trek party came to the area and in December 1837 they made camp about a mile from Imperani. They met with Sekonyela en Reverend Allison and spent the night at the

mission station. Several farmers who partook in the Great Trek eventually settled in the area. Conflict broke out between the white settlers and the Basotho under the leadership of Moshoeshoe during the 1850 which eventually led to three Basotho wars with the second one ending in 1866. In 1867 the Free State government decided to establish three towns in newly conquered territory in order to maintain control. These towns were Ficksburg, Ladybrand and Wepener. Ficksburg was named after General J.I.J. Fick, commandant general of the Free State forces. The layout of the town was interrupted by the third Basuto war in 1867, but it continued after the war. By May 1870, as many as 10 stands had crops planted, 6 houses were already completed while 4 houses were in the process of being constructed. In the same year approval was given for the construction of two corn mills, while the construction of a third corn mill was awarded to Charles Liversage in 1872 (**Fig. 2**).

William Corner describes in his diary of the Anglo-Boer War the activities of the 34th Company Imperial Yeomanry in and around Ficksburg during the 1900s (Corner 1902). In an illustration made by Corner the location of some of these British camps can be seen **Figure 3** with the location of Mitchell's Victoria mills indicated as well. Corner describes the mills as follow: "The main mill is a four-storey, well-built, dressed stone building. The machinery is English, modern, and I should judge first-class, all very clean, orderly and neat. There was a dynamo for electric lighting." "The mills are the property of Mr. Mitchell, a man of some wealth in Ficksburg. The upper mill is managed by Mr. Challis, and the lower by his son-in-law." Corner (1902) also describes the town as follows: "Firs, willows, poplars, gums, and eucalyptus, peach orchards, thick hedges of quince and other fruit trees are the principal trees in and immediately around the town – all have been planted within the last twenty-five or thirty years. The houses are scattered, and the streets laid out in regular blocks on the slope which runs back from the Caledon riverbank to the foot of the precipitous heights of the great Imperani Berg.

Some other important milestones in the developed of the town include:

- The first Anglican congregation was founded in 1871 and the first Methodist congregation in 1888.
- The corner stone of the first Dutch Reformed Church was laid on 2 June 1872. A new church building was opened in 1907.
- The first library was opened in 1892.

- The first hospital was officially opened in 1933.

Field Assessment

Starting at the Meulspruit Dam (**Fig. 4, no. 1 & 2 and Fig. 6 - 7**), the pipeline footprint flanks an existing pipeline next to the Meulspruit and traverses overbank sediments going underneath a railway bridge (**Fig. 4, no. 3 and Fig. 8**) from where it runs adjacent to an existing gravel road that lies parallel to the northern bank of the spruit. The structural remains (GPS coordinates 28°53'9.29"S 27°50'2.55"E) of what appears to be the historical Victoria Mill (**Fig. 4, no. 4 and Fig. 9**) and a large circular brick-built structure (GPS coordinates 28°53'8.10"S 27°50'11.77"E) linked to the Anna Maria Mill site (**Fig. 4, no. 5 and Fig. 10**) are respectively located on the northern and southern banks of the of the spruit. The pipeline will run along a degraded area between the existing gravel road and the Anna Maria Mill site. Well-developed erosional gullies are present within overbank sediments of the spruit (**Fig. 4, no. 6 and Fig. 11**). Investigation of the dongas showed no evidence of intact Quaternary palaeontological or Stone Age archaeological exposures in the vicinity of the pipeline footprint along this section. The footprint flanks a gravel road that follows the R26 provincial road (**Fig. 5, no. 7 and Fig. 12**) and then continues eastwards along the road reserve through the Meqheleng township to the water treatment works in Ficksburg (**Fig. 5, no. 8 and Fig. 13**). The footprint along this section is located on degraded terrain in a built-up area, and on land formerly altered by road construction activities. No aboveground evidence was found of *in situ* Stone Age archaeological material, rock art, prehistoric structures, graves or historically significant structures older than 60 years along this section.

Impact Statement and Recommendation

Footprint A - B (see **Fig. 1B**) is considered to be of low archaeological significance. Potential impact on vertebrate fossil resources within the Quaternary alluvial overburden along the Meulspruit is considered unlikely. It is advised that the circular brick-built structure at the Anna Maria Mill site is strictly avoided during the construction phase of this section. The section is assigned the rating of Generally Protected C (GP.C).

Footprint B – C (see **Fig. 1B**) is considered to be of low archaeological significance. Potential impact on Quaternary vertebrate fossil resources within the superficial overburden is considered unlikely. The section is assigned the rating of Generally Protected C (GP.C).

Footprint C – D (see **Fig. 1B**) is considered to be of low archaeological significance. Declared heritage sites like the house at 81 McCabe Street, erected in 1885, the Town Hall and General Fick Museum on Old Market Square the Nederduitse Gereformeerde Mother Church in Voortrekker Street and the Old Prison Cells on Brand Street will not be impacted by the proposed development (see **Fig. 4**). Potential impact on Quaternary vertebrate fossil resources within the superficial overburden is considered unlikely. The section is assigned the rating of Generally Protected C (GP.C).

References

- Cochrane, G.W.G. 2008. A Comparison of Middle Stone Age and Later Stone Age Blades from South Africa. *Journal of Field Archaeology* 33 (4) 429-448.
- Corner, W. 1902. *The story of the 34th Company (Middlesex) Imperial Yeomanry from the point of view of Private No. 6243*. London: T. Fisher Unwin.
- Grab, S., Scott, L., Rossouw, L. and Meyer, S. Holocene palaeoenvironments inferred from a sedimentary sequence in the Tsoiang River Basin, western Lesotho. *Catena* 61: 49 – 62.
- Henderson, Z., Scott, L., Rossouw, L. and Jacobs, Z. 2006. Dating, palaeoenvironments and archaeology: a progress report on the Sunnyside 1 site, Clarens, South Africa. *Archaeological Papers of the American Anthropological Association* 16: 139 – 149.
- Humphreys, A.J.B. 1991. On the Distribution and Dating of Bifacial Tanged and Barbed Arrowheads in the Interior of South Africa. *South African Archaeological Bulletin* 46 (153)
- Lye, W.F. 1967. The Difiqane: The Mfecane in the Southern Sotho Area, 1822 – 1824. *Journal of African History* 8 (1): 107-131.
- Maggs, T O’C 1976. Iron Age Patterns and Sotho History on the Southern Highveld, South Africa. *World Archaeology* 7(3): 318-332.
- Stow, G.W. 1905. *The Native Races of South Africa*. London.

Thorp, C. and De Ruiter, D. 1997. Evidence for Interaction from Recent Hunter-Gatherer Sites in the Caledon Valley. *African Archaeological Review* 14 (4): 231-256.

Van Riet Lowe, C. 1947. More Neolithic elements from South Africa. *South African Archaeological Bulletin* 2:90-96.

Wadley, L. 1992. Rose Cottage Cave: The Later Stone Age levels with European and Iron Age artefacts. *South African Archaeological Bulletin* 47:8-12.

Walton, J. 1965. Early Ghoya settlement in the Orange Free State. *Researches of the National Museum*, Bloemfontein Memoir 2.

Van Rhijn, P.H. & Klopper, A.H. 1967. *Die geskiedenis van Ficksburg 1867-1967*. Senekal: Oranje Drukkery Bpk.

Chief Surveyor General: <http://csg.dla.gov.za/>

- Map for Ficksburg no. 75. Document no. 2343/1878.
- Map of pipeline. Document no. 2289/1909.
- Map of Anna Maria Mill "A". Document no. 992/1931.
- Portion of Ficksburg no. 75. Document no. 993/1931

Tables and Figures

Table 1: Relationship between different heritage contexts, heritage resources likely to occur within these contexts, and likely sources of heritage impacts in the central interior of South Africa.

Heritage Context	Heritage Resources	Impact
Palaeontology	Palaeozoic and Mesozoic fossil remains, e.g. Karoo Supergroup Neogene regolith	Road cuttings Quarry excavation Bridge and pipeline construction (Quaternary alluvial deposits)
Archaeology Early Stone Age Middle Stone Age LSA - Herder Historical	Types of sites that could occur in the Free State include: Localized Stone Age sites containing artifacts, animal and human remains found near <i>inter alia</i> the following: River courses/springs Stone tool making sites Cave sites and rock shelters Freshwater shell middens Ancient, kraals and stonewalled complexes Abandoned areas of past human settlement Burials over 100 years old Historical dumps Structural remains Objects including industrial machinery and aircraft	Subsurface excavations including ground levelling, landscaping, foundation preparation, road building, bridge building, pipeline construction, construction of electrical infrastructure and alternative energy facilities, township development.
History	Historical townscapes Historical structures, i.e. older than 60 years Historical burial sites Places associated with social identity/displacement, e.g. Witsieshoek Cave Historical mission settlements, e.g. Bethulie, Beersheba	Demolition or alteration work. New development.
Natural Landscapes	Formally proclaimed nature reserves Evidence of pre-colonial occupation Scenic resources, e.g. view corridors, viewing sites, Historical structures/settlements older than 60 years Geological sites of cultural significance.	Demolition or alteration work. New development.
Relic Landscape Context	Battle and military sites, e.g. Magersfontein Precolonial settlement and burial sites Historical graves (marked or unmarked, known or unknown) Human remains (older than 100 years) Associated burial goods (older than 100 years) Burial architecture (older than 60 years)	Demolition or alteration work. New development.

Table 2. Examples of heritage resources located in the Free State Province.

Historically, archaeologically and palaeontologically significant heritage sites & landscapes	Examples
Landscapes with unique geological or palaeontological history	Karoo Basin Beaufort Group sedimentary strata Vredefort Dome World Heritage Site.
Landscapes characterised by certain geomorphological attributes where a range of archaeological and palaeontological sites could be located.	Vaal, Modder and Riet River valleys Pans, pandunes and natural springs of the Free State panveld.
Relic landscapes with evidence of past, now discontinued human activities	Cave sites in the Maluti Drakensberg region Southern Highveld pre-colonial settlement complexes.
Landscapes containing concentrations of historical structures.	Concentration camps & cemeteries from the South African War.
Historical towns, historically significant farmsteads, settlements & routes	Batho historical township area in Mangaung (Bloemfontein).
Battlefield Sites, burial grounds and grave sites older than 60 years.	Sannaspos

Table 3. Field rating categories as prescribed by SAHRA.

Field Rating	Grade	Significance	Mitigation
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

Table 4. Summary of potential Heritage Impact at the site before and after the Phase 1 Impact Assessment.

Development	Duration of Impact	Extent of Impact	Irreplaceability of heritage	Reversibility of impact	Probability of Archaeological Impact	Mitigation required
Before site visit						
Section A-B	Permanent	Local	High	Irreversible	High	Phase 1 assessment
Section B-C	Permanent	Local	High	Irreversible	High	Phase 1 assessment
Section C-D	Permanent	Local	High	Irreversible	High	Phase 1 assessment
After site visit						
Section A-B	Permanent	Local	High	Irreversible	Low (degraded terrain)	Avoidance of structural remains at Anna Maria Mill site
Section B-C	Permanent	Local	High	Irreversible	Low (degraded terrain)	None
Section C-D	Permanent	Local	High	Irreversible	Low (degraded terrain)	None

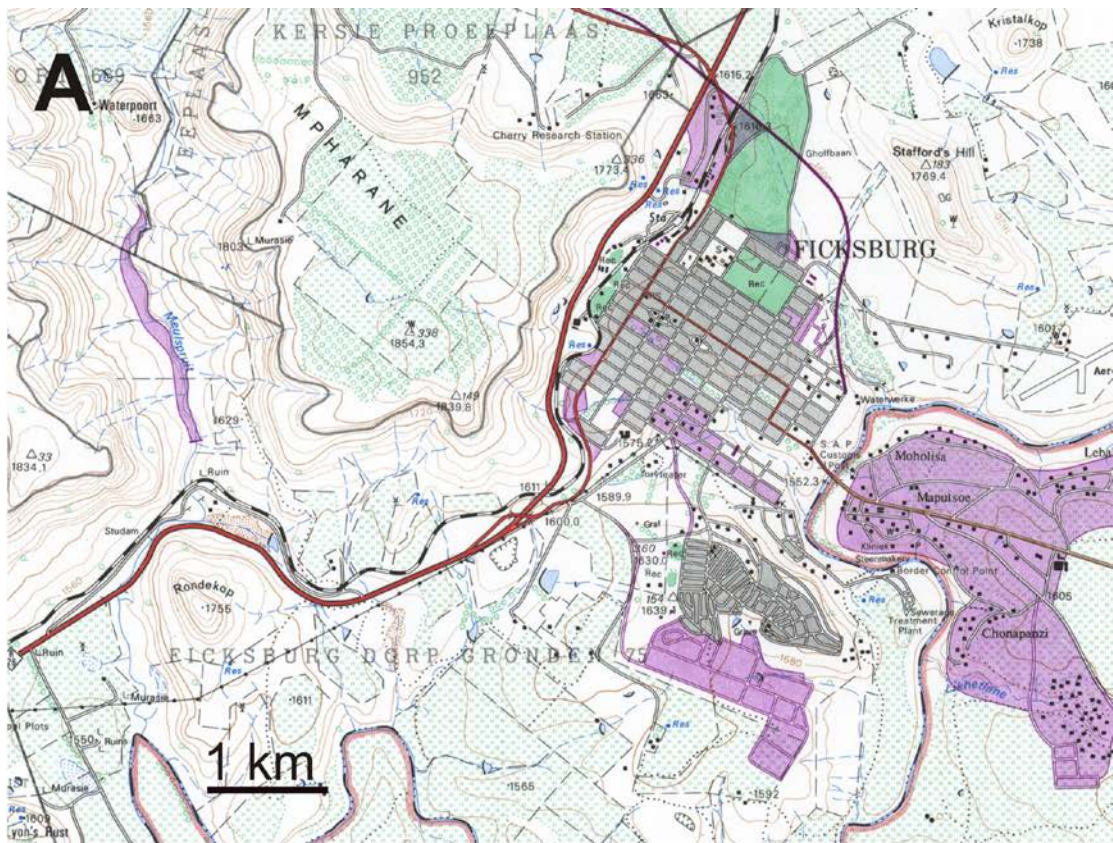


Figure 1. A) Map of Ficksburg (portion of 1:50 000 scale topographic map 2827 DD Ficksburg) and B) aerial view of the proposed pipeline route located between the Meulspruit Dam and Ficksburg (red line).

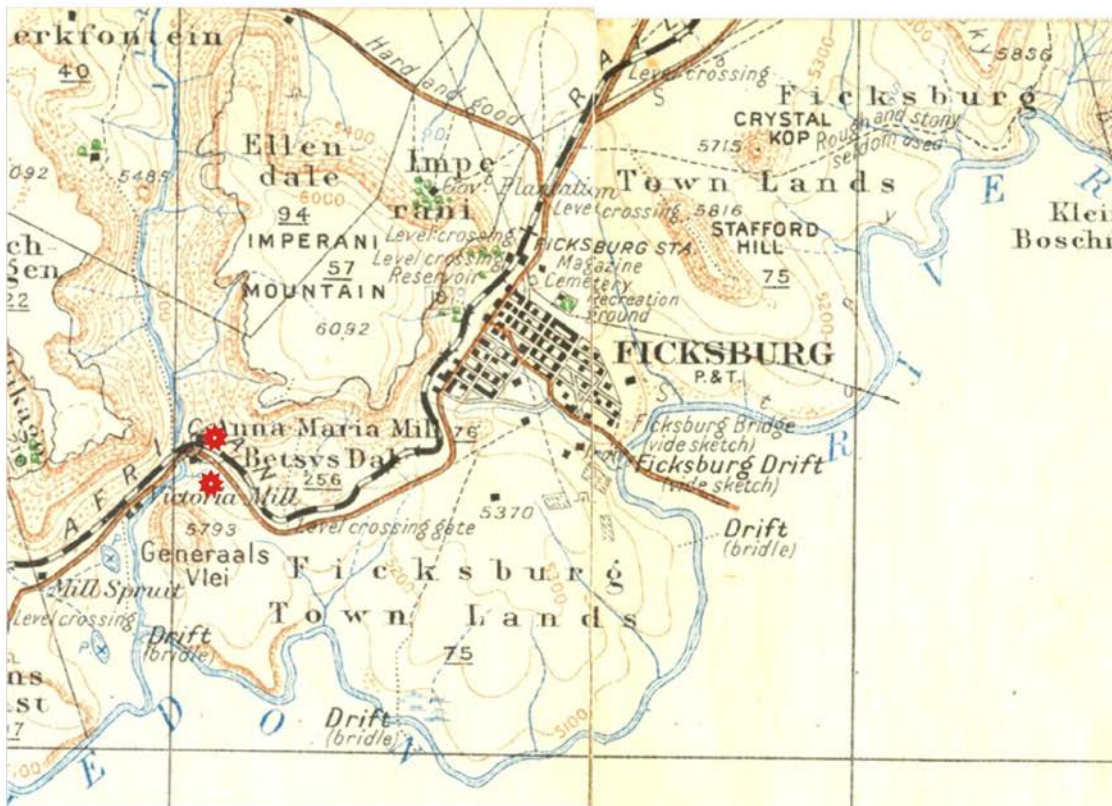
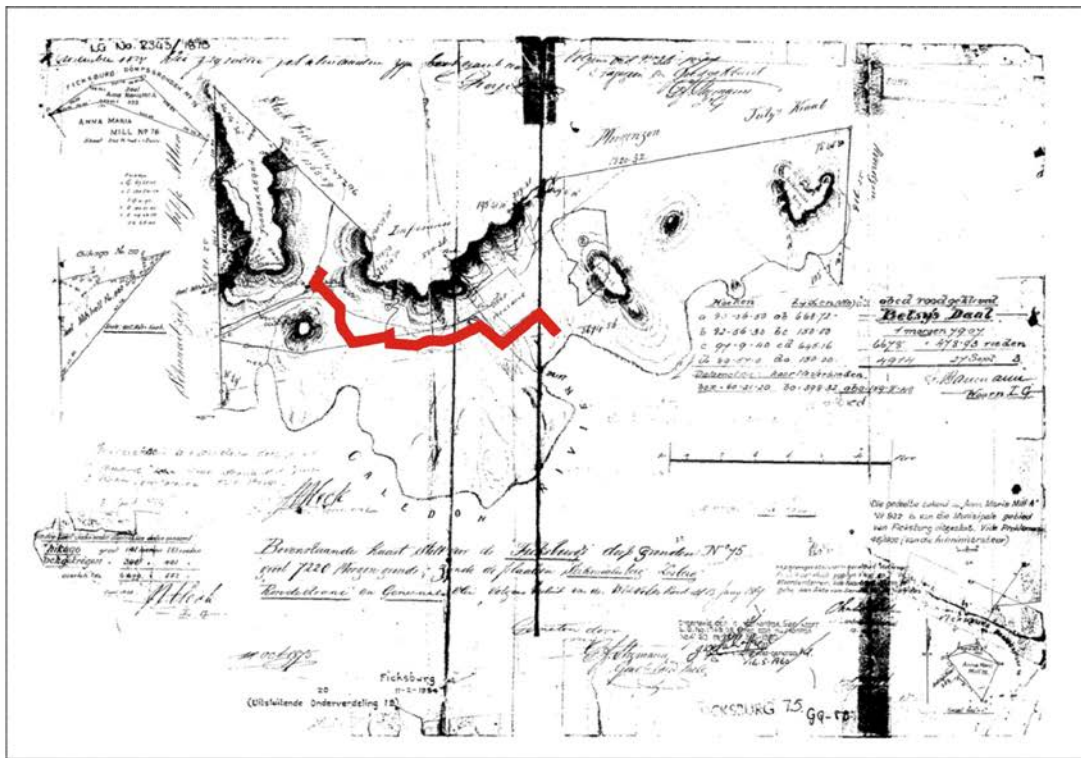


Figure 2. Map of Ficksburg, no. 75, dated 1878 (top). The location of the Victoria and Anna Maria mills are indicated on a map of Ficksburg dated ca. 1920 (bottom).

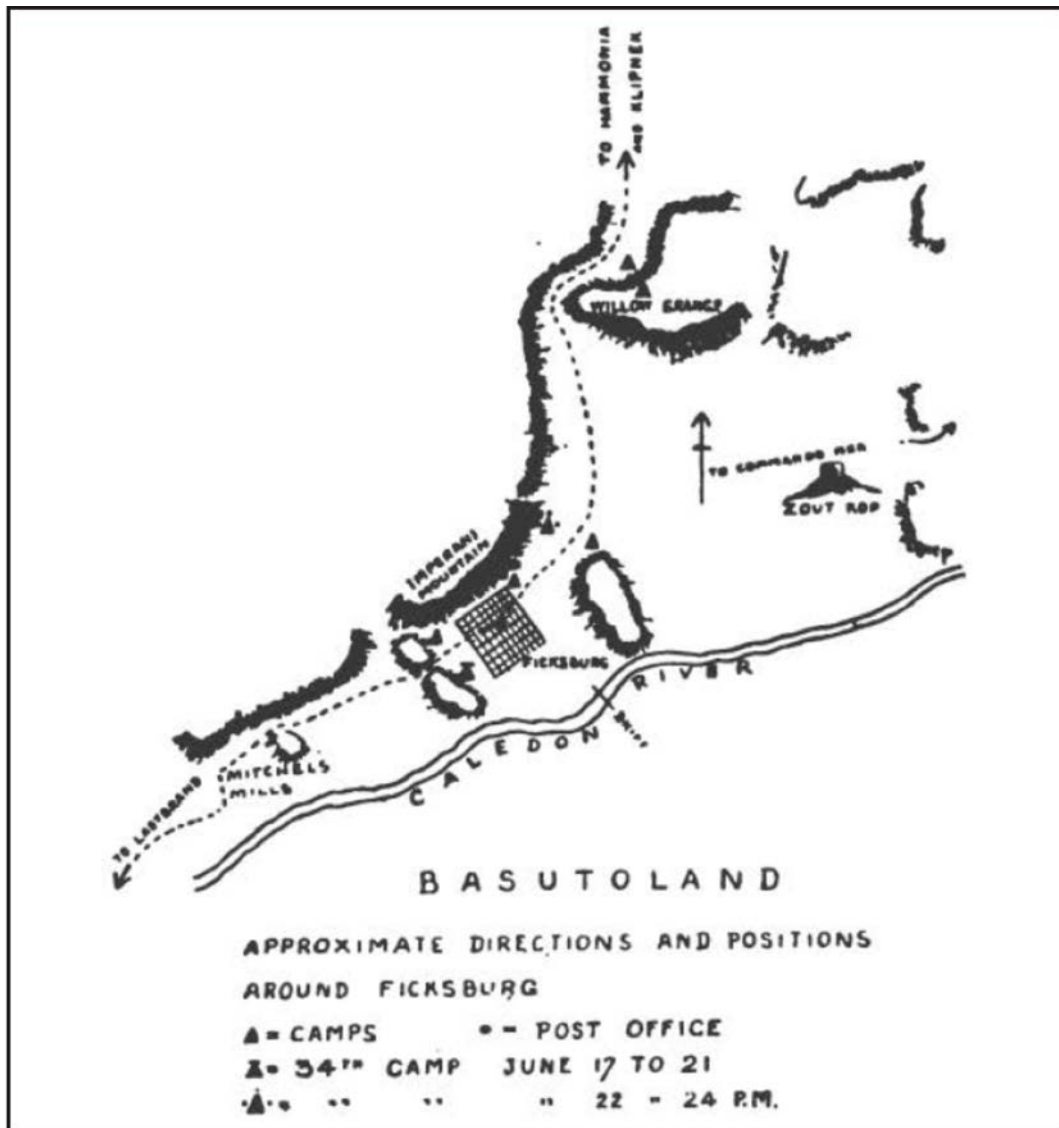


Figure 3. A rough sketch of the Ficksburg area ca. 1902 (after Corner 1902).



Figure 4. Aerial view of pipeline section south of the Meulspruit Dam.



Figure 5. Aerial view of the pipeline section running south of Mpharane Mountain (top & middle) and the section going through the town ending at the Caledon River (bottom).



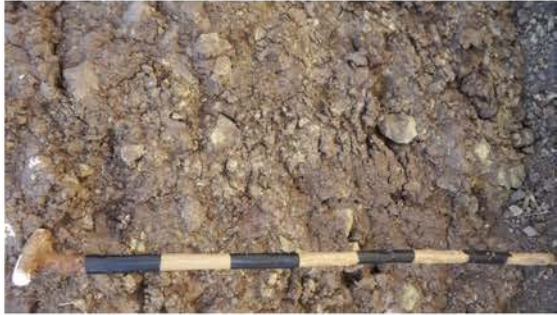


Figure 6. Start of the pipeline route at the Meulspruit Dam, looking northeast (top) and south towards open trenches (bottom left & right) exposing a well-developed superficial overburden (colluvium). Scale 1 = 10 cm).



Figure 7. Pipeline section south of the Meulspruit Dam flanking the spruit, looking southeast (top) and northwest (bottom).



Figure 8. Pipeline section at the railway bridge that crosses the Meulspruit south of the dam.

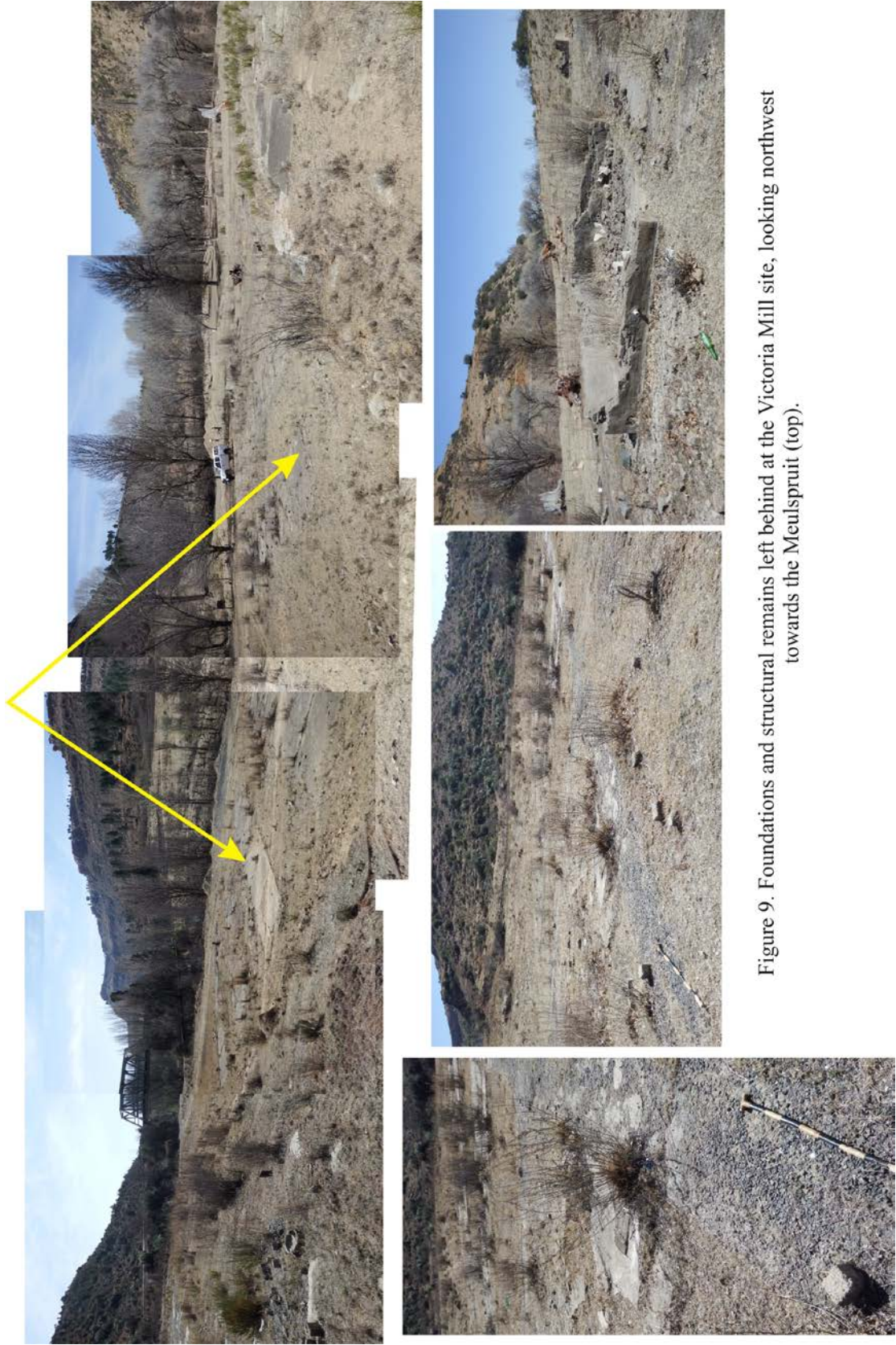


Figure 9. Foundations and structural remains left behind at the Victoria Mill site, looking northwest towards the Meulspruit (top).



Figure 10. Circular structure possibly linked to the Anna Maria Mill site located on the northern bank of the Meulspruit. Scale 1 = 10 cm.



Figure 11. Pipeline section running south of the mountain and east in the direction of Ficksburg (top). This section is characterized by extensive erosional gullies (dongas) flanking the spruit.



Figure 12. View of the pipeline section where it crosses the R26 road going east-northeast towards Fiksburg.



Figure 13. The pipeline footprint traversing residential areas in Ficksburg, terminating at the water treatment works at the Caledon River (bottom).