

**LATE 19TH-CENTURY RAILROAD WORKCAMPS  
ASSOCIATED WITH THE NZASM OOSTERLIJN:  
AN ARCHAEOLOGICAL SURVEY**

By

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Submitted in accordance with the  
requirements for the degree of

**MASTER OF ARTS**

In the subject

**ARCHAEOLOGY**

At the

**UNIVERSITY OF SOUTH AFRICA**

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**JANUARY 2021**

## DECLARATION

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### LATE 19TH-CENTURY RAILROAD WORKCAMP ASSOCIATED WITH THE NZASM OOSTERLIJN: AN ARCHAEOLOGICAL SURVEY

I declare that the above dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.

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I further declare that I have not previously submitted this work, or part of it, for examination at Unisa for another qualification or at any other higher education institution.



2021-01-05

## ABSTRACT

A significant economic and political endeavour of the *Zuid-Afrikaansche Republiek* (ZAR) was the construction of the *Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij* (NZASM) *Oosterlijn* – or Delagoa Bay-Pretoria railway line – over the period 1889–1895. The line provided the goldfields of the Witwatersrand with access to a harbour without traversing British territory. Following global trends in Industrial and Historical Archaeology, industrial-centred interpretations of railway history were re-scaled to be more inclusive of the social aspects associated with railway construction. Utilising a multifaceted approach inclusive of historical photographs, as well as an extensive purposive archaeological field survey, three workcamps along the NZASM *Oosterlijn* were identified. Camp layouts were mapped and analysed to gain an understanding of the manifestation of the 19th-century railway labourers' agency and socio-cultural power relations within the workcamps. The intra-site, site, and inter-site comparisons of camps on local and global scales established a platform from which to approach more complex research themes surrounding South Africa's railway labour history.

**Keywords:** *Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM); Zuid-Afrikaansche Republiek (ZAR); Oosterlijn; Eastern Line; Railway History; Railway Archaeology; Industrial Archaeology; Construction Workcamps; Invisible Workers; Labour; Power; Agency.*

## OKUCASHUNIWE

NGASEKUPHELENI KONGOKWEKHULU LE-19 ULOLIWE WAMAKAMU OKUSEBENZA  
OHLANGISWE NE-NZASM OOSTERLIJN: UCWANINGO LWESAYENSI YEMVUBUKULO

Umzamo obalulekile kwezomnotho nakwezombusazwe weRiphabhuliki yaseNingizimu (ZAR) wukwaxhiwa kololiwe wase*Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM) Oosterlijn* - noma *iDelagoa Bay-Pretoria* - phakathi nenkathi ka-1889-1895. Ulayini unikeze izinkundla zegolide e*Witwatersrand* ukufinyelela echwebeni ngaphandle kokuwela indawo yaseBrithani. Ukulandela izitayela zomhlaba wonke ezimbonini nasemlandweni wemivubukulo, ukuhumusha okugxile ezimbonini zomlando kaloliwe kwaphinde kwanyuswa ukuze kufakwe kakhulu izici zenhlalo ezihambisana nokwaxhiwa kaloliwe. Kusetshenziswa indlela enezici ezahlukahlukene ezibandakanya izithombe zomlando, kanye nenhlolovo ebanzi yezinkundla zemvubukulo, kwakhonjwa amakamu okusebenza amathathu eceleni kwe-NZASM *Oosterlijn*. Izakhiwo zekamu zalungiswa futhi zahlaziywa ukuthola ukuqonda ngokubonakaliswa kokumelwa kwabasebenzi bakaloliwe bangokwekhulu le-19 kanye nobudlelwano bamandla ezenhlalo namasiko ngaphakathi kwamakamu okusebenza. Ukuqhathaniswa kwengaphakathi lendawo, indawo, kanye nendawo yokuhlangana yamakamu ezilinganisweni zasekhaya nezomhlaba wonke kusungule indawo yokuhudlana lapho kuzobhekwa khona izingqikithi zocwaningo eziyinkimbinkimbi ezizungeze umlando wezabasebenzi bakaloliwe baseNingizimu Afrika.

**Amagama asemqoka:** *Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM); IRiphabhuliki yaseNingizimu Afrika(ZAR); Oosterlijn; Umugqa osepumalanga; Umlando kaloliwe; Isayensi yemivubuluko kaloliwe; Imivubuluko yezimboni; Amakamu okusebenziwa wezokwaxhiwa; Abasebenzi abangabonakali; Umsebenzi; Amandla; Ukumela*



## OPSOMMING

### LAAT-19DE-EEUSE SPOORWEGARBEIDERSKAMPE WAT GEASSOSIEER WORD MET DIE NZASM OOSTERLIJN: 'N ARGEOLOGIESE OPNAME

Die konstruksie van die Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM) Oosterlijn – of die Delagoabaai-Pretoria-spoorlyn – van 1889 tot 1895 – was 'n betekenisvolle ekonomiese en staatkundige onderneming van die Zuid-Afrikaansche Republiek (ZAR). Die lyn het die Witwatersrand se goudvelde toegang tot 'n hawe verleen sonder om Britse grondgebied oor te steek. In navolging van internasionale tendense in industriële en historiese argeologie is industrieel-gesentreerde vertolkings van spoorweggeskiedenis herskaal om die sosiale aspekte wat met spoorwegkonstruksie geassosieer word, in te sluit. Met behulp van 'n veelvlakkige benadering wat die ontginning van geskiedkundige foto's behels, asook 'n uitgebreide, doelgerigte argeologiese veldopname, is drie arbeiderskampe langs die NZASM Oosterlijn geïdentifiseer. Kampuitlegte is gekarteer en ontleed om 'n begrip te vorm van die manifestasie van die 19de-eeuse spoorwegarbeiders se 'agentskap' en die sosio-kulturele magsverhoudinge in die arbeiderskampe. Intra-terrein-, terrein- en tussenterrein-vergelykings van kampe op 'n plaaslike en 'n globale skaal het 'n platform geskep vir die ondersoek van meer komplekse navorsingstemas oor die Suid-Afrikaanse spoorwegarbeidsgeskiedenis.

**Sleutelwoorde:** *Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij (NZASM); Zuid-Afrikaansche Republiek (ZAR); Oosterlijn; Spoorweggeskiedenis; Spoorwegargeologie; Industriële Argeologie; Konstruksiewerkkampe, Onsigbare arbeiders; Arbeid; Mag; Agentskap*

## ACKNOWLEDGEMENTS

*Vir my pa,  
Thomas Johannes Fivaz (1929-10-12 – 2015-04-19)  
wat die spore gelê het waarop ek voortstoom.*

My research is indebted to my father, who inspired this project with his love of history, the railways, and railway history, but unfortunately passed away before this project got off the ground. I am forever grateful to my supervisors, Joanna Behrens and Prof. Jan Boeyens, for their invaluable guidance and critique, endless patience and forgiveness for every deadline missed, and for believing in the merit of a project so personal to me. A special word of thanks to Dr Natalie Swanepoel for encouragement and forwarding motivational articles, and Francois Coetzee, who was willing to teach EDM 101 over the phone during Sunday family lunch and helped to transcribe the data. I owe a truckload of beer and unmeasurable gratitude to friend and colleague Jan Engelbrecht, for accompanying me on the rail line's survey, helping me map the sites, and literally climbing mountains for me, twice. Thanks to Anzel Veldman, who faced miserable weather, snakes, deep water furrows and crushing disappointment with me, and Erica Wynter for her willingness to hold a "stick" in grass taller than she is.

My appreciation to all the strangers I corresponded with along the way: Yolanda Meyer from Transnet Heritage Library and Archive, Nicholas Clarke, the *oud-spories* on Facebook, and all the unnamed people who shared expertise, stories, and their passion for railway history.

Many thanks to my friends and family for their support and tolerance with my hermitage while completing this document. Thank you for eventually giving up on asking the dreaded "how far are you?" question. Thank you, Sky-Lee Fairhurst, for sharing your faith and positivity when days felt bleak and graciously listening to me go on and on about my research while being trapped in a car with me.

Finally, Jaco du Toit, my husband, friend, hand-holder, shoulder-sharer, logical-left-brain, tech-support, comic relief, and bank; without you, I would have derailed, thank you.

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## ABBREVIATIONS

CGR	Cape Government Railways
CFLM	<i>Caminho de Ferro de Lourenço Marques</i>
CRM	Cultural Resource Management
CSAR	Central South African Railway
EDM	Electronic Distance Meter
GIS	Geographic Information System
GPS	Global Positioning System
IMR	Imperial Military Railways
NZASM	<i>Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij</i>
OAC	<i>Oost-Afrikaansche Compagnie</i>
QGIS	Quantum Geographic Information System
SAHRA	South African Resources Agency
SAHRIS	South African Heritage Resources Information System
ZAR	<i>Zuid-Afrikaansche Republiek</i>

## GLOSSARY

<b>ballast</b>	Track ballast is the stones that form the trackbed upon which the railroad sleepers are laid, to bear the load and stabilise the sleepers and tracks, to facilitate drainage of water, and keep down vegetation from interfering with the track structure.
<b>cocopan</b>	Mining tipcart, from Afrikaans <i>koekepan</i> .
<b>grog</b>	Strong alcohol, often rum, that has been mixed with water and served or sold at informal establishments.
<b>kampong</b>	Malay word which means an enclosure. In South Africa, the word is used to describe a compound of residences for black labourers on mines or at stations.
<b>koppie</b>	Small hill or hillock in a relatively flat area.
<b>Oosterlijn</b>	Eastern Line, the rail line between Pretoria and Komatipoort.
<b>rondavels</b>	Circular dwelling with cone-shaped roof, reminiscent of indigenous southern African architecture.
<b>toque blanche</b>	White chef's hat.
<b>Uitlanders</b>	Colloquial term for foreigners, any British or other non-Afrikaner immigrants in the ZAR during the 1880s and 1890s.
<b>veld</b>	Open, uncultivated terrain in southern Africa.
<b>Volksraad</b>	ZAR Government

## 1. INTRODUCTION - "HERE COMES THE RAILROAD!"

*"It's coming," she finally explained. "Something frightful, like a kitchen dragging a village behind it."*

— **Gabriel García Márquez, *One Hundred Years of Solitude* (1970: 215)**

There can be no doubt that the development and expansion of railway networks during the 19<sup>th</sup> century was a global phenomenon that, quite simply, transformed the world. Journeys across continents shortened from months to mere days, rural towns were connected to urban centres, bringing the effects of the Industrial Revolution steaming into even the remotest places (Wolmar 2009: Preface, Loc. 107). The movement of fresh produce, materials, and people (as passengers and labour commodity) increased exponentially. It unquestionably had economic and political influence the world over, but the effects on people were by far the most profound. Whether for good or bad, by the late 19<sup>th</sup> century, few aspects of Victorian life were left unaffected (Richter 2005: 4; Wolmar 2009: Preface, Loc. 107). The human impact of the railways extended from communities benefitting from the arrival of rail technology to the multitudes of people involved in the development and construction of the railways and the passengers experiencing the magic of rail travel. By boarding the train, travellers were entering a space with the power to remake them and all of society (Richter 2005: 4).

Globally, the construction and running of railways created a sudden and substantial demand for professional expertise, skilled and unskilled labour, hundreds of thousands of individuals – all of whom needed to be housed, clothed and fed (Wolmar 2009: The Railway Revolution, Loc. 4171; 4177-4178). Railway construction camps were mobile microscale villages, made up of local indigenous and imported labour, living in makeshift circumstances, working on the frontlines of progress. The often-multicultural workforce laboured and lived together within a juxtaposition of industry and domesticity.

The railway companies cultivated the impression of modern triumph and romance around rail travel with the aid of photography. As a product of 19<sup>th</sup>-century industrial society, photography followed a parallel trajectory of invention and advancement to the railways. A

synergistic relationship emerged between railways and photography in many parts of the world (Foster 2003: 660; Frosh 2020: 255). Photography shared an influential foundation of technology, rationality, and modernity with railways, and was, therefore, the ideal promotional medium for corporations like railway companies (Foster 2003: 660). Whether by design or by chance, photographers employed by railway companies captured not only the momentum of monumental engineering feats but life along the tracks. Through their lens, the photographers introduced the viewers to the labourers and supervisors, posed formally and informally against backdrops of industry and crude domesticity.

The first reference to railways in South Africa was a proposal, promulgating the benefits of a railway system to the inhabitants of the Cape Colony, that appeared in a Cape Town newspaper - the *South African Commercial Advertiser* - in 1838. It was, however, not until 1860 that the first railway line in South Africa officially opened in Natal (Boonzaaier 2008: 7; De Jong et al. 1988: 32; Huth 1964: 5). The *Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij* (NZASM) railway line from Pretoria to Delagoa Bay was a pivotal line in South Africa's rail history. Built between 1891 and 1895, the construction of the Eastern Line (*Oosterlijn*) played out against a series of complex economic and political events within the *Zuid-Afrikaansche Republiek* (ZAR). The *Oosterlijn* was the ZAR's endeavour to link the goldfields of the Witwatersrand with a harbour without traversing British territory. The NZASM drew its workforce from a wide range of nationalities. By 1897 there were Dutch, Afrikaans, German, British, Scottish, Irish, Italian, Swedish, Swiss, Austrian, Belgian, Russian, and African employees on the payroll (De Jong et al. 1988: 13, 59-60). Housing for rail construction workers varied from temporary camps with tents and reed and mud buildings, portable prefabricated buildings, to more permanent structures situated at the developing stations and gangers' outposts (De Jong 1989, 1990; De Jong et al. 1988; Wasserfall 1989).

## 1.1 RESEARCH QUESTION AND OBJECTIVES

My research focuses on the worker campsites associated with the construction of the NZASM *Oosterlijn*. I hypothesise that the archaeological investigation of workcamps can produce data that could expand the research paradigm of the *Oosterlijn* and the NZASM beyond the

historical context of the company, and address previously unanswered questions related to the workers. Following global trends in Industrial and Historical Archaeology, the current industrial-centred interpretations of railway history have been re-scaled to be more inclusive of the social aspects associated with railway construction. Traditionally, Industrial Archaeology has focused mainly on the technologies, architecture and industrial spaces associated with industry, rather than studying the people involved (Shackel 2010: 178). The study of the NZASM *Oosterlijn* workcamps forms part of a global movement of archaeological research of 19<sup>th</sup>-century railroad workcamps undertaken in other regions of the world. International case studies provide a baseline for comparing the impact and effect of the 19<sup>th</sup>-century railway expansion upon diverse communities. As a collective, workers from ethnically and culturally divergent backgrounds shared work and living experiences in similar industrial spaces. However, how the workers reacted to their circumstances as individuals and groups is indicative of their agentive power to affect their living circumstance. The agency of railway workers, from micro- to macro-scale, is the result of the agent's ability to act, react, and interact within relationship networks with other agents, with groups and artefacts (Robb 2010: 502). Investigating railway workcamps can highlight the mundane and the personal, and humanise the 'invisible worker'.

The design of workcamps, including the physical characteristics and organisational structure of located camps, their proximity to areas of construction, environmental constraints plus amenities, and material culture, provides clues to the social organisation, behaviour and living conditions of the rail workers. With my research, I aim to determine whether and to what extent the layout of workcamps reflects worker agency, power relationships, and environmental influence. Data was collected by utilising a multifaceted approach inclusive of historical documentation and photographs, predictive site modelling, remote survey, and an extensive archaeological field survey. The campsites that were located during the survey were subsequently mapped to compare the different design layouts.

## 1.2 A PICTURE IS WORTH A THOUSAND WORDS: THE INFLUENCE OF PHOTOGRAPHY

Initially inspired by published images of the construction workers to undertake this research, historical photographs became the primary documentary source for finding and interpreting campsites along the NZASM *Oosterlijn*. Chassanoff (2016: 3) alleged that historians have used photographs primarily as illustrations and have not exploited the possibilities of using images as a principal medium of discursive representation. The expectancy around photography is that it represents the real and tells the truth. There is a perceived immediacy and intimacy to a photograph that implies honesty (Edwards 2001: 9). However, the photographer's agency influences the framing and composition, the manipulation of depth of field and exposure time, and his perspectives and interpretations of his subjects should be considered (Margolis & Rowe 2011: 340). Therefore, Edwards (2001: 9) recommends that photographs, like other historical sources, should be "integrated with other ways of articulating the past". With input from different paradigms, a transdisciplinary approach increases the methodologies and widens the theoretical and thematic perspectives by which one assesses historical photographs as sources (Gordon & Kurzwelly 2018: 2-3, 9).

Archaeology and photography congruently developed during the first half of the 19<sup>th</sup> century. Both have been concerned with seemingly detached objectivity, the visual as material evidence, and the stoppage of time (McFadyen & Hicks 2020: 1). However, the transformational result of an integrated alliance between photography and archaeology is that it allows for freedom from the canon of a "snapshot" and a "freeze-frame" in time (McFadyen & Hicks 2020: 6). Finding the structural or material remains of a railway campsite from the intertextual reading of a historical photograph transports the past in its apparent entirety to the present (Edwards 2001: 8). Often during the survey searching for the NZASM *Oosterlijn* campsites, the "there-then" became the "here-now" as Barthes (1977: 44) posited.

The photographs of the construction of the NZASM *Oosterlijn* read as autoethnographic "texts". The photographer was, in part, capturing his personal experience with life along the line while depicting and interpreting cultural subtexts, experiences, and practices. The

photographer's narrative is infused with his own political/cultural norms and expectations and interwoven in the scenes of the railway construction. Fundamentally, autoethnography aims to show "people in the process of figuring out what to do, how to live, and the meaning of their struggles" (Bochner & Ellis 2006: 111). The photographers were communicating their own experiences, hardships, and discomforts as well as those of the railway construction workers, albeit unintentionally. A reading of the photographs as autoethnography allows another person's world of experience to inspire reflection and inform your own (Bochner & Ellis 2006: 119).

Throughout the archaeological survey, the experience superficially mirrored that of the 19<sup>th</sup>-century NZASM *Oosterlijn* photographer. We travelled along the railway line from Komatipoort, towards Pretoria, camping in (modern) canvas tents, cooking on open fires. We stood in the Lowveld winter midday-sun, feeling the heat emanating from the train tracks, looking at photographs of anonymous figures labouring at physically hazardous work, taming harsh, feral landscapes, finding traces of their material culture on the surface and in the landscape. Trying to fit a photograph's vantage point to the current Lowveld landscape, often required me to undertake strenuous climbs and fight with dense vegetation, while carrying only a small compact camera bag with equipment. Inadvertently one imagines how cumbersome it must have been to carry 19<sup>th</sup>-century photographic equipment across such unfriendly terrain. The photographers were observers of the construction workers, just as their photographs render us into spectators. Archaeology allows us to participate.

This research is not about photography, but it is a work that depends heavily upon photographs as cultural artefacts to guide us along the *Oosterlijn* and help us understand a particular aspect of railway history that Gabriel Márquez (1970: 215) vividly described as a "kitchen dragging a village behind it". It is with the archaeologist's predilection for focussing on the details and the materialities of everyday life that one can extract as much information as possible, beyond the obvious, from historical photographs and this allows us to seek out and witness the previously voiceless in official records (Derbyshire 2020: 168-169, 177).

The remainder of the chapter will focus on situating my research within the context of previous historical research while establishing the theoretical framework with which I approached the research. A discussion of the research methods concludes the chapter.

### 1.3 IN THE LITERATURE: NZASM RESEARCH THEMES

Numerous studies on the *Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij* have been done in the past. Previous authors have built the bridges and culverts, filled the ballast upon which my research tracks could lie. The research themes covered follow popular topics of inquiry in the study of railway history in South Africa. Subjects range from development and construction, political, economic, and industrial impact, to rolling stock, infrastructure, and labour.

The formation of the NZASM, as well as the political and economic role of the company within the ZAR, has been presented in various publications (Conradie 1995; De Jong et al. 1988; *Gedenkboek* 1895; Van-Helten 1978; Van Winter 1938; Venter 1976; Wilburn 1987), with the rolling stock and infrastructure of the NZASM as a particular area of interest for researchers (Bakker 2014; Bakker et al. 2014; Barker 2014, 2015; De Jong et al. 1988; De Jong 1990; Seale 1987; Wasserfall 1989; Zietsman 1982). De Jong et al. (1988) is the most well-known of these works, a seminal source about the NZASM; it provides a concise history of the company and all the branch lines under its purview.

The architecture of the NZASM in the ZAR is the focus of various studies. Architectural studies mostly concentrated on the architectural design elements of the administrative buildings, train stations, official housing and structures like bridges, culverts and the well-known Waterval-Boven Tunnel (Bakker 2014; Bakker et al. 2014; Barker 2015; Clarke & Fisher 2016; De Jong 1990; De Jong et al. 1988; Wasserfall 1989). Clarke and Fisher (2016) conducted a pedestrian survey to identify the surviving building stock of the NZASM in the field along all the branch lines. They created a comprehensive list that is useful for the heritage management of these structures but could have benefited from archaeological input. Their



survey included railway housing of NZASM staff along the railway lines, utilised after the railways' completion.

Nevertheless, the construction workers remain absent within these architecturally based studies. Wasserfall (1989), however, does discuss how the architectural design of worker housing, both railway and mining, serves as socio-political and ideological manipulation of the worker. However, worker agency falls short in the machinations of Government and company. Bakker (2014) and Barker (2015) attempt to re-engage the railway worker within the history of the NZASM, especially the African contribution, acknowledging that our understanding of the industrial landscape will remain incomplete without a more holistic approach to industrial history (Bakker 2014: 71). Reference to transient workcamps is incidental, and work conditions alongside the rail line is a theme outside the scope of these studies.

Inquiry into labour during late 19<sup>th</sup>- to early 20<sup>th</sup>-century industrialisation of southern Africa has predominantly been concerned with the experiences of various groups. Studies of NZASM labour predominantly focus on white labour, both European and South African. De Jong (1989), Van Winter (1938) and Wasserfall (1989) discuss the contribution and experience of the Dutch working for the *Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij* in the ZAR. Although these studies provide valuable historical information, they focus on a specific class and culture. The political ideology of the various governments at the time of railroad construction underpins these historiographies' approach. The relationship between politics and labour is a well-established theme, especially in South African scholarship, where class division was a consequence of racial partitions. Pirie (1993) and Van Onselen (2019) illuminate how the railways in South Africa, particularly the Eastern Line, was paramount in the transport of cheap labour from all around the country and Mozambique for the mines. The relationship between the railways and labour procurement for South Africa's expanding industrial landscape is undeniable. Pirie (1993) and Van Onselen (2019) show how labour as human cargo reflects the racial thinking of South Africa's evolving systems of segregation and apartheid in the late 19<sup>th</sup> to mid-20<sup>th</sup> centuries. However, the worker, as a commodity,

standing on the periphery, controlled, and exploited for a capitalistic and nationalistic benefit, is still a macroscopic view of labour.

Mbem (2018) recognises the resounding silence in the western archive on the histories of non-European labour groups affected by the introduction of railways within the region and looks at black labour on the NZASM Southern Line. She identifies photographs as one of the ways in which "black Africans are present in the past of railway histories in South Africa despite the absence of their narrative within the recorded archive" (Mbem 2018: 29). Mbem analysed a sample of photographs taken during the construction of various NZASM branch lines and railway poetry to understand Western modernity's effects on black communities. The presence of black people in the photographs is interpreted in terms of binary and colonial epistemology. The author concludes that even though they are visible, the black labourers' narrative remains muted.

To date, no archaeological studies have been done concerning NZASM history, and no concentrated effort has been made to study railway workcamps within the South African milieu. My research strives to build upon and address this gap in railroad scholarship.

#### 1.4 INDUSTRIAL ARCHAEOLOGY AND LABOUR, AGENCY, AND POWER

Since the late 18<sup>th</sup> century, the world saw the rapid industrialisation and the "unprecedented absorption of *all* human societies into capitalist economic systems" (Casella 2005: 7). Casella (2005: 7) posited that this Modern Era "necessitates a brand new subdisciplinary set of practices and theories" to understand and study its effects (Casella 2005: 7). The field of Industrial Archaeology, according to David Cranstone, is concerned with "the processes of invention, innovation and development" (quoted in Casella 2005: 4). As a sub-branch of Historical Archaeology, Industrial Archaeology provides a crucial historical context for the new globalised patterns of production and consumption of the Modern Era (Casella 2005: 8). It can further our understanding of industrial society and modern-world development, especially since the focus shifted past its traditional techno-centric paradigm with its

emphasis on the documentation of machines and the history of technology, towards the social dimensions of the industrial past (Casella 2005: 11; Palmer 2005: 73; Shackel 2010: 178; Symonds 2005: 53). Industrial Archaeology can help shape the narratives that highlight the individual and collective social experience within industrial worlds that have shaped our post-industrial lives (Symonds 2005: 53). Railway history, much like Industrial Archaeology in the past, has focused predominantly on the physical features, structures, and machinery associated with rail systems' day-to-day operation. The study of railway history in South Africa, as a vital component of the industrialisation network, can benefit from the new social paradigms prevalent in Industrial Archaeology. Furthermore, linking South African rail history to international research trends situates the study within a global framework.

The mobilisation of social labour by buying and selling labour-power like any other commodity is the essence of capital and industrial development (Wolf 2010: 345). Globally, the composition of 19<sup>th</sup>-century labour forces varied from adult men and women, and children, of different classes and ethnicities (Wolf 2010: 359). Shackel (2010: 178, 180) proposes that understanding labour as an essential component of Industrial Archaeology produces a mechanism for re-interpreting industrial sites and thinking about past, present, and future labour issues. Labour is a global institution, but regions and communities have their own identities and histories. Labour is the lived experiences, identities, and agencies, of people in the past caught up in systems of colonialism, capitalism, industrialism, and racism (Silliman 2006: 161). For the historical archaeologist, labour is "colonised, enforced, controlled, exploited, indebted, hierarchical, unequally distributed, often rigidly structured, and simultaneously global and local" (Silliman 2006: 147). It requires adopting micro-scale, decolonised approaches to the study of industrial and associated sites, to highlight differences in how worker communities adapted to industrialisation (Shackel 2010: 180). The practice of historical archaeology has shown that it can successfully bridge the disjunction between global and local, macro- and microscopic, and incorporate indigenous people within studies of colonial and postcolonial labour (Silliman 2006; Symonds 2005). The study of labour does not replace, but rather complements research on gender, identity, race, sexuality, or class (Silliman 2006: 161).

In South Africa, labour historiographies were predominantly influenced by Marxism and class analysis, with themes of exploitation, organisation, and resistance offering various interpretations of the effects of apartheid and segregation as a capitalist imperative (Bonner et al. 2007: 149; Freund 2013: 496, 507). Currently, the study of South African labour is still conceptualised through a political lens, and it is likely that as new analytical and historic trends emerge, this will continue to be the case (Freund 2013: 517). Concentrating on agency offers alternative perspectives to the review of labour beyond the idea of workers merely as powerless victims of institutional violence and capitalist ideologies of consumerism (Silliman 2006: 153). Pikirayi (2006: 249) wrote that there is no single, but rather multiple historical archaeologies on the African continent, and the "voiceless", underrepresented and often falsely represented, should be accessed through their material culture.

Agency has been part of the archaeological discourse for over twenty years (Robb 2010: 493). Initially, agency as an archaeological interpretation tool focused on individuals' ability to effect their will or intention, usually with a sense of resistance as political agents (Dornan 2002: 304, 319; Robb 2010: 496). Current archaeological theories have, however, expanded on this view to argue that agency is contextual and is a characteristic of relationships, not just the individual (Barrett 2001; Dornan 2002; Joyce & Lopiparo 2005; Latour 2005; Robb 2010). This assessment of agency asserts that social action should be understood as the result of the agent's relationships with other agents, with collectivities, and material things (Robb 2010: 502). Agents act as part of a network with numerous layers of collaboration and conflict with unseen structures of the material and social world. They/we conform to a social reality which both defines the agents' intentions and ultimately envelops, absorbs, or directs different purposes (Robb 2010: 499). An agency approach to labour allows us to interpret the ways that "administrators, overseers, capitalists, managers, and supervisors structured and often imposed labour and the ways that those labouring accommodated, resisted, made use of, and lived through labour situations" (Silliman 2006: 149).

The assumption is that agency is, principally, a personal phenomenon attributed to a singular actor. Collective agency is treated with some misgiving as it may seem that it is at the expense

of individuals, demoting them to docile or dominated servitude (Robb 2010: 503). However, both individual and communal agendas generally shape group behaviour which is not reducible to either. Therefore, collective agency is the action of a group of relationship-forming individuals, acting in some awareness of their situation, and interpreting and modulating their actions accordingly. Understanding collective agency, allows us to comprehend the palimpsest of cause, effect, and contextual chains in which cooperative actions occur (Robb 2010: 503). Labour, seen as a collaborative system, with individuals in a group acting with collective agency towards a common negotiated goal, illustrates the complexity of studying labour.

Similar to agency, power is not a characteristic possessed and exercised by individuals alone, but it manifests as a network of relationships (Robb 2010: 498-499, 502). Power structures consist of organised social webs along which assets and actors are mobilised (Schortman 2014: 168). Previous studies of power in industrial societies usually focused on a singular definition of power, like a Marxist paradigm of domination and resistance, emphasising binary models of power (Cowie 2011: 7-8). Binary models include themes like individual versus the collective, negative and repressive versus positive and productive, forceful versus coercive power, and power that is possessed versus power that is exercised (Cowie 2011: 31-32). However, the growing consensus is that choices and actions related to power are exercised through relations people maintain with each other and with objects (Schortman 2014: 174). The concept of pluralistic power acknowledges that "multiple definitions of power might work together in any given case study, depending on the data, the context, and the social actors in question". Individuals and collective groups can experience power, and power can be both oppressive and productive, depending on the context (Cowie 2011: 8). Agents secure and use knowledge, material culture, symbols, and space to exert and signify power (Schortman 2014: 168). By applying agency-based perspectives to the study of power, we see power networks as open-ended, influenced by human aspiration and agency and we may understand how relations among people and objects organised within networks enact power (Schortman 2014: 168, 171, 177).

Power is evident within varied contexts like written documents, architecture, material culture, the body, and socially constructed categories such as ethnicity, gender, and class (Cowie 2011: 8). For Cowie (2011: 31), industrial archaeologists need to analyse the history of power relationships of industrial sites as evidenced in landscapes, documents, and artefacts. Several issues, ranging from domination and resistance to ethnicity and acculturation, to class and gender relations, have recently been studied by looking at landscapes (Cowie 2011: 48). According to cultural geographers, landscapes are synthetic, with cultural systems structuring and organising peoples' interactions with their natural environments, which can produce and reproduce social meaning in landscape and architecture (Anschuetz et al. 2001: 160). Human interaction with the landscape is a process that expresses agency and power with the establishment of space, place, and identity according to previously established networks and value systems (Anschuetz et al. 2001: 158, 161; Cowie 2011: 46-47). Industrial archaeologists' investigations of industrial landscapes have highlighted how industrialists manipulated landscapes and built environments to control employees' morality, express corporate ideology, aid in surveillance of employees, maintain socioeconomic boundaries, and create and reinforce inequalities under hierarchies of capitalism (Cowie 2011: 9, 49).

The construction workers on the NZASM *Oosterlijn* were part of an agent-based network with regard to their employment, social mobility, economic well-being, their adaptation to a rapidly changing environment, and in creating the materiality associated with the industrial landscape. Both as individuals and as a collective, the workers engaged in relationships with peers and supervisors, with objects, the labouring process, their value systems, and the landscape, as they built the railway line. By approaching the analysis of NZASM workcamp design within the theoretical framework of agency, this study looks at the archaeological remains of workcamps as the result of the railroad workers' interaction with each other, with company structures and material things. The interpretation of the identified workcamp sites' layouts looks at the camps as social webs that mirror the workers' decisions and the structures that condition subsequent choices and actions. Behaviours, as they manifest within the landscape, are analysed to indicate power relationships, access to resources, social networks, the results of the construction process, and the structural context in which they are visible.

With my research, I aim to build on the historical research done on South African rail construction, by adding to the way labour is understood and studied within the context of southern Africa's industrialisation, beyond a Marxist interpretation.

## 1.5 RESEARCH METHODS

The objective to locate as many of the workcamp sites associated with the construction of the NZASM *Oosterlijn* as possible shaped the research methodology. Industrial and historical archaeology research methodology relies on a crucial interrelationship between field and documentary evidence (Palmer & Neaverson 1998: 104). Similarly, my research required a multifaceted approach that included the investigation of historical documentation and photographs, the application of predictive site modelling, remote sensing, and an extensive archaeological survey to locate sites. The second phase of the research project involved recording and mapping surface features present at identified campsites and creating camp layout designs for comparative purposes.

### 1.5.1 ARCHIVAL RESEARCH

The first avenue of research was the investigation of written records about the construction of the NZASM *Oosterlijn*. These included company archival material documents, newspaper articles, maps, memoirs, and personal letters. I conducted archival research at the National Archives Repository in Pretoria, Transnet Heritage Library and Archive in Johannesburg, and the online photographic library of the Zuid-Afrikahuis in the Netherlands.

### 1.5.2 HISTORICAL PHOTOGRAPHS

Documentation photography, or pictures taken with an intent to inform, rather than to inspire or express feelings, gained popularity during the second half of the 19<sup>th</sup> century (Rosenblum 1997: 154). As a subject, industrial activity, progress, and achievement were of particular interest to the materially focused 19<sup>th</sup>-century photographer (Rosenblum 1997: 158). Photographs taken of the construction of the NZASM *Oosterlijn* could aid in the re-creation

of the historical industrial landscape, help to locate long-vanished ephemeral campsites, and give an indication of the nature of the labour force (Palmer & Neaverson 1998: 117; 127).

Contrary to written records, photographs can be more encompassing and include both what the photographer purposefully sought to depict as well as information unintentionally captured in the photos (Banks & Snortland 1995: 126). Photographs depicting construction activities and labour camps were collected from the archives.

I employed a postpositivist methodology of visual analysis to infer embedded representations within the images. The three-part strategy devised by Jeremy Rowe (quoted in Margolis & Rowe 2011: 341) formed the basis of my photographic material analysis:

1. Firstly, I analysed the photographs as objective, factual, documentary evidence. As a primary source, the data collected included document provenance, context, content, and attribution where available. The locations of camps were extrapolated from titles, kilometres and place names scratched onto the negatives and natural and industrial landmarks.
2. Secondly, I made deductions and interpretations from the visual content built on factual and circumstantial evidence that could be verified during the archaeological field survey or secondary sources. The type of housing used by labourers and other features that could help identify campsites in the field were noted from the photographs. By utilising a postpositivist taxonomic counting strategy for determining the relative frequency of certain workcamp housing types, photographs were used to discern patterns in campsites locales and layouts. My deductions were ground-truthed and verified with the field survey and mapping of campsites (Margolis & Rowe 2011: 348).
3. Thirdly, in the stage that Rowe refers to as speculation, I made inferences on the worker camps from the photographs and field survey to examine specific hypotheses and theoretical frameworks. Interpretation of the photographs further required me



to not only recognise what was captured within the photographs but to question what is "missing" (Emerling 2012: 84).

### 1.5.3 PREDICTIVE SITE MODELLING

Discovery probability is the likelihood that, given specific sets of criteria, artefacts will be encountered. The criteria include archaeological and environmental characteristics, relevant archaeological sites, features and artefacts (Orton 2000: 75). A model for identifying and increasing the probability of locating NZASM *Oosterlijn* workcamps was articulated by assimilating existing knowledge (Orton 2000: 76 -77). Many anthropogenic disturbances have occurred in the study area since the construction of the rail line. Actions during the South African War (October 1899 – May 1902), 20<sup>th</sup>-century road and rail development, and farming changed the landscape and altered the probability of locating sites and were, therefore, considered. I collated data from previous surveys along the *Oosterlijn* (Clarke & Fischer 2016), Heritage Impact Assessments available on SAHRIS, research and maps of the old wagon routes that intersect with the study area (Haarhoff 2018; Pienaar et al. 1990), and information from historical photographs to predict site locations.

Furthermore, the "global" can inform the "local". By looking at case studies from similar research conducted in other countries (Caltrans 2013; Chang & Fishkin 2015; Chang et al. 2019; Merritt 2012; Mitchell 2012; Molenda 2019; Polk 2015; Wegars 1991), the nature of railway workcamps and their locations are used to augment this project's predictive modelling. Probable sites were marked on Google Earth for further investigation with remote and field surveys.

### 1.5.4 REMOTE SURVEY

Aerial reconnaissance with vertical and oblique aerial photography and multispectral VHR satellite images opened new possibilities in the field of remote sensing in archaeology and are a sound foundation for planning surveys (Lasaponara & Masini 2012: 14; Orton 2000: 72). Identifying archaeological sites with remote sensing is dependent on the spatial image

resolution, the extension of buried sites, ground characteristics, illumination conditions, and view geometry (Lasaponara & Masini 2012: 5). Aerial photos taken over multiple years were looked at and compared to ascertain how the landscape around the NZASM *Oosterlijn* has changed during the 20<sup>th</sup> century. Google Earth satellite images were studied to identify plots on the landscape which had not undergone intensive redevelopment in the 20<sup>th</sup> century and where archaeological traces of workcamps might still be likely.

#### 1.5.5 FIELD SURVEY

Palmer and Neaverson (1998: 79) proposed that "field walking" is the best means available for locating sites for which there is little documentary evidence. The final step in locating workcamps along the NZASM *Oosterlijn* was, therefore, an extensive survey of areas adjacent to the rail line. The survey strategy adopted was that of prospection or purposive survey. Prospection, according to Banning (2002: 341-2), involves searching for specific targets. This approach is useful for locating uncommon sites that random sampling might miss unless unusually large sample sizes are used. It allows for testing hypotheses or predictive site models much more efficiently than a sampling survey (Banning 2002: 346). Furthermore, prospection minimises costs and search time, and operates within resource constraints.

The survey was designed according to guidelines provided by Orton (2000: 78-86). Objectives for the archaeological survey were set and clearly defined. Targets were identified from historical photographs and predictive site modelling. Adaptive sampling was employed, allowing for unforeseen circumstances in the field, such as encountering previously unknown probable sites or adjusting for the inaccessibility to probable sites. Pedestrian surveys of the study areas were conducted in transects, with no sub-surface investigation. Site identification was dependent on the surface visibility of archaeological features and material. Attempts were made to define the extent of the workcamps based on visible archaeological features, cultural material, the use of the landscape, and the proximity of camps to the rail line, quarries and other work areas. Features and material were recorded in-situ. Spatial data was captured directly with handheld GPS devices.

The quality of an archaeological survey is measured in three ways: by the surveyor's ability to detect archaeological material; classify it correctly; and adequately record their character, density, and distribution. Five factors can influence the effectiveness of a survey: the attentiveness and skills of the surveyors; the quality of the survey design; the character of the archaeological material; and the characteristics of the environment being surveyed (Banning et al. 2016: 3). Every effort was made to address these factors and ensure the quality of the archaeological survey. Subsequently, some areas were surveyed repeatedly during different seasons, after veld fires, and with different surveyors.

#### 1.5.6 MAPPING

Further analysis of features found during the archaeological survey requires precise provenience of extant features. The application of spatial technology like GIS to create maps of the identified workcamp sites allows for visualisation, data management and spatial analysis (Howard 2007; McCoy & Ladefoged 2009: 264). Sites were mapped using an electronic distance measurement device (EDM) or total station, and a handheld GPS device. QGIS 3.2.1 software was used to create maps and analyse spatial data.

In summation, Palmer and Neaverson (1998: 128) argued that the relationship between field and documentary evidence is intricate, as neither tells a complete story and their relative importance could vary from site to site. This project similarly relies on the combined utilisation of documentary and field evidence for data and interpretation.

## 1.6 CONCLUSION

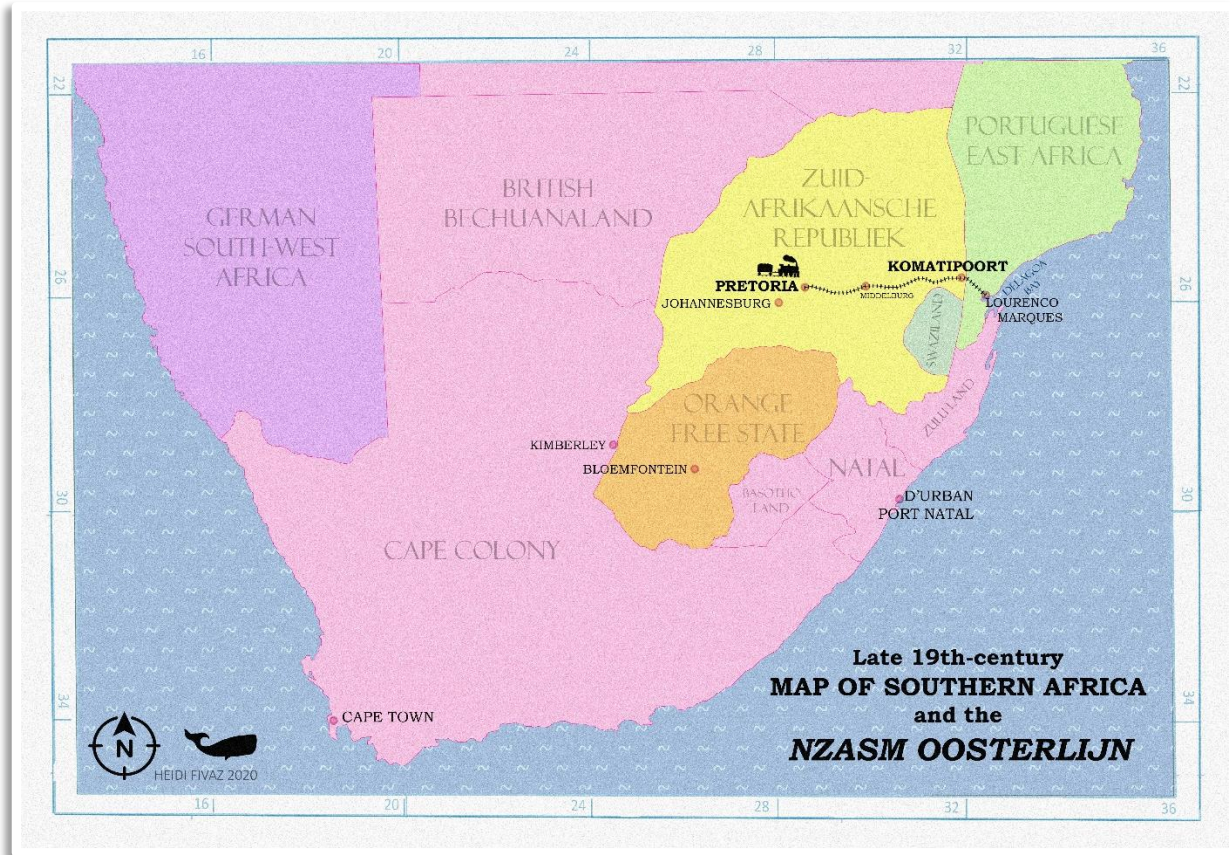
In the spirit of the railroad, I want to shout, "All Aboard!", shovel the coal and let the wheels roll. This chapter presented the reader with the primary premises of my research, framing it in the context of international and local research endeavours, discussing the theoretical foundations underwriting my approach, and reviewing the research methods that structured my research. Going forward, the following chapter will discuss the historical background of

the NZASM and the construction of the *Oosterlijn* and locate the railway line within the historical and current landscape. Chapter 3 looks at historical photographs and documents, and secondary sources to reconstruct camp life along the NZASM railway line. In Chapter 4, I invite the reader to travel with me along the *Oosterlijn*, searching for the remnants of the workcamps, fighting disappointment, and jumping for joy over the little things. Chapter 5 presents the site maps and an intrasite, site, and intersite discussion of camp layout of three identified campsites, and Chapter 6 utilises everything in my theoretical toolbox to interpret the site layouts from the perspective of power and agency. Chapter 7 evaluates case studies of railway workcamps from the United States and New Zealand in a comparative discussion of the camps' similarities on a global scale.

## 2. THE ZAR AND THE CONSTRUCTION OF THE NZASM OOSTERLIJN - A HISTORICAL BACKGROUND

*Who doesn't like playing with a railway? I think we've all got Thomas the Tank Engine in our blood.*

**—Dick Strawbridge, *The Biggest Little Railway in the World* (2017)**



**Figure 1** Stylised composite of historical maps depicting the different colonial powers' territorial division of southern Africa in the late 19<sup>th</sup> century. The location of the NZASM Oosterlijn is indicated on the map. Image: H. Fivaz.

The *Zuid-Afrikaansche Republiek* (ZAR) (Figure 1) was the last Government in 19<sup>th</sup>-century southern Africa to embark on railway construction. The first railway in South Africa was opened by the privately-owned Natal Railway Company railway line in June 1860 (Boonzaaier 2008: 7; De Jong et al. 1988: 32; Huth 1964: 6). In the Cape Colony, the Cape Town Railway and Dock Company completed a railway line between Cape Town and Wellington in November 1863 (Boonzaaier 2008: 7; De Jong et al. 1988: 32; Nock 1971: 20). By late 1890, the Cape Government Railway (CGR) line from Port Elizabeth to De Aar was extended into the

Orange Free State and had reached Bloemfontein, while the branch line from Ladysmith to Van Reenen reached the Orange Free State border late in 1891 (De Jong et al. 1988: 32).

With the 1886 discovery of gold on the Highveld at Langlaagte and the news of the extent of the Banket Gold Reef on the Witwatersrand, the ZAR experienced increasing pressure from the colonial railways to connect to the Rand (De Jong et al. 1988: 32). It was a defining moment in the history of railway progress in Africa (Williams 1921: 424). Up until this point, the convergence of the colonial railway lines was upon the then industrial heart of South Africa, Kimberley. However, the focus shifted to Johannesburg soon after the discovery of gold.

## 2.1 THE NEED FOR A RAILWAY IN THE ZAR

The discovery of gold and coal carried the ZAR's economy into the international sphere, bringing an industrial revolution to the Transvaal veld, and introducing new markets. During the year 1887, 23,000 ounces of gold were exported from the Witwatersrand District. Towards the end of 1890, it was in the region of 494,817 ounces, with a value of \$8,445,767 (Hammond 1897: 239). In 1896, the Witwatersrand's output of 2,276,000 ounces, with a value of \$37,000,000, represented about 16 per cent of the world's annual output and came from a radius of 40.2 km from Johannesburg (Hammond 1897: 242).

The Witwatersrand gold rush led to the arrival of thousands of diverse people into the Republic. For instance, the July 1896 census of Johannesburg shows a population within a five-kilometre area to be 50 000 whites, 42 000 blacks, and 6 000 Asians and Indians (Hammond 1897: 240). This sudden and substantial population increase gave rise to provisioning difficulties within the ill-prepared ZAR during the last quarter of the 19<sup>th</sup> century (Cripps 2012: 37). Farmers in the ZAR were predominantly small-scale producers of crops. Inadequate access to markets meant that there was a limit to the profitability of surplus produce. The layout of townships, which provided land for grazing, and large *erven* that enabled the townspeople enough space for a house and stable, and the growing of vegetables, maize, and horse fodder, meant that there was little to no reliance on produce



from the neighbouring countryside. Moreover, unpredictable droughts and floods, nutrient-poor soils, diseases and insect plagues like locust swarms and tsetse flies hampered large-scale farming (Cripps 2012: 40-41). To provide sufficient sustenance for the growing population of Johannesburg in particular, grain and other produce from the Orange Free State and Basutoland, and from Natal, and tinned foods from overseas had to be imported into the ZAR (Cripps 2012: 13).

Ox-wagon transport riding was an extremely lucrative business in the ZAR up to this point. For a further six years after the proclamation of the goldfields, ox-wagons were still the primary means of transporting local and imported produce (Cripps 2012: 43). However, the cost of transport soon increased, making transported goods, especially food, expensive. The arrival of the railways reduced the cost of transport by two-thirds and improved food availability, even though it was still expensive (Cripps 2012: 9).

## 2.2 RAIL LINK TO THE SEA

With the ZAR's constant struggle to maintain and maximise its independence from British control, unhindered access to a seaport became essential to the Republic's economic and political well-being (Figure 1). President Paul Kruger was the biggest proponent of a rail link with Delagoa Bay, but establishing contact with the Portuguese harbour was a consistent theme for the community north of the Vaal River, even before the acknowledgement of their independence in 1852 (De Jong et al. 1988: 23). The Voortrekker leader Andries Hendrik Potgieter was the first to look towards Delagoa Bay after the founding of Potchefstroom in 1838. By establishing the town of Andries-Ohrigstad in the north-eastern Transvaal, Potgieter hoped to realise the idea of setting up an outpost from which they could trade with Delagoa Bay. However, dissent, as well as the inauspicious Lowveld climate, malaria fever and tsetse flies, prevented Potgieter from realising his vision (De Jong et al. 1988: 24). Other efforts to gain access to ports like Port Natal and St Lucia Bay also failed. President M.W. Pretorius, elected in 1857, again turned attention to the east and the Portuguese controlled shoreline. During the 1860s, agreements were made with a Scotsman named Alexander McCorkindale

to settle immigrants in the far Eastern Transvaal (now Mpumalanga), and plans were laid out to develop the harbour at Delagoa Bay and to enhance the navigability of the Maputo River (De Jong et al. 1988: 25). In 1868 the ZAR Government controversially redefined the boundaries of the ZAR to include large parts of the interior, including a narrow strip of territory along the Maputo River. Both Portuguese and British Governments vehemently protested this move (De Jong et al. 1988: 25). According to the resultant treaty, the ZAR recognised Delagoa Bay as Portuguese territory and received trade concessions in return. The *Volksraad* (ZAR Government) established regular communication with the Portuguese Government and Delagoa Bay, and plans to build a road suitable for steam traction machines from the ZAR to the Portuguese border were discussed (De Jong et al. 1988: 26). These plans were soon adjusted to encompass a railroad instead.

The land surveyor George P. Moodie submitted a scheme for a railway line from Delagoa Bay to the ZAR and the newly elected President Thomas Burgers in 1872. The ZAR and Portuguese governments granted Moodie a concession to build the railway. The ZAR took over the project in 1874 due to a lack of progress. During 1875, President Thomas Burgers travelled to Europe to obtain permission from the Portuguese Government to lay a railway line over Portuguese soil towards the harbour at Delagoa Bay, and to raise funds for this purpose. Burgers successfully concluded a trade and rail contract with the Portuguese and, despite struggling to procure the necessary loans, optimistically placed orders for £63 000 worth of railway material from Belgium and German firms (De Jong et al. 1988: 26; De Jong 1996: 4). Rails, sleepers, trucks, engines, and other construction material were delivered to Maputo where they rusted away as the ZAR lacked the capital needed to pay for the equipment. The conflict between the Pedi of Sekhukhune and ZAR citizens undermined the country's creditability for European money lenders and exhausted remaining resources. By the 1877 British annexation of the Republic, the rail line had failed to materialise, and President Burgers' reputation was left tarnished (Coetzee 1940: 6; De Jong et al. 1988: 26-27; De Jong 1996: 3-4).



### 2.3 OOM PAUL'S RAILWAY

President Kruger took up the reins of the Delagoa Bay rail project after his election in 1883. In his election policy statements, Kruger conveyed his belief that the establishment of a rail link with the eastern coast was crucial for ensuring the future independence of the ZAR (De Jong et al. 1988: 27). During the latter part of 1883, President Kruger, as part of a three-person delegation, had to travel to Britain to renegotiate the terms and limitations of the Pretoria Convention of 1881. After completing the primary diplomatic mission, the small group went to Amsterdam to secure a loan for a state bank and discuss the possibility of financing the Delagoa railway (De Jong et al. 1988: 27). The interested financiers from Amsterdam included N.G. Pierson, the director of the Netherlands Central Bank, and A.D. de Marez-Oyens, a partner in the banking firm Labouchere Oyens & Co. At first, they cautioned against awarding concessions for the railway and instead promoted the idea of a state railway built with borrowed capital (De Jong 1988: 29). However, when David Maarschalk and Johannes Groll, two distinguished Dutch railway engineers from the Netherlands Indies Railway Company, showed interest in a concession, the financiers were persuaded to draft and sign a conditional concession agreement in April of 1884 (De Jong 1988: 29). The provisional concession only applied to the construction of a railway as far as the Portuguese-ZAR border. At this time, an American named Colonel Edward McMurdo had obtained a concession from the Portuguese Government to construct a railway line between Delagoa Bay and the ZAR frontier. The McMurdo concession had two significant stipulations written into the contract: a competitive railroad may not run within a 100 km adjacent area to McMurdo's railway; and McMurdo's company reserved the right to determine rates without the involvement of the Portuguese Government (De Jong et al. 1988: 29). The Dutch investors, therefore, accepted Maarschalk and Groll's proposed concession on the condition that Kruger's delegation would negotiate with the Portuguese Government and McMurdo regarding the construction of the rail line on Portuguese soil (De Jong et al. 1988: 30). McMurdo refused to sign over his concession, and due to the terms of the concession, the Portuguese could only grant the ZAR the rights to build a horse-drawn tramway for the transport of railway material if McMurdo's railway line was not built in time (De Jong et al. 1988: 30).

Upon their return to Pretoria, President Kruger submitted the proposed railway agreement to the members of the *Volksraad* and met with unanticipated scepticism and resistance. Disillusioned by the Burgers railway debacle of 1875-76, people were hesitant to back the new railway scheme. Opponents to the proposed railway asserted that railway construction would lead to an increase in taxes. They cautioned that the railway would ruin the transport riding business. They questioned the vagueness of the concession and the uncertainty around the route, time frame, and costs of railway construction (De Jong et al. 1988: 31; Nock 1971: 22). However, Kruger succeeded in persuading the *Volksraad* by highlighting the most significant benefit of the railway: independence from the British ruled Cape and Natal colonies with their high import duties and British influence (De Jong et al. 1988: 31). The railway line to the port in Delagoa Bay would be the shortest and most direct route to international markets, and the most politically and economically advantageous for the Republic (De Jong 1996: 3). On 23 August 1884, the *Volksraad* approved the concession, and President Kruger was one step closer to realising the dream of a railway link to the sea (De Jong et al. 1988: 31). In 1887 the *Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij* (NZASM) was founded in Amsterdam. During November 1889 work finally commenced on the South African section of the railway line (De Jong et al. 1988: 100-111).

#### 2.4 NEDERLANDSCHE ZUID-AFRIKAANSCH E SPOORWEG-MAATSCHAPPIJ

The *Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij* (NZASM) was a privately owned Dutch company founded with Dutch and German capital. It was established three years after the *Volksraad* had accepted the proposed railway concession from engineers Maarschalk and Groll and Dutch financiers N.G. Pierson, A.L. Wurfbain, A.C. Wertheim, G.M. Boissevain, H.J. De Marez-Oyens, J.P. Moltzer, and A.D. De Marez-Oyens (Coetzee 1940: 120; De Jong 1990: 53; De Jong 1996: 4; Van Helten 1978: 370; *In Memoriam NZASM* 1909: 6). Primarily established to construct and manage the ZAR section of the railway line between Pretoria and Delagoa Bay, the company rapidly grew to include most of the main railway lines in the ZAR. The Rand Tram, the Southern Line, the South-Eastern Line, the South-Western Line, the Barberton branch-line and, of course, the Eastern Line (*Oosterlijn*) were all part of the networks under NZASM management (De Jong 1990: 53).

The company was active in the ZAR for a decade from 1890 until the British took it over during the South African War (Anglo-Boer War) in 1900 (De Jong et al. 1988:9). During the Anglo-Boer War (1899-1902), the NZASM's staff and rolling stock were commandeered to aid the ZAR. Because of their involvement in the war, the British confiscated the NZASM's assets after the British occupation of Pretoria in June 1900 and incorporated it into the Imperial Military Railways (IMR) (De Jong 1996: 8; Van Helten 1978: 388). At the end of the war in 1902, foreign staff members were deported back to their countries of origin, and the railway system was handed over to the Central South African Railways (CSAR) (De Jong et al. 1988:11; De Jong 1996: 8; Van Helten 1978: 388). After a long period of negotiation between the British Government, the Government of the newly formed Transvaal Colony and the NZASM management in the Netherlands, the company was liquidated in October 1908 (De Jong et al. 1988: 11). The Transvaal Concessions Commission recommended that, due to their involvement in the war and considering the persistent complaints received from many commercial and mining interests, the company should not be allowed to keep its profitable monopoly (Van Helten 1978: 388). During the liquidation process, the Transvaal Government undertook to pay out the claims of the Cape Colony and Natal governments against the company to the amount of £95,544 and held themselves liable for the payment of the outstanding debentures of the company. In return, the Transvaal Government expected the transfer of all properties and titles belonging to the company. It prohibited any future claims by the Netherlands Government or the company against the Imperial Government, the Transvaal Government, or the Government of the Orange River Colony (*In Memoriam NZASM* 1909: 161). The liquidation of the *Nederlandsche Zuid-Afrikaansche Spoorweg-Maatschappij* did not, however, erase its legacy and the influence it left within South Africa.

## 2.5 THE CONSTRUCTION OF THE *OOSTERLIJN* 1889-1895

The NZASM *Oosterlijn* or Eastern line is unique in the history of rail development in southern Africa, as it is the only mainline that was planned and constructed as a complete rail link between an interior city and a harbour. Other railway lines in South Africa developed as short lines starting in harbours and extended as needed towards the interior. Located in parts of current-day Gauteng and Mpumalanga, the *Oosterlijn* runs from West to East, from Pretoria

through Middelburg, Machadodorp, Waterval-Boven and -Onder, Kaapmuiden and along the southern border of the Kruger National Park. From Komatipoort, it crosses the Mozambican border where it connected with the Portuguese or Mozambican railways towards modern-day Maputo (Minnaar & Pienaar 1990: 291). The rail line traverses varied and contrasting landscapes. From east to west, it crosses Northern Lebombo Bushveld, Tshokwane-Hlane Basalt Lowveld, Granite Lowveld, Malelane Mountain Bushveld, Scarp Forest, Crocodile Gorge Mountain Bushveld, Pretoriuskop Sour Bushveld, Legogote Sour Bushveld, Steenkampsberg Montane Grassland, Eastern Highveld Grassland, and Rand Highveld Grassland (SANBI 2020).

Major Joachim Machado first surveyed the route of the connecting ZAR and Mozambican railway systems in 1882-1884 (De Jong 1996: 5). Machado's route was admired for being very practical, considering the rugged terrain. However, the NZASM still sought to find a better route from Komatipoort to the Highveld (De Jong et al. 1988: 106). The physical terrain was not the only adversity and danger the subsequent surveyors faced. When the first NZASM surveying team began making detailed surveys of the route from the border towards the end of 1887, it was mid-summer, and malaria temporarily brought this activity to a standstill. Engineers G.H. van der Meulen and J.E. Ysendijk died at the beginning of 1888 and were buried at Komatipoort. It was not until the autumn of 1888 that the survey team returned and ventured into the Lowveld again (De Jong 1996: 6; De Jong et al. 1988: 106; Minnaar & Pienaar 1990: 293). The final route that resulted from the 1888-1889 surveys was to the south of Machado's route. It followed the south bank of the Crocodile River to Kaapmuiden and through the Krokodilpoort Gorge which was considered impenetrable. From Nelspruit, the route headed towards the Elands River Valley, from where the ascent from the Lowveld to the Highveld Plateau was made possible by the detailed and intricate measurement of surveyors Sissingh and Bouten (Coetzee 1975: 40; De Jong et al. 1988: 107). The concession amendments were finalised in June 1890 after two years of extensive surveys (De Jong et al. 1988: 109).

On the Mozambican side of the border, McMurdo started on the construction of the rail line in March 1887. The rail line was built at tremendous speed, covering over 80 km in length by October of the same year. Due to the hasty construction work, the embankments, and bridges

showed signs of faulty workmanship and deteriorated soon after opening for traffic in December 1887. The company's financial tribulations and McMurdo's untimely death disrupted construction, and the rail line was left 9 km short of the ZAR border (De Jong 1996: 5). The Portuguese Government took over the McMurdo concession in June 1889, established a new company, the *Caminho de Ferro de Lourenço Marques* (CFLM) and the rail line became a state enterprise (De Jong et al. 1988: 110; De Jong 1996: 5). The CLFM took over McMurdo's insolvent company's assets and liabilities, completed the rail line to the border, and undertook repairs on the existing line. By late 1889, the first train carrying construction material reached the border, and the NZASM could begin work west of the border (De Jong 1996: 5). On 1 November 1889, the earthworks for the first 3 km between the border and the Komati River began, and the construction of the 472 km *Oosterlijn* was in full swing (De Jong et al. 1988: 111).

The NZASM divided the construction of the *Oosterlijn* into twelve sections of varying lengths. Work proceeded at several sections simultaneously, with separate subcontractors being awarded contracts for each section (Rhind & Walker 1996: 147). Initially, the NZASM was hesitant to engage inexperienced local contractors and sought to ensure that the enterprise carried a Dutch signature. However, friction with Dutch firms, inadequate administration, and lack of control over the numerous subcontractors, necessitated a change of directive. Positive experiences with the construction of the NZASM Rand Tram proved that competent contracting firms could be found in southern Africa. After the sterling work of the local firm James Butler & Co with the construction of the *Oosterlijn* section through the Krokodilpoort, all the remaining sections of the line were contracted through public tenders. The result was that various English, Scottish, Italian, Dutch and South African contractors and subcontractors were employed for the different line sections (De Jong et al. 1988: 114-115). The work on embankments, cuttings, bridges, culverts, tracklaying, and buildings was the responsibility of the contractor under the supervision of an NZASM engineer in charge of the section, who in turn was accountable to the Chief Engineer. Subcontractors completed the construction of bridges, culverts, and buildings for the leading contracting firm. Subcontractors were also hired to clear brush, level and prepare the terrain, often for 2 km stretches at a time. They were paid ten shillings a metre for rock work, six shillings for shale, and two shillings for earth

(Bulpin 1989: 238; De Jong et al. 1988: 111-113; Minnaar & Pienaar 1990: 293). The archival sources do not mention all the contractors and subcontractors' names, and only some are known (Table 1, De Jong et al. 1988: 115-116).

*Table 1 Known contractors and subcontractors that worked on the NZASM Oosterlijn.*

SECTION	CONTRACTOR/ ENGINEER	DATE COMPLETED
The 3 km between the Mozambican border and Komati River.	Clark & Wirth	May 1890
Komatipoort bridge, to Hectorspruit Station KM 35, to Malelane Station KM 55, to Kaapmuiden Station KM 74.	Van Hattum & Co	14 May 1891 1 October 1891 28 December 1891 10 March 1892
Krokodilpoort	James Butler & Co	April 1892
Between Krokodilpoort Station KM 93 and Nelspruit Station KM 105.	Van Hattum & Co Walker & Co	May 1892
Up to Alkmaar Station KM 135		June 1893
Up to Elandshoek Station KM 158		20 November 1893
Up to Nooitgedacht Station KM 187	Adams Bros	30 December 1893
Up to Waterval-Onder Station KM 202	George Hallyburton & Partner	20 January 1894
Up to Waterval-Boven, including steep incline, rack-railway and tunnel. (Work on the tunnel commenced in October 1892)	Warren & Royce	June 1894
Up to Machadodorp		10 July 1894
Line from Pretoria to Eerste Fabrieken	JM Mante GM Fall	13 May 1894
Line to Elandsrivier Station KM 426		1 September 1894
Line to Bronkhorstspuit		15 October 1894
Eastern and western sections meet outside Balmoral Station		20 October 1894

Apart from the engineers, the construction of the *Oosterlijn* required vast numbers of skilled and unskilled labour. Europeans from Dutch, Belgian, Scandinavian, Italian, Portuguese, German, French and British descent arrived in the Lowveld to work as carpenters, masons, painters, or smiths and to practise other forms of craftsmanship (De Jong et al. 1988: 111). With regard to indigenous labour, the contractors and subcontractors relied heavily on the racially oppressive labour practices present in the southern African region at the time of construction. In the ZAR, "Native" labour was legislated. For instance, the ZAR Government's *Naturellekommissaris* (Native Commissioner) and the NZASM commissioned labour recruiters in Mozambique. Three thousand Tsonga labourers were recruited for employment by the contractors and subcontractors with the line's construction through the Krokodilpoort (Harries 1977: 66). These press-ganged men's labour conditions are unknown, except that the NZASM did intercede when contractors or subcontractors failed to pay them their wages (Clarke & Fisher 2016: 9).

## 2.6 THE ENGINEERING FEATS OF THE *OOSTERLIJN*

Amongst the great engineering endeavours of the *Oosterlijn*, which include bridges like the Komati River Bridge outside Komatipoort and the Five Arch Bridge outside Waterval-Onder, two sections stand out: the construction through the Krokodilpoort Gorge and the Waterval-Boven tunnel. The route through the Krokodilpoort meant that the railway line was 20 km shorter than Machado's original survey. James Butler and George Pauling (James Butler & Co), together with the engineer Richard Pizzighelli, secured the contract for the section through the Krokodilpoort. The mountainous terrain and colossal granite boulders required a large amount of dynamite to literally blast the embankment out of the side of the gorge (Coetzee 1975: 43-44; Pauling 1969: 114; Rhind & Walker 1996: 147). Retaining walls, a prominent feature of the *Oosterlijn*, are particularly evident along the line in the gorge. Stone cladding along cuttings was used extensively to prevent rocks tumbling onto the tracks (De Jong et al. 1988: 155; Rhind & Walker 1996: 147). The most extensive retaining wall, nearly half a kilometre in length, on the *Oosterlijn*, is situated on the embankment north of Elandshoek Station. This wall is part solid stone masonry, and part stone blocks piled on top of each other (De Jong et al. 1988: 155).

The tunnel with its rack-railway system outside Waterval-Boven (current-day Emgwenya) is the most well-known feature of the *Oosterlijn*. Warren & Royce secured the contract for the tunnel. Work on the 211 m tunnel commenced from both ends in October 1892, meeting in the middle on 12 September 1893 (Bulpin 1989: 240; De Jong et al. 1988: 152-153; Minnaar & Pienaar 1990: 296). The tunnel formed part of a 225 m radius curve, with a gradient of 1:20, which made its construction more complicated. It is therefore remarkable that when the centre and levels were measured, an adjustment of only two inches was needed (De Jong et al. 1988: 152). The tunnel interior had to be lined with stone due to the rock's instability (Coetzee 1975: 45).

The *Oosterlijn* has the highest number of culverts and bridges designed and constructed of all the NZASM rail lines. The location and design of bridges and culverts were dictated by the topography and flood hazards that may endanger the embankments. The type of steel superstructure distinguishes the various types of bridges, with the design and construction of the abutments and piers remaining the same throughout. The smaller bridges had plate girder spans with solid or closed sides, often called fish-belly girders, while the larger bridges had lattice or truss girders. There are three basic culvert designs: arched culverts, a smaller rectangular type with parallel vertical walls, and culverts constructed with 60 or 100 cm diameter steel pipes. The masonry for the bridges and culverts consisted of dressed natural stone. Strict regulations specified the shapes and sizes of the stone blocks, the bonding, the width, the composition, and the finish of the mortar bonds (De Jong et al. 1988: 145).

As construction of the line progressed and the branch lines, like the Southern Line between Elandsfontein and Pretoria, were completed, construction materials became more readily available. Steel and iron for bridges and steel rails and sleepers were imported from Dortmund's Union steelworks and the Bochum steelworks in Germany. From Java, the NZASM imported rough Indonesian oak for railway sleepers (De Jong et al. 1988: 111).



## 2.7 “DE LIJN ALS VOLTOOID BESCHAUWD”

On 20 October 1894, the eastern and western sections of the line met at Balmoral, on the Farm Elandsfontein, 90 km from Pretoria. At a ceremonial tightening of the last bolt on 2 November 1894 at Wilge River Station, President Paul Kruger publicly declared the line complete (Figure 2). However, this was a symbolic act, for even though the line was opened for regular traffic on 1 January 1895, it was not officially regarded as finished until nearly a year later (De Jong et al. 1988: 116; Minnaar & Pienaar 1990: 296).



**Figure 2** The ceremonial tightening of the last bolt at Wilge River Station on 2 November 1894 by President Kruger (centre). Photo: Het Zuid-Afrikahuis Map76-18 1421.

The *Oosterlijn* testifies to human ingenuity and perseverance. It was a long time in the making, from conception to completion, and required a vast number of actors fulfilling numerous roles. The railway workers had to endure harsh environments, with extremely high summer heats in the Lowveld and freezing winters on the Highveld. Wild animals, like predators,

snakes, crocodiles and hippos, and insects such as mosquitos, tsetse flies, ants and termites were a constant nuisance. At the same time, tropical diseases like malaria also took a toll.

The following chapter explores life along the line for the railway construction workers. Details of their housing, subsistence, recreation, and relationships will be discussed using primary and secondary sources, especially historical photographs.

### 3. LIFE ALONG THE LINE

*Driving the train doesn't set its course. The real job is laying the track.*

***Ed Catmull (2014: Chapter 11, Loc. 143)***

The explorers and surveyors were the first agents in the construction of the *Oosterlijn* to arrive in the Lowveld. They travelled with ox-wagons and mail coaches from Lourenço Marques and Durban into a wild and primitive environment devoid of their known comfort and luxuries. The trailblazing survey teams were small with a few engineers and overseers, and a handful of African aides working from remote, makeshift, mobile basecamps (De Jong 1989: 55). As larger construction teams arrived, tent and hut camps sprang up along the hundreds of kilometres of the rail line, as well as amenities such as field hospitals, trading stores, hotels, and bars. Anyone who had experienced the rigours and deprivations of the surveys could speak of the improved comfort during the construction phase (De Jong 1989: 58). Some of the larger camps developed into halts and stations, where permanent buildings replaced the temporary structures, and railway suburbs and railway villages emerged (De Jong 1989: 58; De Jong 1990: 53).

Camp life is pieced together from letters sent home and photographs taken along the line, as found in the archives and secondary sources. These documentary sources predominantly describe the experiences of the Europeans working on the line. Documented first-hand non-European workers' experiences are either non-existent or exceedingly rare. I attempt to address the racially biased European view where possible and expand the narrative, by incorporating a visual and contextual investigation of the bromide prints.

#### 3.1 SLEEPING UNDER CANVAS, GRASS, WOOD, AND IRON

Arriving in the veld, the most basic shelters erected against the elements were tents and improvised canvas canopies (Figures 3 & 4). Rectangular, common A-shaped or wedge tents, as well as wall tents, were haphazardly pitched in a cleared area of the veld. The camps do not appear to have any preconceived formal layout or design. Spaces simultaneously served

as offices, living rooms, and bedrooms, packed with rudimentary furniture, supplies, personal belongings, and tools of the trade (De Jong 1989: 56). Some basecamps included separate kitchen spaces or cookhouses made of rushes, or reeds and cane. The engineer Westenberg observed the presence of these kitchens at camps in Komatipoort and Kaapmuiden during 1890 (De Jong 1989: 100; De Jong 1990: 53-54). In photographs of a telegraph construction camp (Figure 3), and a subcontractor camp at the Waterval-Boven Tunnel (Figure 11), we notice similar kitchen structures.

Anecdotes from the time illustrate the hardships coincident with tent-living conditions. The tents were uncomfortable and often not able to withstand the onslaught of nature. During rainstorms, it was sometimes necessary to make a fire underneath the draughting table to dry the day's work (De Jong 1989: 56). Local building materials, techniques and skills were quickly utilised to improve basecamps and construct shelters with more permanence and substance. Structures constructed with wood, mud, rushes, or cane came into use in conjunction with tents (Figures 5 & 6). Engineers and overseers traded the impermanence of tents with more substantial reed and mud thatched houses (De Jong 1989: 100; De Jong 1990: 53-54).

In an endeavour to ensure their staff's physical and mental well-being, the NZASM made attempts to provide suitable housing as construction work commenced. In the early days, company assistance concerning housing was mostly on an ad hoc basis, providing accommodation upon demand as the railway network expanded (Wasserfall 1989: 225). Prefabricated wooden houses (Figure 7) were seen as a viable solution and could be erected with speed and convenience along the line (Barker 2014: 114).



*Figure 3* Telegraph construction camp, unknown location along the Oosterlijn, 1892. Tented camp with a cane and rushes cookhouse in the background. Photo: National Archives Repository TAB7350.



*Figure 4* Surveyor's tented camp at KM 201, April 1891, Caney, W & Co. Photo: Transnet Heritage Library and Archives 100109/2





*Figure 5 European and African construction workers pose at Reid's camp, 1892. Photo: Het Zuid-Afrikahuis Map71-17a 1257.*



*Figure 6 Supervisor's hut at KM 150. Photo: Het Zuid-Afrikahuis Map74-6 1339.*

The first of the wooden houses were small, but the bigger ones that followed consisted of a hallway with rooms on both sides. Some of these larger timber units, or *keeten* as they were called, were later converted into station buildings (De Jong 1989: 102; De Jong 1990: 54). The style of the prefabricated structures was similar to the architecture employed in the Dutch East Indies (Indonesia). The buildings characteristically had double roofs to enable adequate ventilation and continuous verandas enclosed with mosquito-proof gauze (Wasserfall 1989: 229). Stilts raised the floor approximately 50 cm above the ground. The supportive beams stood in water-filled cast-iron pots embedded in the ground, acting as a deterrent to the termites.

Even with all the precautionary measures, the Lowveld climate proved too taxing, and many of the structures deteriorated soon after they were put into use (Barker 2014: 115; De Jong 1989: 102; De Jong 1990: 54). In comparison, the mud and reed huts were cheaper and easier to build, longer-lasting than the timber constructs, more suited to the changing environments along the line, and therefore more common in the camps (De Jong 1989: 102).



*Figure 7* Prefabricated timber double gangers' cottage on stilts and a domed beehive-type grass hut, Komatipoort, 1891.  
Photo: Het Zuid-Afrikahuis Map70-13 1220.

By 1891, prefabricated portable-type buildings with wooden frames and corrugated-iron walls (Figure 8) started to appear, especially in the Lowveld where logistics and the climate required raised, light-framed buildings, for proper ventilation and prevention of termite infestation (Barker 2014: 117; De Jong 1990: 54). Architects in the employ of the NZASM designed various prefabricated timber and corrugated-iron house types to meet housing demands and fit the occupants' function, type of work, local climatic conditions, and marital status (Barker 2014: 117). These portable temporary dwellings were erected and dismantled with ease. They were positioned near the construction works to house navvies, sub-gangers, gangers, platelayers, engineers, and overseers working on sections of the *Oosterlijn* (Wasserfall 1989: 225).

The most basic house design type was the *brugwachters woning*, the bridge keeper's house, that had a living room, veranda (covered porch), or a covered terrace (level paved area adjoining a building). The ganger's cottage's design had two more rooms, an extension of the veranda and an additional storage veranda (Barker 2014: 117; Wasserfall 1989: 226). As construction of the line progressed, some of these prefabricated cottages were converted into stations and halts as occurred at Kaapmuiden (KM 74) and Krokodilpoort (KM 93). However, many others were relocated after their purpose had been served (Barker 2014: 117-118).

Corrugated-iron was a strong, cheap, durable, portable, and readily available building material. It was widely utilised along the line to construct shacks, shelters, and sheds in the camps. The NZASM continued to use it extensively for formal staff housing, station buildings, roundhouses, and other structures (De Jong 1990: 54). On the Highveld, temporary gangers' cottages of stone and brick, with corrugated roofs were prevalent (Barker 2014: 117).





*Figure 8* Prefabricated corrugated-iron cottage and outbuildings in the camp at Pampoenspruit, KM 215.  
 Photo: National Archives Repository TAB7428.

Written sources about the accommodation for black NZASM personnel, particularly during the construction of the *Oosterlijn*, are lacking. As the stations became more established, thatched-roofed rondavels and huts in kampongs near station precincts (Figure 91) housed the permanent black personnel (De Jong 1989: 107, 119; De Jong 1990: 58). Barker (2015: 34) writes that the temporariness of these structures as opposed to the corrugated-iron, brick, and stone houses of the white personnel, “smacked of an indigenous temperament”. However, what was the housing situation in the field as construction continued? Turning to the period photographs of the camps, one notices small domed grass huts visible on the periphery of the tented camps, to the side or behind the prefabricated structures, or sometimes even further removed if the landscape allowed. These thatched beehive-type huts are scattered around all the construction sites (Figures 7, 8, 92, & 93).

In southern Africa, the Nguni groups (which consist of Zulu, Xhosa, Ndebele and Swazi peoples), some of the Sotho-Tswana groups, and the Tsonga of the Shangaan-Tsonga group have all been observed to construct some analogous form of the grass-domed hut (Frescura 1985: 47-48; Junod 1913: 93; Lekgoathi 2014: 60; Stow 1905: 43-44; Van Vuuren 1992: 94; Walton 1950: 34). For instance, we know that at least three thousand Tsonga labourers were recruited for the construction of the *Oosterlijn*. Junod (1913: 93) mentions that Tsonga boys built small beehive huts, approximately six feet in diameter (1.82 m) as temporary and mobile shelters while herding goats. These temporary, mobile structures were ideal for housing at the railway construction sites.

The intricacies of cultural, decorative, and architectural variations aside, commonalities indicate two principal methods of construction (Figure 9). The first entailed a circular framework of supple branches inserted into the ground and brought together in a crest, either as a continuous curve or to a point on the apex. Horizontal parallel hoops further enforced the frame. The second involved a hemispherical framework consisting of saplings fixed in a circle and bent over into semi-circular arches (Walton 1950: 34). The grass thatch covering was then attached to the wooden framework, either as loose thatch, as grass and reed mats, with a rope network, or sewn tight (Walton 1950: 34). The readily available building materials, their suitability for the climate, as well as the ease with which one can assemble and disassemble, or just abandon when redundant, made beehive huts the ideal way to create some private space within the construction landscape.

It is difficult to discern from the photographs which of these assembling styles and techniques were employed by the African railway workers, or whether any cultural identifiers are evident. However, it is fair to assume that a combination of these techniques may be present. The wide distribution of this type of dwelling in the worker camps testifies to the ease with which local knowledge and building prowess were implemented for feasible solutions in addressing the discrepancy in worker housing provision.

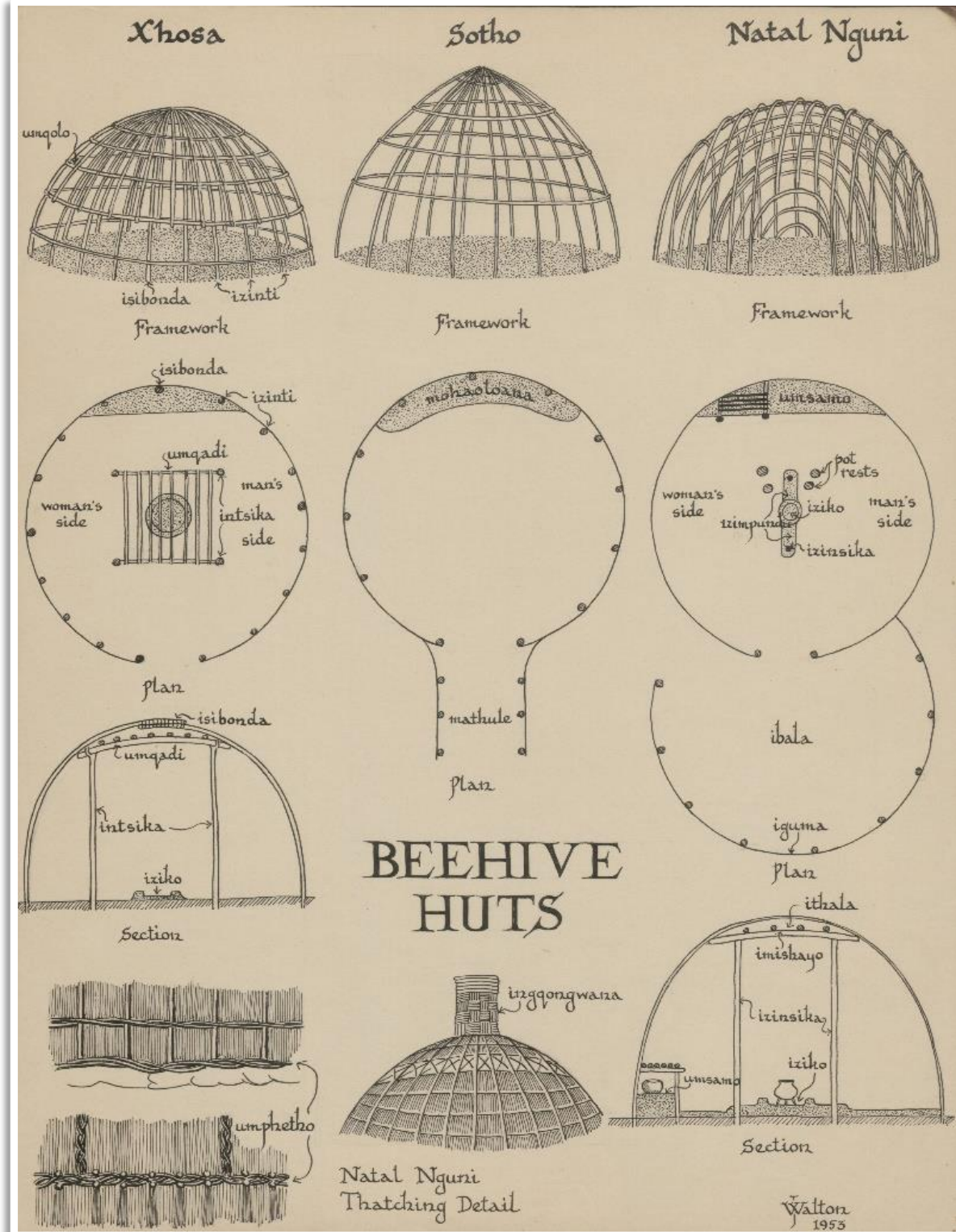


Figure 9 James Walton's (1953) illustration of three traditional South African beehive hut types.  
 Image: SUNDigital Collections <http://hdl.handle.net/10019.2/534>.

### 3.2 GIVE US THIS DAY OUR DAILY BREAD

If an army marches on its stomach, so much more does a group of railway construction workers. At the beginning of the surveying, provisions were limited and hard to come by, especially in the remote areas of the Lowveld. Surveyors had to rely on what provisions they were able to transport with them, as well as what they could hunt or trade with indigenous communities, for some variety. Predominantly made from rice, canned goods, and onions, meal quality was very much dependent upon the cooks' skills, initiative, and creativity (De Jong 1989: 56, 61). On the Highveld, which was more cultivated, there was less game to hunt. However, chicken and mutton and cheese, milk, eggs, and vegetables, were obtainable from the farmers (De Jong 1989: 61).

With the rail line's progression, traders opened stores all along the line, enabling access to more foodstuffs and products (Figure 10). The *Oost-Afrikaansche Compagnie* (OAC) trading company established stores at regular distances to serve the construction employees (De Jong 1989: 58). The Dutch NZASM staff members especially benefitted from the availability of imported goods like canned vegetables and meat, sauerkraut, cocoa, gin, and other delicacies from their homeland (De Jong 1989: 62). Even selected housewares were on offer at the OAC stores (De Jong 1989: 63). The OAC stores were expensive, however. To such an extent, that the *Algemeen Handelsblad* of 1895 implied that importing personal goods or having care packages sent from family in the Netherlands was cheaper (De Jong 1989: 63). Ambitious entrepreneurs soon opened competing establishments. Bakers, butchers, and hotels that served alcohol and cooked meals opened doors (De Jong 1989: 61, 63). Figures like Dorabjee Dhunjbhoy, who started with one store in Komatipoort, saw an opportunity and quickly applied for trade licenses to open more stores at other locations along the surveyed trajectory of the *Oosterlijn* (Bulpin 1989: 236; Minnaar & Pienaar 1990: 293).

The rivalry between different store owners and trading companies were not always amicable. Pauling, the contractor constructing the problematic section through the Crocodile River Gorge, arranged with a firm from Port Elizabeth, Messrs. Hansen and Schrader, to supply stores and provisions for his men. Pauling would receive ten per cent of the profits with this



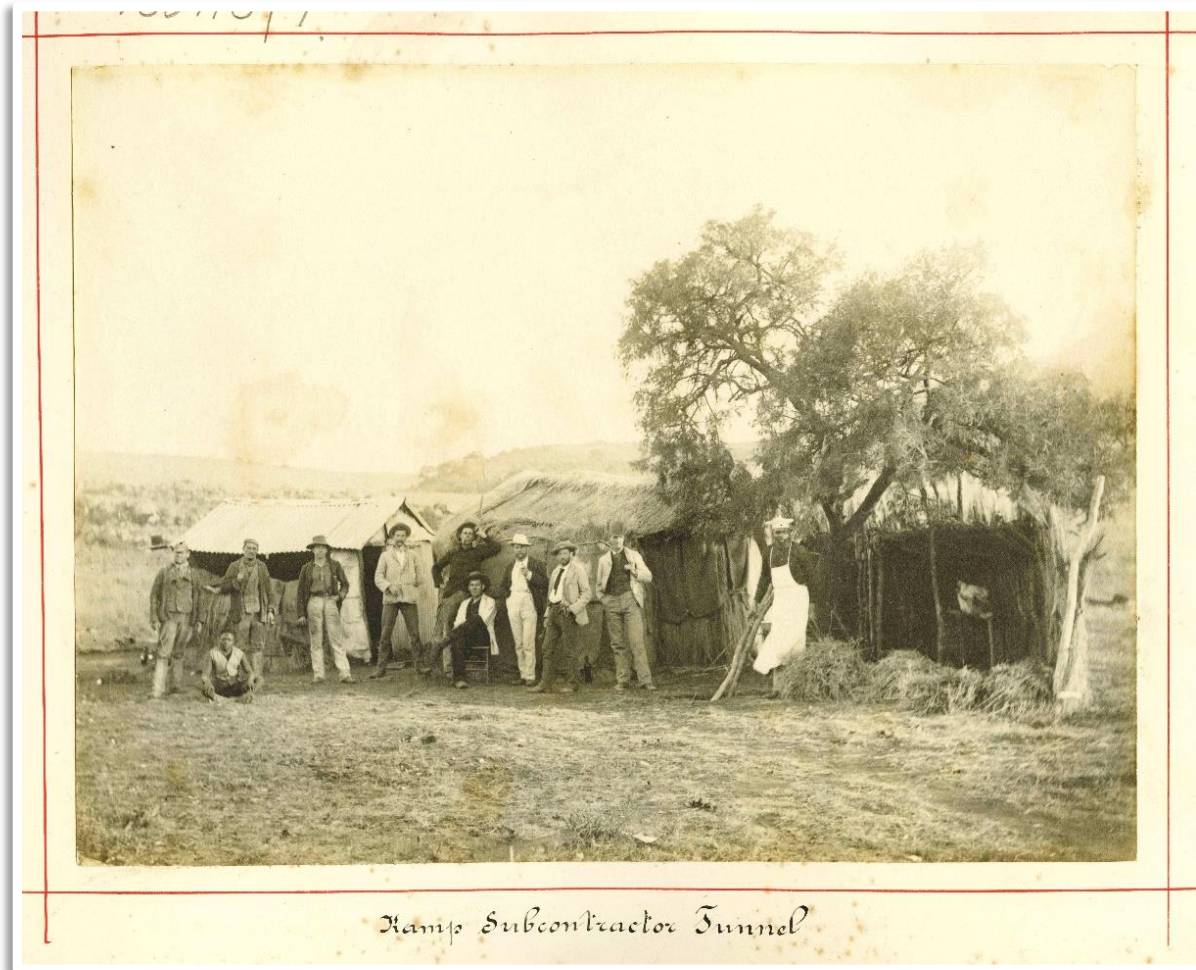
arrangement. Messrs. Hansen and Schrader then proceeded to construct a couple of stores in suitable places. Simultaneously, prominent transport rider and trader, Percy Fitzpatrick, with a concession provided by the OAC, endeavoured to set up his store at a place in the Gorge that Pauling refers to as “Waterfall”. When Pauling failed to dissuade Fitzpatrick of his plans, he waited patiently for Fitzpatrick to finish erecting and stocking his store. Pauling then gave Fitzpatrick notice that he was “about to open a big quarry close to his establishment and that there was every probability that it would be blown to pieces” (Pauling 1969: 115-116).



*Figure 10* The shop of Pierneef & Snoeck at Waterval-Boven, 1890.  
Photo: Het Zuid-Afrikahuis Map110-23 2021.

As previously mentioned, some camps had designated cooking spaces. In a photograph of a subcontractor’s camp taken by the photographers Caney and Raucher at the construction of the NZASM Tunnel (Figure 11), an African male can be seen, dressed in a *toque blanche* and white apron, standing in front of a cooking screen. The women present in the photograph of Reid’s camp (Figures 5 & 19) may have taken on domestic duties around the camp, which

might have included cooking. However, it is unclear to what degree the responsibility of food preparation was communal, the task of an appointed person, or up to the individuals themselves.



*Figure 11* Subcontractors' camp at the construction of the NZASM tunnel, Waterval-Boven, with a cook in front of the kitchen.  
 Photo: Transnet Heritage Library and Archives 100110/7.

### 3.3 IN SICKNESS AND DEATH

As with numerous other 19<sup>th</sup>-century railroads across the world, it is often written that there is a body buried for every railway sleeper that was laid on the *Oosterlijn* (Coetzee 1975: 38). Hyperbole aside, there is no denying that the number of lives lost during the rail line's construction was high. From mosquitoes, wild animals, extreme heat, and cold temperatures, to dangerous construction activities, the probabilities for severe injury or death were high. At

first, the survey teams had to rely on their wits and what was available in the medicine box to treat any ailments (De Jong 1989: 56). The deaths of the engineers Van Ysendijk and Van der Meulen in 1888, from malaria, were a big incentive for the NZASM to take their employees' health into serious consideration and appointed the first company doctor. By 1890 the number of doctors had increased to three, and the NZASM established the first field hospital at KM 60. The NZASM further created a medical fund for the benefit of both white and black staff members in 1891. The fund allowed staff members access to free nursing and doctors' visits in the event of injury or sickness (De Jong 1989: 92).

Affliction from malaria was a commonplace, stark reality of working in the more tropical climate of the Lowveld. Since it took the lives of the first engineers, and fifty more lives before construction even commenced, it was a significant concern for the construction workers (Coetzee 1975: 38; De Jong 1989: 80). At first, the mosquito was not identified as the culprit, but the blame was instead attributed to the fever tree (*Vachellia xanthophloea*) with its powdery pale yellow-green bark. Fever trees typically grow in marshy areas frequently populated by mosquitoes, and early European settlers noted that they contracted malarial fever in these areas. The contractors made a concerted effort to avoid the shadows of these trees in an attempt to avoid catching the fever (Coetzee 1975: 38). The construction workers also noted that malaria was more prevalent during the rainy summer seasons than during winter. The dry summer of 1891-1892 had fewer reported malaria cases than the summer of 1892-1893 (De Jong 1989: 80).

Pauling's camp at Krokodilpoort housed a one-room, thatched grass-and-wood hospital with twenty-four beds under Dr Williams's care. With a hundred per cent occupancy, only the worst cases could be admitted, and not all survived (Coetzee 1975: 44). Very little apart from treatment with quinine could be done for these patients, except to make them comfortable and wait out the fever (Bulpin 1989: 239; Freshfield 1893: 56). Dr Williams, trying to uplift the spirits of his patients, introduced a lottery game. Every afternoon a shilling from each patient was put into a betting pool, after which the doctor would proceed to take everyone's temperatures. Even when a patient was too sick to participate knowingly, a shilling was contributed on his behalf. The person with the highest fever that afternoon won the pot.

Often patients would awake from the delirium of fevers spiking 105 to 108 degrees Fahrenheit (40.6- 42°C), only for their first waking thoughts to be on the results of the previous pool (Bulpin 1989: 239; Coetzee 1975: 44; Minnaar & Pienaar 1990: 295; Pauling 1969: 118).

During the ten months that the work was conducted through the gorge, twenty-seven Europeans, and more than a hundred African construction workers died from malaria. The estimation is that for every thousand white workers operational on the *Oosterlijn*, an average of one-hundred and thirty-five died from the fever. An approximation for the number of deaths of the African workers is unavailable (Minnaar & Pienaar 1990: 295).

Another illness that proved just as critical was dysentery (De Jong 1989: 80). The 1893 Royal Geographic Society's sourcebook for travellers describes dysentery as "a specific inflammation of the lining membrane of the lower segment of the bowel, with a tendency to ulceration" (Freshfield 1893: 54). Treatment included ipecacuanha, a drug made from the dried root of *Cephaelis ipecacuanha*, as well as opium. In large doses, ipecacuanha is an emetic; in smaller ones, it is an expectorant and a restorative, and the opium countered nausea (Freshfield 1893: 55). The recommended diet for the disease's acute stage consisted of boiled milk and plantain flour (Freshfield 1893: 55). Like with malaria, dysentery sufferers continued to struggle with symptoms, long after reaching healthier climates (De Jong 1989: 80).

Other illnesses among the construction crews mentioned in the NZASM's annual reports include tuberculosis, blood poisoning, and heart attacks. On the Highveld, the exposure to colder temperatures often caused pneumonia that led to death (De Jong 1989: 80). Predominantly, deaths related to illnesses dominate the literature. Reported work-related deaths within the company are more associated with the day-to-day running of the rail networks than construction (De Jong 1989: 82). Nonetheless, with so many ways to die, details on burials and gravesites are surprisingly limited. Van Ysendijk and Van der Meulen were buried in Komatipoort (Figure 12). At the same time, other NZASM staff members of Dutch descent were laid to rest in Pretoria's Old Cemetery and a dedicated cemetery not far from the Salvokop township (De Jong 1987: 20). A memorial, commemorating everyone who



gave their lives for the completion of the Oosterlijn, was unveiled at Waterval-Boven station on 28 Augustus 1934 (Figure 12) (De Jong 1987: 16).



*Figure 12* The headstone on the engineer Van Ysendijk's grave in Komatipoort (left), and the memorial stone with a plaque commemorating the lives lost during the construction of the Oosterlijn, Waterval-Boven (right). Photos: H. Fivaz.

### 3.4 REST AND RELAXATION

Construction work on the *Oosterlijn* continued at a furious pace. There was, however, some opportunity for relaxation and leisure activities. When the work allowed, many of the Europeans, used to a more cosmopolitan lifestyle, had to generate their own form of entertainment far removed from the bigger towns. In the Lowveld in particular, the monotony of the environment and the work generated an atmosphere unbearable to some. Activities ranged from the more practical, such as hunting and fishing, to social pastimes like picnics, and competitive athletic and team-sporting events and visits to local African homesteads in the area of the camps. Hotels with bar-rooms and billiard tables offered a different kind of distraction, one less popular with the company.

Hunting expeditions presented the construction workers with the chance to liven up mealtimes and fight boredom. Wildlife was abundant in the Lowveld and must have been quite enchanting to the European newcomers. Westenberg proudly exclaims in his letters of August 1890 how he managed to kill his first reedbuck (De Jong 1989: 165). Allegedly, the Dutch were not accomplished hunters and mostly missed. They often left the killing to a local Afrikaner or African accompanying them on the hunt. Several Dutch NZASM employees sent trophies from their hunts like animal skins, horns, and skulls back home (De Jong 1989: 165).

More tranquil outdoor recreations meant excursions to scenic spots for some fishing, or a picnic. The rail line follows and crosses many rivers with falls and natural pools proffering pleasant respite from the heat. Photographs of men fishing, doing the washing or lounging on big river rocks with a bottle of gin abound (Figures 13 & 14). Picnics, in particular, were popular around Waterval-Boven, with its majestic Elands River Falls (De Jong 1989: 165). Photographs depict groups of white women and men dressed in all their civilised finery, juxtaposed with the wild African landscape (Figure 15). Within these photographs, black men are often posed sitting or standing close by.

The outings into the sublime African landscape presented amateur photographers with the perfect opportunity to ply their craft. Technological advancements in photography with regard to development processes and camera size made photography more accessible to the traveller and amateur enthusiast. Equipment choices ranged from the lightweight bellows camera to small, handheld cameras, using either glass plates or celluloid film (Freshfield 1893: 322-323). As such, the engineer Westenberg and the supervisor Rademaker were two of the known NZASM construction staff to possess personal cameras. Despite often struggling to get hold of good quality paper and chemicals, their photographs are invaluable (De Jong 1989: 181).



*Figure 13* NZASM Oosterlijn construction workers on the shore of the Komati River, fishing and doing their washing, 1891.  
Photo: Het Zuid-Afrikahuis Map69-26 1207.

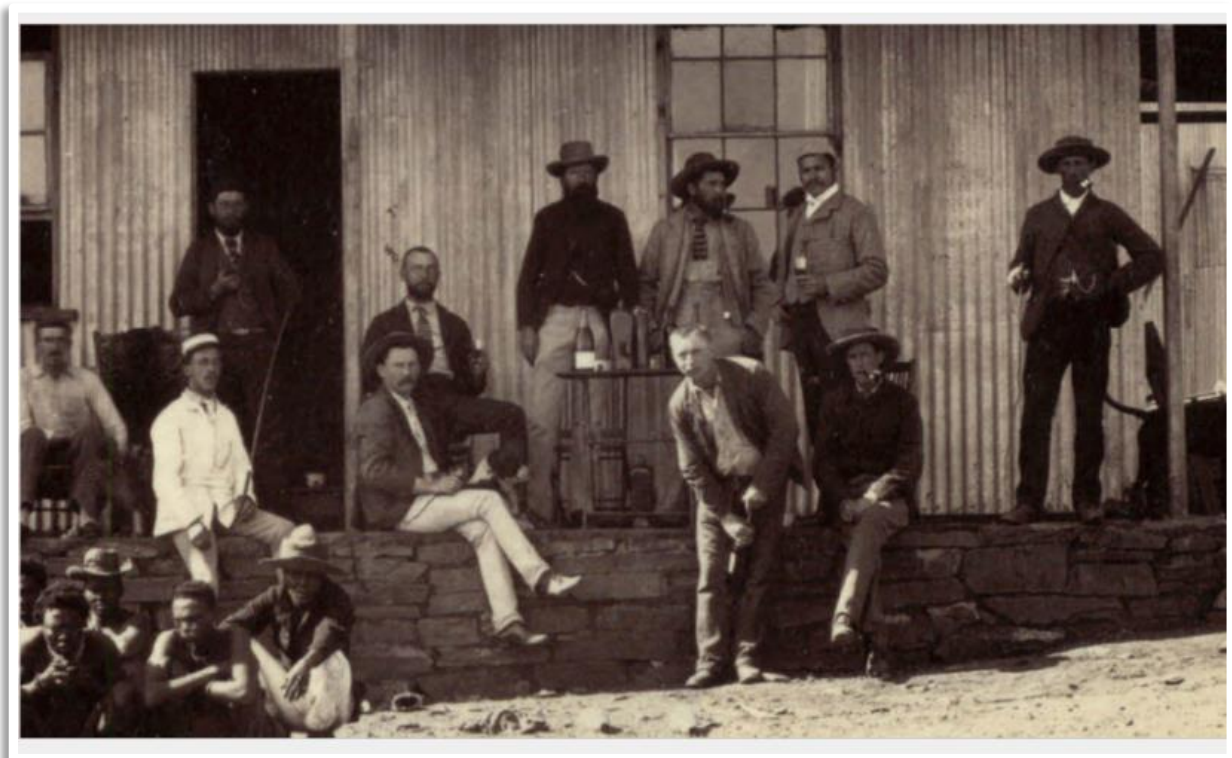


*Figure 14* Taking a breather near the NZASM tunnel, Elands River falls, Oosterlijn 1892.  
Photo: Het Zuid-Afrikahuis Map75-24 1391.





*Figure 15* Group NZASM staff and guests at the Dwaalheuwelspruit waterfall near Waterval-Onder, 1893.  
*Photo: Het Zuid-Afrikahuis Map74-34 1367.*



*Figure 16* Enjoying some drinks on the veranda of an official's house at Elandspruit, Oosterlijn, 1892.  
*Photo: Het Zuid-Afrikahuis Map75-31 1398.*

From Pauling (1969: 118), we gather that organised sporting events were another way amusement and recreation were contrived. On Christmas or New Year's Day 1890-1, with temperatures at 46°C in the shade at three o'clock in the afternoon, the construction crew of Krokodilpoort participated in an athletic meet. Even Pauling, carrying over sixteen stone (102 kg) body weight, felt he should participate in the programme and good-naturedly entered the half-mile race. Luckily for him, being the boss had its advantages, and he was given a big head start and won the race (Pauling 1969: 118).

However, not all recreational activities were considered as wholesome by the company. Large-scale alcohol consumption was rampant amongst the workers. It was also the leading cause of accidents, disciplinary actions, and employment terminations (De Jong 1989: 56, 82, 84). Van Winter and De Jong speculate that alcohol served as an anaesthetic to the fear of sickness and death and the boredom of an isolated posting. Moreover, it supposedly spoke to the influence of the more unsavoury characters who found their way to the construction works (De Jong 1989: 84). Hotels, bars, canteens, and grog shops, as well as liquor smugglers, sprang up along the line, to serve thirsty customers. In Poort City, the addition of billiard rooms and serving barmaids must have added to the attraction of these establishments. The men drank, gambled, fought, and spent their hard-earned wages (Bulpin 1989: 238; Coetzee 1975: 44; Minnaar & Pienaar 1990: 293, 295).

Partaking in alcoholic beverages did not just occur in the confines of specific establishments. Even during the initial surveys, pre-dinner drinks were enjoyed as a way to unwind after the day's work (De Jong 1989: 56). Furthermore, various photographs show groups of people casually enjoying drinks on the verandas of prefabricated corrugated-iron houses. A small table or drinks-trolley displaying a variety of alcoholic choices can be seen at an official's house at Elandspruit (Figure 16). Alcohol appears to have been a commonplace part of socialising as well as relaxation.

### 3.5 “US” AND “THEM” - SOCIAL RELATIONSHIPS AND POWER

The construction of the *Oosterlijn* brought together diverse people from various nationalities. The Dutch NZASM personnel had to supervise teams consisting of people from Italy, England, France, Portugal, Denmark, America, Austria, Greece, Poland, Spain, Belgium, Brazil, India and different southern African indigenous communities (Coetzee 1975: 43; De Jong 1989: 56). Amongst such a divergent group of people, strife and infighting were likely to arise. Political and racial ideological divisions often underwrote labour and social relationships. Furthermore, as the philosopher Bertrand Russell observed, power plays a central role in everyday social interactions (Simpson et al. 2015: 393).

The Dutch NZASM employees were in a relatively privileged position within the company and during the construction of the rail line. From personal correspondence, their views regarding several groups during their tenure can be ascertained. According to Westenberg (quoted in De Jong 1989: 85), the Dutch shared the ZAR's disdain regarding Britain and the *Uitlanders* (foreigners, any British or other non-Afrikaner immigrants in the ZAR during the 1880s and 1890s). They had an uncomfortable relationship with the Afrikaners and deemed them to be “corrupt, lazy, dirty, know-all, drunkards” (Barker 2015: 32; Mbem 2018: 72). On the other hand, their experiences with the black people in their employ were purportedly more amicable than with the Afrikaners and *Uitlanders*. According to De Jong (1989: 197), their experiences were without any previous knowledge or preconceived prejudice to dictate their rapport. Their 19<sup>th</sup>-century Western-centric opinion was that the indigenous people were “*onbedorven natuurkinderen*” (unspoiled children of nature), innocents in need of sympathy and education (engineer Sissingh quoted in De Jong 1989: 197). Some NZASM personnel, like Westenberg, involved with the construction of the line endeavoured to learn a Bantu language to communicate more efficiently. However, most probably continued to speak Dutch (Barker 2015: 32; De Jong 1989: 198).

The period photographs reveal different manifestations of the hierarchical nature of the “white/non-white” binary racial relationships along the rail line and subtly captures the state of relations between ‘whites’, and ‘blacks’ (Barker 2015: 32). Barker (2015: 33) describes

these interactions as masters and servants, comrades and even protectors. In the photographs, the contrasting physical positions and poses of the 'black' workers versus the 'white' overseers, express the hierarchy, importance and status of 'white' individuals and the subjugation of 'black' labour (Barker 2015: 32; Mbem 2018: 72). The more formally posed group photographs captured the black worker situated below, behind, or just off-centre of their white bosses (Barker 2015: 34). Even if one argues that the grouping was to ensure that everyone fits into the frame, these compositions' focal point is generally still the European NZASM officials (Figures 5 & 16). Mbem (2018: 76) postulates that the deliberate arrangements of the groups in some of these photographs end up demoting the black African labourers into a black mass without differentiation and individuality (Figure 17). In contrast, the emphasised individuality and assertiveness of the European officials within these images served the intended European audience (Mbem 2018: 77). One cannot deny that the racist ideologies of the 19<sup>th</sup> century is evident in the photographs.



*Figure 17* Photograph taken of the construction crew at the subcontractors' camp, Waterval-Boven tunnel. Caney & Raucher's composition consists of many different groups. The white employees are posed to the front, while the black African workers are posed behind. Whether by design or happenstance, the silhouetted figures on the rocks draw the viewer's attention away from the foreground. Of interest is the group of Indian men and women, with a child, standing wholly apart from the rest.

*Photo: Transnet Heritage Library and Archives 100110/9.*





*Figure 18* Laying down the rails, KM 200, 1892. Photo: *Het Zuid-Afrikahuis* Map74-31 1364.

Photographs showcasing the actual construction work were less orchestrated and seemed to capture a sense of common purpose and the inclusiveness of all individuals involved in the *Oosterlijn's* construction (Barker 2015: 32). Within the bustle captured in some of these photographs, a game reminiscent of “Where-is Waldo” is needed to find the hierarchical structures so apparent in the group prints (Figure 18). The black workers are centre-stage performers when the hard, physical work of construction is featured – a visual testament of their invaluable contribution (Barker 2015: 35). More informal, candid photographs such as the photographs of white and black construction workers relaxing together, fishing, and doing chores like washing, portray a sense of camaraderie and weakened power boundaries (Figure 13 & 14).

De Jong (1989: 198) asserts that due to the seemingly mutually respectful relationship, the black African workers started to adopt the attire of the European railway personnel. Wearing old hand-me-down shirts, pants, and jackets showed that the black Africans tried to be like the European (De Jong 1989: 198). For Mbem (2018: 74, 79), the states of dress and undress, and European attire versus traditional wear amongst the black African men pictured, points



to cultural assimilation and expressions of power. Although we define power in different ways, we understand it to be “the ability of one individual in a relationship (the influence agent) to exert influence on another person (the target of influence) so that the influence agent obtains the specific outcomes” (Simpson et al. 2015: 393). Therefore, social influence ensues when “the presence (either actual or implied) or the actions of one person (the influence agent) produce a change in the beliefs, attitudes, or behaviour of another person (the target of influence)” (Simpson et al. 2015: 395). The transition from donning traditional wear to emulating European dress codes demonstrates the black workers’ adaption to the expectations of Western modernity and individual proximity to power (Mbem 2018: 74, 77). The semi-clothed or traditionally clothed black Africans occupied the lowest ranks within the company or are new additions. The black African employees dressed in more European fashions seem to possess more power and standing with a more acquired sense of belonging to the company (Figure 5 & 17) (Mbem 2018: 74).



*Figure 19* Detail of Figure 5, a small group of black women posing with European and African construction workers at Reid’s camp, 1892.  
Photo: Het Zuid-Afrikahuis Map71-17a 1257.

On the topic of social and power relationships, gender relationships along the rail line are an aspect that has received little to no attention. The white women were photographed in association with their male affiliation to the company. They are the wives, paramours, or companions, and visiting family members of male NZASM officials and employees (Figures 15

& 17). Black women do not often appear in camp photographs. They are either situated on the periphery of group poses, not included in photographs or not present in the camps at all (Figures 19). The narratives and roles of these black women are unknown and untold (Mbem 2018: 81). The most common photographic depictions of black women along the line are, however, as “harmless and exotically-costumed anthropological” subjects presented for the European gaze (Mbem 2018: 81). Semi-naked, young black women are photographed within natural environments or sometimes even in the company of amused-looking European men. Furthermore, within the literature, the only mention of women is to note that some of the NZASM employees visited brothels and had relations with local African women along the line that would have been considered as improper and immoral at the time (De Jong 1989: 84-85).



*Figure 20* Indian women and children in the camp at KM 212, Waterval-Boven region. One of the only known camps with families present.  
Photo: Transnet Heritage Library and Archives 100110/9.

The largest group of women photographed in a construction workers' camp are a group of Indian women with their children in the Indian camp at KM 212, outside Waterval-Boven (Figure 20). Apart from their occasional appearance within photos, the sizeable Indian workforce present during the *Oosterlijn's* construction has been omitted from the literature.

### 3.6 PACKING UP CAMP AND MOVING ALONG

Too many nameless faces stare at us across time when we look at the historical photographs of the NZASM *Oosterlijn's* construction. The ahistorical are present, physically, but their agencies are overshadowed in the archives by the dominant narrative of the railway company, and their Dutch employees (Mbem 2018: 84). Weaving together a picture of life in the construction camps from piecemeal documentary sources merely succeeded in creating an atmospheric Impressionistic painting of events. With a tilt of the head and by squinting your eyes, daubs of colour flow together to form a picture, but details are frustratingly elusive. Too many questions remain unanswered about the lived, day-to-day experiences of the majority of the people present during the construction of the rail line.

Nonetheless, it is time to pack up camp and proceed to the next destination. The following chapter presents the reader with an account of the author's adventures along the *Oosterlijn*, in search of the archaeological footprints of the construction camps.

## 4. A LONG WAY TO PRETORIA – AN ARCHAEOLOGICAL SURVEY

*Trains, like time and tide, stop for no one.*

**Jules Verne (1873: 204)**

On 9 July 2017, we left an unexpectedly wet Roodepoort for the warmer winter climes of the Lowveld. Tightly packed into the vehicle were camping gear, surveying equipment, personal belongings, years of Cultural Resource Management (CRM) survey experience, a plan, high hopes and expectations, and a good measure of trepidation. I had formulated a plan for a purposive survey based on archival research and digital surveys. Starting in Komatipoort, we would follow the *Oosterlijn*, back to Pretoria, stopping at predetermined locations of possible campsites, as well as areas that held the potential for sites. We allocated two weeks in which to travel and investigate the 472 km rail line.

### 4.1 THE PLAN

One hundred and forty-eight NZASM themed photographs were investigated at the National Archives Repository in Pretoria, and ten photographs were retrieved that show workcamps along the *Oosterlijn*. Only five of these have identifying place names written on the back of the photographs. These include Komatipoort, Oorsprong, Hectorspruit, Krokodilpoort, and Belfast. A search for NZASM associated photographs on the online *Beeldbank* or photographic repository of the Zuid-Afrikahuis in the Netherlands results in two hundred and fifty entries. Thirty-two of these photos depict workcamps, some of the same camp from different angles. Fortunately, the photographer(s) inscribed the plates with their locations, including the kilometres along the rail line, marked from the Mozambican border towards Pretoria. At the Transnet Heritage Library and Archives in Johannesburg is a photographic album marked as the work of G. Raucher and W. Caney. Seven construction workcamps' locations were indicated on fifteen of these photographs. After collating the data from the three different archives, I compiled a list of twenty-four locations to be surveyed (Table 2). The majority of the photographs show camps located in the Lowveld, from Komatipoort to Waterval-Boven Tunnel, with only a few on the Highveld, on the stretch of the rail line between Waterval-

Boven and Belfast. However, upon closer inspection, the photograph of the camp at Belfast (TAB7428) appears to be a misidentified photograph of Pampoenspruit. Nevertheless, it was added to the list to investigate.

From the photographs and literature, there appear to be three basic categories of railway construction-related camps: those relating to activities ahead of construction like surveying, those relating to construction activities before track-laying like bridge and culvert construction, the formation of cuttings and the tunnel, and then those relating to track laying (ballasting, rail laying). More than half of the camp locations identified from photographs fall in the second category and show camps near bridges, culverts, and the tunnel. These photographed camps are located close to the structures under construction. Predictive site modelling suggests that although not photographed, campsites would be in the vicinity of all the other bridges along the line. That meant adding fourteen more potential sites to the survey list.

With a final list of thirty-eight campsite locations to survey and a tight time frame, it was necessary to prioritise. By doing a digital survey, utilising satellite imagery and technologies such as the Google Earth Pro desktop application, and QGIS mapping software, it was possible to investigate the environment of all the prospective campsites. Although sites themselves were too ephemeral to show up on satellite photos, it was useful to remotely scan the landscape, and note natural erosion and anthropogenic disturbances like built infrastructure and agricultural activities in the study areas. The old aerial photographs were instrumental in discerning changes in topography. A priority value was given to each site based on the digital assessment, and the probability that remnants of the campsite might still exist. High priority ratings were given to sites with a photograph that would help pinpoint the exact location, and with little to no anthropogenic disturbances in the area. Probable sites with medium priority included photographed sites with less than favourable landscape features, and unphotographed sites but with favourable landscape features. Lastly, low priority values were assigned to highly compromised unphotographed sites. Seventeen survey locations were earmarked with “High” priority values, and these sites were allocated the most time for an intensive purposive survey (Table 2; Figures 21 & 22).



**Table 2** List of probable workcamp sites compiled from historical photographs, and potential sites determined by predictive modelling.

	WORK CAMP	LOCATION	TYPE OF CAMP	PRIORITY VALUE	ARCHIVE PROVENANCE		
					ZA*	NARP* *	THLA***
LOWVELD	1. KM 3-5 Komatipoort	25°26'43.62" S 31°57'36.63" E	Tents, prefabricated timber, and beehive huts, the area appears undisturbed	HIGH	1220 1226 1202	TAB7347	
	2. KM 19 Oorsprong	25°26'14.62" S 31°46'31.91" E	Prefabricated timber, tents, and beehive huts, the area appears undisturbed	HIGH		TAB7407	
	3. KM 28 Hectorspruit	25°26'10.06" S 31°40'36.12" E	Prefabricated timber, tents, and beehive huts, the area appears somewhat compromised	MEDIUM		TAB7406	
	4. KM 40	25°27'26.03" S 31°37'48.81" E	Prefabricated structure, reed, grass, and mud house, area appears undisturbed	HIGH	1236	TAB7384	
	5. KM 41	25°27'32.97" S 31°37'14.92" E	Prefabricated structures, area appears undisturbed	HIGH	1237		
	6. Bridge west of Hectorspruit	25°27'39.24" S 31°36'50.76" E	Unknown as no photograph exists, but the area around the bridge relatively undisturbed, traces of camp may still be present	MEDIUM			
	7. KM 59 Bridge at Soutwater Creek	25°30'21.09" S 31°27'33.76" E	Tents, prefabricated timber, and beehive huts, the area appears somewhat compromised	MEDIUM	1242		
	8. KM 60- 61	25°30'29.74" S 31°26'58.20" E 25°30'42.75" S 31°26'25.90" E	Grass beehive huts and tents, the area appears somewhat compromised	MEDIUM			100108/1 100108/14 100108/15
	9. KM 62.5-63 Culvert	25°30'55.67" S 31°25'52.42" E	Prefabricated structures, grass beehive huts and tents, area appears somewhat compromised	MEDIUM	1251		100108/19 100108/21
	10. KM 65 Bridge		Grass, reed, and mud structures, area appears undisturbed	HIGH	1261		
	11. KM 76 Kaap River Bridge	25°32'28.15" S 31°18'56.69" E	Tents, prefabricated structures, reed and mud structures, and beehive huts, the area appears somewhat	HIGH	1271 1275 1281 1282	TAB7379 TAB7321	

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WORK CAMP	LOCATION	TYPE OF CAMP	PRIORITY VALUE	ARCHIVE PROVENANCE		
				ZA*	NARP* *	THLA****
		compromised, but the various positions of the camps in the area of the bridge heightens the possibility of parts of the camp remaining				
12. KM 85 Rail bridge	25°31'10.56" S 31°13'51.85" E	Prefabricated timber, the area appears undisturbed	HIGH	1290 1178		
13. Second bridge Krokodilpoort	25°30'57.72" S 31°13'34.45" E	Unknown as no photograph exists, but the area around the bridge relatively undisturbed, traces of camp may still be present	MEDIUM			
14. KM 93 Bridge Krokodilpoort	25°29'59.33" S 31°10'24.68" E	Large camp with prefabricated structures, grass and reed structures, tents, beehive huts, some areas appear undisturbed	HIGH	1302 1306	TAB7415	
15. KM 97 Culvert and bridge west of Krokodilpoort	25°29'23.28" S 31°09'27.72" E 25°29'14.96" S 31°09'06.50" E	Reed and mud structures, cone-on-wall grass and mud structures, beehive huts, the area appears undisturbed	HIGH	1313		
16. KM 101 Bridge Karino	25°28'20.64" S 31°05'48.48" E	Prefabricated building, reed and mud structures, beehive huts, the area appears somewhat compromised	MEDIUM	1315		
17. Bridge over the Nelspruit	25°27'43.39" S30°57'01.30" E	Unknown as no photograph exists, but the area around the bridge relatively undisturbed, traces of camp may still be present	MEDIUM			
18. Bridge west of Cairn	25°26'41.62" S 30°53'10.20" E	Unknown as no photograph exists, and the area around the bridge too compromised	LOW			
19. Bridge east of Alkmaar	25°26'39.52" S 30°51'18.58" E	Unknown as no photograph exists, and the area around the bridge too compromised	LOW			

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	WORK CAMP	LOCATION	TYPE OF CAMP	PRIORITY VALUE	ARCHIVE PROVENANCE		
					ZA*	NARP* *	THLA***
	20. KM 138 Alkmaar	25°26'28.21" S 30°49'35.86" E	Beehive huts, the area appears somewhat compromised	MEDIUM	1334		
	21. Bridge west of Alkmaar	25°26'20.64" S 30°49'05.75" E	Unknown as no photograph exists, but the area around the bridge relatively undisturbed, traces of camp may still be present	MEDIUM			
	22. KM 150	25°27'08.98" S 30°44'35.45" E	Reed, grass, and mud building, the area appears undisturbed	HIGH	1339		
	23. KM 168-169 Ngodwana Bridge and culvert	25°34'17.83" S 30°39'35.61" E	Beehive huts and tents, the area appears undisturbed	HIGH	1348 1349 1350		
	24. Bridge east of Hemlock	25°35'54.60" S 30°35'40.92" E	Unknown as no photograph exists, and the area around the bridge too compromised	LOW			
	25. Bridge west of Hemlock	25°36'59.23" S 30°31'20.83" E	Unknown as no photograph exists, but the area around the bridge relatively undisturbed, traces of camp may still be present	MEDIUM			
	26. KM 195 Skoonspruit Bridge	25°36'35.67" S 30°25'49.38" E	Beehive hut, the area appears undisturbed	HIGH	1360		
	27. KM 201-202 Towards Waterval-Onder	25°38'53.98" S 30°23'06.31" E	Tents, beehive huts, area appears undisturbed	HIGH			100109/1 100109/2
	28. KM 203 Five Arches Bridge Dwaalheuwel Spruit	25°38'40.00" S 30°21'15.00" E	Beehive huts, the area appears undisturbed	HIGH	1366		
	HIGHVELD	29. KM 207.5 Waterval-Boven Tunnel	25°38'04.25" S 30°20'41.23" E	Tents, beehive huts, corrugated sheds, area appears undisturbed	HIGH	1375 1386	
30. KM 212.5		25°38'11.90" S 30°18'29.67" E	Wood, stone and corrugated-iron sheds, the area appears undisturbed	HIGH			100110/19
31. KM 215.5 Pampoenspruit Bridge		25°38'57.30" S 30°17'22.83" E	Prefabricated corrugated-iron structures, beehive huts, and tents,	HIGH	1405 1406 1407 1408	TAB7428	100110/25 100110/26 100110/28 100110/29



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WORK CAMP	LOCATION	TYPE OF CAMP	PRIORITY VALUE	ARCHIVE PROVENANCE		
				ZA*	NARP* *	THLA***
		area appears undisturbed				
32. Bridge west of Goed Geluk	25°38'56.05" S 30°16'34.05" E	Unknown as no photograph exists, but the area around the bridge relatively undisturbed, traces of camp may still be present	MEDIUM			
33. Leeuwspruit Bridge	25°39'13.86" S 30°15'33.94" E	Unknown as no photograph exists, but the area around the bridge relatively undisturbed, traces of camp may still be present	MEDIUM			
34. Belfast	25°42'23.01" S 30°03'14.03" E	Prefabricated corrugated-iron structures, beehive huts, area appears somewhat compromised	MEDIUM		TAB7428	
35. Bridge Klein Olifants River	25°46'09.05" S 29°31'44.46" E	Unknown as no photograph exists, and the area around the bridge too compromised	LOW			
36. Bridge Groot Olifants River	25°48'22.63" S 29°19'07.49" E	Unknown as no photograph exists, but the area around the bridge relatively undisturbed, traces of camp may still be present	MEDIUM			
37. Bridge Saalklapspruit	25°52'44.28" S 29°00'41.80" E	Unknown as no photograph exists, and the area around the bridge too compromised	LOW			
38. Bridge Bronkhorstspruit	25°47'43.45" S 28°45'01.88" E	Unknown as no photograph exists, and the area around the bridge too compromised	LOW			

\*ZA = Zuid-Afrikahuis Online repository \*\*NARP = National Archives Repository in Pretoria \*\*\* THLA = Transnet Heritage Library and Archives

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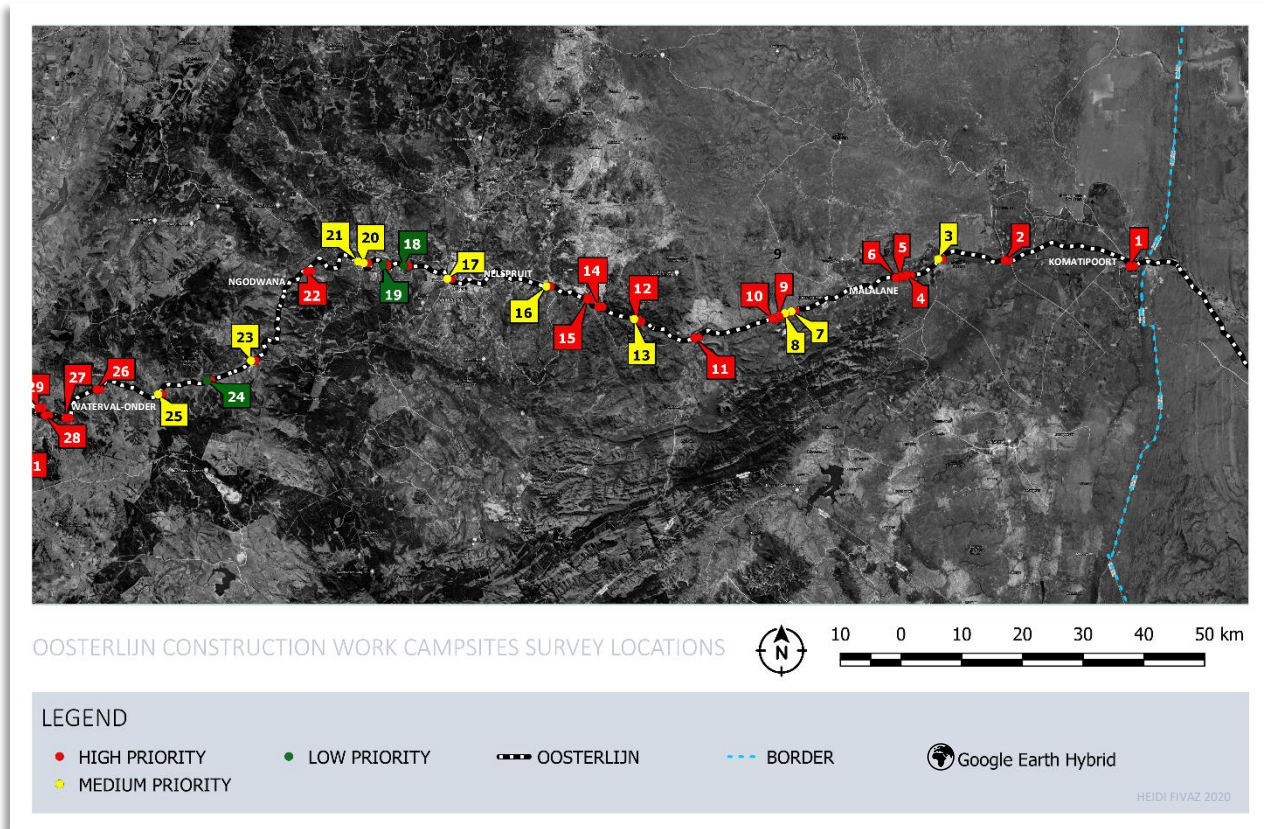


Figure 21 Listed survey locations in the Lowveld, KomatiPoort to Waterval-Onder, indicated on Google Earth Hybrid satellite imagery.



Figure 22 Listed survey locations in the Highveld, Waterval-Boven to Pretoria, indicated on Google Earth Hybrid satellite imagery

## 4.2 CRIB NOTES

Embarking on the expedition, knowing where to look, was akin to having a treasure map to steer the survey. Even though I had x-marked spots, I still had to identify any archaeological features present at these sites successfully. The historical photographs forearmed me with knowledge regarding the types of structures in the workcamps, and I could deduce from the visual clues what their archaeological footprint might be. With previous excavation experience on various mid- to late-19<sup>th</sup>-century residential sites under my belt, I felt confident about recognising the archaeological features and material related to domestic spaces. However, to identify the archaeological remnants of the industrial processes and activities involved in 19<sup>th</sup>-century railroad construction, I turned to similar railway workcamp studies in other parts of the world, to expand my what-to-look-for list. To this end, a document compiled by the California Department of Transportation (Caltrans 2013) about identifying 19<sup>th</sup>- and early-20<sup>th</sup>-century workcamps in that state, was immensely useful. Even though it describes site features and material characteristics of workcamps in the United States of America, railway construction was a global 19<sup>th</sup>-century phenomenon with corresponding parallels between countries. Furthermore, it highlights any differences between international sites and any campsites identified on the *Oosterlijn*.

Manufacturing chronology guides (Busch 1981, Jones & Sullivan 1989, Malan 2009, Memmott, 2015, Merritt 2014) for artefact types common on late-19<sup>th</sup>-century sites completed the toolkit. Artefacts like glass bottles, ceramics, and cans are reliable temporal markers for archaeological sites. Uploaded onto a smart device in a pdf or epub format for easy accessibility in the field, and cursory on-the-spot approximations of the manufacture period of found material, the guides can aid with construction campsite identification, as the *Oosterlijn's* construction falls within a short time frame.

The archaeological features and associated material culture were listed under four probable feature types that might be found during the survey: residential, construction, infrastructure, and additional facilities (Table 3). Initial and subsequent surveyors were briefed with the contents of the compiled list in preparation of the surveys.

**Table 3** List of expected archaeological features and material that may help identify construction worker campsites.

	WORKCAMP AREA	ASSOCIATED STRUCTURES	ARCHAEOLOGICAL FEATURES	ARCHAEOLOGICAL MATERIAL
RESIDENTIAL	HOUSING	<ul style="list-style-type: none"> <li>• Tents</li> <li>• Reed, grass, and mud structure</li> <li>• Beehive huts</li> <li>• Prefabricated timber structures</li> <li>• Prefabricated corrugated-iron structures</li> </ul>	<ul style="list-style-type: none"> <li>• Tent platforms: levelled areas, flats, pads, stone platforms,</li> <li>• Small berms, ditches</li> <li>• Terraces</li> <li>• Compacted floors</li> <li>• Stone/concrete foundations</li> <li>• Stonewalling</li> <li>• Landscaping</li> <li>• Household middens</li> <li>• Sheet refuse</li> </ul>	<ul style="list-style-type: none"> <li>• Tent stakes and pegs</li> <li>• Corrugated-iron, metal sheeting</li> <li>• Burrs and grommets</li> <li>• Roofing, floor nails</li> <li>• Window glass</li> <li>• Personal items: clothing parts, razor blades, toothpaste, toothbrushes, combs, hairbrushes, smoking paraphernalia</li> <li>• Enamelware basins</li> </ul>
	FOOD PREPARATION AND STORAGE	<ul style="list-style-type: none"> <li>• Cooking screens</li> <li>• Kitchens</li> <li>• Fire pits</li> <li>• Hearths</li> <li>• Prefabricated corrugated-iron structures</li> </ul>	<ul style="list-style-type: none"> <li>• Compacted floors</li> <li>• Levelled areas, flats, pads, stone platforms</li> <li>• Stone/concrete foundations</li> <li>• Stonewalling</li> <li>• Packed stone</li> <li>• Fire pits</li> <li>• Hearths</li> <li>• Food waste midden</li> <li>• Sheet refuse</li> </ul>	<ul style="list-style-type: none"> <li>• Cast-iron pots</li> <li>• Low-fired earthenware pots</li> <li>• Ceramic tableware</li> <li>• Enamelware dishes</li> <li>• Glass bottles and jars</li> <li>• Cans</li> <li>• Utensils</li> <li>• Food waste</li> <li>• Faunal remains</li> <li>• Barrel hoops</li> <li>• Crate parts</li> <li>• Meat hooks</li> </ul>
	PRIVIES	<ul style="list-style-type: none"> <li>• Reed, grass, and mud structure</li> <li>• Prefabricated timber structures</li> <li>• Prefabricated corrugated-iron structures</li> </ul>	<ul style="list-style-type: none"> <li>• Levelled area, pad</li> <li>• Foundation</li> <li>• Privy pits/features</li> </ul>	<ul style="list-style-type: none"> <li>• Packed stone</li> <li>• Corrugated sheet metal</li> <li>• Roofing material</li> </ul>
CONSTRUCTION	ADMINISTRATION	<ul style="list-style-type: none"> <li>• Tents</li> <li>• Reed, grass, and mud structure</li> <li>• Beehive huts</li> <li>• Prefabricated timber structures</li> <li>• Prefabricated corrugated-iron structures</li> </ul>	<ul style="list-style-type: none"> <li>• Tent platforms</li> <li>• Terraces</li> <li>• Compacted floors</li> <li>• Stone/concrete foundations</li> </ul>	<ul style="list-style-type: none"> <li>• Tent stakes and pegs</li> <li>• Corrugated-iron, metal sheeting</li> <li>• Roofing, floor nails</li> <li>• Window glass</li> <li>• Writing implements and ink containers</li> </ul>



WORKCAMP AREA	ASSOCIATED STRUCTURES	ARCHAEOLOGICAL FEATURES	ARCHAEOLOGICAL MATERIAL	
INDUSTRIAL	<ul style="list-style-type: none"> <li>Workshops, like carpentry</li> <li>Blacksmith shops</li> <li>Prefabricated corrugated-iron structures</li> <li>Make-shift sheds</li> <li>Machine shop/equipment foundation and storage</li> </ul>	<ul style="list-style-type: none"> <li>Concrete foundations</li> <li>Forge, casting floor</li> <li>Industrial by-products, waste</li> <li>Refuse dumps</li> <li>Ash pits</li> <li>Embankments</li> <li>Retaining walls</li> <li>Platforms</li> <li>Portable forges</li> </ul>	<ul style="list-style-type: none"> <li>Blacksmithing debris such as clinker, coal</li> <li>Residue such as metal shavings, slag</li> <li>Rod and bar stock</li> <li>Scrap metal</li> <li>Railroad hardware</li> <li>General tools and hardware</li> <li>Specialist tools</li> <li>Corrugated-iron, metal sheeting</li> <li>Roofing, floor nails</li> <li>Galvanised buckets</li> </ul>	
	MINING	<ul style="list-style-type: none"> <li>Quarries</li> <li>Borrow pits</li> <li>Ore-processing</li> <li>Industrial structures/buildings,</li> <li>Foundations</li> <li>Machine mounts</li> </ul>	<ul style="list-style-type: none"> <li>Cuttings</li> <li>Cut banks</li> <li>Waste-rock piles</li> <li>Landscape cuts and pits</li> <li>Drill scars</li> </ul>	<ul style="list-style-type: none"> <li>Expend tools and equipment</li> <li>Spoil piles</li> </ul>
	STORAGE	<ul style="list-style-type: none"> <li>Corrugated-iron sheds, lean-to's</li> <li>Open-air</li> </ul>	<ul style="list-style-type: none"> <li>Levelled area, pad</li> <li>Foundation</li> <li>Dugout</li> </ul>	<ul style="list-style-type: none"> <li>Barrel hoops</li> <li>Crate parts</li> </ul>
INFRASTRUCTURE	TRANSPORT OF EQUIPMENT AND GOODS	<ul style="list-style-type: none"> <li>Roads</li> <li>Trails</li> <li>Auxiliary bridges</li> <li>Secondary rails</li> <li>Embankments</li> <li>Stone/concrete platforms</li> </ul>	<ul style="list-style-type: none"> <li>Roads</li> <li>Trails</li> <li>Rock-lined or rock-retained paths</li> <li>Embankments</li> <li>Stone/concrete platforms</li> <li>Stone/concrete plinths</li> <li>Retaining walls</li> <li>Cut banks</li> <li>Outspan</li> </ul>	<ul style="list-style-type: none"> <li>Remains of wagons, carriages</li> </ul>
	WATER CONVEYANCE	<ul style="list-style-type: none"> <li>Furrows, ditches</li> <li>Drains</li> <li>Pumping stations</li> <li>Water tank plinth</li> </ul>	<ul style="list-style-type: none"> <li>Furrows, ditches</li> <li>Modified watercourses</li> <li>Stone-lined furrows</li> <li>Elevated canals/trestles</li> <li>Drains</li> <li>Wells</li> <li>Stone/concrete foundations</li> <li>Machine mounts</li> <li>Stone/concrete plinth</li> </ul>	<ul style="list-style-type: none"> <li>Pipes</li> <li>Cisterns, tanks</li> <li>Valves, faucets</li> <li>Buckets, basins</li> <li>Components of pumps</li> </ul>

	WORKCAMP AREA	ASSOCIATED STRUCTURES	ARCHAEOLOGICAL FEATURES	ARCHAEOLOGICAL MATERIAL
ADDITIONAL FACILITIES	COMMISSARY, SHOPS AND HOTELS	<ul style="list-style-type: none"> <li>• Prefabricated corrugated-iron structures/ shops, hotels</li> <li>• Stone and brick structures</li> </ul>	<ul style="list-style-type: none"> <li>• Stone/concrete foundations</li> <li>• Brick mounds</li> <li>• Landscaping</li> <li>• Midden</li> </ul>	<ul style="list-style-type: none"> <li>• Corrugated sheet metal</li> <li>• Roofing material</li> <li>• Window glass and hardware</li> <li>• Barrel hoops</li> <li>• Crate parts</li> <li>• Meat hooks</li> <li>• Writing implements and other office-related artefacts</li> <li>• Personal items</li> <li>• Tobacco containers and smoking paraphernalia</li> <li>• Food containers</li> <li>• Stoneware and glass liquor bottles</li> <li>• Coins and tokens</li> <li>• Ceramic hotel ware vessels</li> </ul>
	TEMPORARY MEDICAL FACILITIES	<ul style="list-style-type: none"> <li>• Tents</li> <li>• Reed, grass, and mud structure</li> <li>• Prefabricated timber structures</li> <li>• Prefabricated corrugated-iron structures</li> </ul>	<ul style="list-style-type: none"> <li>• Compacted floors</li> <li>• Levelled areas, flats, pads, stone platforms</li> <li>• Stone/concrete foundations</li> <li>• Stonewalling</li> <li>• Packed stone</li> </ul>	<ul style="list-style-type: none"> <li>• Corrugated sheet metal</li> <li>• Roofing material</li> <li>• Window glass and hardware</li> <li>• Medical equipment</li> <li>• Bed and cot frames</li> <li>• Glass and metal medicine containers</li> <li>• Writing supplies</li> </ul>
	LIVESTOCK	<ul style="list-style-type: none"> <li>• Corrals, barns, shelters</li> <li>• Posts, postholes, fencing</li> </ul>	<ul style="list-style-type: none"> <li>• Compacted earth floors</li> <li>• Stonewalling</li> </ul>	<ul style="list-style-type: none"> <li>• Packed stone</li> <li>• Corrugated sheet metal</li> <li>• Roofing material</li> <li>• Wire, and fasteners</li> <li>• Hoof picks, horseshoes</li> <li>• Galvanised buckets</li> <li>• Water troughs</li> <li>• Tack</li> <li>• Fencing materials and barbed wire</li> </ul>

It is crucial to note that the NZASM *Oosterlijn* witnessed countless military actions, especially between June 1900 and the end of the South African War in May 1902. British blockhouses and encampments featured prominently along the line. Military campsites would share many of the same characteristics as the railway construction camps. It is therefore prudent to be cautious in identifying sites as associated with the rail construction, particularly sites without an accompanying historical photograph to support the claim.

### 4.3 TRACKS, TRAINS, TEARS AND A TUNNEL – SURVEY RESULTS

Amongst the many lessons learned during the baseline archaeological survey of the *Oosterlijn*, an important one was that by the time you hear the train, you have just enough time to vacate the tracks before it is upon you. The two weeks sped by with the same frightening speed as the modern trains. Even with the tight schedule, we managed to scope, and survey thirty-one of the thirty-eight sites earmarked for investigation. Surface scatters of late-19<sup>th</sup>-century cultural material, and (or) archaeological features that might be associated with construction workcamps were recorded at ten of these sites. The ten sites that yielded a positive outcome were all marked as “High” priority, and nine have accompanying historical photographs. The exception was the workshop at KM 93 Bridge, to the east of the photographed camp. The purposive survey with supported primary documentation was, therefore, the most effective. An additional site that was not on the initial predetermined survey list was documented in Krokodilpoort. The cultural material associated with the site dates to the early 20<sup>th</sup> century; therefore, while the site was recorded during the survey, it will not be discussed further in this study, as it cannot be linked to the construction of the rail line.

There were a couple of factors that contributed to the mere 26% success rate of the survey. The dense vegetation present at many sites surveyed may have obscured any archaeological traces, especially the lush thorn thickets growing around many of the bridges in the Lowveld, and the very tall grass found across the Highveld. Furthermore, the rail line runs through agriculturally productive landscapes. It meant that often, in lining up the historical photograph with landscape and rail line features, I found myself staring at a sugar-cane plantation or an orchard instead of an archaeological site. The rail line has been upgraded and electrified through the years, and continued maintenance further erases any indication of the 19<sup>th</sup>-century workcamps. On the N4 national road and the service roads along the line, incessant roadworks further disturbed the landscape and the integrity of any sites present. Sites situated around bridges could have washed or eroded away during any floods occurring in the past hundred and thirty years.

A summary of the survey results is presented in Table 4, followed by a more detailed description of the archaeological traces found at the ten aforementioned locations. For the interested reader, focused maps with the survey tracks recorded on handheld GPS devices are provided in Appendix A.

*Table 4 Summary of survey results*

WORKCAMP	SURVEY DESCRIPTION	ARCHAEOLOGICAL FEATURES	ARCHAEOLOGICAL MATERIAL
1. KM 3-5 Komatipoort	Surveyed areas around the bridge and rail on the northern bank of Komati River. A grass-covered site with disturbance from road construction.	Levelled areas, stone platforms, brick mounds, stonewalling, and probable telegraph/utility pole.	Glass, window glass, ceramic fragment, metal, cocopan undercarriage
2. KM 19 Oorsprong	We surveyed an area to the north and south of the rail line. The area is very overgrown, with tall grass and bushes.	None found	None found
3. KM 28 Hectorspruit	The station precinct is too disturbed and developed, even the pockets of brush visible on satellite imagery have traces of dumping.	No archaeological features found, apart from an old NZASM cottage and water tank still standing, relatively well preserved.	None found
4. KM 40	Surveyed the narrow remaining area that lies between the N4, with mounds that might be associated with road construction work—surveyed areas north of the rail line and service road.	Thin concrete foundation, short packed stone wall or grave, and circular stone and mud wall recorded.	None found
5. KM 41	This location was surveyed as an extension of KM 40.	None found	None found
6. Bridge west of Hectorspruit	Surveyed the area around the bridge, between N4 and the service road.	None found	None found
7. KM 59 Bridge at Soutwater Creek	Highly cultivated area. Completed cursory survey of affluent bed. Could not gain access to survey the area to the north where an auxiliary rail and bridge across the Krokodil River might have been situated.	None found	None found
8. KM 60- 61	We surveyed the small pocket of land around the bridge, between the sugar cane plantations. The original bridge is defunct and building the new bridge and moving the rail line disturbed the area.	None found	None found
9. KM 62.5-63 Culvert	The historical photographs show a two-arch culvert, but the one at this location has three arches. The campsite indicated in the photographs is situated in a sugar cane field.	None found	None found



4. A LONG WAY TO PRETORIA – AN ARCHAEOLOGICAL SURVEY

WORKCAMP	SURVEY DESCRIPTION	ARCHAEOLOGICAL FEATURES	ARCHAEOLOGICAL MATERIAL
10. KM 65 Bridge	The historical photograph shows a bridge that does not exist in this vicinity. The photograph is probably of a bridge on a branch line and misattributed to the <i>Oosterlijn</i> . No survey was done of this location.	Not surveyed	
11. KM 76 Kaap River Bridge	The eastern and western banks of the Kaap River are agriculturally developed. The current rail line and new embankments lie to the south of the original trajectory, where parts of the camp would have been. We surveyed riverbanks to the north and south of the rail line.	None found	Piece of ceramic, 19 <sup>th</sup> -century glass, modern building debris
12. KM 85 Rail bridge	We surveyed the mountainous area southeast of the bridge. The area is natural and undisturbed.	Broken concrete flooring, pathway, sheet refuse midden	Glass bottles, ceramic, double-bolt metal clamp, metal fragment
13. Second bridge Krokodilpoort	The environment is very overgrown and steep. Decided that survey of the area would be done blindly and would be too costly time-wise.	Not surveyed	
❖ KM 90.2 Possible ganger's cottage Location not on the initial list.	Location surveyed because it seemed to be a feasible site for a camp. A large flat area close to the river north of the rail line. Although the structural remains were exciting, the material culture puts the site post-1900s.	Stone and concrete foundation, with in-situ corrugated iron sheets, machine mounts, brick mounds, midden, stonewalling, landscaping	1920s-30s glass (marmite and other) bottles, metal screw, spike
14. KM 93 Bridge Krokodilpoort	We surveyed entire hill southeast of the train bridge, and the area between hill, rail line, N4, and Mara road.	Levelled area, embankment, concrete platform, machine mounts, quarry, concrete foundations, waste rock spoil heaps	European ceramics, glass bottles, metal sheeting, nails, tent peg, local ceramics, ammunition, barrel hoop
15. KM 97 Culvert and bridge west of Krokodilpoort	Agricultural development is present north and south of the rail line, except directly around bridge and culvert, which we surveyed.	None found	None found
16. KM 101 Bridge Karino	Dense vegetation and somewhat disturbed. We conducted a cursory survey north to south of the line, west of the bridge, and briefly southeast of the bridge.	None found	None found
17. Bridge over the Nelspruit	The surveyed area north of the rail line showed evidence of earthmoving activities.	None found	None found
18. Bridge west of Cairn	Briefly scoped the densely vegetated and disturbed section south of the rail line adjacent to the N4. The area to the north lies on private property to which we did not gain access at the time of the survey.	None found	None found

4. A LONG WAY TO PRETORIA – AN ARCHAEOLOGICAL SURVEY

WORKCAMP	SURVEY DESCRIPTION	ARCHAEOLOGICAL FEATURES	ARCHAEOLOGICAL MATERIAL
19. Bridge east of Alkmaar	Cultivated lands on the western and eastern banks of the river, therefore only briefly scoped the densely-vegetated pockets north- and southeast of the bridge.	None found	None found
20. KM 138 Alkmaar	Station precinct with extant NZASM buildings still present. The surrounding landscape is cultivated.	None found	None found
21. Bridge west of Alkmaar	We surveyed the southwestern bank of the tributary. The southeastern bank has been cleared for agriculture; no access points to private property north of rail line.	None found	None found
22. KM 150	The historical photograph has no distinctive landscape features to help pinpoint the location of the camp. I focused the survey on the elevated ground south of the rail line at KM 150.	None found	None found
23. KM 168-169 Ngodwana Bridge and culvert	The area around the culvert was severely eroded and washed away. We continued the survey towards the Ngodwana bridge. The slope on the eastern approach to the bridge, above and below the rail line was intensely surveyed.	Packed stone piles and walls, long stone foundations, circular packed stone structures, possible tent platform	Metal cans, stoneware and ceramic sherds, low-fired earthenware fragments, tent pen, barbed-wire
24. Bridge east of Hemlock	The bridge is located in cultivated area, briefly scoped area around the bridge.	None found	None found
25. Bridge west of Hemlock	Surveyed area west of rail line. Dense vegetation inhibited movement and visibility.	None found	None found
26. KM 195 Skoonspruit Bridge	The service road to the bridge is closed off and locked, as it is also access to private property. We could not reach anyone on the number at the gate. From the road, it was apparent that additions to the old bridge have been made, that would have compromised the site depicted in the historical photograph.	Not surveyed	
27. KM 201-202 Towards Waterval-Onder	Surveyed areas along the service road as it follows the original trajectory of the rail line.	Packed stone, graves	Stoneware sherds, glass bottles
28. KM 203 Five Arches Bridge Dwaalheuwel Spruit	Surveyed the area at the bottom of the bridge, accessed via the tourist pathway.	None found	None found

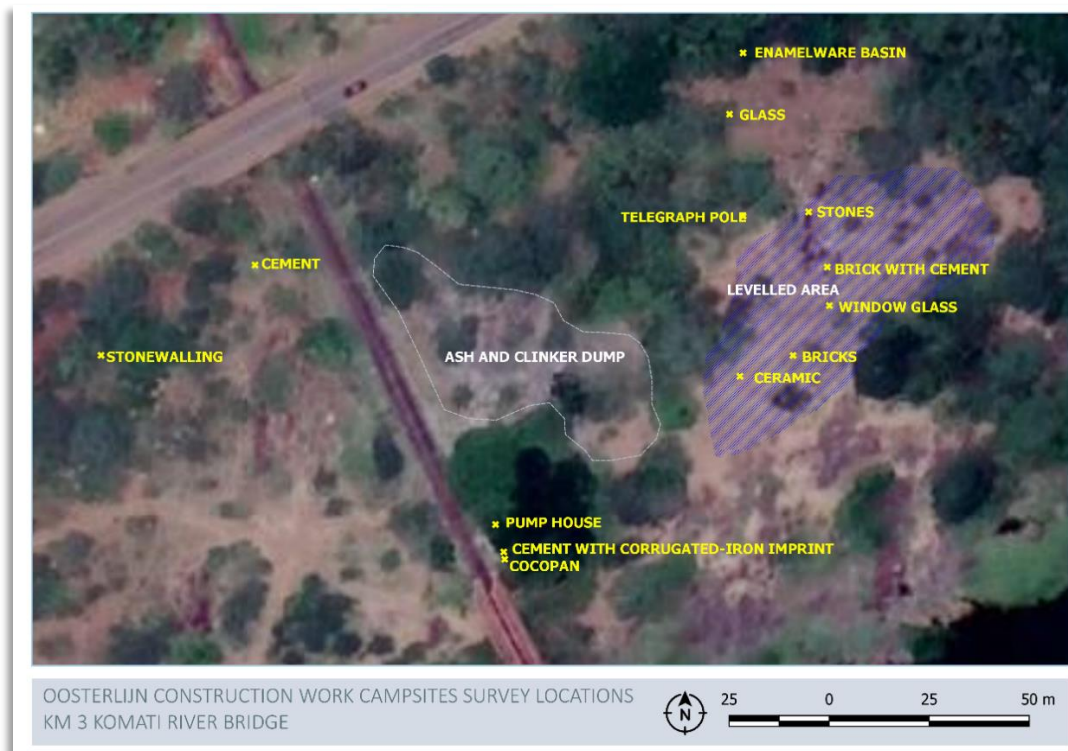
4. A LONG WAY TO PRETORIA – AN ARCHAEOLOGICAL SURVEY

WORKCAMP	SURVEY DESCRIPTION	ARCHAEOLOGICAL FEATURES	ARCHAEOLOGICAL MATERIAL
29. KM 207.5 Waternal-Boven Tunnel	We surveyed the eastern slope of the mountain between the eastern and western tunnel entrances, down to the river and bottom of the falls.	Terraces, levelled platforms, pathways, midden	Glass bottles, stoneware ceramics, low-fired earthenware, metal button, thimble, enamelware basin
30. KM 212.5	Surveyed large area between the rail line and Elands River, and the western slope of the hill at this location. Area disturbed by livestock grazing as well as dams built for trout farming.	Graves, stonewalling, packed stone	Ceramics, kettle, pot lid, metal sheet, spoon
31. KM 215.5 Pampoenspruit Bridge	We surveyed the slope of the hill from the dirt road down towards the bridge. The area was recently burned, which facilitated visibility.	Concrete and stone foundations, circular stone structures, middens, retaining wall, modern graves	Ceramics, glassware, glass bottles, stoneware, corrugated iron, pipe, metal rods, modern bricks
32. Bridge west of Goed Geluk	The section south of the rail line was severely eroded and disturbed, and very tall grass on the northern area impaired visibility.	None found	None found
33. Leeuwspruit Bridge	We surveyed the banks south of the rail line but the very tall grass on the northern area specifically, impaired visibility.	None found	None found
34. Belfast	Station precinct is developed, and no landscape features correspond with those in the attributed historical photograph. We made cursory investigations of open pieces of veld next to the rail line and service road.	None found	None found
35. Bridge Klein Olifants River	Due to the number of farm tracks visible on satellite imagery, and the evidence of dumping and earth moving from the side of the road, it was decided not to survey this site.	Not surveyed	
36. Bridge Groot Olifants River	Due to time constraints, the area was not surveyed.	Not surveyed	
37. Bridge Saalklapspruit	Due to time constraints, the area was not surveyed.	Not surveyed	
38. Bridge Bronkhorstspuit	Due to time constraints, the area was not surveyed.	Not surveyed	

4.3.1 KM 3 KOMATI RIVER BRIDGE



**Figure 23** Early days of the construction of the Komati River Bridge with the footbridge to the right, 1890. Camp on the northern bank of the river, top left in the photograph. Photo: Het Zuid-Afrikahuis Map69-21 1202.



**Figure 24** Distribution of recorded finds across the surveyed area – Komati River Bridge, indicated on Google Earth satellite imagery.

The historical photograph, taken during the beginning stages of the Komati River Bridge, captured the camp on the river's northern bank, to the east of the bridge (Figure 23). Visible in the grainy image is a prefabricated building with several tents. We commenced the survey of an approximate 7.8 ha area around the bridge and rail line on the northern bank of Komati River, east of the northern abutment (Figure 24). The last remnant of the steam era, the pump-house which fell into disuse in 1966 when the line was electrified, still stands. Next to the modern-era building, is a partial concrete foundation with a corrugated-iron imprint which may be late 19<sup>th</sup> century or early 20<sup>th</sup> century. The narrow-gauge undercarriage of a cocopan or tipper rests peacefully between the concrete foundation and the train tracks. The cocopan has been recently cleared of brush and the soil neatly cut-away from it - evidence that someone attempted to fight the encroachment of nature and time. There is a substantial, 70-years' worth of ash, and cinder deposit, covering an area estimated at 0.212 ha. The repeated waste dumping potentially buried any noticeable traces of the 19<sup>th</sup>-century campsite that may exist in this area.

A levelled area is perceptible further east of the bridge. Either the result of human effort or due to water movement across the surface, the area is invitingly flat. Some window glass fragments and a few disparate bricks without sufficient context, as well as some packed stones, were recorded here. To the northeast of the site are some discernible stonewalling and strange concrete circles. Mounds of brick and modern building rubble cover most of this site. The R571 road lies about 160 m north of the bank, close to these features. The use of large-scale earthmoving equipment in the construction of the embankment probably disrupted the integrity of this site. No middens were recorded anywhere in the surveyed area, and the sparsely-scattered material culture has no distinguishing temporal markers. Other finds include metal hardware, enamelware basin, thick-walled glass, and an undecorated ceramic fragment. The evidence from the surveyed area is not conclusively indicative of a campsite.

To round off our search of the Komati River Bridge, we scoped a small area north of the R571, which yielded nothing noteworthy.





**Figure 25** Selection of photographed features and cultural material recorded at Komati River Bridge: (a) cocopan, (b) cement with corrugated-iron imprint, (c) modern pump-house, (d & e) ash and clinker deposit, (f) flat area east of bridge, (g, h, & i) bricks and window glass, (j) stonewalling, (k) unknown cement feature, (l) drinking glass, (m) mound of building rubble, (n) probable telegraph pole, (o) enamel basin, (p) ceramic sherd. Photos: H. Fivaz.



4.3.2 KM 40 CULVERT



Figure 26 Camp with granite koppie (small hill) in the background, KM 40, 1891. Photo: National Archives Repository TAB7384.

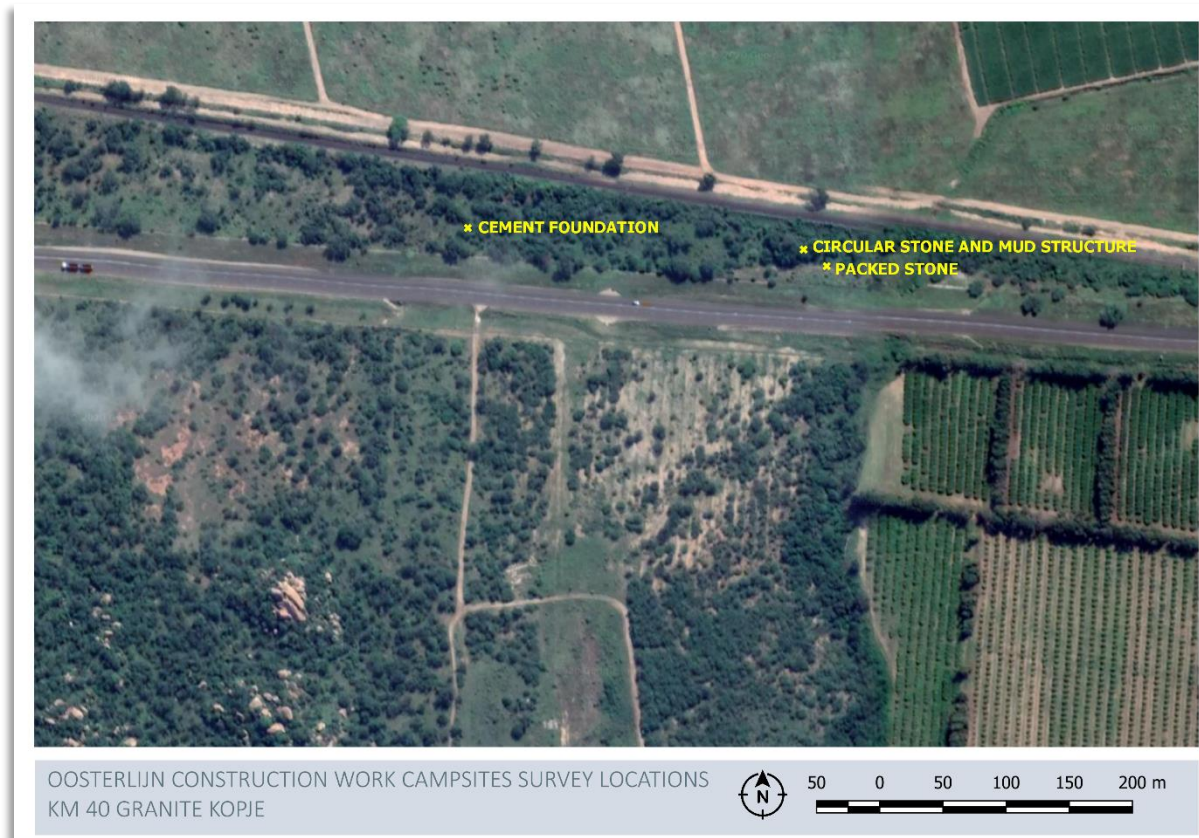
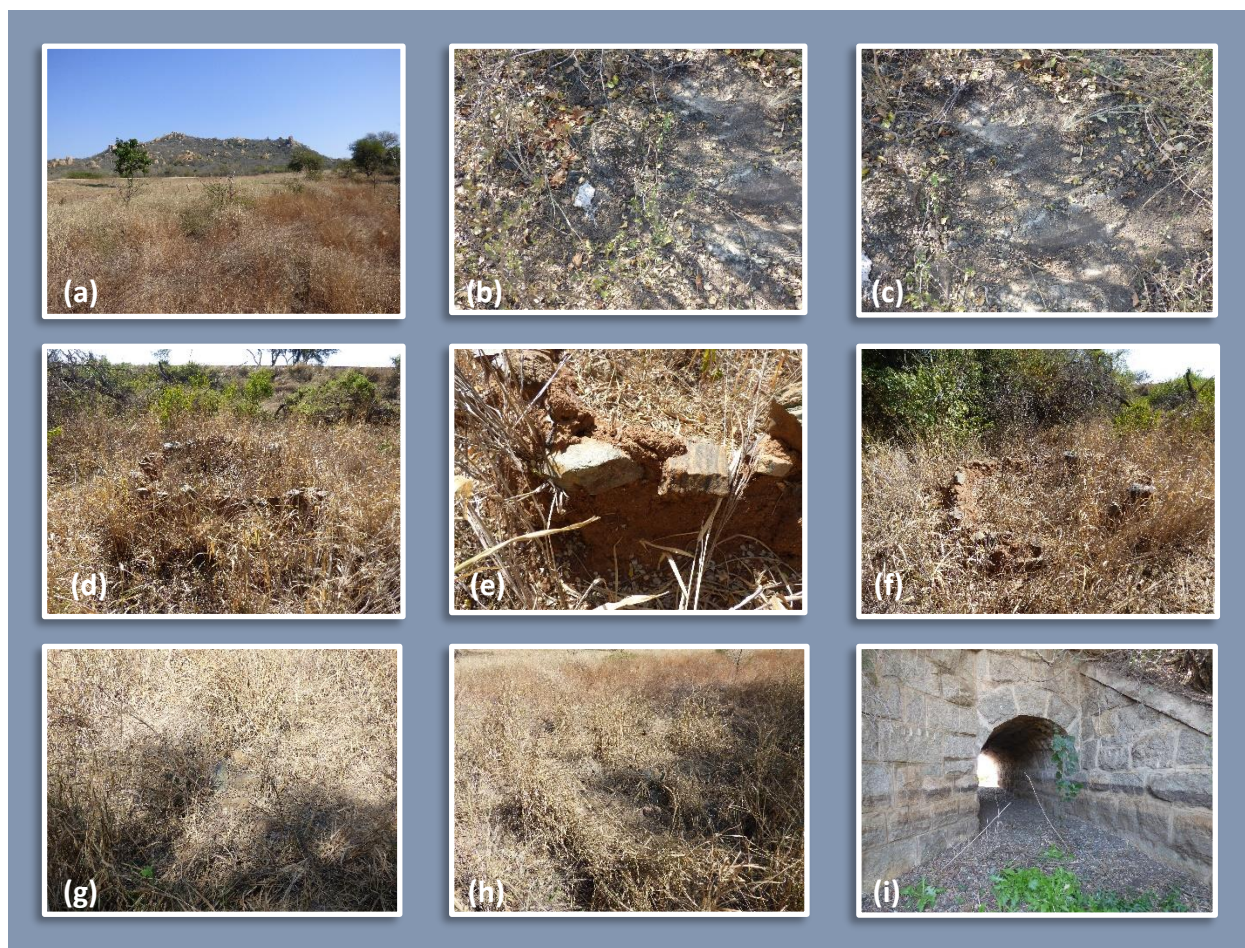


Figure 27 Distribution of recorded finds across the surveyed area – KM 40 Culvert, indicated on Google Earth satellite imagery.



In 1891, the photographer captured the camp at KM 40 against the backdrop of a very distinct granite koppie (Figure 26). The campsite consisted of tents, reed, and mud structures. By aligning the photographer's vantage point with the surveyed landscape, it became clear that the trajectory of the N4 most likely cut through the bulk of the camp (Figure 27). Our survey concentrated on the remaining strip of land between the train tracks and the N4. There were some aggregate dumps and earth mounds in areas closest to the national road, but the rest of the area was minimally disturbed. A thin fine-aggregate concrete patch, which could be a small foundation, was documented. The concrete was not evenly laid out in all places but appeared to be more deliberate than a spill. As far as could be determined, the area with the concrete is approximately 1.2 – 1.5 m<sup>2</sup>.



*Figure 28 Selection of photographed features recorded at the KM 40 Culvert: (a) current view of the granite koppie, (b & c) cement, (d, e & f) circular stone and mud structure, (g & h) packed stone, (i) culvert. Photos: H. Fivaz.*

To the east of the concrete, a circular stone and mud wall was recorded. This feature was the only occurrence of its type recorded along the line. Close to the structure was a stone feature that was either part of a wall or a grave. Even though the features were encouraging that parts of a campsite had been discovered, the complete lack of any associated material culture soon dampened the enthusiasm. No middens or surface scatters were found that could help establish a connection between the features and the 19<sup>th</sup>-century construction of the rail line.

#### 4.3.3 KM 76 KAAP RIVER BRIDGE

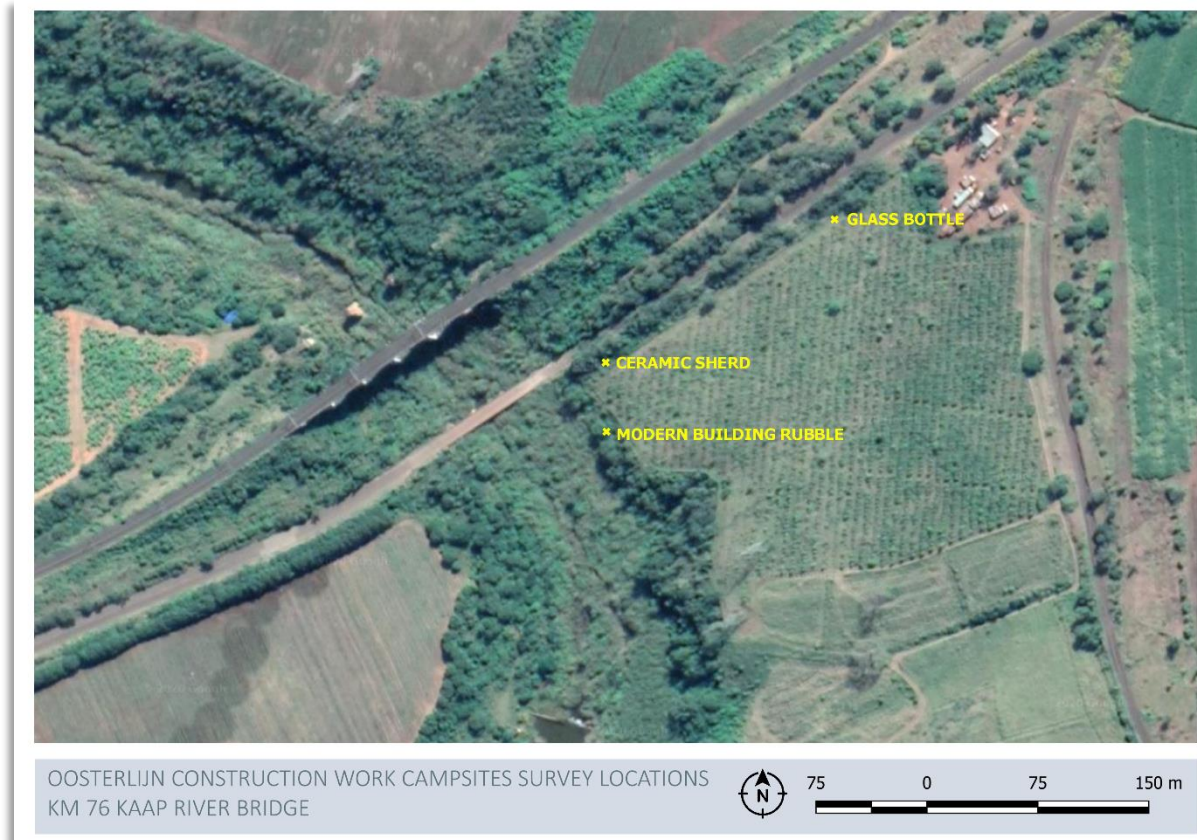


*Figure 29* View of the Kaap River Bridge at KM 76, photographed from the northwest, with the camp on the hill in the background, 1892.  
 Photo: Het Zuid-Afrikahuis Map72-1 1271.

Even though it was apparent from the digital survey that the site captured in the 19<sup>th</sup>-century photograph has been compromised by agriculture, one stubbornly hopes something of the large camp might have survived. The southeastern ridge behind the bridge was occupied with all manner of structures (Figure 29). However, cultivation, road and rail line construction jeopardised any potential for finding an intact site (Figure 30). The excitement of finding any sign of 19<sup>th</sup>-century life was, therefore, disproportionate to the insignificance of the finds. The 19<sup>th</sup>-century bottle base and small teal green transfer-printed ceramic sherd were isolated

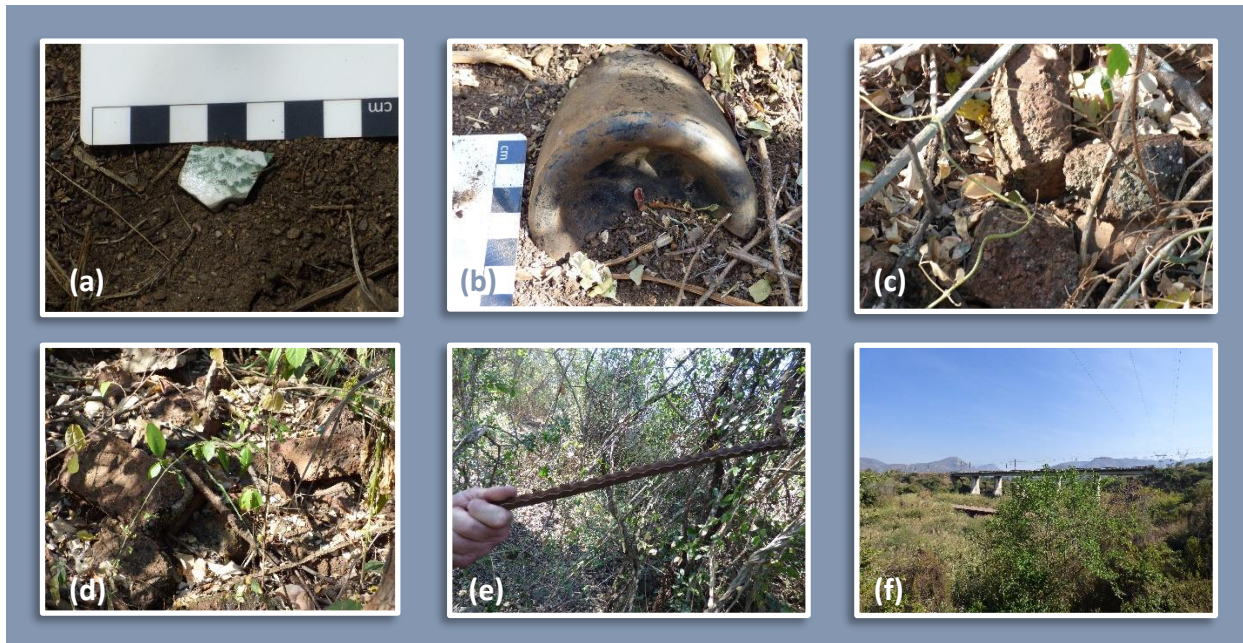


surface finds occurring on the northern edge of the southeastern bank. The only other finds were modern building debris (Figure 31).



*Figure 30* Distribution of recorded finds across the surveyed area – KM 76 Kaap River Bridge, indicated on Google Earth satellite imagery.

Apart from the accessible areas on the southeastern bank, the survey explored areas along the northeast and northwestern banks as well, where other photographs show more campsites were located. The Kaap River Bridge was rebuilt in 1895 after the structure failed during a massive flood. The campsites, visible in the photographs of its reconstruction, are now nut and mango orchards and no archaeological footprints were found.



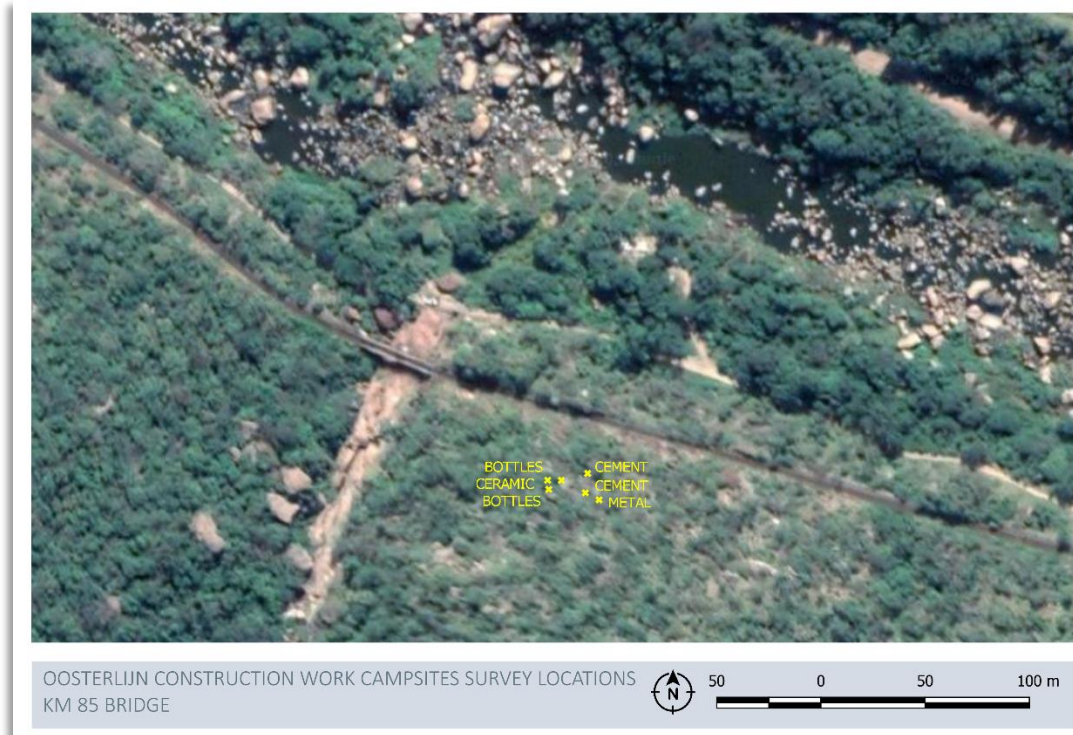
**Figure 31** Selection of photographed features recorded at the KM 76 Kaap River Bridge: (a) teal green transfer-printed ceramic, (b) 19<sup>th</sup>-century glass bottle base, (c, d & e) brick and building rubble, (f) view of the new Kaapriver Bridge adjacent to the original NZASM structure. Photos: H. Fivaz.

#### 4.3.4 KM 85 RAIL BRIDGE



**Figure 32** View of the construction of the bridge at KM 85, with a supervisor's hut top right, 1891. Photo: Het Zuid-Afrikahuis Map68-18 1178.



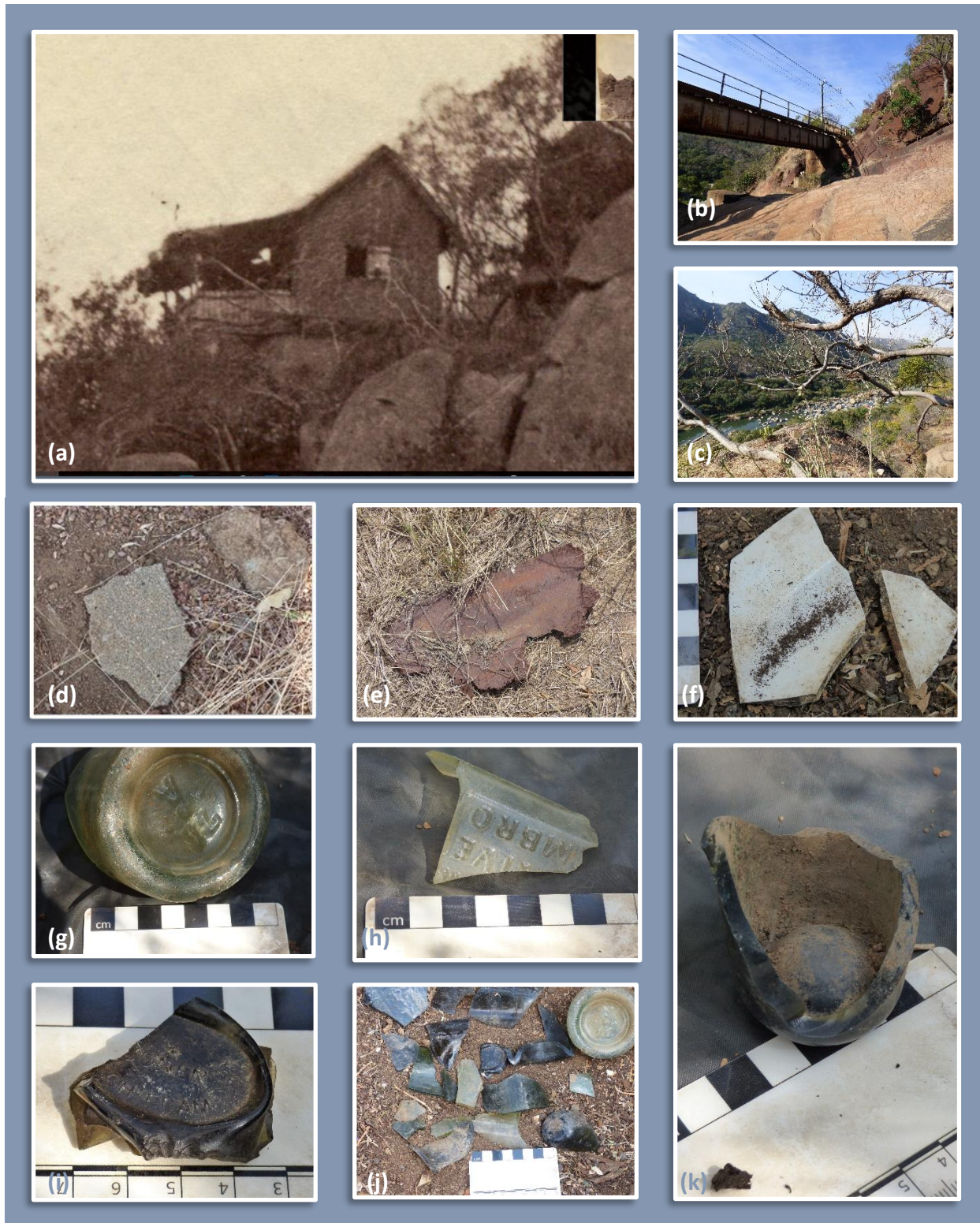


*Figure 33* Distribution of recorded finds across the surveyed area – KM 85 Bridge, indicated on Google Earth satellite imagery.

When framing his shot of the bridge under construction, the photographer deliberately included the precariously positioned little house of the supervisor in his composition (Figure 32). By enlarging the photograph on the computer screen, one can make out people relaxing on the veranda (Figure 34). Though the decision to erect the prefabricated structure in this unlikely spot seems eccentric, it was an excellent position from which to supervise the work some distance to the east and west. Access to the site was arduous, even after we stumbled across the overgrown path that led us directly to the site. However, the late-afternoon view was, admittedly, rewarding, and sitting down where the veranda would have been to enjoy it, was one of those Barthesian “there-then/here-now” experiences.

It is not possible to establish from the photograph whether the house was a prefabricated, timber, or corrugated-iron building. The building does appear to be elevated off the ground, resting on large rocks and stilts, especially the front veranda. Attributed structural remains left were thin concrete fragments, probably parts of a flooring surface, broken up when the prefabricated parts were removed to another location (Figure 34). A piece of metal sheeting

seen close by might have had some structural purpose. From the photograph, one can also barely discern what appears to be a fence around the back of the house. No sign of this could be seen during our survey.



**Figure 34** Selection of photographed features recorded at the KM 85 Bridge: (a) detail of Figure 30, Het Zuid-Afrikahuis Map68-18 1178, (b) view from underneath bridge towards the site, (c) view from the site, (d) pieces of cement flooring, (e) corrugated-iron sheet fragment, (f) white ceramic flatware, (g, h, i, j, & k) glass bottles. Photos: H. Fivaz.



There was no localised midden in the area. Instead, a sheet of refuse lay to the southwest of the concrete. Recorded material culture included two white ceramic flatware pieces and numerous glass sherds and bottle bases (Figure 34). The glass bottle remains range in colour from clear, and aqua, to green, amber, and black. Two of the bottle bases and one of the body fragments were embossed. The majority of the glass recorded is thick-walled and represents fragments from various probable typologies, including wine, liquor, soda water, household, foodstuff, or medicinal containers.

#### 4.3.5 KM 93 BRIDGE KROKODILPOORT

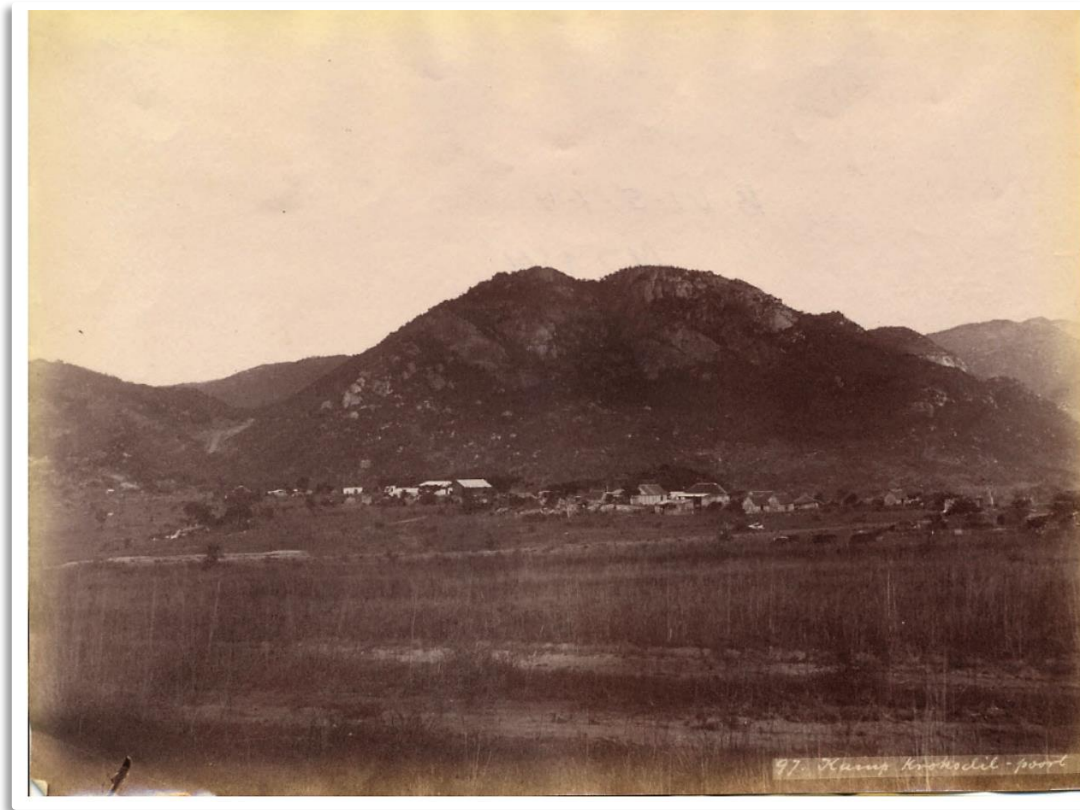
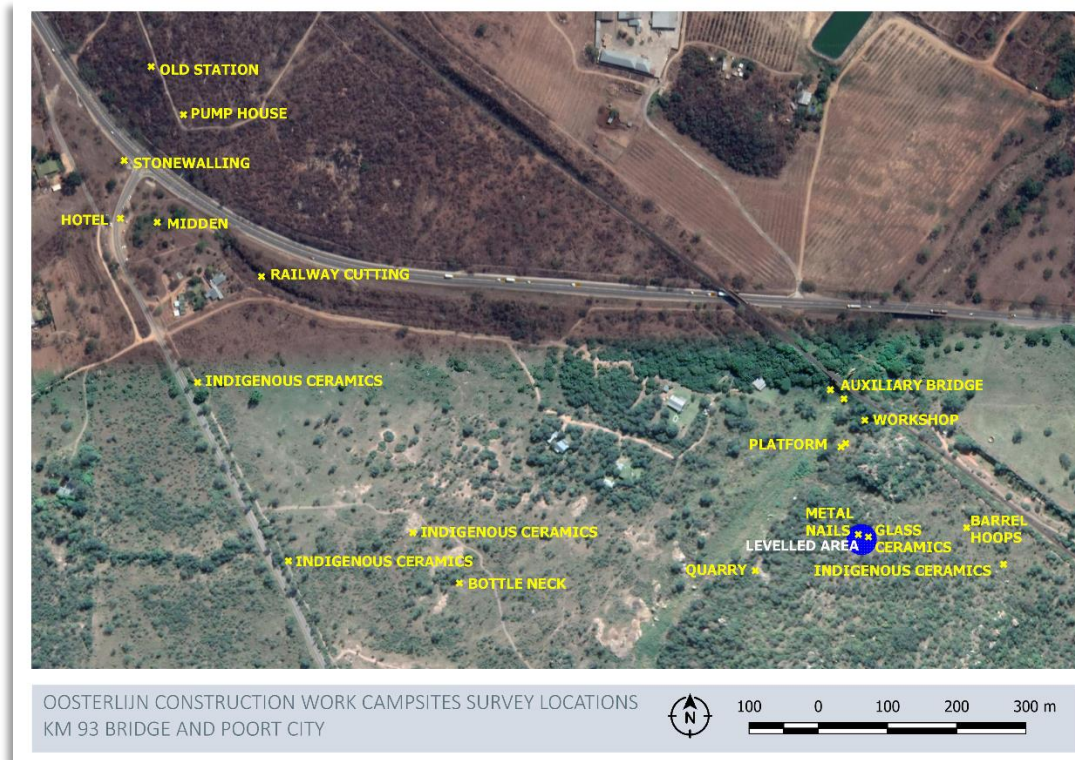


Figure 35 Camp at KM 93, known as Poort City, Krokodilpoort, 1892. Photo: Het Zuid-Afrikahuis Map73-2 1302.

Poort City, the camp at KM 93, is the largest camp shown in the historical photographs, and also the most well-known location of an *Oosterlijn* railway camp (Figure 35). Expectations were high, but the construction of the new rail trajectory, the N4 national road, as well as the



new intersection towards Mara had a significant impact on the integrity of the site (Figure 36).



*Figure 36* Distribution of recorded finds across the surveyed area – KM 93 Bridge, Poort City, indicated on Google Earth satellite imagery.

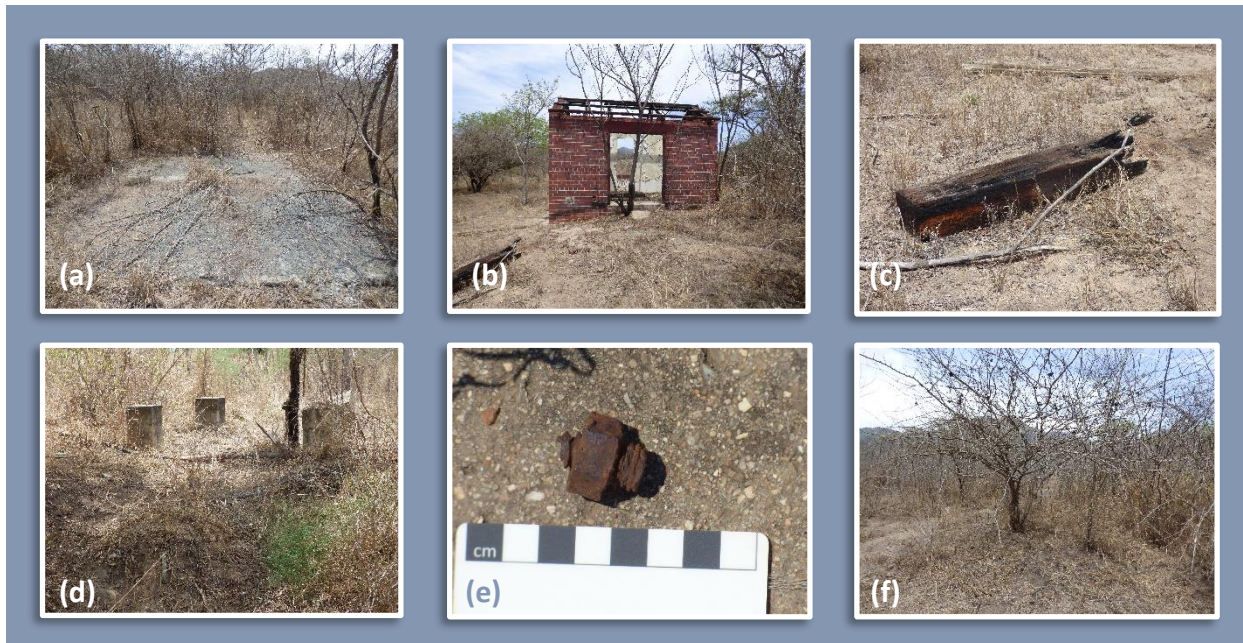
From the photo, it is possible to determine that the camp predominantly lay to the northwest of the bridge over the Crocodile River at KM 93, on the farm Madeliefje No. 138-JU. An Archaeological Impact Assessment (AIA) completed by Celliers (2010) indicated the location of the hotel that was a prominent feature of the Barberton transport road and the railway camp. No structural remains were recorded during the AIA survey, and Celliers' GPS location currently leads one to a point in the middle of the new Mara road, constructed in 2013-2014. If the construction work unearthed any archaeological evidence, then this is unknown.



**Figure 37** Selection of photographed artefacts recorded at the Poort City hotel midden: (a, b, & c) gin stoneware bottle and fragments, (d) local indigenous ceramics, (e) glass bottle bases and tops, (f) canvas tie, (g & h) unfired 303 Lee-Enfield II bullet. Photos: H. Fivaz.

However, 50 m to the east of this point, situated on private property, is a substantial midden, that might be associated with the hotel. There are countless artefacts on the surface, intermixed with more modern waste, as the property owner also uses this area as his personal household refuse dump. The midden appears to be mostly intact, apart from the areas which the owner's dog excavated. The dog brought home an entire stoneware gin bottle after one of his fieldwork sessions! Other items found at the midden during our survey include old glass bottles, more stoneware gin bottle fragments, indigenous low-fired earthenware ceramics, a possible canvas tie, and an unfired 303 Lee-Enfield II bullet (Figure 37). The stoneware bottles and fragments are inscribed with the names of the *Erven Lucas Bols* and *Hulstkamp Zoon & Molyn*, prolific gin distillers and distributors based in Amsterdam. Systematic archaeological excavation of this midden might yield crucial information about the people of Poort City, which will reflect on the experiences of the railway workers too.





*Figure 38* Selection of photographed features recorded at the old Krokodilpoort Station precinct: (a) cement foundation, (b) old pump-house brick structure, (c) remains of timber beam, (d) cement platform with plinths, (e) bolt, (f) old station area. Photos: H. Fivaz.

Celliers (2010) further documented the remains of a short stone foundation or wall to the north of the possible hotel location, but none of this appears to remain. To the north of the N4 are the remains of the water pump-station and the old railway station. We recorded one large concrete slab foundation and one smaller one with machine mount plinths in association with the old railway precinct (Figure 38). No datable material was found in this area during our survey.

The investigation turned to the area around the KM 93 Bridge. I had to return to continue the survey of this area in September 2017, as I could not gain access to the property during the baseline study in July. Approaching from the west, we found the remains of concrete platforms on both sides of the Blinkwater River, likely the bases for a small auxiliary bridge utilised during construction. On the bridge's southeastern bank, at the foot of the koppie, is the partly intact concrete foundation of a workshop (Figure 39). The corrugated-iron imprints on the remaining sections of concrete are similar to those at the Komati River Bridge. Some of the concrete blocks have round post holes. Earthmoving equipment has at some point, probably during the construction of the new bridge and track trajectory, cut into the original concrete floor.





*Figure 39 Selection of photographed features and material recorded at the KM 93 Bridge: (a, b & c) cement foundation with corrugated-iron imprint, (d, e & f) cement foundation with post holes, (g, h & i) cement platform with machine mounts, (j) large screw and railway spike, (k) slag, (l) quarry. Photos: H. Fivaz.*

To the south of the workshop, is a platform with machine mounts, and further to the south, the quarry. The area between the platform and the quarry has been terraced to ease movement from one to the other. Around the quarry and platform are waste-rock and aggregate spoil heaps. Dense vegetation and thick grass growth severely hampered surface visibility, and it being snake-season in black mamba country, I did little to clear the vegetation in search of cultural material. I did uncover a large screw bolt and railway spike, as well as

what appears to be some metal slag in the area between the workshop and platform (Figure 39).

On the crest of the koppie, halfway between the workshop and the quarry, is a levelled area or tent platform. River sand has been brought up from the riverbed and spread over an approximate 2 x 3 m area. Contrasting with the grassy surrounds, it stands out clearly (Figure 40).

Associated structural material on-site include a tent peg, metal sheets with holes, and several nails. In the northwestern corner of the site and washed downward from there along the koppie's western slope, is cultural material (Figure 40). There are black, aqua, clear and green glass bottle fragments, with bases representing wine and case liquor typologies. Some white ceramic flatware and indigenous potsherds, cast-iron pot fragments, and an undetermined calibre bullet casing are also present, as well as a metal can. The campsite's advantageous position provides quick access to the work areas, the workshop, quarry, and the track to the east.

Towards the east of the little campsite were metal bands, probably barrel hoops or crate bindings. A sizeable smooth polishing stone and a piece of indigenous low-fired earthenware were also recorded in this area (Figure 41).

The final area surveyed at this location was between the Blinkwater River, the Mara road, and the property fence in the east. One of the current landowners told us that he used to send his children onto this field to collect the "rubbish" lying around. According to him, there were heaps of bottles collected and removed to the city dump. His kids did a thorough job, as our survey only found one isolated bottle finish and some low-fired earthenware pottery sherds. No structural or other archaeological features were visible.





**Figure 40** Selection of photographed features and material recorded on the koppie at KM 93: (a & b) cleared and levelled area, (c, d, e & f) glass bottle fragments, (g) metal sheets, (h) nails, (i) ceramic flatware, (j) metal can, (k) indigenous ceramic, (l) bullet casing. Photos: H. Fivaz.



**Figure 41** Selection of photographed features and material recorded east of the bridge at KM 93: (a & b) barrel hoops or crate bindings, (c) polishing stone. Photos: H. Fivaz.



4.3.6 KM 168-169 NGODWANA BRIDGE AND CULVERT



Figure 42 View of the construction towards the Ngodwana Bridge KM 168, 1892. Photo: Het Zuid-Afrikahuis Map74-15 1348.

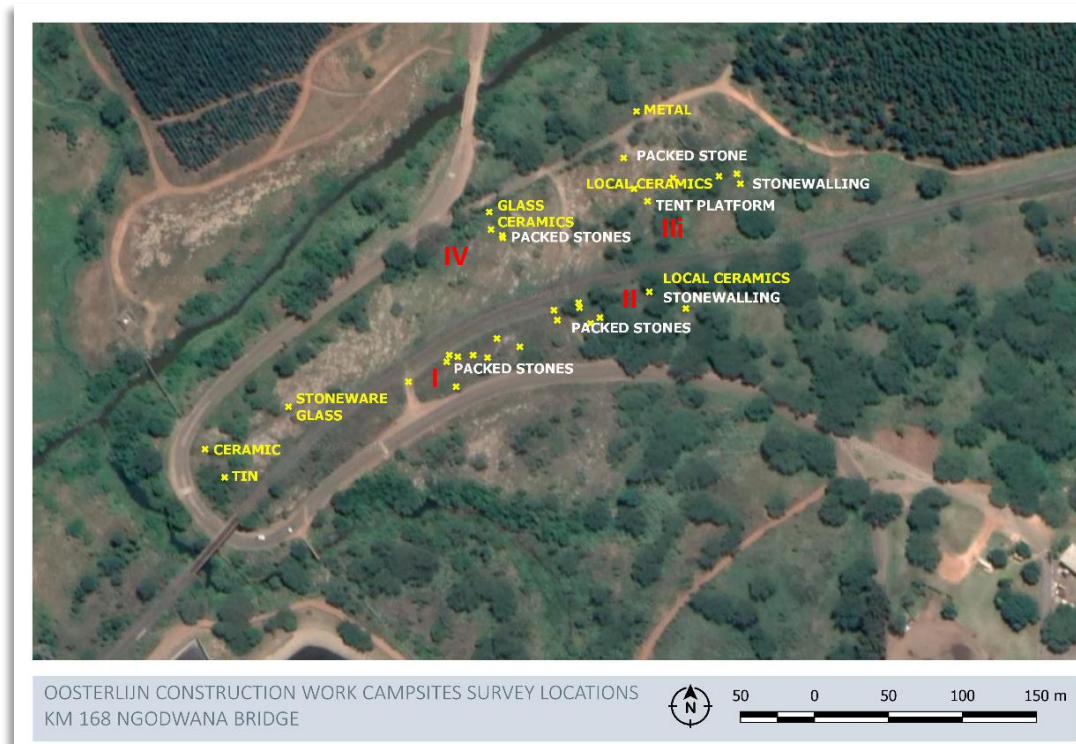


Figure 43 Distribution of recorded finds across the surveyed area – KM 168 Ngodwana Bridge, indicated on Google Earth satellite imagery.

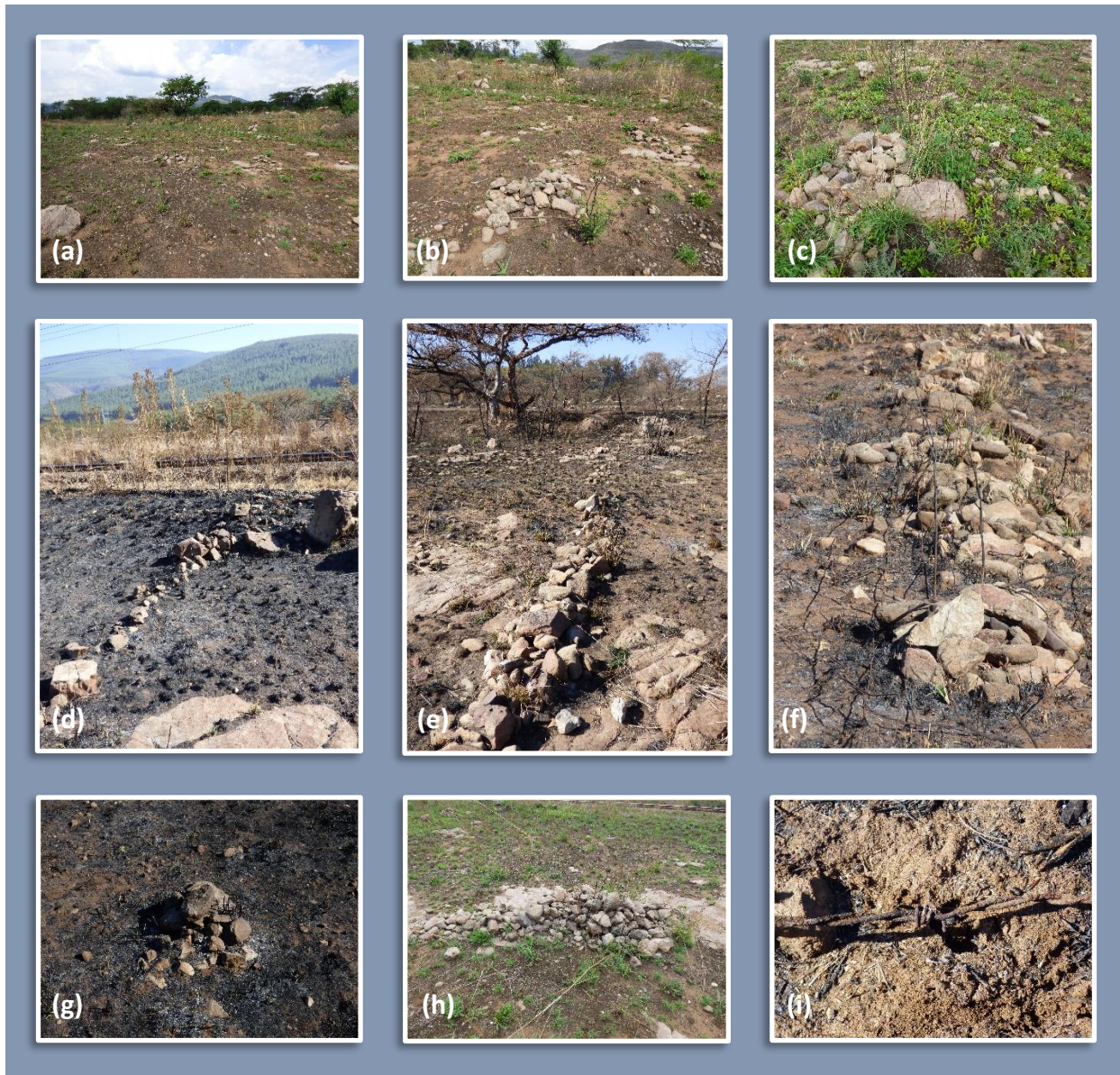


In the historical photo, the camp seems to consist of beehive huts and tents (Figure 42). However, the area's archaeological features are a mixed bag of packed stones, stone walls, and a tent platform (Figure 43). I surveyed this site on four separate occasions, and every time as much was revealed as obscured. I encountered a different environment with every visit, from tall, dry grass, to new growth after a veld fire, to lush thorn thickets prohibiting movement, and lovely-to-survey scorched earth. After the fourth trip, the decision was made not to map this site, despite its abundance of features. One gets the sense of a palimpsest of events that occurred at the site in quick succession.

Some of the remains could probably date to September 1900, when a British construction train commenced work on the bridge after Boer forces had destroyed it. Construction work was done under the guard of the 11th Division (Girouard 1903: 45). The campsite might therefore be a railway construction camp of sorts, but not the type under study. This, of course, is said with the benefit of hindsight, in an attempt to interpret the results of the survey.

The landscape naturally divided itself into four zones and was surveyed as such. For discussion purposes, the survey results are split into the same four sections. Section I lies adjacent to the service road above the rail line (south of the tracks) with Section II further east, past the pedestrian thoroughfare. Below the rail line (north of the tracks) are Sections III and IV, similarly separated by the thoroughfare (Figure 43).

Section I consists of an open flat area with multiple packed stone piles or cairns with no obvious pattern, and packed stone walls with barbed wire. None of the stone piles or walls appears to be the foundations of housing or other building structures. The southernmost wall's stones lie on top of the barbed wire (Figure 44). The section is devoid of any other material culture.



*Figure 44 Selection of photographed features and material recorded Section I, KM 168: (a) view of the area, (b & c) stone cairns, (d, e & f) stonewalling, (g & h) more packed stone piles, (i) barbed wire. Photos: H. Fivaz.*

Section II is situated to the east of Section I, in a wooded, overgrown area (Figure 45). At the start of the wooded area are more packed stones and amongst the trees are several long straight, and few short semi-circular stonewalls. Most of the walls are broken, and very few are continuous, making it challenging to map the site in one's mind. It is possible that the semi-circular stonewalls could have been foundations of beehive huts. Due to the vegetation, the extent of this section is hard to determine. However, despite the dense vegetation, numerous low-fired earthenware potsherds were seen scattered across the surface. None of the sherds we found was decorated. At least two probable upper grinders were lying amongst the walls.





*Figure 45 Selection of photographed features and material recorded Section II, KM 168: (a) stones packed around a tree, packed stone pile, (c, d, e & f) stonewalling, (g & h) upper grinders, (i) indigenous ceramics. Photos: H. Fivaz.*

Section III lies directly north of Section II, and more stonewalling occurs in this area, both circular and straight, as well as some packed stone cairns (Figure 46). The most apparent structural feature is the circular tent platform with packed stone boundary. An abandoned tent pole lies within the circle. Other cultural materials recorded include low-fired earthenware and a metal swing arm latch or hook.





*Figure 46 Selection of photographed features and material recorded Section III, KM 168: (a, b, c & d) stonewalling, (e) stone cairns, (f & g) tent platform, (h) tent pen, (i) swing latch. Photos: H. Fivaz.*

The bulk of the cultural material on this site was documented in Section IV. This section stretched from the eastern abutment of the bridge to the path that formed the western boundary of Section III (Figure 43). Section IV's material assemblage includes green-banded industrial slipware, white porcelain, stoneware, aqua, green, black, and pink glass sherds. At the foot of the bridge, we recorded a hole-in-cap rectangular food tin, mysteriously filled with cement (Figure 47). It has been suggested that the food tin filled with cement could have been used as an improvised weight or anchor for a guy wire or tent line.



The packed stone features in the north of Section IV include larger in-situ natural rocks, with the smaller stones packed in to fill the gaps, and making it more substantial, forming short semi-curved walls. The three features in this area are approximately between 50 and 100 cm in height. No artefacts directly associated with these structures were observed.



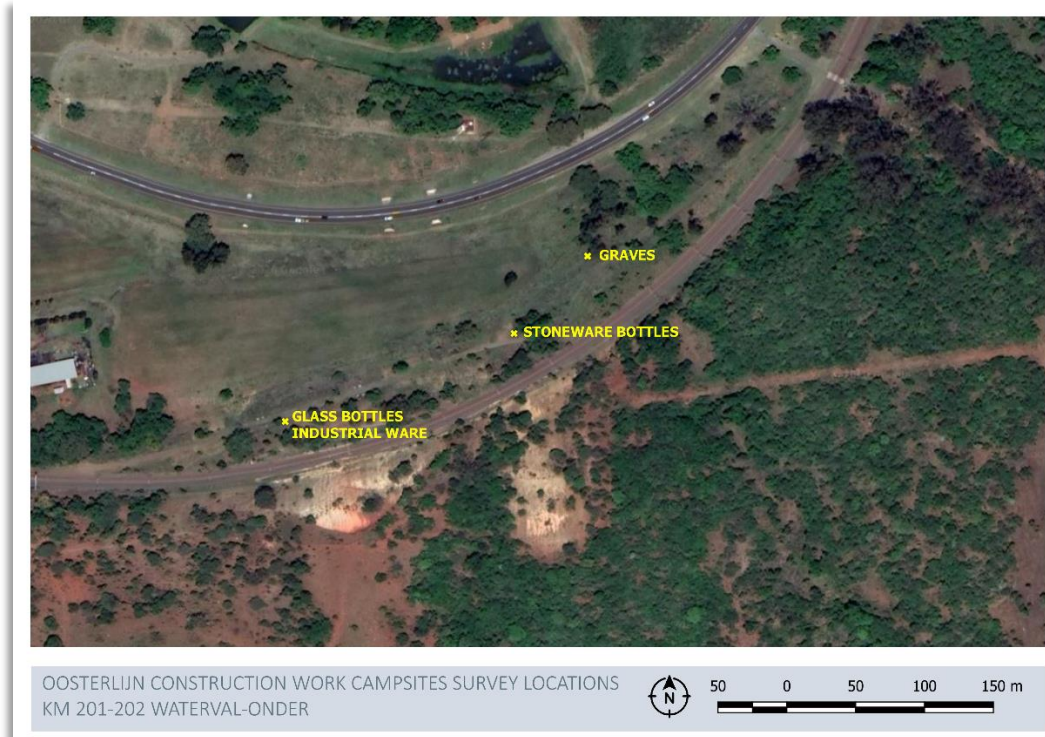
*Figure 47 Selection of photographed features and material recorded Section IV, KM 168, (a, b, c) stone cairns with natural in-situ stone, (d) rectangular food can filled with cement, (e) bottle glass, (f) stoneware fragments, (g) stoneware and glass, (h) European ceramics, (i) small glass bases. Photos: H. Fivaz.*



4.3.7 KM 201-202 TOWARDS WATERVAL-ONDER



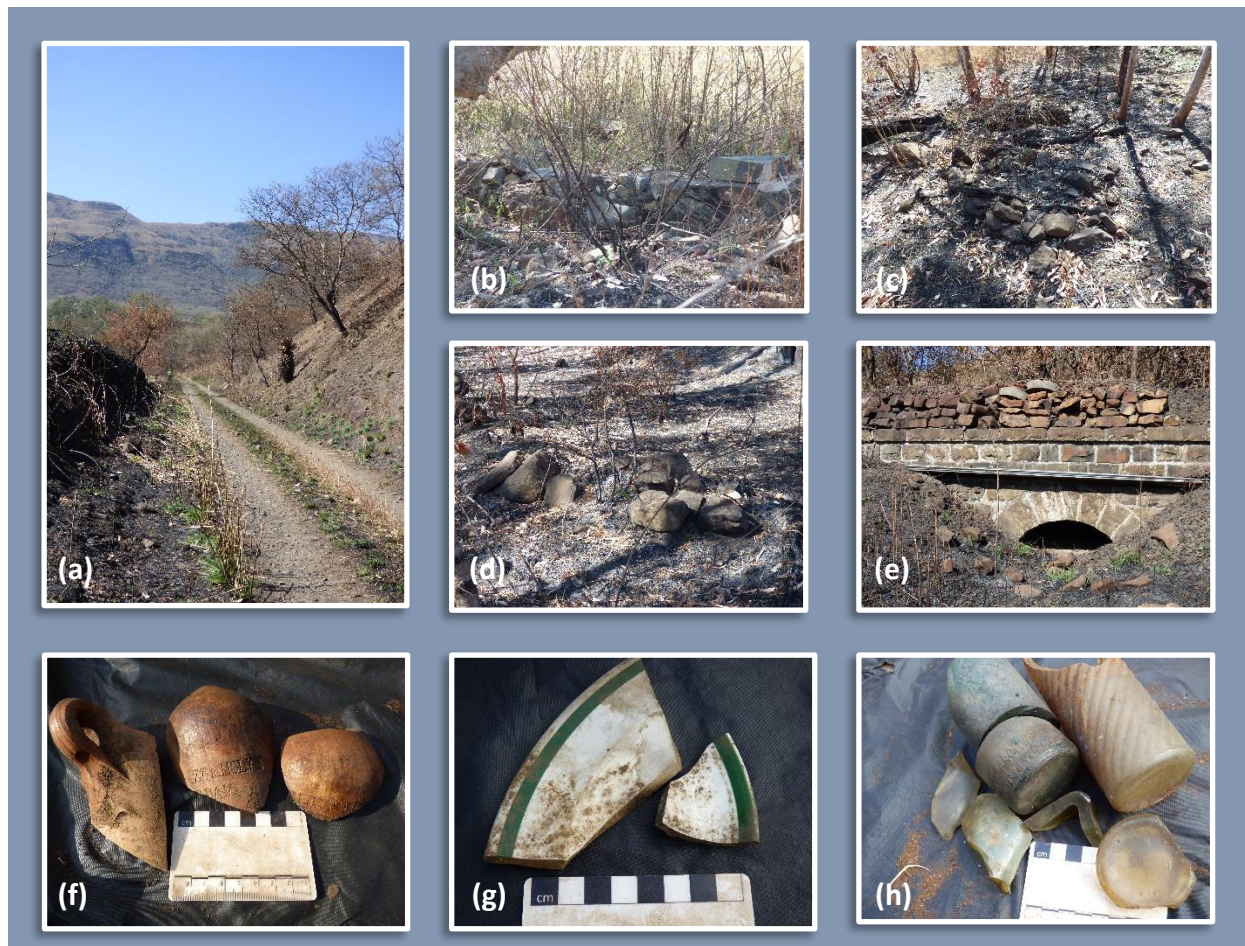
**Figure 48** View of the start of the 8<sup>th</sup> section of the Oosterlijn, Waterval-Onder.  
Photo: Transnet Heritage Library and Archives 100109/1



**Figure 49** Distribution of recorded finds across the surveyed area – KM 201 Waterval-Onder, indicated on Google Earth satellite imagery.



The photograph of the construction of the 8<sup>th</sup> section of the *Oosterlijn* shows little tented campsites situated all along the rail line (Figure 48). The closest to the photographer is in the vicinity of the culvert east of Waterval-Onder. The service road follows the original rail trajectory. We surveyed the area north of the rail line, from east to west (Figure 49). There is a stone and mortar structure with concrete foundations in the area where the tented camp is situated. There are four recognisable graves, marked with stone cairns, directly south of the structure. Around the mouth of the culvert were several stoneware *Erven Lucas Bols* and *Hulstkamp Zoon & Molyen*, bottle fragments. To the west, glass bottle fragments and green-lined Refined Industrial Ware, similar to the pieces found at Ngodwana (Figure 50). No campsite features were recorded at this location.



**Figure 50** Selection of photographed features and material recorded KM 201-202, Waterval-Onder: (a) original trajectory of the rail line, now service road, (b, c & d) graves, (e) culvert, (f) gin stoneware jugs fragments, (g) green-lined Refined Industrial Ware, (h) glass bottles.

Photos: H. Fivaz.



4.3.8 KM 207.5 WATERVAL BOVEN TUNNEL



Figure 51 “Camp Spies. Horvath underneath the cliff, at the Tunnel, with high embankment in the background KM 207.5”. Waterval-Boven May 1894. Photo: Transnet Heritage Library and Archives 100109/39.

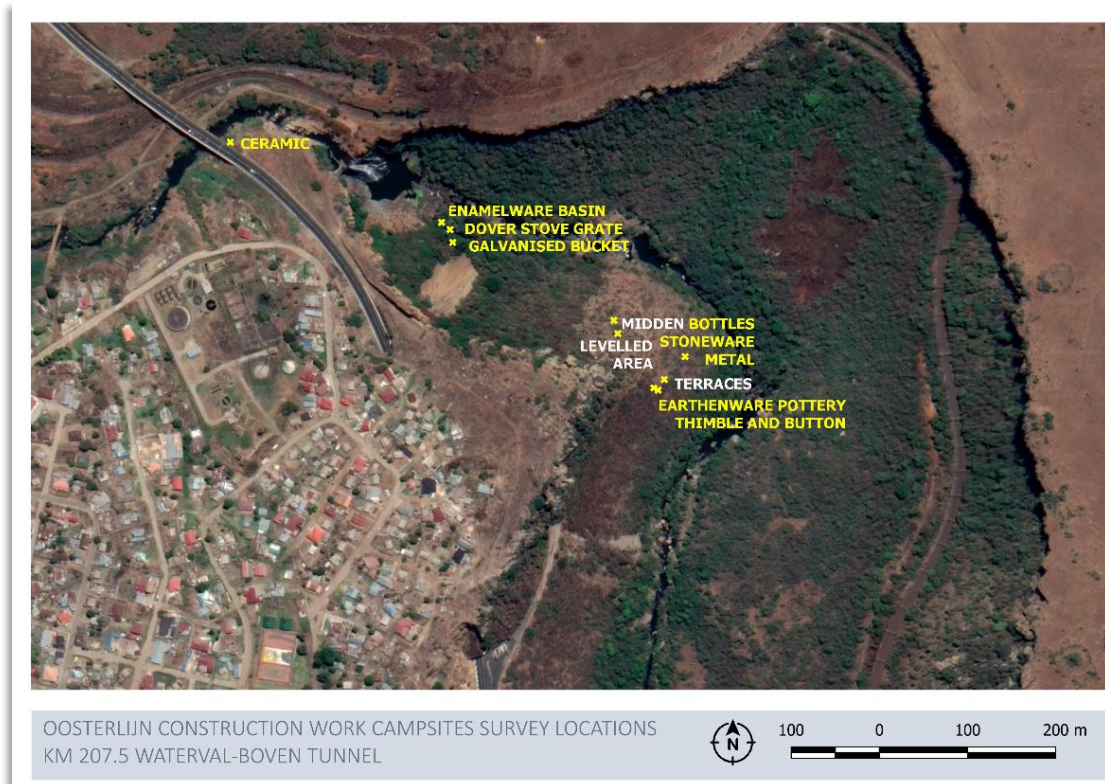


Figure 52 Distribution of recorded finds across the surveyed area – KM 207.5 NZASM Tunnel, indicated on Google Earth satellite imagery.

Multiple historical photographs show camps around the tunnel. On the eastern ascent towards the tunnel were beehive huts and tents, just above where the N4 is today. Other camps were situated west of the western opening of the tunnel, in place of the present-day Emgwenya Extension 3 town development. The construction of the N4 and the tunnel further changed the landscape's appearance, so that natural features in the historical photographs become unrecognisable and unusable for identifying campsites. We surveyed the eastern slope of the mountain between the eastern and western tunnel entrances. We further surveyed the area at the bottom of the falls and investigated the bank of the Elands River northwest of the tunnel. The eastern slope yielded the richest trove of archaeological features and material of all the areas surveyed at this location. Terraces, levelled platforms, pathways, and a midden lay just off the tourist trail to the falls (Figures 51 & 52).

The southernmost extent of the recorded features consists of a small scalloped terrace with steps leading down to it, and a larger circular levelled area situated on the terrace. The corresponding views, between the photographer's vantage point (Figure 51) and these terraces, led me to conclude that this was the location of the camp captured by Caney and Raucher in 1894. The camp consisted of large grass huts with added canvas canopies. No midden was identified in this area, and as the side of the mountain slopes away sharply, it is highly likely that waste was just disposed of by throwing it from the terrace edge. A couple of low-fired earthenware sherds and polishing stones were recovered within the scalloped area. Isolated small finds, such as a button, a Glen Airn type sewing thimble, and a long nail, were found along the terrace (Figure 53).

To the north-northwest of the photographed workcamp terraces is another terrace with a levelled area (Figure 54). The associated midden is slowly being washed away, and traces of material can be followed down the steep mountain slope. The artefact assemblage predominantly consists of wine and liquor bottles and case gin type bottles. I counted at least thirty-three glass bases concentrated in the midden surface spread. The bottles were very soil encrusted, obscuring colour variations. However, black, green, clear, aqua, and even pink were observed. Glass sherds with the characteristic indentation of cod-style mineral water bottles were among the surface assemblage. Stoneware gin bottle sherds are present as well.



Beneath the midden to the southeast lay more stoneware and a large piece of metal, and isolated occurrences of low-fired indigenous earthenware were noted on the paths.



*Figure 53 Selection of photographed features and material recorded on the southeastern terraces, Waterval-Boven tunnel: (a) and digitally enhanced detail of Figure 51 (Transnet Heritage Library and Archives 100109/39), (b) southernmost terrace, (c) scalloped terrace, (d) indigenous ceramics, (e & f) polishing stones, (g) nail, (h) button and sewing thimble. Photos: H. Fivaz.*





**Figure 54** Selection of photographed features and material recorded at midden, Waterval-Boven Tunnel: (a) stone-lined terrace, (b-f), glass bottles found at midden, (g) stoneware jugs, (h) indigenous ceramics, (i) metal object. Photos: H. Fivaz.

4.3.9 KM 212.5



Figure 55 Camp of Indian railway workers, KM 212.5. Photo: Transnet Heritage Library and Archives 100110/19.

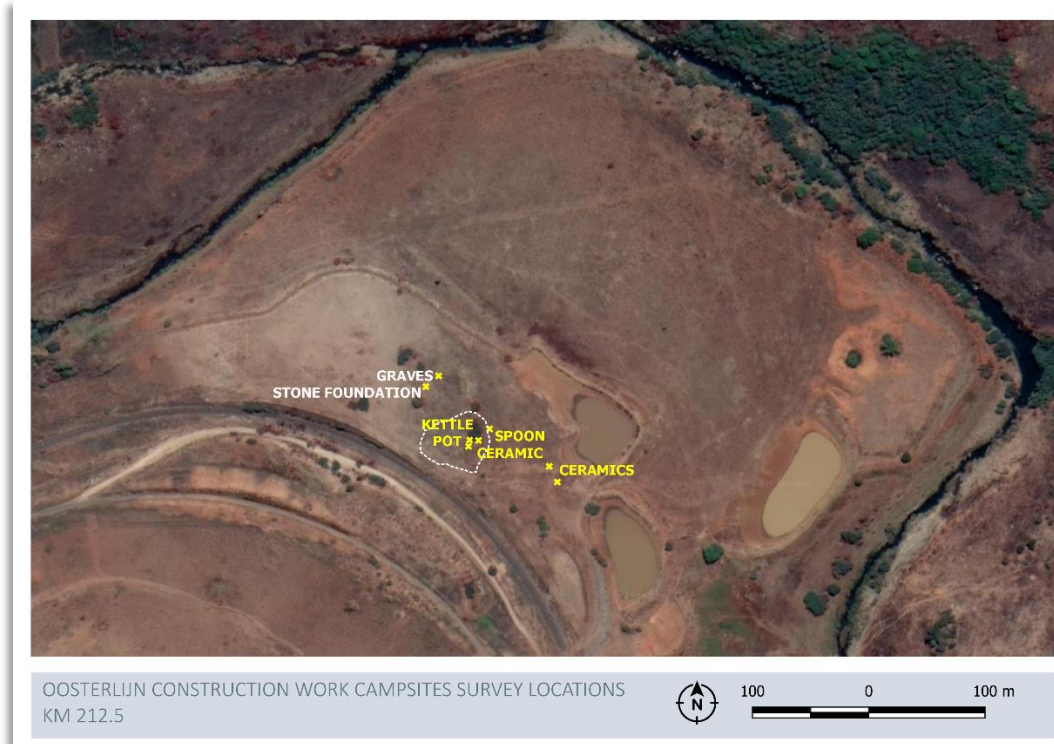


Figure 56 Distribution of recorded finds across the surveyed area – KM 212.5, indicated on Google Earth satellite imagery.



The camp at KM 212.5, photographed by Caney and Raucher, is unique amongst the photographically documented railway workcamps of the *Oosterlijn* (Figure 55). The camp housed the Indian contingent working on the railway line, and their families. The structures are different from the housing seen in the workcamps in the Lowveld. They are only about shoulder-height, timber-framed, with packed stone walls and flat corrugated-iron roofs, and wooden doors. Locating this unique example of a railway camp was a high priority, and when I failed to locate it during the baseline survey, I stubbornly returned a few months later, still hoping to find it. Fortunately, I realised we initially combed the wrong side of the koppie. Unfortunately, however, when we discovered the ruins of the camp, on the eastern (and right) side of the koppie, few in-situ features survived (Figure 56).



*Figure 57* Selection of photographed features found at KM 212.5, (a) vantage point of the 19<sup>th</sup>-century photographer, (b-d) heaps of rubble and dumped cultural material, (e) in-situ standing stones, (f) stone circle, (g) metal sheet, (h) possible door hinge, (i) metal bolt.  
Photos: H. Fivaz.

The site was probably cleared so that the fields could be used for livestock grazing or crop cultivation and trout farming dams. Evidence of earthmoving equipment is all around the trout dams, and against the railway line. What remained of the campsite was found in one location, where the removed stone and earth was dumped (Figure 57). Ceramic, stoneware, and glass fragments dot the disturbed soil heaps, and building stones are scattered indiscriminately throughout the dump zone. It seems as if some of the building stones were appropriated to build the water furrows feeding the dams. Two archaeological features stand out amongst the rubble and may belong to the original camp: a small stone circle, and a wall with five vertically planted stones. It might mean that other in-situ features could have survived the dumping event and lie buried under disturbed soil and stone. Several pieces of metal building hardware are strewn amongst the rubble (Figure 57).

The material assemblage is predominantly household-related: a cooking pot with lid, kettle, spoon, and the ceramic sherds (Figure 58). A wider variety of ceramics is represented than at other campsites surveyed along the rail line. The surface scatter includes decorated and undecorated white porcelain, Refined Industrial Ware fragments with, blue transfer printing (including Willow and Asian Pheasant patterns) and industrial slipware decoration. However, none of the bottle glass, that characterises the construction campsites recorded along the *Oosterlijn* this far was present across this site. We did not observe any middens in our survey of this site.

There is a stone foundation to the northwest of the campsite ruins, with six graves northeast of the structure. The workers we interviewed at the farm's main homestead, said that these were familial graves of previous farm workers, but they knew nothing of the railway campsite or the large house foundation.





**Figure 58** Selection of photographed cultural material found at KM 212.5, (a) Refined Industrial Ware fragments with blue Willow pattern transfer printing, (b) Asian Pheasant patterns, (c) porcelain sherds, (d) pink-glazed Refined Industrial Ware, (e) industrial slipware, (f-h) porcelain, (i) spoon, (j), kettle, (k & l) pot and lid. Photos: H. Fivaz.

4.3.10 KM 215.5 PAMPOENSPRUIT BRIDGE



Figure 59 Camp at the construction of Pampoenspruit Bridge, KM 215.5, 1893. Photo: Transnet Heritage Library and Archives 100110/26.

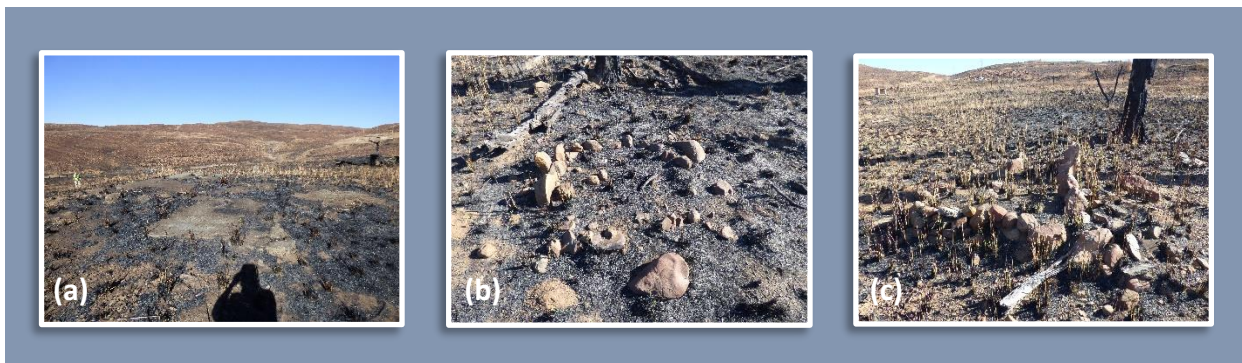


Figure 60 Distribution of recorded finds across the surveyed area – KM 215.5, Pampoenspruit, indicated on Google Earth satellite imagery.



The archaeological footprint of the little campsite pictured in the historical photograph, with its prefabricated corrugated-iron house, sheds, privy, and beehive hut, is intact in the landscape (Figure 59). Looking at the amount of cultural material, and the high number of middens on-site, the camp must have been utilised for some time after construction, probably as a ganger's cottage. Additions made to the original site include retaining walls and concrete foundations with 20<sup>th</sup>-century bricks to the west. A mid-20<sup>th</sup>-century graveyard starts within the northeastern extent of the site and spreads out to the east (Figure 60).

The structural features were easily identified in the newly burned veld (Figure 61). They included the concrete and stone foundation of the main house, as well as two smaller concrete slab foundations, circular stone walls, and collapsed stonewalling.



*Figure 61 Selection of photographed archaeological features found at KM 215.5: (a) cement foundation, (b) stone circle, (c) stone foundation. Photos: H. Fivaz.*

The material culture is concentrated in five midden zones, from which it has been dispersed by rainwater flow towards the spring in the northeast. The archaeological material assemblage consists of the characteristic bottle glass, Refined Industrial Ware and porcelain ceramics, hole-in-cap food tins, *Erven Lucas Bols* gin bottle fragments and other thicker-walled stoneware jar pieces. A piece of glass stemware and a tool handle were also recorded on site (Figure 62).



**Figure 62** Selection of photographed archaeological material found at KM 215.5: (a) metal can remains and ceramic sherds, (b) glass bottle in situ, (c) glass stemware and ceramic sherds, (d-e) large midden and glass bottles, (f-g) glass bottle bases and necks, (h-i) Refined Industrial Ware and porcelain, (j) stoneware, (k) food tins, (l) tool handle. Photos: H. Fivaz

The uncompromised nature of this site makes it unique and viable for additional archaeological investigations. Future study endeavours with stratigraphic analysis of the middens might show a discernible change in cultural material that could indicate how life along the *Oosterlijn* changed, from construction to maintenance, since the camp's establishment in 1893. Artefacts with temporal markers would also help determine the time-frame in which the camp was occupied, post-construction.



#### 4.4 FIRESIDE REFLECTION ON A HARD DAY'S WORK

Archaeological spaces and material often bring one in close kinship with past peoples. Similarly, the survey of the construction campsites brought the late-19<sup>th</sup>-century railway construction workers into sharper focus. Experiencing the same intense heat of the day, walking the same paths, enjoying the same views, and relaxing with a gin and tonic (unfortunately not *Erven Lucas Bols* or *Hulstkamp Zoon & Moly*) by the evening's campfire, erases hundred-and-twenty-two years. The survey's results proved the effectiveness of a purposive approach and highlighted the importance of community liaison in endeavours like this. Access to specific sites would not have been possible without the graciousness of property owners, the tolerance of Transnet servitude security, and input from community members. Anecdotes about the railway line, its construction and maintenance, its history and importance were found in butcheries, pubs, on farms, social media forums, and literally in the streets, adding to an immersive survey experience. I would just like to state unequivocally though, in response to so many queries, that no, we did not find the mythical hoard of Kruger millions, and its location remains the stuff of legends<sup>1</sup>.

In the next chapter, I leave the dust of the veld behind, put on my analysing spectacles and focus on the layout of three identified campsites: the camp at the KM 93 Bridge in Krokodilpoort, the camp at KM 207.5 on the slopes of the NZASM Tunnel, and the little campsite at the KM 215.5 Bridge over the Pampoenspruit.

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<sup>1</sup> On the 4<sup>th</sup> of June 1900, as the British forces approached Pretoria from the south, President Kruger left for Machadodorp, travelling by train along the *Oosterlijn*. According to the Kruger Millions legend, the train also carried a large freight of gold coins and bars, removed from the State Mint and National Bank to prevent it from falling into enemy hands. Whilst some claim that a substantial amount accompanied President Kruger into exile to Europe, others nurture the belief that Paul Kruger buried millions of pounds sterling somewhere in the Lowveld, probably along the *Oosterlijn*'s trajectory. Although countless historians through the years have disproven the myth with a re-examination of the facts, the romantic allure of a treasure that was worth 2 million pounds in 1900 keeps the legend alive (Carruthers 2020).

## 5. CAMP LAYOUTS

*“Sir, I think the railway is going to need a translator.”*

***Terry Pratchett (2013: 127)***

The archaeological survey found considerably more evidence of railway worker camps than anticipated. However, for this study, only three of these had potential with regard to understanding camp layout or design: the camp at KM 93 Bridge Krokodilpoort, the camp at KM 207.5 Waterval-Boven Tunnel, and the camp at KM 215.5 Bridge Pampoenspruit. In moving towards the goal of interpreting the data and gaining more insight into the *Oosterlijn* railway workers' agency and power, this chapter translates the site features and material into visual representations accompanied by an analysis of spatial organisation.

The campsites' analysis comprises three interrelated scales: intrasite, site, and intersite level. An intrasite analysis looks at the individual, or groupings of, identified archaeological features and deposits within the campsite and the relationships between archaeological observables to reconstruct and infer past non-observable behaviours and activities (Carr 1984: 126). At site level analysis, the worker campsite is considered as a complete entity, its spatial organisation, position in the landscape, and proximity to the rail line or roads are taken into account. With intersite level analysis, similarities and variations between the different camps are considered through comparison. Inferences made from the 19<sup>th</sup>-century photographs augment the small data set and increase the potential of identifying intersite patterning. The intersite analysis is continued in Chapter 7 on a global scale, looking at workcamps from railway construction projects in other countries.

### 5.1 KM 93 BRIDGE KROKODILPOORT

The archaeological features of the Poort City camp, situated at the KM 93 Bridge, comprises three identified area types: residential, construction with industrial and mining components, and recreational (Figures 65 & 66).

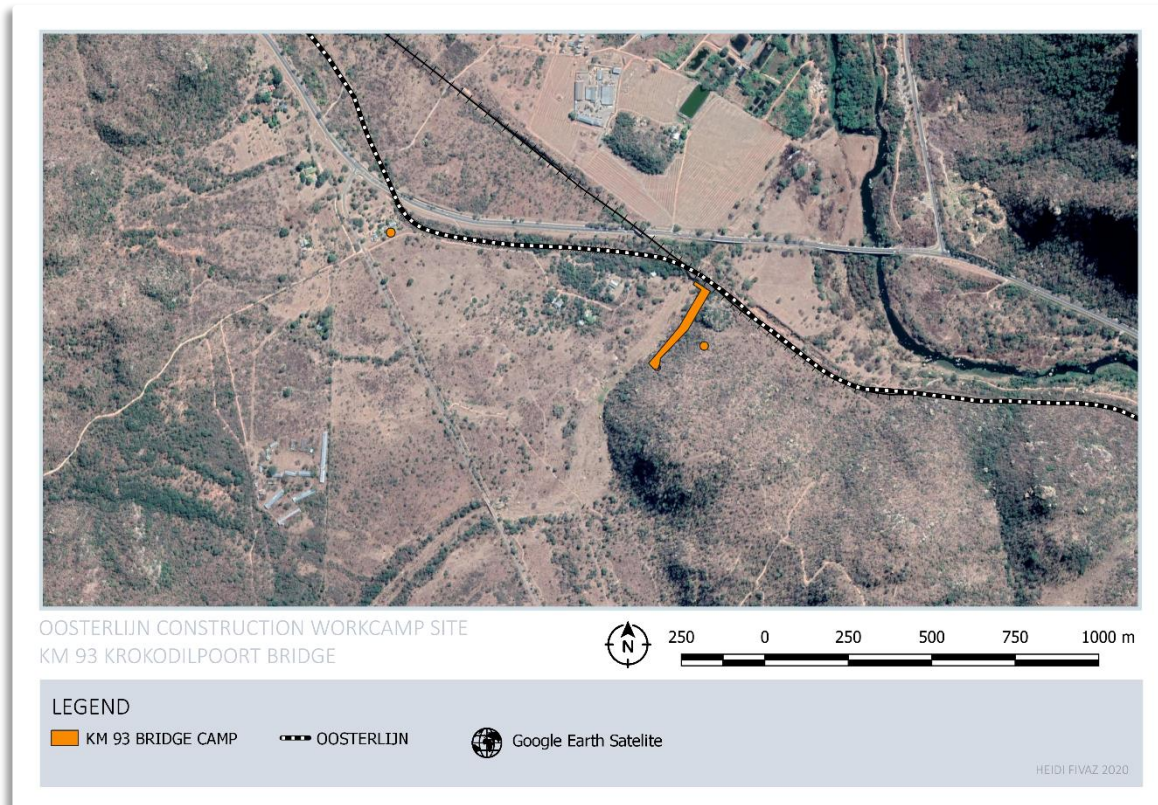


Figure 63 Location of KM 93 Krokodilpoort Bridge Camp indicated on a Google Earth satellite image. Image: H. Fivaz.

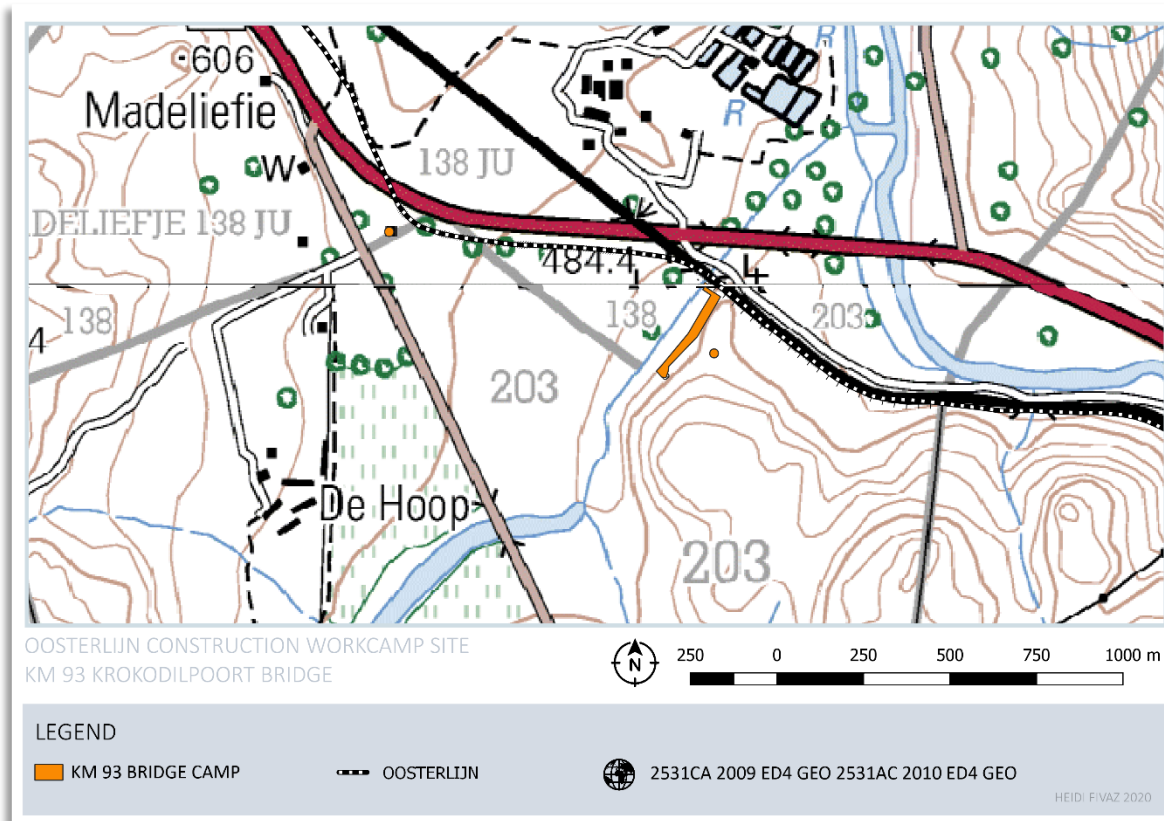


Figure 64 Location of KM 93 Krokodilpoort Bridge Camp indicated on a 1:50 000 Topo-cadastral maps WGS2531CA, and WGS2531AC, Chief Surveyor General. Image: H. Fivaz.

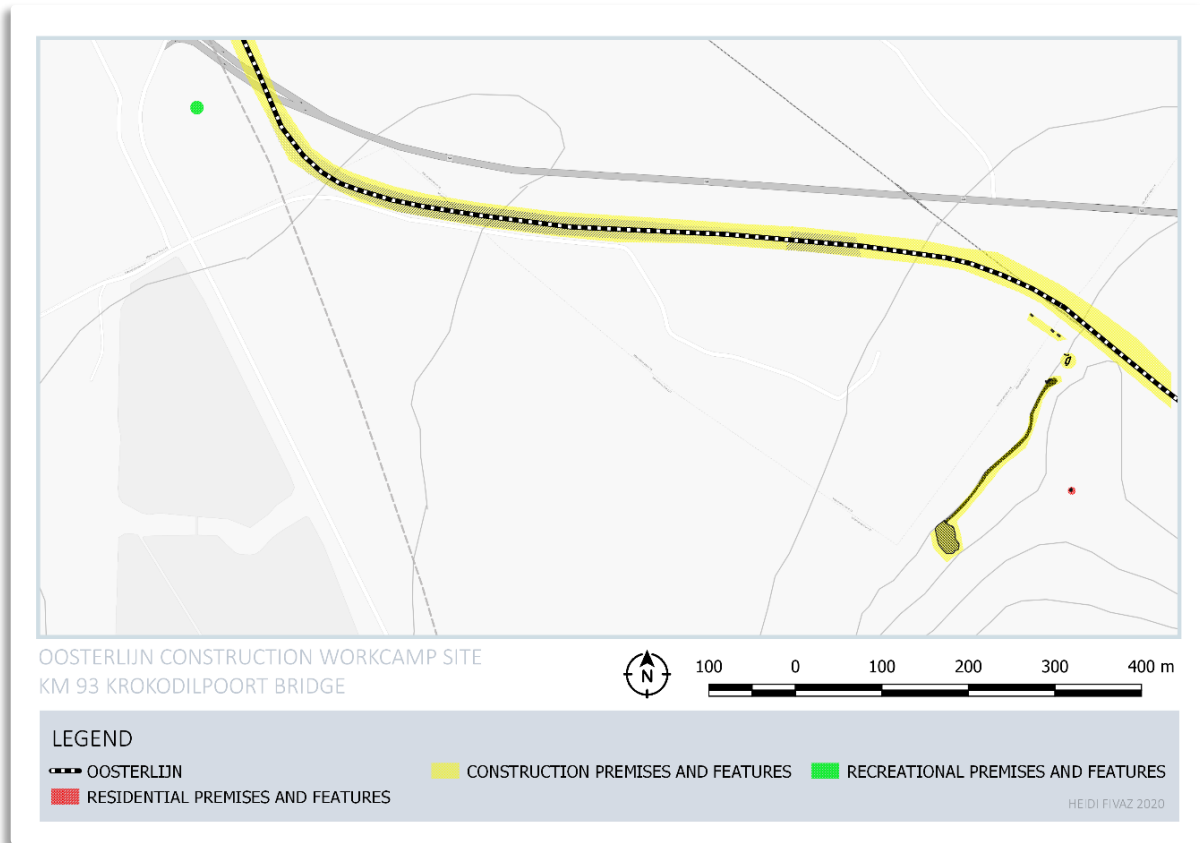


Figure 65 Spatial distribution of residential and construction associated spaces at KM 93 Bridge Camp. Image: H. Fivaz.

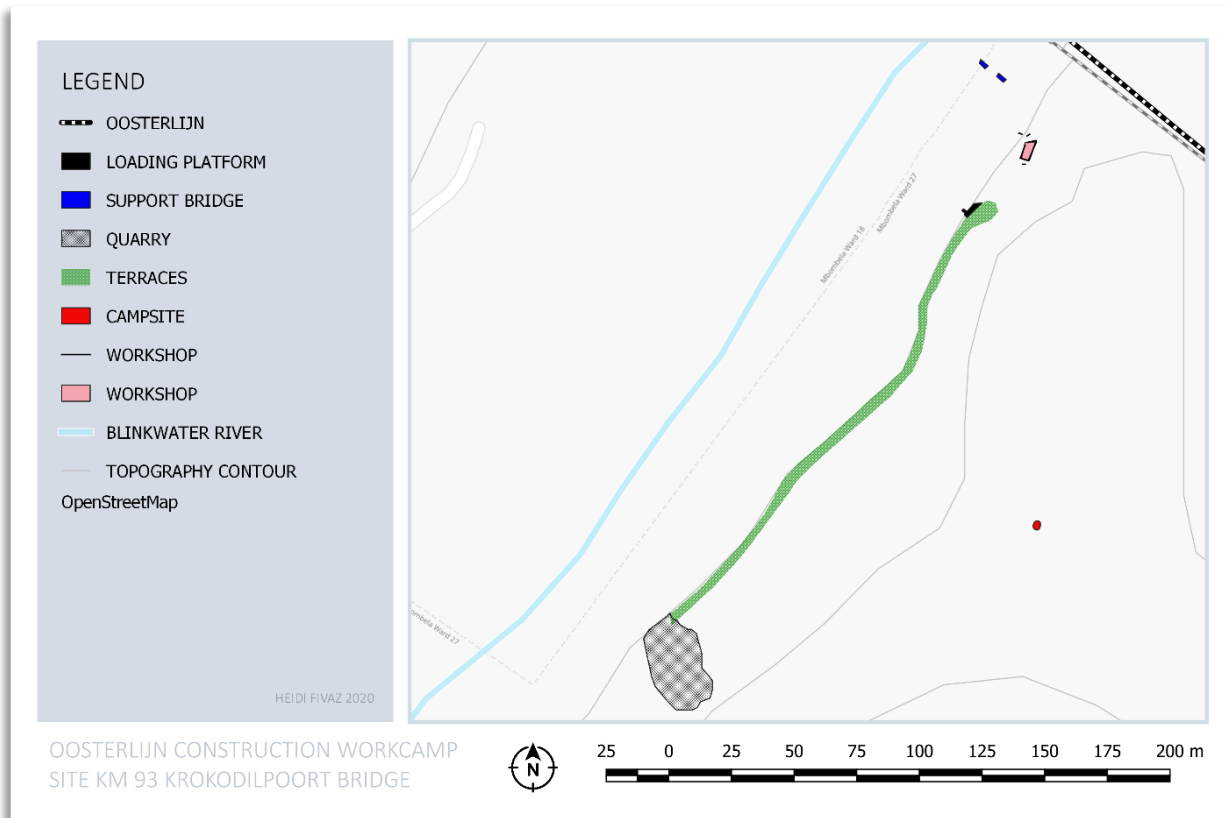
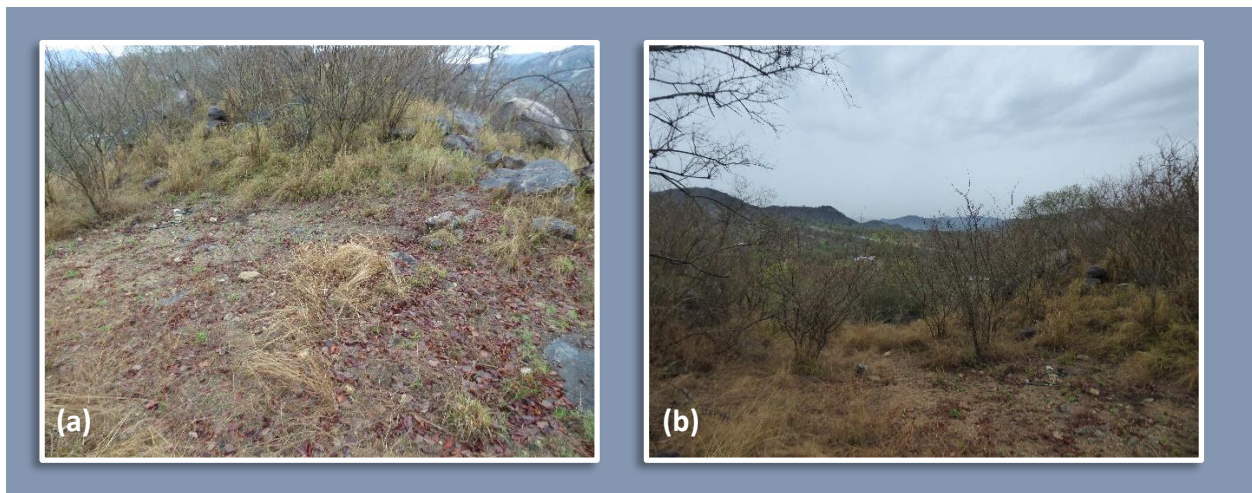


Figure 66 Site layout, KM 93 Krokodilpoort Bridge Camp. Image: H. Fivaz.



The small campsite with a tent pad and associated material culture is the only evidence of housing left across the site. In the 5 m x 5 m clearing, 2 m x 3 m were covered with imported river sand to form a probable tent pad or flooring for another form of temporary shelter (Figure 67). The ephemeral nature of the site indicates that its occupation was only necessary for a specific task or period of construction. The proximity of the site to the KM 93 Bridge and related work loci suggests that it may confidently be attributed to the building of the bridge. Although the site provides no direct line-of-sight to the bridge, the eastern approach to the rail bridge is visible. A natural path allows for an easy descent down the gradual eastern slope towards the rail line. The path down the steeper western slope is less discernible, being more overgrown, but it leads one down to the area between the platform and quarry. The sheet distribution of cultural material represents the presence and household activities of one or two individuals. The cast-iron cooking pot fragments, ceramic tableware sherds, and food cans found in the area point to the individualised food storage, preparation, and consumption that occurred at this campsite. The alcoholic glass bottles occurring in the assemblage could indicate personal recreation, although this is speculative as glass containers can be re-used.



*Figure 67 KM 93 Bridge campsite (a) and the view from the site to the east (b). Photos: H. Fivaz.*

The archaeological features associated with the construction area include the workshop's footprint, the loading platform, quarry, and an auxiliary bridge platform as support infrastructure. The 34 m<sup>2</sup> ruins of the probable workshop area are located approximately 60 m from the bridge. The workshop's remains and the lack of substantial associated

industrial waste product, such as metal shavings, slag, cinder, scrap metal, or discarded tools, do not indicate the specific purpose this structure would have served (Figure 68). However, it could have been utilised as equipment storage, a blacksmith or machine shop to manufacture and maintain tools, or other industry-specific structures associated with railway construction.



*Figure 68 Remains of the workshop feature at KM 93 Bridge. Photos: H. Fivaz.*

The loading platform is positioned approximately 25 m to the south of the workshop (Figure 69). The wedge-shaped concrete structure is roughly 6-8 m in length, 2 m in height, with a 1.7 x 1 m perpendicular protrusion with the remaining in-situ screws of a machine mount. The quarry is 200 m away from the loading platform along a flat terraced walkway, wide enough to accommodate narrow-gauge rails to transport the rocks mined from the quarry to the loading platform, or for wheelbarrows pushed side by side. Around the bottom of the quarry and the loading platform are piles of waste stone. The sizes of the stones around the loading platform are predominantly smaller than those around the quarry, signifying that a crusher might have been mounted on the loading platform to resize quarried stone into workable ballast. The ballast could then be moved from the loading platform to the construction works. The remains of short concrete posts on both sides of the river might indicate a supplementary bridge to ease movement of material and equipment from the eastern to the western bank of the Blinkwater River.





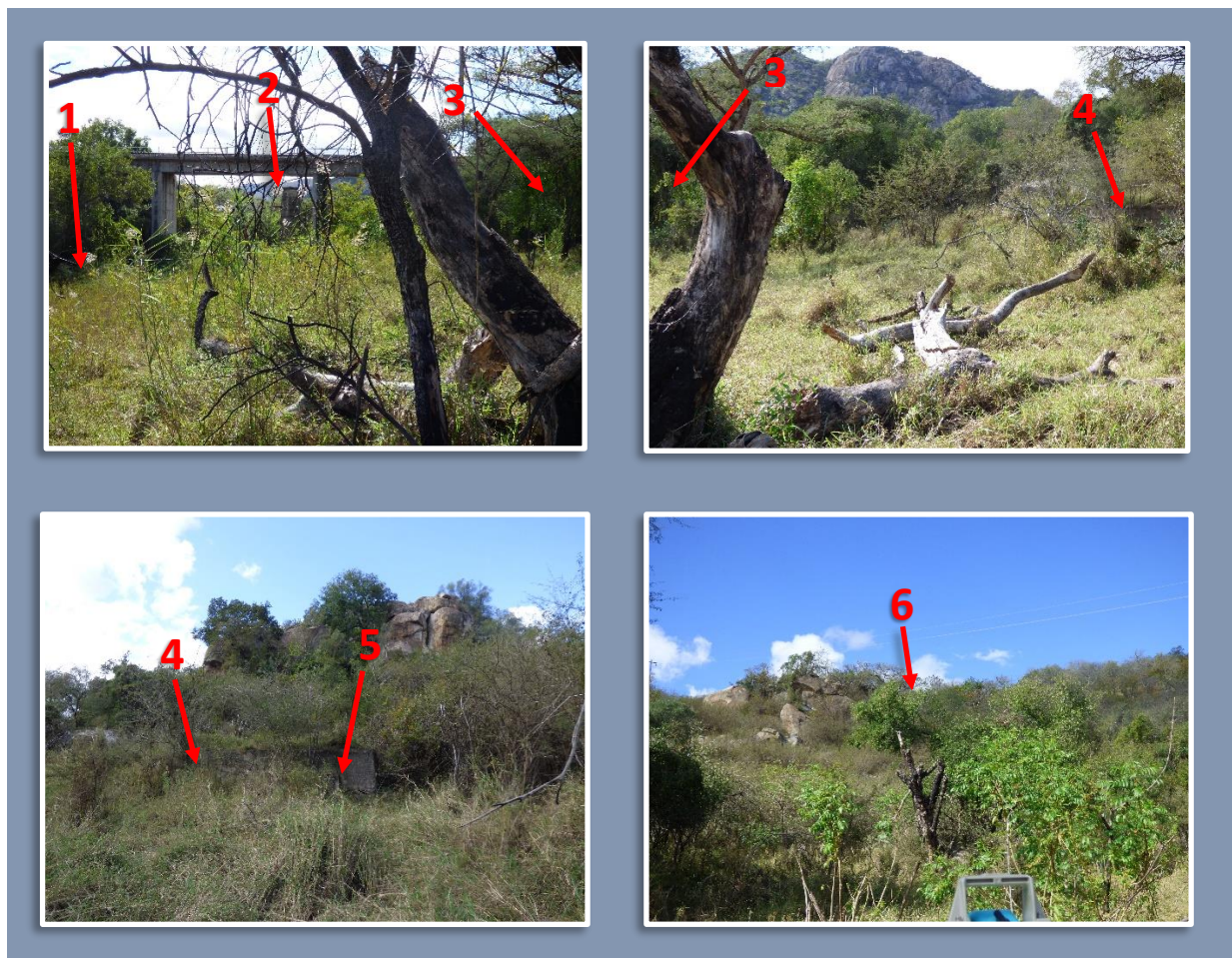
*Figure 69 Detail of the loading platform with machine mount screws at KM 93 Bridge. Photos: H. Fivaz.*



*Figure 70 View of the quarry at KM93 Bridge from above (a) and below (b). Photos: H. Fivaz.*



The hill-top campsite and work area form a locus of activity within the more significant Poort City camp setting (Figure 71). The activity zone around the bridge is on the periphery of the main camp, and the associated transient residential area appears isolated from the hubbub of the core (Figure 72). Furthermore, the choice of location appears to be subordinate to the needs of the construction work and fosters the occupant's personal needs. Similarly, focused activity loci with temporary residence and construction features could have existed to the west of the bridge, in the area of the railway cutting, where specialised construction activity would have occurred. However, as no other traces of residential, or construction property sites are evident, the relationship of this grouping of features around the bridge with other site elements cannot be fully determined, and we are left with conjecture.



*Figure 71* Composite view of KM 93 Krokodilpoort Bridge camp worksite from north to east with arrows indicating the archaeological features within the landscape: (1) auxiliary bridge, (2) original bridge pillar, (3) workshop, (4) loading platform, (5) machine mount on platform, (6) campsite. Photos: H. Fivaz.



The only other existing section of the original Poort City site is part of the recreational premises: the assumed hotel midden. Without excavation, the midden is primarily mute. However, the midden possibly designates the hotel's location, and as such, points to the probable central hub of the camp as historical sources imply. As the hotel or canteen predates the construction of the *Oosterlijn*, the camp ostensibly developed around the hotel premises, with the trading store and hospital located somewhere in the vicinity. Called the Resurrection Hotel, it was established along the old Salvation Valley section of the Delagoa-Barberton wagon road by Edward Hardie Gould and his wife Florence, in the mid-1880s (Pienaar 1990: 266). The road fell into disuse after the completion of the Barberton branch line that connected with the *Oosterlijn* in 1896. The road is a feature that temporally and spatially extends beyond the railway line's construction, but in 1892, it was one of the vital avenues for material and provisions to reach Pauling's basecamp. It was most probably an important deciding factor for the camp's location outside the gorge.



*Figure 72* Panoramic view of the campsite at KM 93 Krokodilpoort Bridge to the right, and the estimated location of Poort City to the left.  
Photo: H. Fivaz.

5.2 KM 207.5 WATERVAL-BOVEN TUNNEL



Figure 73 Location of KM 207.5 Waterval-Boven Tunnel Camp indicated on a Google Earth satellite image. Image: H. Fivaz.

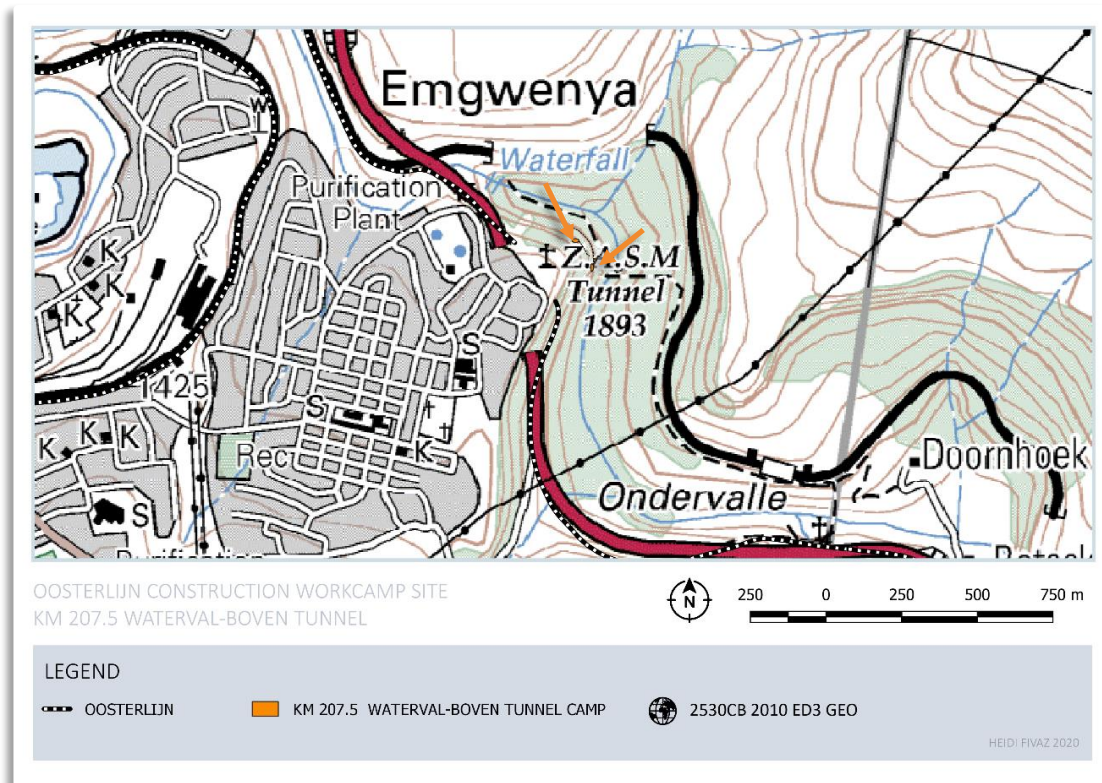


Figure 74 Location of KM 207.5 Waterval-Boven Tunnel Camp indicated on a 1:50 000 Topo-cadastral map WGS2530CB, Chief Surveyor General. Image: H. Fivaz.



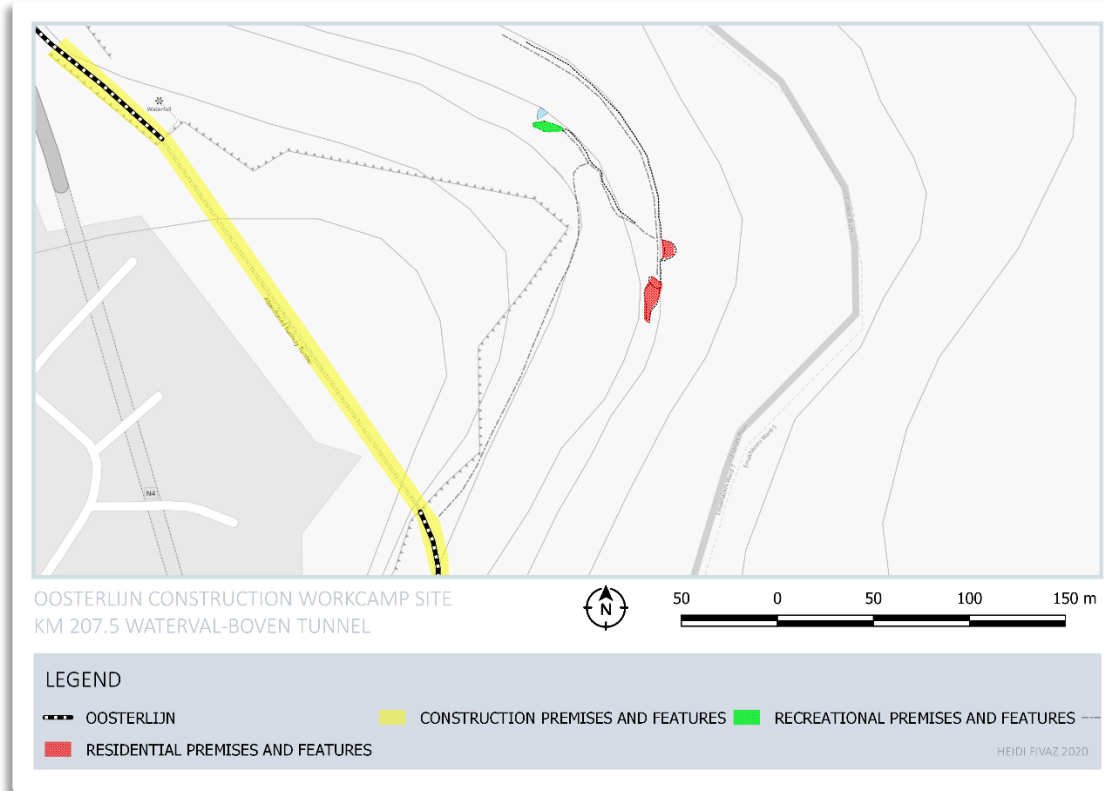


Figure 75 Spatial distribution of residential and possible recreational associated spaces at KM 207.5 Waterval-Boven Tunnel Camp. Image: H. Fivaz.

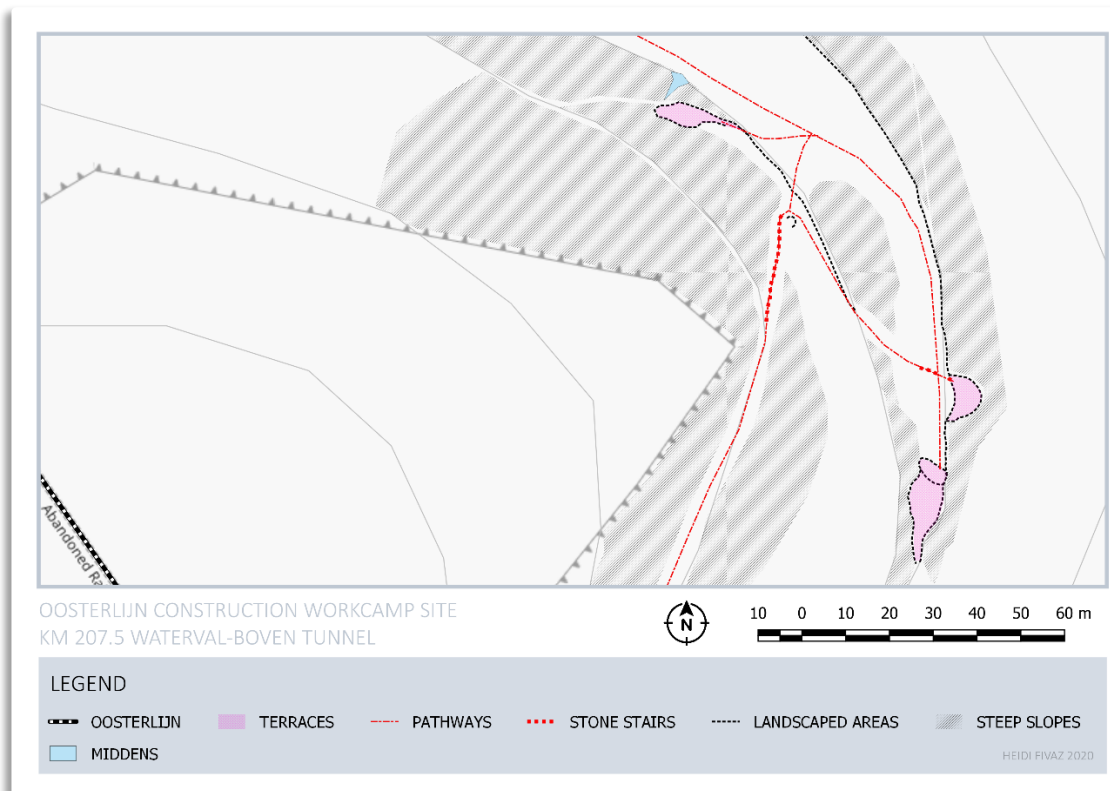


Figure 76 Site layout, KM 207.5 Waterval-Boven Tunnel Camp. Image: H. Fivaz.

The identified camp footprint situated on the eastern slope of the tunnel ridge comprises residential features (Figures 75 & 76). The three habitable terraces, with interconnected pathways, were built along the steep slope, with stone retaining walls, and levelled areas. These terraces are located underneath the cliff, approximately halfway between the two tunnel openings, with ease of access to the eastern tunnel entrance.

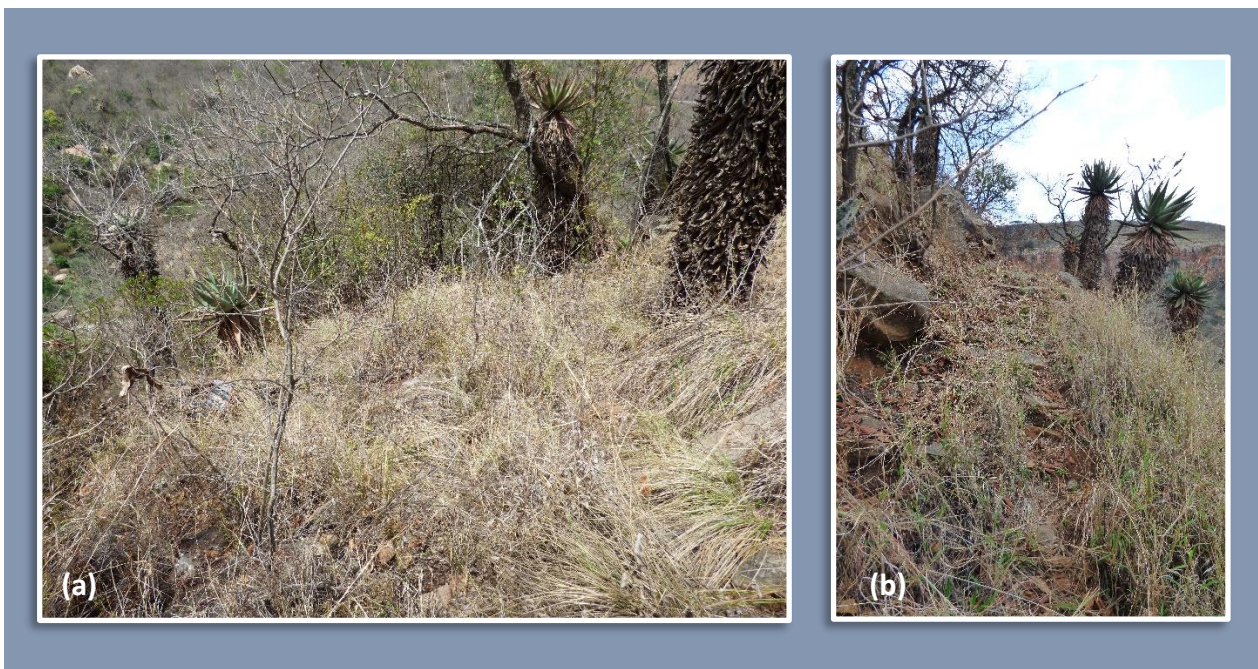


**Figure 77** Views of the southernmost terrace: (a) the stone circle platform is visible in the righthand corner of the photograph, (b) the edge of the terrace and the large retaining wall stones are visible. The arrow indicates the N4, which follows the original Oosterlijn ascent to the Waterval-Boven Tunnel. Photos: H. Fivaz.

The southernmost terrace consists of a 100 m<sup>2</sup> cleared area with an 18 m<sup>2</sup> shallow built-up stone encircled platform on the northern end (Figure 77). The area is backed by sizeable natural mountain rocks and a steep slope on the west, with the slope dropping nearly vertically in the east. To the north of this area is a smaller, scalloped terrace, with rough-hewn stone steps leading down from the level above. The diameter of the semi-circular terrace is 8.1 m with the radius at the broadest part measuring 5.9 m (Figure 78). From the creation of



the terraces, cutting steps into the natural stone, and stabilising the terraces and paths with retaining walls, a fair amount of landscaping has been done to prepare the space for the camp. The effort almost seems at odds with the use of short-lived building materials such as wood, thatch grass, and canvas evident in the historical photographs. The location must have had precedence over other considerations of ease and comfort. Apart from easy access to the eastern tunnel construction, the campsite further provided an unhindered view of the rail line's approach towards the tunnel. It would not be a wild leap to conclude that the occupants of this camp appeared to have had a particular interest in the eastern section of the tunnel. Whether their work was concerned with drilling, masonry, or tracklaying, is not clear from the observable evidence in the residential footprint.



*Figure 78* Scalloped terrace at the Waterval-Boven Tunnel campsite (a), and (b) the path and stone steps leading to the southeastern terraces. Photos: H. Fivaz.

With little indication of repeated waste disposal on the surface, refuse was probably dumped over the edge of the terrace, leaving only accidental losses of personal-use items for us to find. It could also mean that waste that would have accumulated from daily activities such as cooking is not present, because these activities did not take place in this area. Along the

footpath, around the curve towards the northwest, lies another flattened terrace, nearly 45 m<sup>2</sup> in size. This terrace is only effortlessly reachable from a southeasterly direction, as the gradient of the slope in other directions is somewhat sharp (Figure 79). The small terrace has not been braced by a retaining wall, like the terraces to the south, and the path looks less engineered and landscaped. The area has been delineated with stone. One can conclude from the lack of archaeological features or permanent building material, that wood, thatch, or canvas were used. There is however a substantial, concentrated dispersal of refuse down the northern slope. No evidence of individual or communal food preparation was apparent. The assemblage of surface material is skewed towards alcoholic beverages. Questions that arise from this space are whether an individual accumulated the refuse over an extended period or whether it results from the activities of several people in a short time frame.



*Figure 79* View from the northernmost terrace at Waterval-Boven Tunnel campsite (a) towards the approaching path, and (b) the stone steps leading back up to the path to the eastern tunnel entrance. Photo: H. Fivaz.

It is unclear whether this space was a dwelling, utilised as storage, or even a communal recreation spot related to the southern terraces. The trail from the terrace joins up with the main pathway leading to the eastern end of the tunnel, and the footpaths to southern terraces, creating a plausible association between these areas.



5.3 KM 215.5 PAMPOENSPRUIT BRIDGE

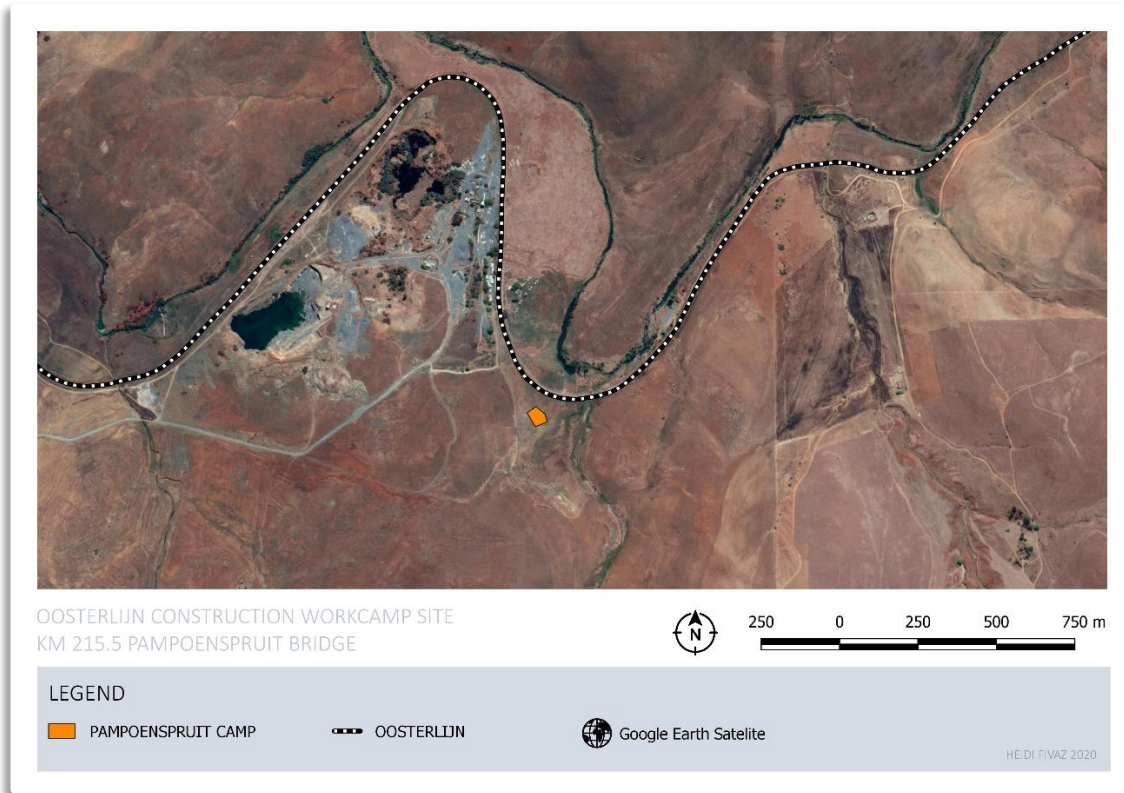


Figure 80 Location of KM 215.5 Pampospruit Bridge Camp indicated on Google Earth Satellite image. Image: H. Fivaz.

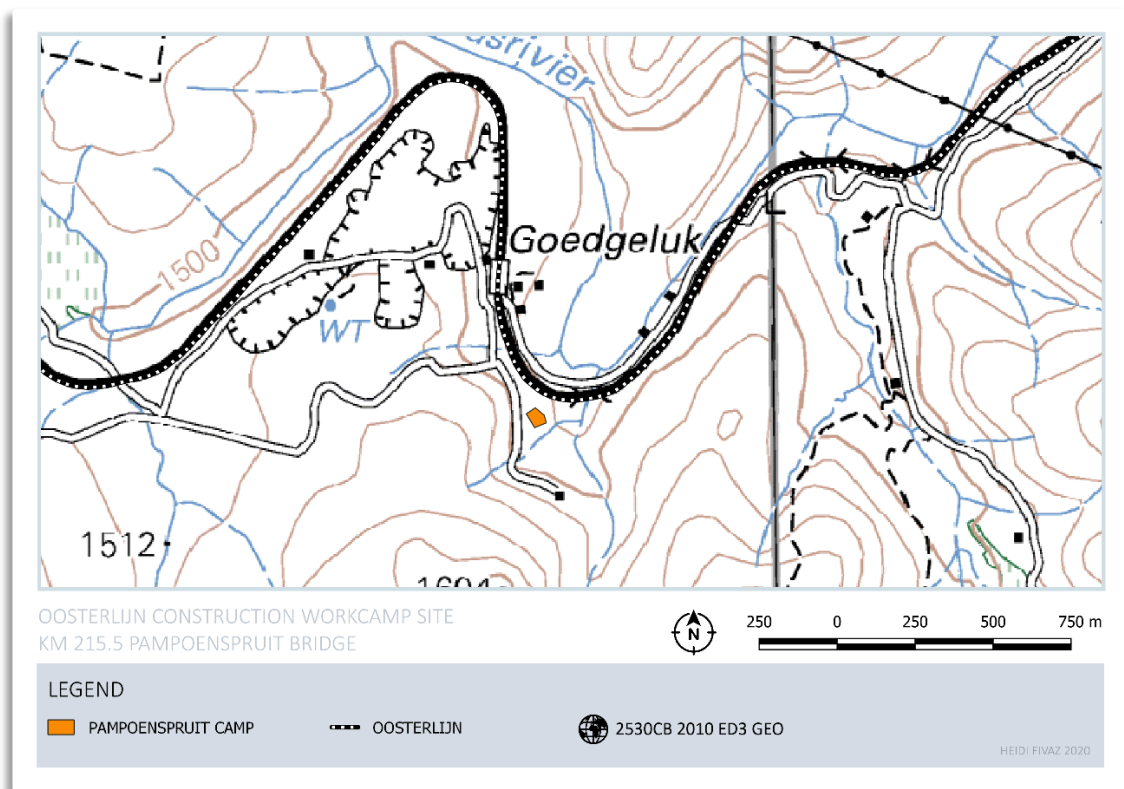


Figure 81 Location of KM 215.5 Pampospruit Bridge Camp indicated on a 1:50 000 Topo-cadastral map WGS2530CB, Chief Surveyor General. Image: H. Fivaz.

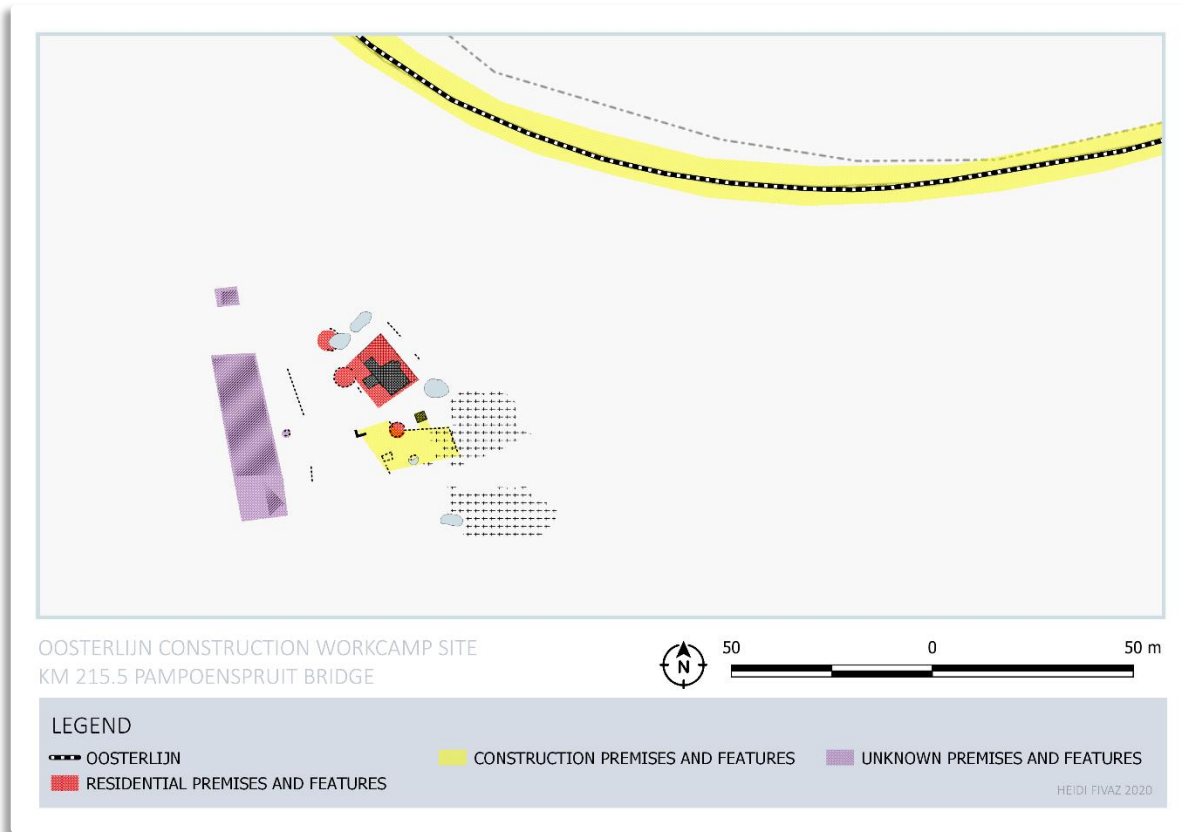


Figure 82 Spatial distribution of residential and construction associated spaces at Pampoenspruit Bridge Camp. Image: H. Fivaz.

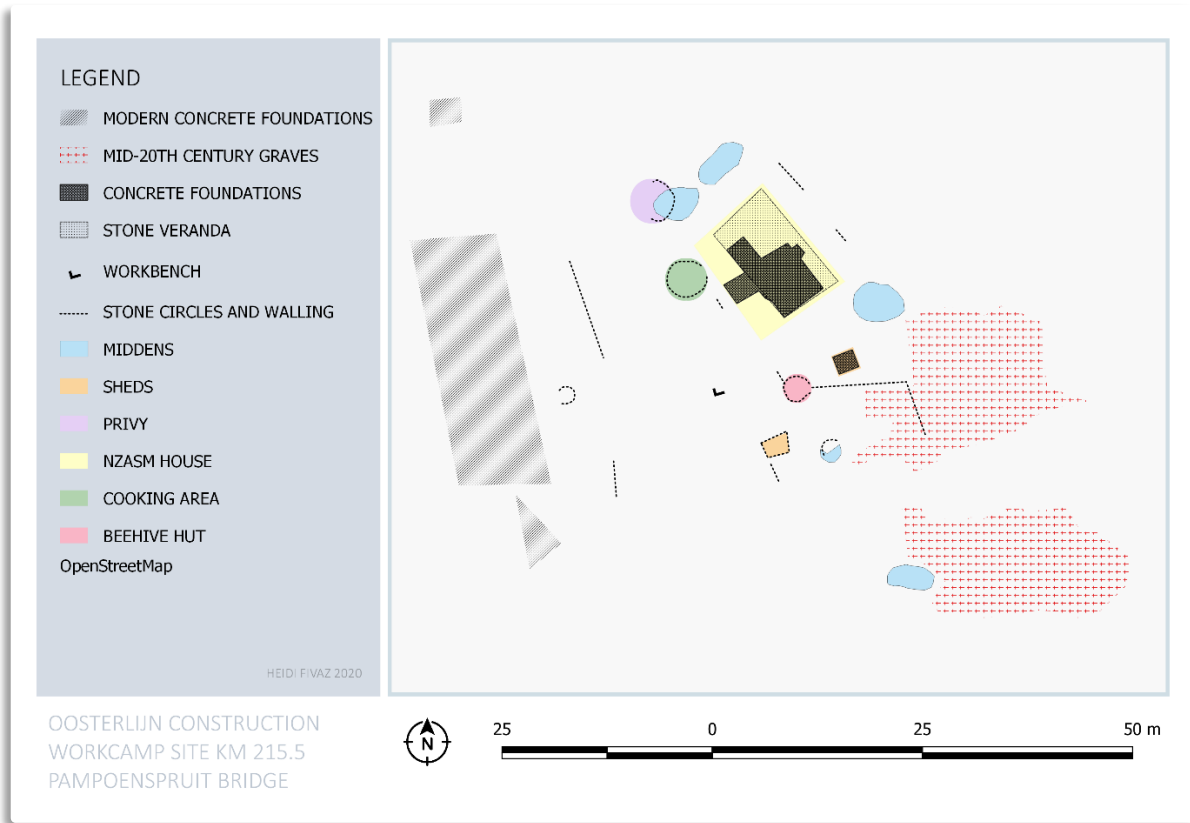
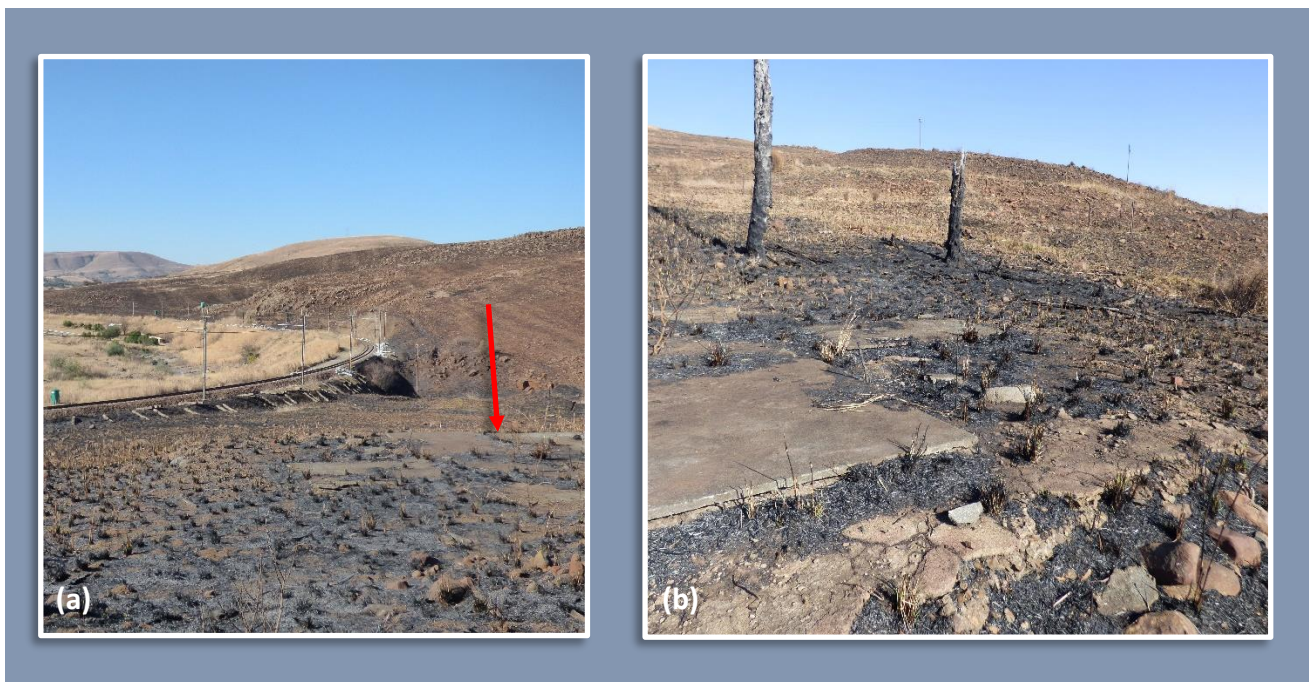


Figure 83 Site layout, KM 215.5 Pampoenspruit Bridge. Image: H. Fivaz.



The campsite established at the bridge over the Pampoenspruit comprises integrated residential, and construction feature types (Figure 82). The residential features include the main prefabricated corrugated-iron house, a beehive hut, and privy. The attributed construction structures include workshops, storage shed, and workspace (Figure 83).

The central concrete and stone foundation is positioned to the north of the camp, closest to the rail line. Parts of the concrete foundation consist of a double poured slab, while the remainder, mostly part of the veranda, has not been maintained and has in areas crumbled away (Figure 84). The original 115 m<sup>2</sup> footprint is still distinct within the landscape.



**Figure 84** The main house's foundation with (a) the view towards the Pampoenspruit Bridge, (b) and a close-up of the double-poured foundation and the crumbling veranda. Photos: H. Fivaz.

The structure could have housed more than one person and provided space for administrative responsibilities and personal storage. As such, this structure represents both residential and construction premises. Well-positioned on the gentle slope at the foot of a hill, this residential and administrative space provided easy access to the construction work, as well as views of the rail line to the east and north-northwest.

There is no evidence of a fireplace or hearth within the structure and, unless the kitchen possessed a small mobile cooking stove, it is highly likely that cooking occurred outside. A circle of stones at the back of the house might have served as an outdoor cooking area with firepit (Figure 85). Household refuse was disposed of on the northwest side of the structure, where one extensive midden or two separate middens were identified by the characteristic grey ash deposits, as well as household-type cultural material such as ceramics, glass, and food tins, visible on the surface (Figure 85). Outside the southeastern corner of the house, another deposit of grey ash and surface material is located. The middens in the northwest are substantial mounds, while the deposit of discarded refuse to the southeast of the house, is shallower. Excavation of these middens would reveal more about whether they were utilised at different dates, or for different types of waste. A vital component of the residential space that has not been observed at the other camps is the privy. As deduced from the historical photographs, its position could partly account for the sizable midden in the northwest, where stones from a collapsed wall are visible on the top of the midden mound. Again, only excavation can reveal the privy's position, and its role, if any, in the camp's household rubbish disposal practices.

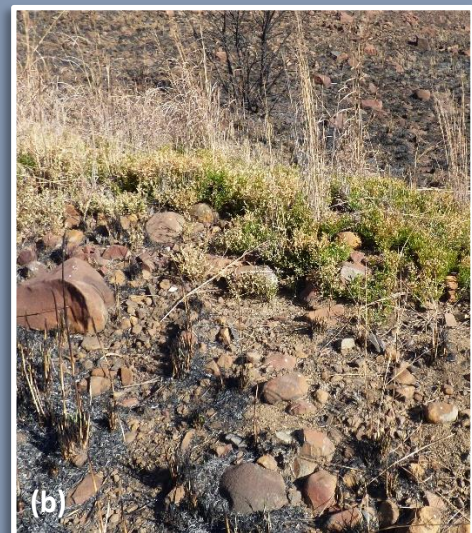


Figure 85 (a) Possible cooking screen and (b) the privy midden. Photo: H. Fivaz.



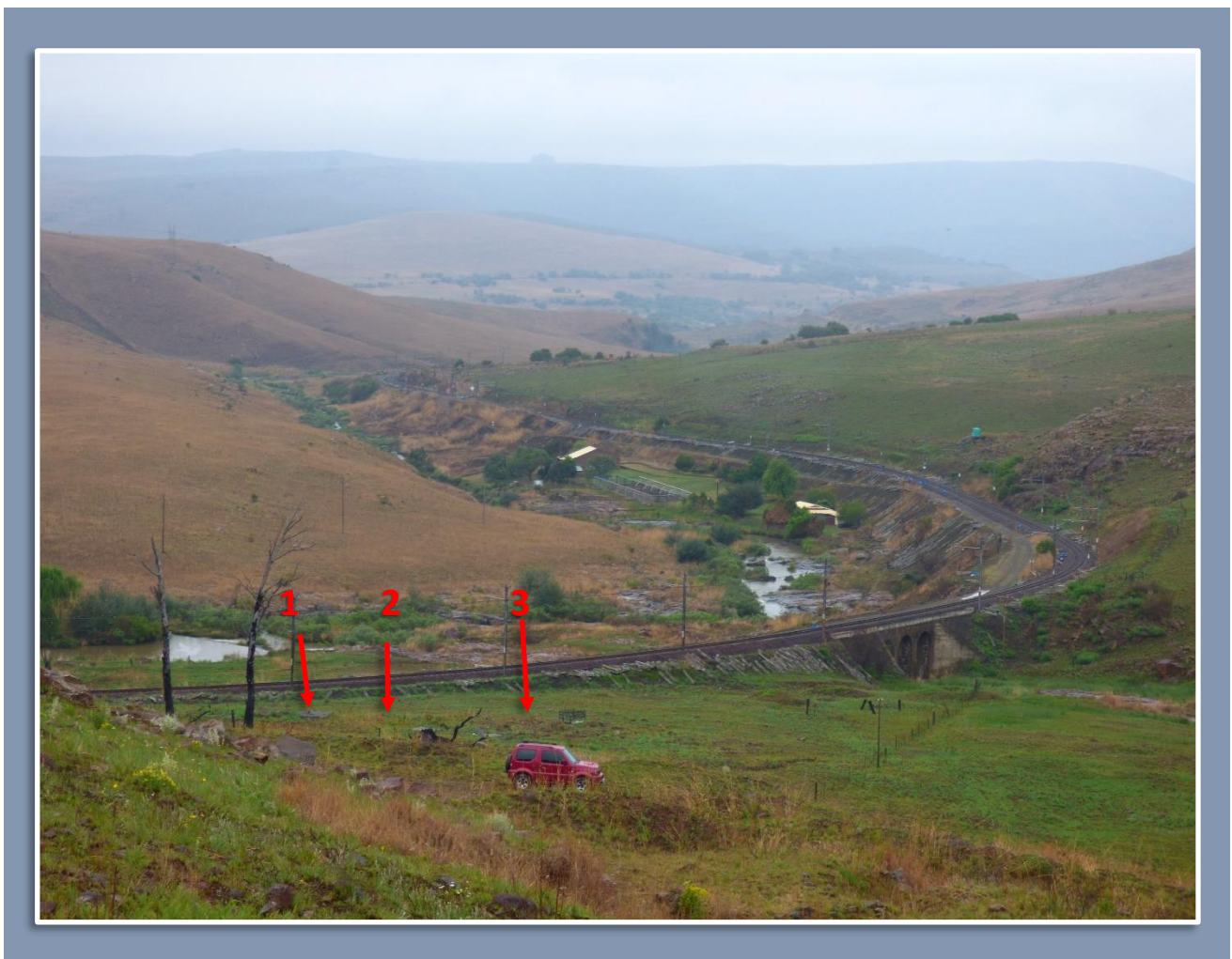
The southeastern section of the camp is predominantly labour orientated (Figure 86). A smaller concrete slab foundation and a partially packed stone foundation and wall lie to the north and east of a flattened area with a shallow retaining wall. The rectangular foundations are most likely storage sheds or workshops. Within the levelled area is a modest semi-circular stone circle with a highly concentrated ashy deposit, and some glass fragments. To the northwest of this area lies the remnants of a hefty, metal and railway sleeper object, which could be an abandoned workbench, without precise archaeological context. Designated to storage, and probably light smithing, and essential repair and fabrication work, the area is easily accessible from the main house and the construction work on the bridge and trackbed.



*Figure 86 (a) Stone circle (beehive hut) and small cement foundation, (b) rectangular stonewalling, (c) small stone circle within the workspace, and (d) possible workbench. Photos: H. Fivaz.*



Between the rectangular foundations, a stone circle with a diameter of 3 m is located in a position that corresponds with the beehive hut depicted within the historical photographs. It is a residential unit amidst the dedicated construction space. The packed circular stone feature with the ashy deposit, directly south of the dwelling, could have been utilised as cooking space as well as industry-related work (Figure 86). If this was the case, food preparation and consumption could have been individualised across the site, rather than communal. A possible waste dump is situated further to the south, which might include both residential and construction refuse disposal, as signs on the surface suggests. Household refuse in this section of the camp might provide evidence of camp demographics when compared to the other middens. Furthermore, the industrial waste might identify the activities and functions of nearby residential and support features.



*Figure 87* The position of the (1) NZASM house, (2) the work area, and (3) the mid-20th-century cemetery, within the landscape. Photo: H. Fivaz.



No clear indications of landscaping, other than retaining walls, are observable onsite. The mid-20<sup>th</sup>-century graveyard of 87 graves, located in the southeastern section of the site, almost certainly has repurposed stones gathered from across the site as part of the stone cairns marking the graves. Even though not dating to the 19<sup>th</sup> century, the graves are likely railway related and connected with the railway worker compound set up across the railway line at Goed Geluk station during the 1940-50s (Figure 88).



**Figure 88** The worker compound at Goed Geluk station photographed from Pampoenspruit Bridge camp, and graves of the mid-20<sup>th</sup>-century cemetery situated at Pampoenspruit site. Photos: H. Fivaz.

#### 5.4 LOCATION, LOCATION, LOCATION

The three campsites analysed in this section differ in extent, construction, and type. Spatial analysis of the three sites and historical photographs reveal a couple of intersite idiosyncrasies. There are predominantly small clusters of informal campsites housing minimal numbers of people scattered along the railway construction zones. The camps may consist of a variety of different building types, ranging from ephemeral to semi-permanent. Campsite locations are advantageously close to the construction work with quick and easy access from camp to construction site. The campsites that fulfil a supervisory subfunction tend to be elevated with the best vantage points on the progressing construction work. Modifications are often made to the landscape, even when the site's occupation will be brief, to optimise comfort and function. The rail line primarily follows the trajectory of a couple of major rivers, so effortless access to water is incidental rather than planned. Lastly, it appears as if, within these small cluster campsites, practices of refuse disposal were localised to 'households' and activity areas, and not shared by the whole camp.

However, what does this mean? Camp design and organisation help us to reconstruct the living spaces, habits, and activities of the railway construction worker: can it provide insight into worker agency and power relationships? Chapter 6 will attempt to address this question.

6. AGENCY AND POWER IN THE *OOSTERLIJN* LANDSCAPE

*We do not ride on the railroad; it rides upon us.*

**Henry David Thoreau (1893: 146)**

Henry David Thoreau laments the toll that railroad development and the desire for industrial progress has had on the workers labouring on its construction. He reproves that the pleasure of rail travel comes at a high cost to the misfortunate, who suffers the displeasure of being ridden upon (Thoreau 1893: 146). Thoreau's imagery brings to mind inherent powerlessness on the part of the railway construction worker. The narrative of the labour force as an expendable and replaceable capitalist commodity is a well-known one, as well as the oppressive and dominating nature of industrial capitalism. The historical imbalance of economic and political power has been one of control, influence and authority over others. The 'power over' viewpoint is the result of our natural tendency to put one over another in the context of social relationships (Purdy 2015: 3). However, beyond the exploitation of workers, and concepts of 'power over' and control, other interpretations of labour highlight the nuances of the skilful inventiveness and the creative strategies that workers employed every day (Cowie 2011: 8).

The word 'power', if I can be forgiven for relying on a writing cliché to further my argument, stems from the Anglo-French *pouair*, Old French *pouvoir*, a noun for "to be able" (Harper 2020). The ability to effect change and make choices that influence circumstances, environments, social roles and relationships, translates into power in the hands of individuals, collective groups, in other words, a variety of agents. Therefore, power exists when it is experienced or employed by agents in social, political, or economic networks (Cowie 2011: 32). Power is multifaceted and pluralistic and can be direct, indirect, positive or negative. It encompasses multiple dimensions, such as class, status, identity, gender, and agency. We find it manifesting as domination, resistance, hegemony, heterarchy, authority, paternalism, collaboration, collusion, surveillance, and creative action (Cowie 2011: 8). A range of human interpretations, relationships, motivations, and identities comes into focus when considering pluralistic power.

The microscale analysis of the NZASM railway construction campsites accommodates the focus on individual nodes in an agent-network of power relations. In the words of Charles Orser (2015: 321) “in most archaeology, small (scale) is indeed beautiful”; however, one should remember that the sites are mere units of convenience with which to approach the much larger social network of power relations that arose and were maintained beyond the extent of the campsites. The discernible power organisation and evident agency of the railway workers at KM 93 Bridge Krokodilpoort, Waterval-Boven Tunnel, and KM 215.5 Pampoenspruit Bridge campsites reflect the complex, often transnational, economic, political, and ideological power structures of the NZASM, the ZAR, and the Netherlands.

To provide, as Deetz (1988: 367) suggests, “a more satisfactory explanation than would be forthcoming from either set [archaeological or documentary] of data alone”, I continue to weave data from photographic and documentary sources to augment the small archaeological data set in my dissection of the manifestations of agency and power in the NZASM *Oosterlijn* landscape.

### 6.1 DADDY ISSUES: INDUSTRIAL PATERNALISM

The most predominant managerial style characteristic of 19<sup>th</sup>-century factories, company-owned towns and workcamps was industrial paternalism. Industrial paternalism encompasses the metaphor of the protective, often benevolent, yet controlling relationship between a (male) parent and child (Cowie 2011: 57). It was a subtle management system with sociological, political, and symbolic power aspects, utilising a combination of persuasion and repression to control the labour force (Reid 1985: 580, 584). Paternalism further exhibits reward power theory elements, which provides one agent with the ability to influence another’s beliefs, attitudes, or behaviours to conform to the agent’s desires with the promise of a reward (Simpson et al. 2015: 394). Rewards could be tangible, such as monetary, or intangible, like an increase in status, a promotion, job security, or other social benefits within the network. Company policies often reflected the ideological orientation of the management. As such, Protestant and Victorian ideologies, particularly regarding alcohol and sexual conduct, often found their way into management policies (Cowie 2011: 76). Viewing



the NZASM through the lens of industrial paternalism puts the company's ideologies and planning, their blueprints, and regulations into a new perspective. Understanding the NZASM's paternalistic features aids the reading of the on-the-ground manifestations of company plans and ideals in the railway construction camps and how the camps reflected the workers' practical compromises to, or indifference towards, company plans.

The establishment of the NZASM created a need for qualified and experienced technical and administrative personnel to construct and run the new rail networks in the ZAR. At the time, few appropriately skilled candidates existed amongst the population of the Republic, and the bulk of the skilled workforce was sourced in the Netherlands. The NZASM had to sweeten the deal, so to speak, on many fronts to attract applicants to join the company and emigrate to a far-off African state. Many paternalistic industrial companies worldwide had to offer perks to entice employees to isolated workcamps. Therefore, efforts were made to provide staff with housing and housing stipends and support through various medical, financing, savings, and pension schemes. A booklet with counsel and advice was handed out to new staff members to prepare them for their journey and sojourn in the ZAR. Lists of appropriate clothing, luggage, equipment and accessories, as well as useful information for the journey ahead by ship, train, carriage, and transport wagon, were supplied. Partial and full travelling allowances were also available to senior staff members, whilst more junior staff members could apply for a salary advance to cover the travel costs to the ZAR (De Jong 1989: 33; 53). The company further imported schoolteachers and preachers to cater to the educational and spiritual needs of their employees and their families. In due time, Afrikaners and other Europeans were adequately trained and employed in more skilled positions, and even though the local African workforce doing the unskilled and unschooled work were in the majority, the Dutch workers remained the backbone of the company (De Jong 1989: 18-19). As a result, the NZASM had a distinctive Dutch identity which the company endeavoured to uphold and nurture.

Globally, company towns and workcamps were a particular feature of paternalism and industrial capitalism of the 19<sup>th</sup> century. NZASM towns that developed around workcamps, stations and railway infrastructure include towns such as Springs, Komatipoort, Waterval-

Onder, and Waterval-Boven. The company put its Dutch stamp architecturally from the NZASM drawing office in Pretoria. Under architect Van Lissa's direction, they developed type drawings for all the structures associated with the company. From the temporary prefabricated structures to permanent stone and brick structures, they developed building types to potentially suit different locations and functions based on available material and technology (Barker 2014: 114-115).

On the *Oosterlijn* trajectory, Waterval-Boven and its little sister Waterval-Onder can be held up as examples of NZASM company towns that were established during the construction of the railway line. Waterval-Boven was founded as the NZASM headquarters for the *Oosterlijn* railway section. It was the first hub of the Highveld (from the east), the terminus for the rack rail system, and ideally situated halfway between Pretoria and Komatipoort. The construction of the Waterval-Boven Tunnel commenced in 1892, and by 1894 the formal town was taking shape based on engineer Westenberg's designs (Figures 89 & 90). The town plan included rail and administrative infrastructure, offices, housing, a school, a church, a hospital, and a recreational park for NZASM employees (De Jong 1989: 117). The town continued to develop even after construction was completed. With the addition of more housing and a doctor's residence, the town was a thriving example of paternal benevolence by 1898. It is interesting to note that the NZASM did not allow any commercial enterprises within the town's boundaries. By 1899, there was only one general dealer, a bakery, and butchery located on the town's periphery (De Jong 1989: 119).

Waterval-Onder was the last station of the Lowveld before the *Oosterlijn* crossed over onto the Highveld plateau via the rack rail system (Figure 91). Although smaller than Waterval-Boven, it was also formally developed during the construction of the rail line in 1892. Along with the station buildings, locomotive sheds, and turntable (a revolving platform for turning a locomotive), there were staff houses, a restaurant, and in 1896 a hospital was added to the complex (De Jong 1989: 116). While Waterval-Boven with its healthier climate continued to expand, Waterval-Onder remained a sleepy little Dutch town at the edge of the Lowveld.

These company towns were the nuclei of Dutch culture far from the city centres. One can infer that Dutch individuals were empowered not only by their unique skills and attributes and the positions they held with the NZASM but by the support their cultural identity afforded, as well as the authority and distinction that accompanied that identity. The onus of the company's paternal benevolence was by default principally towards the employees of Dutch origin, with employees holding the highest positions benefitting the most. Within the NZASM power structure, the staff employed for the construction of the NZASM railway network, holding predominantly temporary contracts, especially during the early 1890s, found themselves logistically less 'cared for'. One can argue that the fledgling company had to prioritise its resources and investing heavily in temporary labour made less sense than establishing permanent infrastructure and devoting capital to positions that would outlast the construction phase. It was economically prudent for the company to secure their most valuable labour force, the skilled engineers and supervisors, who would be harder to replace than those working in unskilled positions. The result was benign negligence towards the unskilled labourers and an asymmetrical economic and symbolic power structure.



*Figure 89* The early days of the developing town Waterval-Boven, Oosterlijn, 1892. Photo: Het Zuid-Afrikahuis Map75-36 1403.



*Figure 90* Administrative buildings under construction in Waterval-Boven, Oosterlijn. Photo: Het Zuid-Afrikahuis Map169-21 3551.



*Figure 91* The town of Waterval-Onder, Oosterlijn. Photo: Het Zuid-Afrikahuis Map74-30 1363.



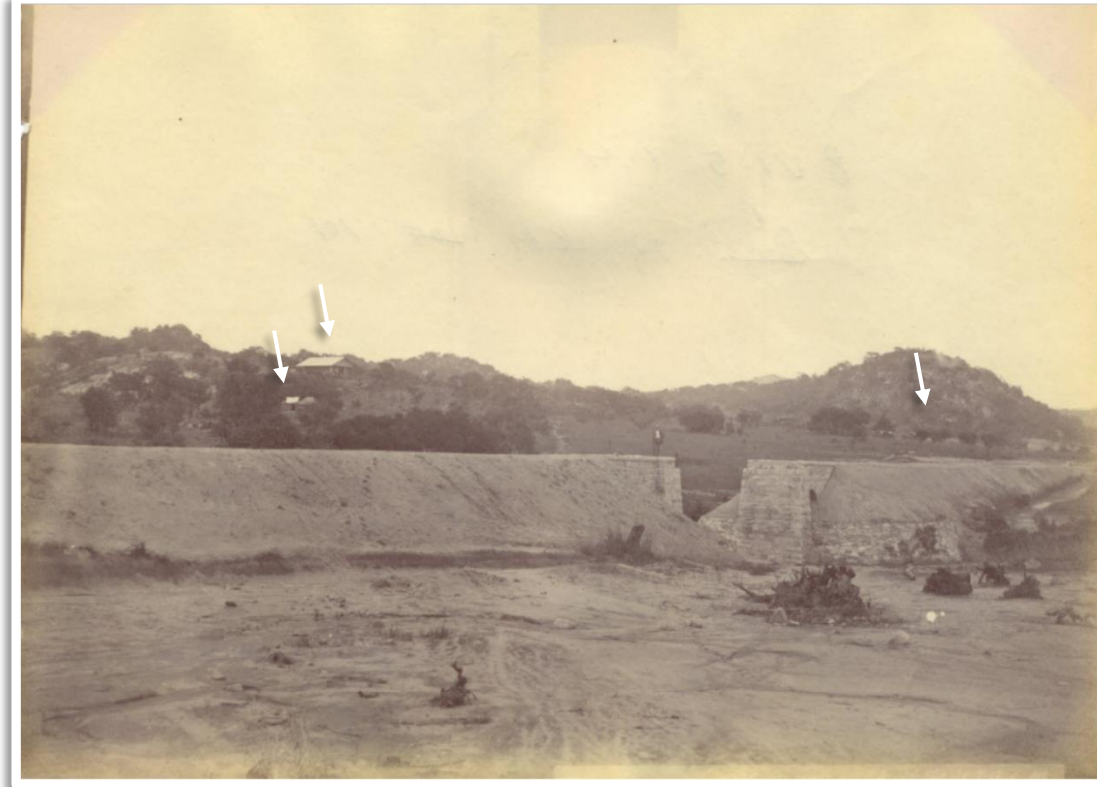
## 6.2 HOUSES WITH POWER

An observable manifestation of the company's paternal benevolence versus benign negligence, and the company's expression of symbolic power in terms of Dutch cultural identity, is with the housing provided in the field. The intent to provide housing for the NZASM workforce, shown in the blueprints and development of a town like Waterval-Boven, contrasts with the lack of formalised housing noted in the workcamps during the *Oosterlijn's* construction.

Chapter 3 highlighted that the provision of housing was on an ad-hoc basis, provided when the demands of the staff reached a fever pitch of necessity. However, the supplied prefabricated timber and corrugated-iron buildings did not fill the landscape along the line under construction. The studied period photographs rarely show more than one prefabricated housing structure in a construction area along the line, the exception being Komatipoort station precinct. An example of this is Figure 92, the photograph taken in 1892 during the line's construction at KM 101. There is only one prefabricated structure situated on the hill, overlooking the construction work, and reed and mud structures below it, as well as a couple of beehive huts in the treeline.

Initially, one can assume that the small number of prefabricated buildings pictured in the period photographs may indicate that the NZASM failed in its mandate to provide housing for the construction crews and did the bare minimum. However, one needs to take into account the power structures in play during the construction of the rail line. A staff organigram from 1891 positions the hierarchy of posts in the *Dienst van Aanleg* (Service of Construction) Department as 1) Chief Engineer, 2) Section Engineers, 3) Engineers, 4) Chief Supervisors and Technical Officials, and 5) Supervisors (De Jong 1989: 248). The contractors and sub-contractors and the majority of the labourers involved in the line's actual physical construction were independent of but subject to NZASM supervision. The company's responsibility to provide housing, therefore, ended with their engineers and supervisors in the field and did not extend towards the contractors and masses of unskilled labour. This

could account for the significant number of informal structures of mud, reed, and grass that populated the landscape during the *Oosterlijn's* construction.



*Figure 92* Construction at KM 101, Oosterlijn, 1892. Arrows indicate the prefabricated housing structure on the hill, with reed, mud and grass structures below it, with grass beehive huts to the right in the treeline. Photo: Het Zuid-Afrikahuis Map73-15 1315.

The historical photographs, such as Figure 93 taken at KM 97, show numerous smaller campsites spread over the landscape along the rail line's trajectory. The campsites consist of two to five informally grouped housing structures. In Figure 93, one can note groups of beehive huts, circular cone-on-wall huts (*rondavels*), and rectangular mud, reed, and grass buildings, but no prefabricated structure that can confidently be associated with the NZASM. Naturally not an indication of the company's absence, however, the site is devoid of an observable distinctive corporate influence, presence, and power base that would have been signified by an NZASM prefabricated housing structure. Without an imposing prefabricated structure such as that shown in Figure 92, the campsites in Figure 93 appear more homogeneous and heterarchical from the photographer's vantage point. From a distance, one can imagine heterarchical power relationships between the numerous, horizontally

arranged, allied groups as they reside, interact, and work side-by-side in the landscape. How these inferred power relationships were realised beyond spatial use of the landscape is unclear at this time.



*Figure 93 Landscape at KM 97, Oosterlijn, 1892. This photograph shows the spatial distribution of clusters of different campsites along the line during construction, highlighted with the arrows for clarity. Photo: Het Zuid-Afrikahuis Map73-13a 1313.*

Of course, one should consider that the photograph could have been taken from the veranda of an NZASM employee's residence, situated on the hill, or that such a house could have been located in the landscape to the east. We only see what the photographer chose to capture. However, even with the inclusion of an unseen NZASM hierarchical signifier, it does not negate the interpretation of pluralistic power systems existing during the construction of the *Oosterlijn*, which would have included heterarchy.

Therefore, I propose that the appearance of a prefabricated housing structure in the landscape becomes a symbolic representation of the company itself. They would have housed

supervisors or engineers, who during the construction phase of the *Oosterlijn*, were in charge of overseeing and bringing the project to successful fulfilment, hence a house of power. The remains of the little corrugated-iron house in the Pampoenspruit Bridge camp at KM 215.5 (Figures 8 & 59) can be more confidently attributed to NZASM employees than the grass structures in the campsite on the southeastern slope of the Waterval-Boven Tunnel, or the campsite remains at KM 93 Krokodilpoort Bridge. The presence of more than one substantial midden at Pampoenspruit Bridge camp points to a more prolonged occupation than the other two mapped campsites. The camp could have been occupied after the 1893-1894 construction of this rail line section, until the outbreak of the South African War, and maybe even later. An investigation of the cultural material in the middens could refine the dates. The middens confirm that the structure was utilised for some time after the construction of the rail line had been completed and that it probably became part of the rail line's operational or maintenance infrastructure; thus, a company-owned structure.

The Waterval-Boven Tunnel campsite on the slope is attributed to a "*Spies. Horvath*" by the photographer (Figure 51). It is uncertain whether Spies and Horvath were contractors, or subcontractors, and what they were contracted to do as no information could be found on an individual, individuals, or a company of that name. Warren & Royce were the official contractors responsible for constructing the rail line from Waterval-Onder to Waterval-Boven, including the tunnel and rack rail, construction work that took almost two years (October 1892 – June 1894) to complete. The occupants of the Waterval-Boven Tunnel campsite might have been members of the Warren & Royce construction team or subcontracted by them to complete an aspect of the line's construction through the tunnel. It is doubtful, although still possible that an NZASM employed engineer or supervisor would have spent two years in the temporary grass huts shown in the photographs of the mapped Waterval-Boven campsite. Especially with the official NZASM town close-by, and an associated NZASM cottage situated adjacent to the sloping rail line approaching the tunnel.

George Pauling and his company, James Butler & Co., was responsible for the construction of the rail line through the Krokodilpoort. His main camp was situated at Poort City. The small campsite located at KM 93 Krokodilpoort Bridge with its closeness to the bridge's construction



works implies that its occupant would have been directly involved in the construction work. An NZASM supervisor or engineer would have had better accommodation at Poort City, or the supervisor's cottage located a small distance to the east at KM 84 Bridge.

### 6.3 SURVEILLANCE AND SUPERVISION

Continuing on the theme of housing with symbolic power, the concept of supervision and surveillance was paramount to paternal industrialism. Surveillance is described as an “essential element of the system” and that “paternalism and supervision enjoyed a dialectical relationship with one another, each originating in and generating the other” (Reid 1985: 585, 588). A discussion on surveillance brings us to the theme of “supervision, issuing instructions, monitoring for specific behaviours/actions, and regulating or governing behaviour” (Purdy 2015: 5). Supervision was naturally crucial for a large-scale construction project like the rail line to ensure quality and consistency. The NZASM created a five-tiered hierarchy in the department of rail construction, as cited in the previous section, to manage construction work. Engineers and supervisors were part of the labour management system that afforded the large company the control of smaller sole-owner enterprises. The NZASM managing director G.A.A. Middelburg was only intermittently in the ZAR in April–August 1890, in May–August 1891, and June–September 1893, before settling in Pretoria in 1894 with his family. With the chief engineers also based in Pretoria, the supervision in the field had to stand in for the paternal eye of the company's co-directors.

As mentioned in Chapter 1, the investigations of industrial landscapes by Industrial Archaeologists have highlighted how industrialists manipulated landscapes and built environments to control and surveil employees to reinforce the hierarchies of capitalism (Cowie 2011: 9, 49). In the Lowveld, the landscape naturally offered various strategic points for panoptic surveillance. Quite a few historical photographs show campsites that have an elevated position; in particular, supervisors' structures are positioned to have a panoramic view of the rail line and its construction. The little supervisor's house at KM 85 (Figure 32), visited during the survey, comes to mind. The precarious spot chosen for the house offered great views of the landscape, and the rail line to the west and east, and thus, the construction

work underway. The house was also isolated from other campsites that might have been in the area. Likewise, other locales like the prefabricated structure at KM 101 (Figure 92), the camp at KM 76 Kaapriver Bridge (Figure 29), and the supervisor's grass hut at KM 105 (Figure 6), were elevated above the rest of the camp with a full view of the construction activity. Comparably, our now familiar NZASM affiliated camp at Pampoenspruit Bridge was also positioned to have a perfect line of sight on construction work in progress, while also having easy access to the worksites (Figures 8 & 59).

On the other hand, the campsites at the Tunnel and the KM 93 Bridge have views, but not the looming presence of the known supervisors' structures in the landscape. The terraced campsite at the Waterval-Boven Tunnel had a panoramic view of the distant inclined ascent towards the tunnel (Figure 51). However, the campsite was on a lower elevation than the rail line and easy access to the viewed section of rail line was impeded by the valley that lay in-between the camp and the actual construction work. The small campsite situated above the crushing platform and workshop at the KM 93 Krokodilpoort Bridge is in an elevated position. However, the site provides limited views of the rail line to the east, and because of the rocky landscape, none of the bridge construction work.

Cowie (2011: 119) points out that the value and power of Foucaultian surveillance lie not in what can be seen, but in the perception that one might be seen. The supervisor's elevated vantage point, as well as the closeness of the campsites to the rail line, meant that workers would not be able to escape the sense of being observed by their bosses, or their peers as they work or move around the campsite, to and from the construction site. A sense of privacy was probably only achieved within the dwellings, even though these were often shared. For Cowie (2011: 119), the constant visibility could have caused workers to self-monitor and self-discipline and might have encouraged work efficiency and professional behaviour, while discouraging delinquency like thievery and intoxication within the workspace. Whether the same is true for the *Oosterlijn* construction workers is uncertain; however, we can look toward camp layout to determine how they might have reacted to the idea of being relentlessly observed.

I would be remiss if I did not briefly discuss the role photographers would have played in workforce surveillance. Whether on commission or for personal pleasure, the professional and amateur period photographers observed and captured the construction of the *Oosterlijn*, not just for posterity and, fortuitously, for the benefit of historians. In the 19<sup>th</sup> century, the photographs would have been seen by peers and management alike and would have been not only enjoyed as curios but scrutinised as official reports. With so many of the photographs unattributed to specific photographers, it is unclear if the motif or theme of particular photographs reflects the intent or designation of the person behind the lens. For instance, did the Engineer Westenberg's amateur photographs focus more on engineering aspects of the construction work than someone who was more inspired by the landscape, the people, and composition? Were the photographs of an independent photographer more objective than someone associated with the company? Whatever the answer, the camera's presence in the field would have been a powerful, albeit inadvertent, tool for control and surveillance. Beyond the formal posing effects, such as standing or sitting a little straighter and pulling in stomachs, an awareness of the camera would further have influenced and possibly modified behaviour and actions on sites. The viewer and consumer of the photograph further assumes the role of power and continues the surveillance, inspection, and assessment of the workers, their actions, environment, and results of their labour, unhindered by time.

#### 6.4 AGENTIVE ADOPTIONS AND ADAPTATIONS

Up to this point, this chapter has focused on company power constructs and how these manifested within the landscape. The company visibly exercised its power through resources distribution, symbolic representation, space and surveillance. The workers reacted to, negotiated with, and accommodated the expressions of power as collective and individual agents. The workers enact their power through their actions and choices, their use of skills, knowledge, and space within the landscape.

The composition and layout of campsites observed in the Lowveld photographs are predominantly *laissez-faire*. The campsites lack evidence of a formalised plan for the camp layout or company influence in camp design (Figure 93). The construction of the rail line is the

main common denominator dictating where campsites were located. It is only practical that campsites had to have easy access to worksites, to minimise energy expenditure for the daily 'commute' to and from worksites. The small campsite situated above the crusher platform and workshop at the KM 93 Bridge is detached from the main camp at Poort City, indicating that being closely positioned to the work site was preferable for the occupant than being part of the main camp. The location of the Waterval-Boven Tunnel campsite was so attractive to the inhabitants that they did substantial landscaping, cutting steps and building terraces, in order to have a campsite close to the eastern tunnel entrance. The Pampoenspruit Bridge campsite is located halfway between Waterval-Boven and Machadodorp, and its establishment was probably predetermined as a basecamp for the section of rail line between these towns. However, the specific site was chosen for its organic convenience: ease to the construction work, and for the view it provided of the railway line to the east and north.

The workers were very proactive in deciding where and how they would inhabit the landscape, even though these decisions were subject to the rail line trajectory. However, the most prevalent evidence of the construction workers' agentive practicality has to be their resourcefulness with regard to the lack of formal housing along the line. The adoption of make-shift building materials like clay, reeds, wood, and grass, and indigenous building skills, was the most viable solution to address shelter needs, for both NZASM and non-NZASM employees. For the visiting European, adapting to the foreign environment and climate required effort and a paradigm shift. Embracing indigenous building technology is not unprecedented, as European immigrants and missionaries have throughout preceding history often done the same, specifically to meet short-term shelter needs (Frescura 1985: 145). Indigenous builders drew building material from their natural environment and utilised the material according to its physical and organic properties (Frescura 1985: 28). Shelters could either be easily dismantled and moved or left to decay with little to no trace - a characteristic not favourable for archaeological research, but ideal for temporary camp construction.

Apart from being indicative of the workers' innovation towards solving their housing problems, the exchange of skills and knowledge between African and European agents reveals an open-ended network of resource power dynamics. Resources, such as skills, knowledge,



money, and status, are the property of an individual or group and can be made available to others “as instrumental to the satisfaction of their needs or the attainment of their goals” (Simpson et al. 2015: 397). The ownership of resources like skills and knowledge gave agents the power (the ability) to influence the quality of outcomes that affect other agents’ experiences directly (Simpson et al. 2015: 399). As such, indigenous building skills and knowledge directly affected the personal comforts of the NZASM and non-NZASM workers. By aiding the Europeans with housing, the African workers could have benefitted in return by receiving tangible and intangible rewards.

Resource power networks are dyadic and dynamic, and one should consider the degree to which different actors value, hold, and exchange resources with one another (Simpson et al. 2015: 398, 400). Resources would have flowed in both directions, even though one agent might retain more resources than others, and hence more power in the relationship network. The resources within the network could have varying value and significance for the separate actors or network nodes. As such, the power network would not necessarily be equal and can become imbalanced and skewed. For example, during construction, the unskilled African labourer would have an opportunity to gain new knowledge and skills on the job, that might prove advantageous to them in future jobs, while also receiving monetary compensation. In turn, the Europeans benefitted from the Africans’ local knowledge concerning the building techniques, hunting skills, and of course, the comparative cheapness of their labour. The surface scatters of cultural material recorded at the KM 93 Krokodilpoort Bridge, Waterval-Boven Tunnel and Pampoenspruit Bridge camps include cultural material typically associated with both African and European sites, interspersed. There were local earthenware ceramics as well as glass bottles and European ceramics within the assemblages. One can confidently infer that the resource power network extended towards an exchange of cultural material.

## 6.5 SEGREGATION AND SEPARATE SPACES

Orser (2015: 315) succinctly wrote that “though only one human race exists, countless generations of real, living human beings, having been racialised, have been victimised by the

realities of racial practices and racism". Racial ideology and the relationship between black and white people are chief thematic components of South Africa's labour studies. In current discussions, 'race' is taken to allude to the biological differences of groups, and 'ethnicity' indicates the cultural elements. There are some cultural characteristics to which 'social significance' is attached that have been attributed to different races, lending itself to the prejudice of 'the other' not exhibiting these characteristics (Eldridge 1984: 17). From contemporary Dutch publications and letters written by the NZASM personnel, we can see the complex relationships that existed between different racial, ethnic and cultural groups in the ZAR at the time.

During the 19<sup>th</sup> century, various conflicts occurred between several ethnic groups in the ZAR, both black and white. Black people were increasingly marginalised by the minority, in support of the white settlers' belief in their superiority (Kuitenbrouwer 2012: 67). As mentioned in Chapter 3, the Dutch described the indigenous African people as naïve, children of nature. The adjectives "primitive", "infantile", "uncivilised", and "heathen" were often used in conjunction with the indigenous African communities and led to the treatment of black people as inferior, as the basis of systemic racism. Dutch publications before 1899 referred to the British and the Boers as the two "white races" of South Africa, which indicates that the meaning of race in the 19<sup>th</sup> century was not only about skin colour but also had strong cultural considerations (Kuitenbrouwer 2012: 66). The Dutch Pro-Boer propaganda of the time portrayed the Boers as heroic pioneers who brought European 'civilisation' to the interior of Africa while subduing the black majority to 'develop' the region. By contrast, the depiction of the British was of arrogant, selfish empire-builders, whose relationship with the indigenous communities was fickle and hypocritical, and informed by what would best suit their interests and ambitions (Kuitenbrouwer 2012: 100). Though some authors in the Netherlands believed the way the Afrikaners treated black people was "sensible", some of the letters written by NZASM employees, on the other hand, disagreed with the treatment, which they considered harsh and unfair.

Historically, space was used to create and reinforce capitalism's inequalities and hierarchies (Cowie 2011: 49). In the KM 97 camp (Figure 93), the campsites are grouped and separated

across the landscape. Does the spatial distribution of the structures, in particular, the dwellings of the railway construction workers within the camps, reflect the late 19<sup>th</sup>-century racist ideology and power relationships? The use of indigenous building skills and techniques did not translate into a standardised uniformity within the campsites. At the KM 97 camp (Figure 93), a whole range of structures utilising indigenous skills, techniques and styles, are displayed: beehive huts, circular cone-on-wall huts (*rondavels*), and rectangular mud, reed, and grass buildings. In the absence of cookie-cutter homogeneity, one has to account for individual, personal, cultural, and occupational influences for the resultant forms. However, with shared building materials and techniques, allocating a culture, ethnicity, or occupation to the inhabitant of any of the structures can be problematic, and is further compounded by the presence of a mixed material culture assemblage. One, therefore, has to make some assumptions to interpret space and segregation of spaces. The assumption that the beehive-type huts can be attributed to the African workers is based on the presence of at least one in most of the camps photographed, often with a black person standing or sitting by (Figures 8 & 51). The rectangular grass and mud structures are attributed to the European workers, due to their size and the European cultural influence in their form. The circular cone-on-wall huts constructed with grass and mud can be associated with either black or white. In some photographs, they are shown to be the houses of white engineers, and in others, they are the more permanent residences of the black workers at stations. Considering ethnicity and space at the hand of these assumptions, at KM 97, the camp layout puts the African workers at the periphery in the landscape. Spatial segregation, therefore, does reflect 19<sup>th</sup>-century racism within this camp.

The campsite at Pampoenspruit Bridge consists of a prefabricated corrugated-iron house, and away from the main house, the beehive hut is situated amongst the sheds. As determined, the main corrugated-iron structure most certainly was utilised by an NZASM employee. The supplied housing did not extend to the black employee(s) residing at the camp. The construction of the beehive hut was the residents' answer to a lack of formally supplied housing. The beehive structure is relegated to the outdoor workspace at the site. As a result, the occupants' domestic space intersected with their workspace. Within the consigned living

space, the perceived identity of the black worker becomes entangled with their work and their value as a labourer.

At the other two identified campsites under discussion, ethnic or racial separation of space is more difficult to discern. As Orser (2015: 318) pointed out, “the invisibility of racialisation is one of the most effective features of the process”, and that “its ability to conceal itself from analysis” is one of its greatest strengths. The photograph of the main camp at Poort City (Figure 35) also shows diverse types of structures in the camp. The exact building material and nature of the structure that was located at the KM 93 Bridge worksite is unknown without the aid of an accompanying photograph. The archaeological data point to a temporary structure that required a circular clearing, a tent peg, metal sheets and nails. The associated cultural material includes both conventionally European and locally attributed material. European ceramics and glass containers would have been widely available during the late 19<sup>th</sup> century. The indigenous low-fired porous earthenware ceramics are useful for keeping water cool, which would have been used for water storage in the warm Lowveld, by Europeans and Africans alike. Therefore, it is impossible to attribute race to this structure confidently, and its isolation from the main camp might not be racially motivated.

Similarly, the campsites at Waterval-Boven Tunnel have no clear ethnic or racial identity. The structures shown in the photographs are grass huts in the indigenous African tradition. The photographs show both black and white workers around the campsite (Figure 51). Limited surface material was recorded in the area of the southeastern terraces, but, again the assemblage was a mix of both habitually assigned European and African material, which could not make a deciding distinction either way. However, there is a separation of space between the southeastern terraces and the other northern terrace and associated midden. It is unclear whether this spatial distribution is hierarchical, racial or a side effect of the landscape’s limitations.



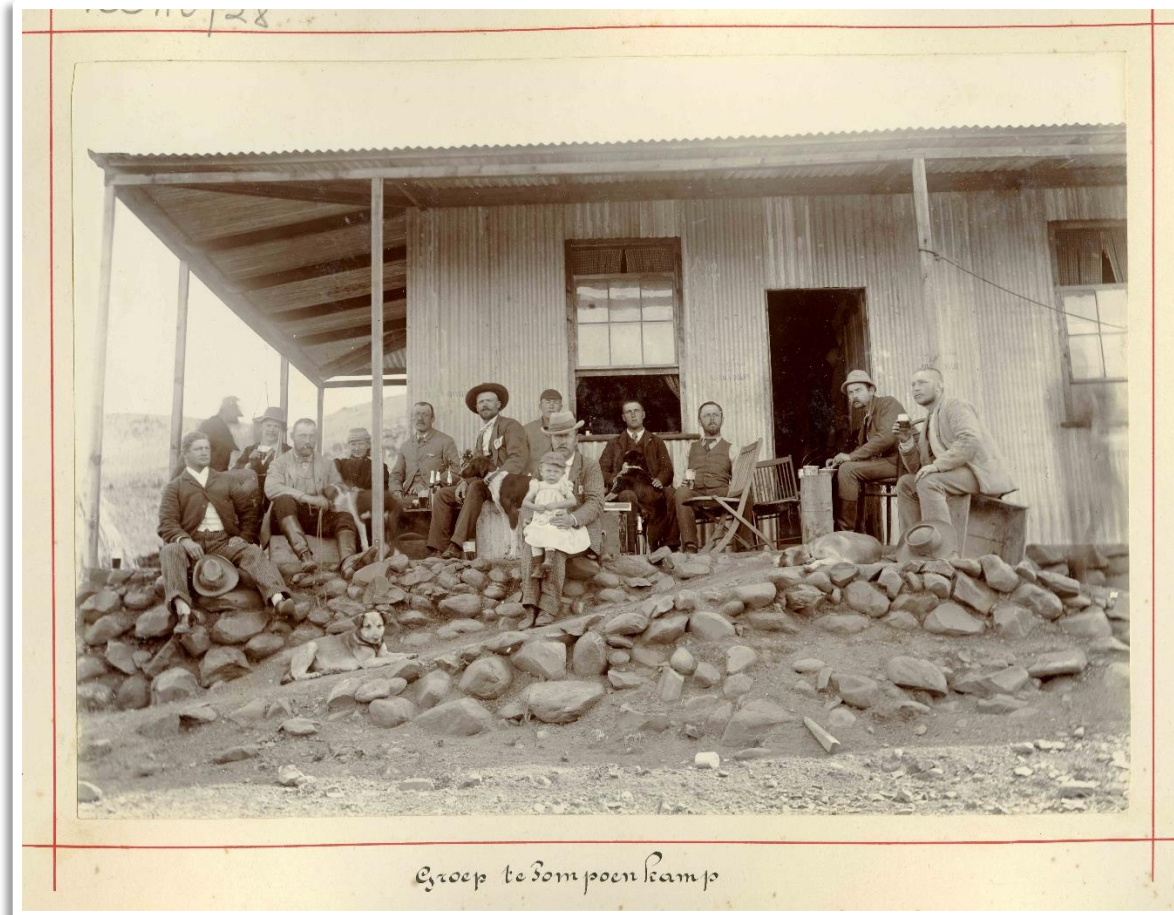


Figure 94 Group at Pampoenspruit Bridge camp, socialising on the veranda. Photo: Transnet Heritage Library and Archives 100110/28.

Separate spaces not only apply to constructs of “their space” versus “our space”, but also “my space” versus “our space”. Within the campsites and worksites, there were more communal spaces than private ones. When a dwelling also functioned as an office space, private and individual spaces became even less designated. Victorian sensibilities trended towards distinct private and individual spaces, with specific functions assigned to rooms. There were separate, designated spaces for receiving visitors, rather than having visitors enter living spaces (Cowie 2011: 164). There was no such luxury in the camps, with one-roomed multifunctional spaces being shared.

Social capital is a crucial resource in power networks that hinge on meaningful relationships with other people. Agents need to build intra-community (bonding) and extra-community (bridging) relationships with their peers and superiors for social support and maintaining the

status quo, or for social leverage or advancement (Cowie 2011: 154). Regardless of status or position, the only spaces available to the railway construction workers in the camps for wining and dining the boss, family or friends, and nurturing their social capital was outside their living, private spaces. For instance, the veranda at Pampoenspruit Bridge camp became an extension of the house and a separate room that could be utilised for entertaining. In Figure 94, one can see such a social gathering, relaxing on the veranda around the house, enjoying the view, the fresh air, but most importantly, a space separate from the occupants' private living and workspace.

## 6.6 REPRESSION AND RESISTANCE

In a discussion about capitalism, industrialism, labour and power, the investigation of resistance is a natural offshoot. The oppressed, either by industrialist or ideological powers, are agents with the ability to resist domination and that resistance is in and of itself a form of power (Purdy 2015: 9). The same applies to racial repression and resistance. Matthews and McGovern (2015: 4) assert that the creative strategies and struggles of resistance of those who lived through oppression should be evident in the archaeological record and perhaps constitute that record.

The most prevalent and vocal protests and resistance against industrial capitalism during the late-19<sup>th</sup> century were socialist movements. Within the NZASM, socialists were primarily active within the bigger urban areas, such as Pretoria and Johannesburg, where the largest contingent of company employees was situated. At these locations, meetings were held, strikes planned, and demands set forth for better salaries and pensions (De Jong 1989: 85). However, in the construction camps, resistance against the company and social conventions was more subtle.

Late-19<sup>th</sup>-century publications noted how Dutch emigrants in the past had tarnished the reputation of their Motherland in the ZAR. In the Dutch Pro-Boer movement, good behaviour by emigrants to the ZAR was stressed because vices such as alcohol abuse, swearing and arrogance were particularly frowned upon by the Calvinistic Boers in the Republic

(Kuitenbrouwer 2012: 79). Good relations between the Boers and the Dutch were imperative for endeavours like the NZASM to flourish as it required political and economic co-operation between the two nations. Proposed temperance was not just a national Dutch socio-political imperative, but an NZASM company rule of conduct. From Chapter 3, we know that alcohol consumption was common amongst the NZASM employees, against company rules and regulations. Transgressors could be fined or fired for drinking or being drunk on the job, depending on the severity of the infringement. It is unclear how restrictions regarding alcohol consumption affected contractors and subcontractors, and the unskilled workforce.

Evidence of alcohol consumption was recorded at several sites along the *Oosterlijn* trajectory during the survey. These include sites associated with NZASM employees like the supervisor house at KM 85 and the camp at Pampoenspruit Bridge. Furthermore, glass bottles of wine and liquor, and gin stoneware containers were also recorded at the Waterval-Boven Tunnel campsite, and glass bottles were found at the KM 97 Bridge campsite. Although the presence of alcohol bottles does not necessarily equate with alcohol consumption as bottles can be repurposed, at least a substantial percentage of the bottles would be relevant for consideration.

Alcohol consumption by the NZASM employees and railway construction workers may not be strictly seen as resistance against company rule, yet, it can be interpreted as the assertion of agency, choice, and identity. Individual actors build an identity as workers and employees in response to the company and the surrounding power structures. Their thoughts, emotions, self-esteem and their level of commitment, satisfaction, and stability within the relationships with various powers determine the shape this identity takes (Simpson et al. 2015: 394). Constructing identity can often be a contradictory process, and it has the potential to become an act of political and social resistance (McQuinn 2015: 157). Partaking, in a vice like drinking, may have been a small rebellion against societal institutions which provided the individual with a sense of freedom of choice and inherent agentic power and identity.

Another visual reading of resistance is possible from the positions of individual dwellings within the camps. Previously the power of surveillance was discussed as it presented itself in

the camp layout. Resistance to the surveillance or perceived surveillance could be seen in the way that the houses or dwellings are situated. In the Pampoenspruit Bridge camp photographs, one can see the entrance of the beehive hut faces away from the main house, towards the workspace (Figures 8 & 59). The position would have given its occupant a modicum of privacy from their employer, for at least part of the time. The small campsite located above the worksite at KM 93 Krokodilpoort Bridge is isolated from the main camp, private and almost hidden. Undoubtedly the most private of the campsites is the one at Waterval-Boven Tunnel (Figure 51). The pathways landscaped into the often-steep slope offered limited access to the campsites. The landscape further naturally curves and juts, providing no clear vantage point of the camp, ensuring privacy. Modern digital surveillance has made us aware of the power of privacy and self-determination. Albeit in small and subtle ways, reclaiming privacy meant reclaiming identity and personal power.

## 6.7 UPON REFLECTION

Exploring power relationships and the roles they played in camp layout illuminates the agency and resistance of the railway construction workers. The construction workers engaged with power networks based on paternalism, nationalism and racism, employing initiative, resources, resistance, and agency. Camps were informally designed, and division of space and use of landscape was predominantly the purview of the construction workers and not the company. The workers addressed the housing needs in the field and without company aid, and the locations of individual structures have considerations of surveillance and privacy. Power can be repressive, but as shown from the construction workers' actions, it can be productive too.

As Cowie (2011: 185) concluded, industrial capitalism has been an oppressive and dominating system to those who have laboured in its wake. We should strive to "illuminate their stories and highlight their skilful improvisations in everyday practices and the creative strategies they employed to achieve significant goals". Camps have many stories to tell, and looking at power is only one interpretation. Studies of railway construction camps in the new worlds have



looked at similar and different themes. In the following chapter, I briefly compare the study of the *Oosterlijn* camps to archaeological work camp studies in America and New Zealand.

## 7. RAILWAY CAMPS OF THE WORLD

*I've heard of the call of the wild, the call of the law, the call of the church.*

*There is also the call of the railroad.*

**Gary Krist (2007: 9)**

Workcamps from various 19<sup>th</sup>-century industries have been studied by historians and archaeologists alike, around the world. Studying construction, mining, railway, and logging camps in a global context allows us to compare very distinct industries and how very different people, from far corners of the earth, were affected by industrial capitalism. The short-term occupation of workcamps is distinctly advantageous for comparative studies (Hardesty 2002: 95). We can work towards a work camp ethnology through comparative study to explain variability and change in workcamps, both historically and cross-culturally. If a distinctive workcamp culture exists, a sizeable comparative data set of cross-cultural, trans-global sites will illuminate this (Hardesty 2002: 95).

Staging the workcamps of the *Oosterlijn* within the context of international studies has the benefit of making intersite comparisons on a much larger scale, and understanding the scope of themes and theoretical applications that could still be applied to the historical and archaeological research of the railways of southern Africa. Globalisation research focusing on commodity distribution has been a principal approach in Historical Archaeology. In workcamps, the material culture is not only indicative of global trade networks but also of immigrant labour. Furthermore, globalisation is not just the universal spread of products, but ideas as well. Comparative studies can illuminate how 19<sup>th</sup>-century beliefs about race, gender, power, and status have manifested in camps around the world. The scope of archaeological research being done on workcamps, and railway construction camps, in particular, is vast. For this comparative section, however, I will limit my discussion to case studies that involve spatial analysis of camp layouts, within two other colonial countries.

## 7.1 USA: RAILROADS IN THE WILD WEST

During the 19<sup>th</sup> century, the transcontinental railroads, which included the Central Pacific Railroad, the Union Pacific Railroad, Southern Pacific Railroad, and the Northern Pacific Railroad to name a few, were the prominent railway construction projects in the United States. Construction of the transcontinental railroads required massive numbers of labourers housed in temporary line camps. A number of these camps have been the topic of archaeological research.

One of the most prolifically researched themes is immigrant railway construction camps, particularly the camps of Chinese labourers. Chinese camps along the Northern Pacific Railroad in the Rocky Mountains of northwestern Montana, the Virginia & Truckee Railroad route in Nevada, Central Pacific Railroad in California, the Southern Pacific Railroad in Arizona, and the Rio Grande Railroad in Utah have been studied. Attention to social identity, especially race, ethnicity, and nationality, were the focus of these archaeological studies (Voss 2019: 109). The spatial and ethnic separation of the camps was a common characteristic of the railway line camps: the Chinese railroad workers primarily lived in segregated camps, separate from non-Chinese workers. Their housing was in part provided by the railway companies, most commonly company-issued canvas tents, and in part augmented by themselves (Voss 2019: 113). The provided tents varied in size and would have slept four to twelve people. Within the camps, such as at the Langtry Camp of the Southern Pacific Railroad in Val Verde County, Texas, the tents were clustered closely together. The archaeological traces of the tented camps include shallow-level depressions, surrounded by alignments of rocks (Voss 2019: 114-115).

At long-term workcamps like the Central Pacific Railroad's Summit Camp, located on Donner Summit, California, workers stayed in wooden houses with stone foundations. These structures were more spacious than the tents and would have housed more, or afforded more personal space. Summit was one of the longest-occupied and likely the most extensive residential base for Chinese railroad workers in North America and has been studied at length by archaeologists since the late 1960s. Other accommodations at Chinese railroad workers'

campsites include corrugated-iron buildings, platform tents, stone masonry blocks for rooms, circular pit structures, lean-tos, and rock shelters (Voss 2019: 113, 115).

Furnis and Maniery (2015) found that workcamps on the Virginia and Truckee rail line were divided into activity areas, with sleeping areas separated from places used for eating, cooking, and socialising. Comparatively, camps on the Northern Pacific and Southern Pacific lines have integrated activity patterns in which sleeping tents were clustered, with each tent cluster sharing a central hearth and socialising area. The workcamps on the Central Pacific line, on the other hand, show no discernible residential pattern. That line has various housing types and often a haphazard spatial organisation (Voss 2019: 115). The most common identifying archaeological feature in the Chinese camps is the remainder of U-shaped stone cooking hearths (Dixon et al. 2019: 128).

The differences between the Chinese and non-Chinese, and the Union Pacific Railroad Company and Central Pacific Railroad Company's camps have been compared at the Promontory Summit (Polk 2015: 60-69). The archaeological study has found that in addition to environmental and technological variables that influenced camp layout, social structures and relationships were the principal determinants for spatial behaviour in many construction camps. Of the nineteen identified campsites at Promontory, four were attributed to Chinese workers. The Chinese workers built distinct camps, separate from other railroad workers. The researchers argued that native-born labourers did not tolerate the presence of the non-native employed labourers, such as the Chinese, Italians, Mexicans, and African Americans. Ethnic separation was a common feature of camps, and it was suggested that it might have even been enforced by management (Polk 2015: 68).

The segregation of the camp spaces was also motivated by religious beliefs. Mormons made up a large percentage of the construction crews at Promontory, and their strict moral code would have moved them to separate themselves from other camps (Polk 2015: 68). Separate sites might have been the initiative of the labour contractors, as it would have been easier to maintain control and discipline that way. However, the workers' agency, choosing to surround



themselves with familiar company, and their fellow countrymen who share their customs and beliefs should not be discounted (Polk 2015: 69).

Buckles (1983) further distinguished among camps whose occupants were responsible for different construction tasks like surveying, track grading, track laying, trestle construction, construction of depots, and other support facilities. He noted that the purpose and function of the crew members of a camp often superseded logical decisions, and resulted in camps located in environmentally unfavourable situations (Buckles 1983: 220).

By comparing the interpretations of the identified *Oosterlijn* construction campsites, one can begin to see similarities with the railway construction camps of the western United States. The spatial layouts of the Promontory Summit campsites that were spread out over the area bring to mind the construction camp at KM 97 (Figure 5) on the trajectory of the *Oosterlijn*. The different ethnicities and contractors, engineers, and supervisors, with diverging power status, and varying construction responsibilities, are dispersed and separated in the landscape, like the Promontory Summit sites. Segregation of the campsites and dwellings based on race, culture, status, and work shows that power networks appear to be the same in both countries. Buckles' (1983) assertion that the campsites were dependent on the worksites, even tolerating unfavourable settings to fulfil their purpose and function, rings true for the *Oosterlijn* campsites as well. The Waterval-Boven Tunnel campsite, the KM 93 Krokodilpoort Bridge campsite and the supervisor cottage at KM 85 are all examples of campsites on the *Oosterlijn* situated in awkward spots in the landscape.

In my discussion of the power of surveillance and panopticism, and how it may have manifested in the *Oosterlijn* workcamps, I proposed that supervisors would have positioned themselves at points in the landscape from where they could oversee without being observed. Molenda (2019) discusses control in his study of the first transcontinental railroad in the mid-19<sup>th</sup> century, and the Chinese and Euro-American camps in the region of the High Sierras region to the west of Truckee, California, in and around the Tahoe National Forest. He emphasises that ethnography should be taken into account when looking for forms of control. Panopticism is not part of the 19<sup>th</sup>-century Chinese vernacular, and that a “display of

hierarchy” would have been a more effective form of control (Molenda 2019: 139-140). This display would rarely manifest in the landscape, but rather in the material culture. This perspective shifts emphasis from those who wish to yield control to the controlled and their perception of power.

During my archaeological survey of the *Oosterlijn*, no campsites of significant size can be attributed to people of colour. I could therefore not determine whether the world-view or spatial phenomenology that underwrite the traditional local African settlement patterns found its way into the campsites of the black labourers. Molenda (2019: 152-157) looked towards *feng shui* and how the Chinese might have experienced space in the camps, both physical and metaphysical space. Such an approach, attempting to understand campsites based on inherent cultural philosophies and beliefs, would need a more extensive data set than the one available for the *Oosterlijn* study but might provide interesting insights.

## 7.2 NEW ZEELAND: FORTY YEARS IN THE WILDERNESS

The construction of the Otago Central Railway in the South Island of New Zealand took forty years to complete. Begun in 1880 and not completed until 1920, the sporadic construction of the 236 km rail line was caused by continuous financial obstacles (Mitchell 2012: 18). At the start, the railway’s construction was the initiative of the Public Works Department. However, by the late 1880s, the loan that had been secured for the project had been exhausted. Thereafter the Public Works Department instigated a ‘co-operative system’ in which work was contracted to gangs of workmen, rather than relying on tenders. The ‘co-operative system’ meant that workers had to provide their own tools, barrows and even explosives for construction work. A tent was provided for housing, but its upkeep and replacement was up to the individual (Mitchell 2012: 20-21). The Public Works Department’s workers did the unskilled work like forming the trackbed and making cuttings, while private contractors were constructing the tunnels, culverts, and bridges.

In a similar research project, Mitchell (2012) set out on an archaeological survey to identify the remains of workcamps along the Otago Central Railway. His motivation was to investigate

whether it was possible to distinguish between camps set up by the Public Works Department and public contractors. His survey of eight workcamp sites concluded that the larger Public Works Department camps were situated in the most favourable locations, which meant areas with sufficient space, and access to a supply of fresh water nearby. On the other hand, the private contractor's camps tend to be small and located close to the bridges and tunnels the workers were constructing (Mitchell 2012: 38).

Apart from location, Mitchell (2012) further noticed differences regarding camp design and layout between Public Works Department camps and private contractor camps. The Public Works Department camps consisted of tents, as well as prefabricated timber and corrugated-iron buildings. The tents in the Public Works Department camps appear to be of light timber framing covered in canvas. Some of the tents had chimneys at one end constructed from materials such as sod, clay, corrugated iron, flat iron (from large tins), schist slabs, or river cobbles topped with a biscuit or other large tins. The tents with chimneys would have been used for housing and workshops, and tents without for storage and latrines (Mitchell 2012: 39). The possible latrine tents were located a little distance and downslope from the central camp. Each of the main Government camps on the Otago Central Railway had a blacksmith's workshop, a carpentry workshop, engineer's office, powder magazine, a boarding house and at least one supply store. Wherever possible, the camps were semi-formally laid out with the engineer's or foreman's huts central, the workshops (blacksmith and carpentry) nearby and the boarding houses, stores, workers tents and huts scattered around, and the powder magazine furthest away (Mitchell 2012: 82).

The private contractors' camps contrasted with the more ordered barrack-type settlement of the government camps. The tents were more haphazardly clustered, and the random layout and sly grog shanties are equated to a 'traditional navy' lifestyle rather than the late Victorian British one (Mitchell 2012: 82). The private contractors' camps predominantly consisted of tents, with one or two timber or corrugated-iron structures. Mitchell (2012: 83) could not identify any specifically designated activity areas within the contractors' camps. The private contractors' camps were all different, both in size and composition.

It is pertinent to note that there are large tented camps along the Central Otago Railway line, as well as the transcontinental railroad. The provision of a tent for basic shelter appears to be a minimal housing aid that most employers offered: the American railroad companies and the Public Works Department of New Zealand, distributed tents to their employees. The Public Works Department also extended this assistance to the employees of the private contractors as part of the co-operation system. The NZASM, however, did not follow suit, which might explain why there are no large tented camps along the *Oosterlijn*.

Along the Central Otago Railway trajectory, the government camps had to house a large number of people for some time; the choice of location was predetermined by environmental factors, for comfort and safety, even if the campsite was further away from the worksites. On the other hand, the contractors' camps traded environmental comfort with proximity to worksites, even if it meant the camps ended up perching uncomfortably on steep slopes or were located in freezing valleys and mountain shadows. The Public Works Department had more extensive work areas covered by a camp, while the contractors focused on very particular construction projects. It appears that the consideration of closeness to work is, therefore, a global characteristic of workcamp sites of contractors that are concerned with specific construction work. The campsites at Waterval-Boven Tunnel, Pampoenspruit Bridge, and KM 93 Krokodilpoort Bridge on the *Oosterlijn* share this commonality with campsites at Duck Point Tunnel, Ross Point, and Nenthorn on the Central Otago rail line, as well as the Promontory Summit campsites on the transcontinental railroad.

Although Mitchell (2012) does not discuss segregation and separation in-depth, he does mention that the private contractor camps were removed from the government camps even when situated in the same area. Ethnic and racial segregation also occurred along the Otago Central Rail line, as the Chinese labourers had separate camps from the Europeans. Even though their diligence and stone masonry skills were much admired, 19<sup>th</sup>-century European racial ideology resulted in separate living spaces (Mitchell 2012: 84). It would appear that separation and segregation of spaces because of ethnicity, race, function, and managerial ownership are global characteristics of railway workcamps, as presented in the United States, the ZAR, and New Zealand.



In the Public Works Department camps, Mitchell (2012: 82) equates the presence of the barrack-style settlement pattern with an attempt at control and to curb any “morally disturbing behavioural aspects of the itinerant workforce”. An unexpected feature of the Public Works Department camps, which represents civil control of the workers, is the presence of police officers. A police camp, with a lock-up jail, was situated on the upper terrace at the Flat Stream Public Works Department camp. This police camp was established after the murder of William Meldrum, the keeper of a sly grog shanty at the Nenthorn (a private contractor) camp, in 1884 (Mitchell 2012: 34, 83). Police officers were also stationed at Ida Valley, and at Chatto Creek when the Ida Valley camp was abandoned (Mitchell 2012: 36-37). Themes of control appear in my *Oosterlijn* work camp study, as well as studies of the construction camps on the American transcontinental railroad. The control of the workforce was, however, as labourers, and was focused around productivity. The police force's presence at the Public Works Department camps adds a different dimension to the theme of control, and one wonders what the effect, if any, of civil surveillance would have had on the workforce.

### 7.3 APPLES AND ORANGES

At a superficial glance, it may appear as if comparing the campsites from the transcontinental railroad, the Central Otago Railway, and *the Oosterlijn* is like comparing apples and oranges, even though they are all fruit. One does not expect parallels to exist between the workcamps of rail lines that were constructed on different continents by different people. The American railways were built by two separate private enterprises, as opposed to the government-funded rail infrastructure of New Zealand. The *Oosterlijn* was built by foreign private enterprise at the behest of the local ZAR Government. The transcontinental railroad was continuously constructed, between 1863 and 1869; the *Oosterlijn* similarly took only five years (1889-1894), while the Central Otago Railway's sporadic construction lasted forty years (1880-1920). Some of the camps on the Central Otago Railways were occupied between five and seven years, Summit Camp at Donner Pass, California, was the longest-lived residential base for Chinese railroad workers in North America, at four years. The lengthiest occupation of a campsite on the *Oosterlijn* would have been two years during the construction of the Waterval-Boven Tunnel.

Apart from these fundamental and other more complex differences, the similarities of the campsite designs become apparent in a comparative study, underwriting the railways as a global industry and phenomenon. Labour, of different races, ethnicities, origins, beliefs, and world-views have shared experiences during railroad construction, continents apart. Themes of power and the need to control the workforce are apparent in the archaeological studies of camp layouts on all three continents. Status and power positions also manifest within the workcamps' spatial layout, either in elevation or centrality. The global effects of 19<sup>th</sup>-century racial ideology and discrimination are apparent across the board at all the campsites discussed, and racial and ethnic segregation becomes a feature of construction camps that can be witnessed all over. The separation of space due to function and job description and ownership of the campsite is also prevalent.

Looking at railway construction workcamps on a global scale feels like peeling an onion: multiple layers are unveiled and explored. I look forward to expanding my data set and include comparative analysis of material culture, and more research themes in the future.

## 8. CONCLUSION

*Done.*

— *Telegraph message from Promontory Summit, Utah, heralding the driving of the last spike in the transcontinental railroad, 10 May 1869 (CPRR 2014)*

Coming to the end of this dissertation, metaphors about a journey's end feels applicable, though they may be trite. I have not experienced the romance and magic of long-distance rail travel since I was a child. Nevertheless, a vivid memory of leaning out of the carriage window, excitedly waving to no one in particular as the train slowed its approach to the station, comes to mind. Even though train travel was filled with wonder, reaching one's destination heralded new adventures and sights to see or a return to familiar environs and routines. I have to acknowledge that a moment of childhood joy like that would not have been possible, if not for the thousands of labourers who built the track beds and laid the rails, who blasted cuttings and tunnels and build railway bridges and culverts nearly a century before across South Africa. I embarked on my research to find evidence of some of these labourers along only one of the multitudes of rail lines crisscrossing the country.

The history of the NZASM *Oosterlijn* has been extensively researched by various authors interested in the company's history, the architecture, and the rolling-stock. However, I found little to nothing written about the workers, specifically the black contingent of the workforce I saw looking at me in the period photographs. My research stands on the shoulders of prominent NZASM historians like De Jong (1987, 1989, 1990), while adding an archaeological perspective to existing knowledge, in line with the current trends in Industrial Archaeology to shift the focus from machines to people. To address the narrative gap that has left the workers largely invisible and mute, I set out to find the archaeological footprints of the workcamps situated along the rail line between Komatipoort and Pretoria. The question was whether the ephemeral nature of these workcamps would have left any trace to find, and what the archaeological evidence if found, would be able to tell us concerning the railway construction workers.

Historical photographs taken during the construction of the *Oosterlijn* became the backbone of my research, aiding in identifying and interpreting worker campsites. The photographers were inadvertent tour guides, not only through time but for the survey. The photographs were an autoethnographic expression of the photographer's experiences along the line, and the choices about composition and subject involuntarily reflect personal bias and aesthetic. During the survey, the photographs were contextualised within the environment by establishing the photographer's vantage point and immersing myself in the landscape beyond the scene captured. Even though the constant commune with the Derridean hauntological 'spectre' behind the lens did not feature prominently in this dissertation, it did frame and compose my interpretation. The majority of the photographs depict campsites in the Lowveld, with only a few sites on the Highveld. The purposive survey was based on the locations marked on the photographs and proved to be a successful survey strategy. From a list of thirty-eight potential sites, thirty-one sites were surveyed. Ten of these locations yielded material that could be associated with the late-19<sup>th</sup>-century and possible *Oosterlijn* construction campsites.

Three sites, the campsites at KM 93 Bridge, the Waterval-Boven Tunnel, and KM 215.5 Pampoenspruit Bridge, were consequently mapped and the camp designs were analysed on intrasite, site, and intersite levels. The campsites differ in size and consist of different types of structures, from temporary to semi-permanent. However, the site analysis highlighted a couple of similarities between the three sites. All three of these sites comprise residential features. The KM 93 Bridge and KM 2125.5 Pampoenspruit Bridge camps additionally have evidence of industrial and construction activity areas close to the domestic spaces. Refuse disposal appears to have been on a 'household' scale, and within activity areas, instead of utilising an accumulative camp-wide dumpsite. The three campsites, as well as the camps shown in the historical photographs, are positioned to have easy access to the construction sites and specialised activity areas. Furthermore, there was no evidence of large-scale influence by the NZASM in terms of camp layout, and campsite locations appear to be the purview of the individual occupants rather than a formal company design.



My study determined that the camp layouts are testimonies of the workers' agency regarding their living arrangements and reclaiming private space in a public environment. Domesticity and industry often intersected requiring the workers to adopt and adapt various strategies to reclaim individual and collective agentive power. They negotiated the power networks and relationships between their peers and superiors with ingenuity and practicality. Despite the NZASM's industrial paternalistic qualities, the railway construction workers predominantly met their own housing needs with indigenous building techniques and materials naturally available, trading skills and knowledge as resources for self- and group empowerment. Prefabricated buildings supplied by the company are commonly situated in elevated positions, representing the power structures of the company. The spatial distribution of dwellings is indicative of the occupants' response to either the need to surveil, or resistance against, and reprieve from, constant surveillance.

The research results have both local and international significance and relevance. Industrial Archaeological research on workcamps deals with universally applicable themes. If we were to work towards a workcamp ethnology, as Hardesty (2002: 95) suggests, a sizeable comparative data set of cross-cultural, trans-global sites is needed, which needs to include South African sites. The global-scale intersite comparison of workcamp layouts along the Transcontinental Railroad, the Central Otago Railway, and the *Oosterlijn* illustrates the commonalities in themes of power and control of 19<sup>th</sup>-century railway workcamps, continents apart. For instance, segregation of space based on ethnicity and race is a prominent feature of the Transcontinental Railroad and the Central Otago Railway workcamps. Large-scale spatial segregation within *Oosterlijn* workcamps would have been dictated by 19<sup>th</sup>-century ZAR racial ideology as well, even though this could not be corroborated with the small data set at hand. Racism nonetheless remains a theme that with the discovery and inclusion of more sites could still be investigated on a local and global scale.

Locally, the architectural extant of the NZASM has been the topic of renewed interest. The NZASM Footsteps Along the Tracks project mapped, recorded, and assessed the condition of the structures associated with the NZASM (Clarke et al. 2016). The survey results were captured on the South African Heritage Resources Information System (SAHRIS), an online

database for southern African heritage resources. Clarke and Fischer (2018: 18) prompt the reader that railway lines, together with associated features, infrastructure and architecture should not be seen as separate 'sites' and 'places', but should be considered in its entirety as a 'place' of cultural and historical significance as described by the National Heritage Resources Act 25 of 1999. As such the linear trajectory of the *Oosterlijn*, with its historic bridges, culverts and tunnel, together with the associated station buildings, staff houses and support infrastructure located serially along the line, should be considered as an entity, a 'place' protected under the Heritage Act. I implore the reader that we do not just consider the line and its importance after its completion and the artefactual extant associated with the operation and maintenance of the rail line as a historically significant 'place', but that we include the sites that are associated with the construction of the rail line: the residential, construction, industrial, support, and recreational premises, and additional facilities that make up the workcamps - and not just along the *Oosterlijn*, and other NZASM branch lines. We should consider the presence of possible archaeological footprints of railway construction workers along all the historic railway lines in southern Africa. With the narrative of railway construction workers, expressly the black labourers, being as incomplete as it currently is, we should endeavour to protect any trace of them we could find, for a more inclusive history of our industrial past.

At the onset of this project, I was apprehensive that the workcamps might have been too ephemeral to leave a trace, and that agricultural and infrastructure development would have destroyed any evidence of the railway construction workers. However, traces do remain, and even though the data set is small, the potential for expanding and building on it with further archaeological investigation and excavation exists. An in-depth analysis of the surface material culture recorded along the line, as well as the excavation of the in-situ material at Pampoenspruit Bridge and Waterval-Boven Tunnel, would further help to develop the narrative of the NZASM railway construction workers. Utilising the same purposive archaeological survey method along the other NZASM branch lines might add even more sites, more information, more 'shiny-things' to uncover: the endless possibilities leave me breathless and excited for the future of railway archaeology in South Africa. Future endeavours will also benefit from a consultation of the primary sources housed in the

Netherland's archives, a visit beyond the scope of this study. So, even though I am at one journey's end, I am ready to buy tickets for the next trip. I leave the reader with the words of the 20<sup>th</sup>-century American railroad photographer, O. Winston Link (quoted in Dell'Amore 2005): "I was one (*wo*)man, and I tackled a big railroad. I did the best I could".

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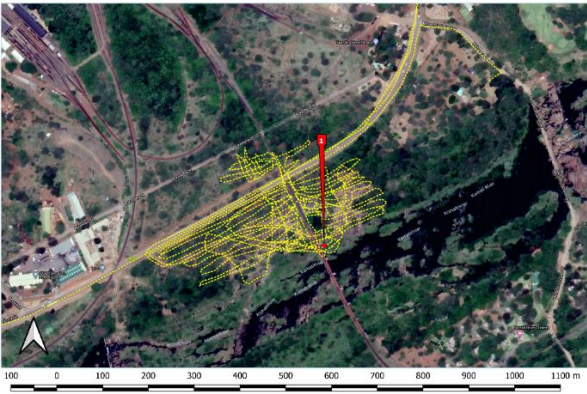
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# APPENDIX A

RECORDED SURVEY TRACKS



1. KM 3-5 KOMATIPOORT BRIDGE



2. KM 19 OORSPRONG



3. KM 28 HECTORSPRUIT



4. KM 40



5. KM 41



6. BRIDGE WEST OF HECTORSPRUIT

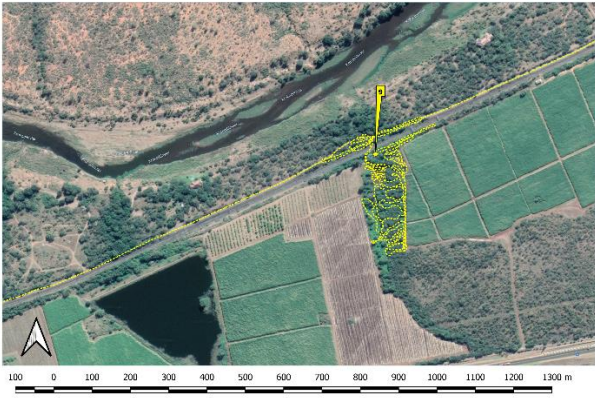


7. KM 59 BRIDGE AT SOUTWATER CREEK

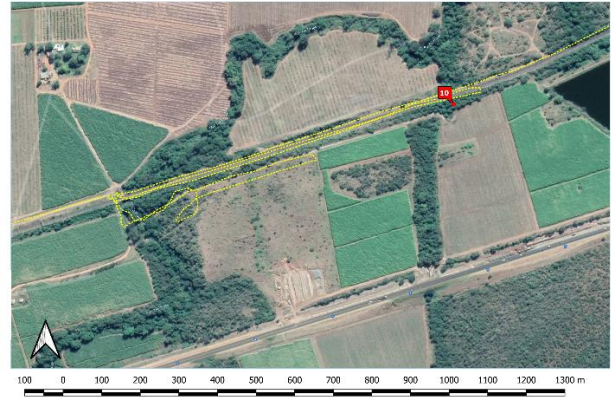


8. KM 60-61

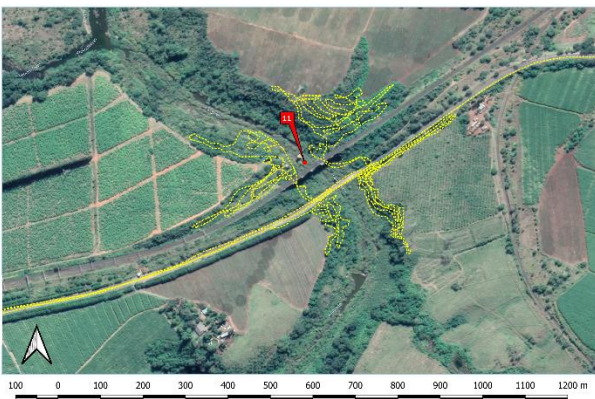




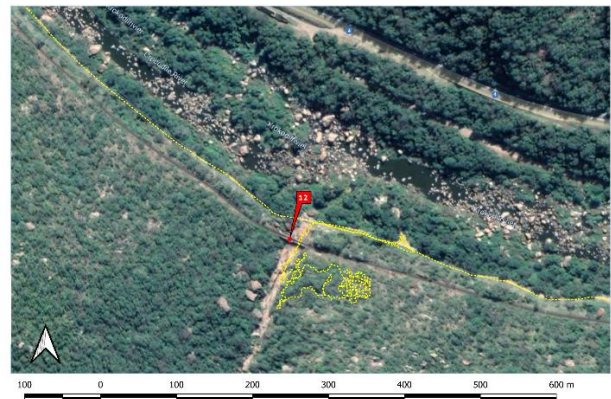
9. KM 62.5-63 CULVERT



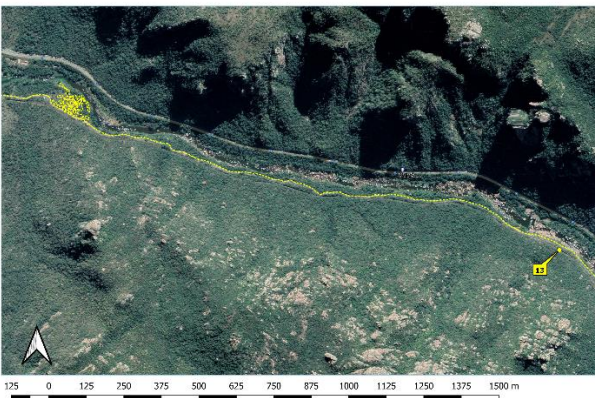
10. KM 65 BRIDGE



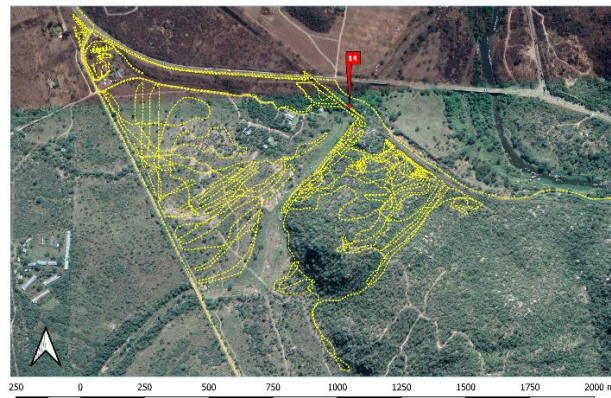
11. KM 76 KAAP RIVER BRIDGE



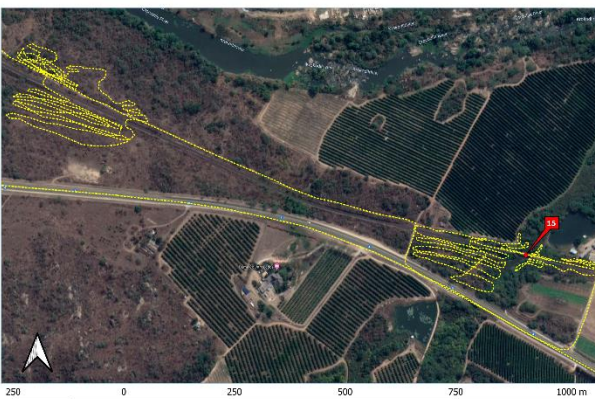
12. KM 85 RAIL BRIDGE



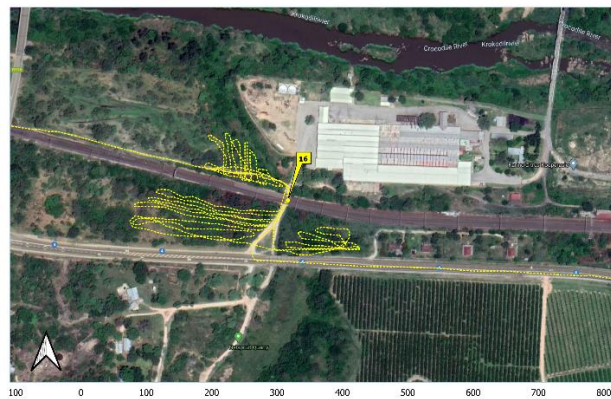
13. SECOND BRIDGE KROKODILPOORT AND SITE TO THE WEST



14. KM 93 BRIDGE KROKODILPOORT

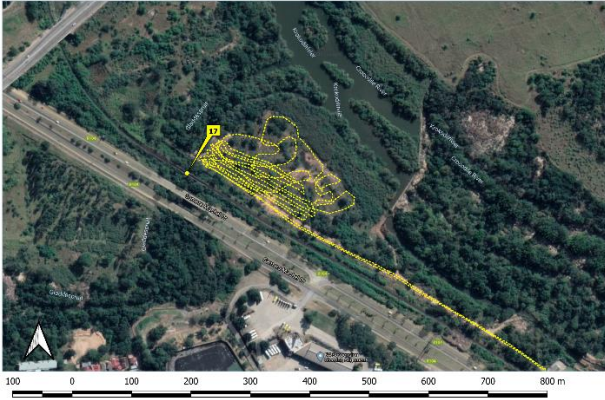


15. KM 97 CULVERT AND BRIDGE WEST OF KROKODILPOORT

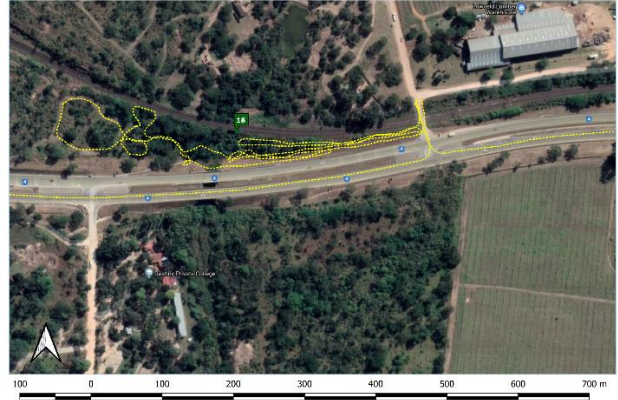


16. KM 101 BRIDGE KARINO





17. BRIDGE OVER THE NELSPRUIT



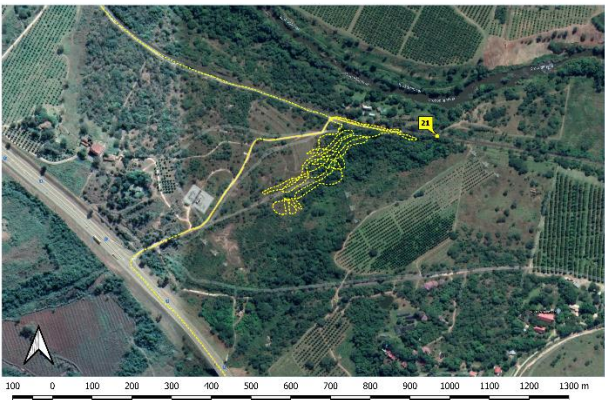
18. BRIDGE WEST OF CAIRN



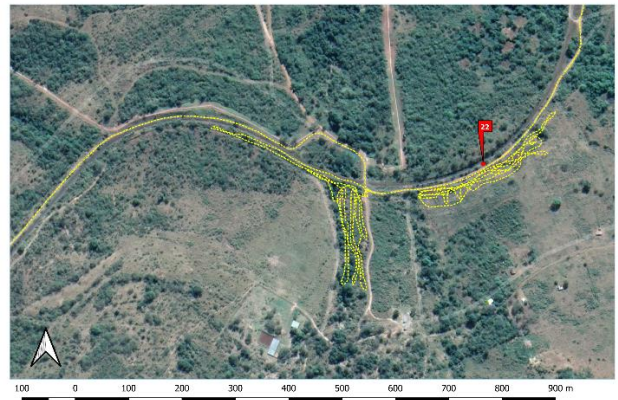
19. BRIDGE EAST OF ALKMAAR



20. KM 138 ALKMAAR



21. BRIDGE WEST OF ALKMAAR



22. KM 150



23. KM 168-169 NGODWANA BRIDGE AND CULVERT

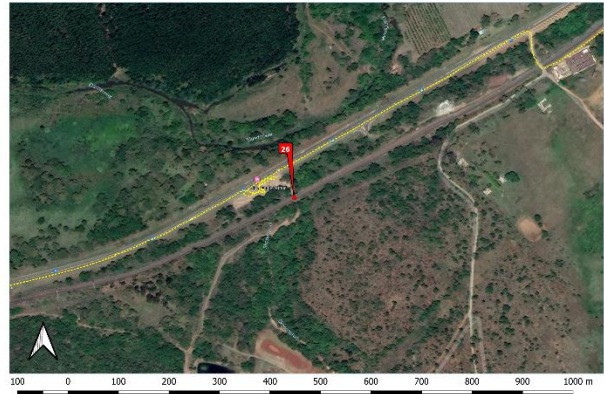


24. BRIDGE EAST OF HEMLOCK





25. BRIDGE WEST OF HEMLOCK



26. KM 195 SCHOONSPRUIT BRIDGE



27. KM 201-202 TOWARDS WATERVAL-ONDER



28. KM 203 FIVE ARCHES BRIDGE DWAALHEUWEL SPRUIT



29. KM 207.5 WATERVAL BOVEN TUNNEL



30. KM 212.5

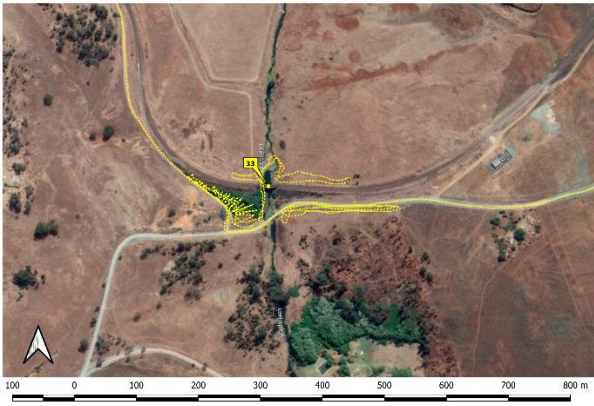


31. KM 215.5 PAMPOENSPRUIT BRIDGE

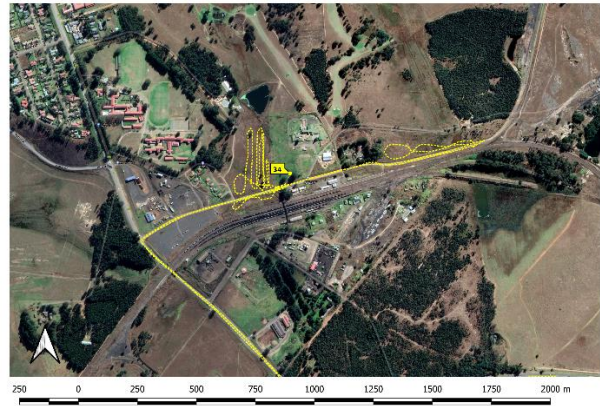


32. BRIDGE WEST OF GOED GELUK

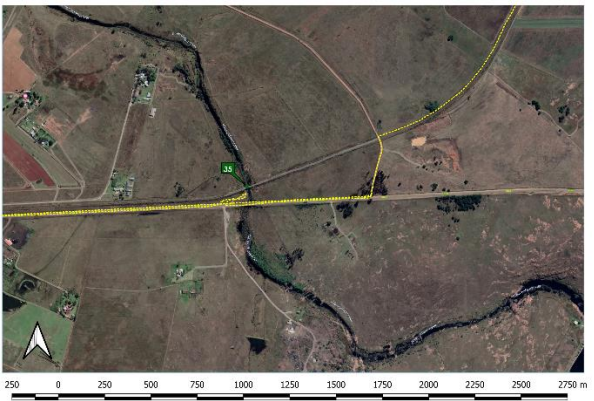




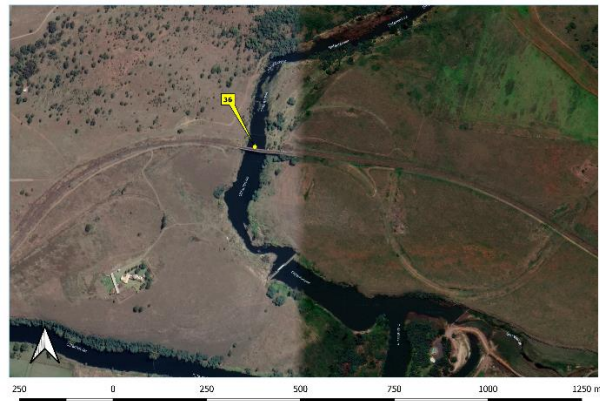
33. LEEUWSPRUIT BRIDGE



34. BELFAST



35. BRIDGE KLEIN OLIFANTS RIVER



36. BRIDGE GROOT OLIFANTS RIVER



37. BRIDGE SAALKLAP SPRUIT



38. BRIDGE BRONKHORSTSPRUIT