



**Gas and Grain:
The Conservation of Networked Industrial Landscapes**

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Abstract

Title: *Gas and Grain: The Conservation of Networked Industrial Landscapes.*

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This thesis examines the networked industrial landscapes of Cape Town's nineteenth century gas supply industry, and South Africa's twentieth century grain elevator system.

The thesis takes the view that, although created in very differing circumstances, both networks were explicitly constructed with the purpose of social and economic development, albeit for narrowly defined constituencies. In both cases, important component sites of these networks came to the end of their working lives during the course of this research.

The Woodstock gas works has since been demolished, and the Cape Town grain elevator stands derelict. The principle question of this thesis asks whether the networks of which these sites formed an integral part, can be conserved with the purpose of future social and economic development within the broad framework of Agenda 21.

Working within a methodological framework informed by the Kerr's Conservation Plan work, research was conducted which would provide a thorough understanding of the networks, allowing for an assessment of cultural significance, an awareness of issues that might affect that significance, and the formulation of policies for retention.

Extensive desk-based study, archival research, and fieldwork was carried out at the Woodstock gas works, the Cape Town grain elevator, and the surviving country grain elevators that comprise the respective networks. Both the key sites were recorded during their final days of operation, with a detailed site inventory being created for the Cape Town grain elevator, together with an inventory of sites for the country elevators.

It was found that the attitude to industrial heritage is changing rapidly, but that it is heavily influenced by aesthetic and economic considerations. The Woodstock gas works was demolished, and the site cleared, with very little active consideration being given to its conservation. By way of contrast, the Cape Town grain elevator, now derelict, has been the subject of a draft Conservation Plan, albeit one prepared without public participation. The process has stalled as the developer attempts to reconcile aesthetic and economic drivers with a publicly held commitment to the conservation, and marketing, of 'heritage'.

The thesis concludes by proposing a new approach to dealing with networked industrial landscapes. It suggests that the surviving country elevators can not only be put to good use for the purpose of sustainable development in terms of Agenda 21, but that the network which historically links them to the Cape Town elevator could itself be re-established in the cause of social transformation.

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Conversion Factors

Linear Measure	1 mile	=	1.609 kilometres
	1 yard	=	0.914 metres
	1 feet	=	0.305 metres
	1 inches	=	0.0254 Centimeters
Square Measure	1 square inch	=	6.45 square centimetres
	1 square yard	=	0.836 square metres
	1 acre (4,840 sq. yards)	=	0.4971 morgen
	1 morgen	=	0.8147 hectares
Cubic Measure	1 cubic inch	=	16.4 cubic centimetres
	1 cubic foot (1,728 cu. in.)	=	0.283 cubic metres
	1 cubic yard (27 cu. ft.)	=	0.765 cubic metres
Capacity Measure	1 bushel	=	36.4 litres
	1 bushel	=	57 pounds
	1 bushel	=	0.285 muids
Weight	1 bushel	=	0.0285 short ton (2,000 lbs)
	1 muid	=	200 pounds
	1 short ton (2,000 lbs.)	=	2,000 pounds
	1 short ton (2,000 lbs.)	=	35.1 bushels
	1 short ton (2,000 lbs.)	=	10 muids
	1 short ton (2,000 lbs.)	=	0.907 metric tonnes
Pressure	1 inches - water gauge	=	0.0025 kgs. per square cm.

Note: 'bushels' and 'muids' were, strictly speaking, measures of capacity. However, when working with most types of maize the capacity measures could also be used as an approximate guide to the weight of the product.

Chapter 1: Introduction

Introduction

This research was carried out within the University of Cape Town's Research Unit for the Archaeology of Cape Town, and was initially motivated by the largely uncontested and unnoticed demolition of the Woodstock gas works in 1996. The Woodstock site contained surviving elements of a gas works that had been in commercial production for just over a hundred years old. The loss of the site provoked little concern among its neighbours, the academic community, or Cape Town's city planners and "heritage" officials. It appeared that only those to whom closure meant job losses, mourned its end.

The late 1990s also saw the closure of another landmark industrial site in Cape Town. The grain elevator at Cape Town harbour formed an integral part of a nationwide network of elevators, built in the 1920s to facilitate the export of maize from South Africa. Its location within an area of the harbour being re-developed for a mix of uses, made it economically unsustainable for its owners and its operators. At the time of writing (late 2003), its future remains far from assured and it is vulnerable to demolition.

A recent English Heritage discussion document, *Sustaining the Historic Environment: New Perspectives on the Future* [1997], reminds us that discussion of archaeology and heritage cannot be simply about the past. It is also about the present and the future. It is about how the relationship between archaeology and heritage can inform the conservation and management of historic environments.

As the twentieth century drew to a close, South Africa was reborn and re-branded as the 'New South Africa: Rainbow Nation'. Yet its new democratic government faced unprecedented challenges in addressing and redressing centuries of inequality and repression, of homelessness, hunger and HIV/AIDS. Heritage, for the majority, was of little concern. However, as the country comes to the end of its first decade of democratic governance, there is a recognition amongst politicians and economists alike that adherence to the principles of 'sustainable development' is essential if the needs of the poor are to be met.

South Africa is currently grappling with a severe under-provision of adequate housing and basic services, and with the need to create long-term employment and other economic opportunities within a framework of sustainable development. A rapidly urbanising population continues to migrate to Cape Town and other major cities, putting increasing pressure on the development and redevelopment of the historic environment.

Examining the relationship between industrial archaeology and industrial heritage in South Africa, and the significance of these relationships to the conservation and management of historic environments, leads one to question why should South Africans care about symbols of economic power that contributed

so much to their social and economic disempowerment over the centuries? The situation in South Africa is very unlike that found in the United Kingdom, where the concept of the 'Industrial Revolution' continues to inform national identity and national pride, long after the country's industrial decline.

South Africa's industrial identity is based on the mineral extraction industries: principally gold, diamonds and coal. These industries remain paramount in the South African economy, and daily movements in the gold price impact significantly on the perceived state of that economy. However, as greater emphasis is placed on service industries, and in particular on tourism, the natural environment has become one of South Africa's most important selling points.

The historic environment is most often represented by the archetypal 'Cape Dutch' and similar buildings of the colonial era, and the 'heritage value' of industrial buildings has been, and remains, poorly recognised by communities, amenity groups and professional practitioners alike. Meanwhile, the older, more established industries decline and die out as their technologies become obsolete. Much needed economic, political and social development, is popularly seen to threaten the historic and natural environments. Yet the need for such development is paramount if South Africa's population is to take full advantage of its hard won political freedoms. Thus there is an imperative for mechanisms to facilitate reconciliation of the country's development needs with conservation of the historic and natural environments. In order for such a mechanism to be designed, it is first necessary to achieve an understanding of the nature of the historic environment, and to assess the cultural and other values that may attach to it.

Recent historical studies have addressed many of the issues of Cape Town's 19th century municipal politics, whilst others have considered the specific histories of utilities such as Cape Town's waterworks¹ and tramways systems [Coates 1976]. At the national scale, there have been various economic histories of state funded enterprises such as Eskom and Iskor [Clark 1994]. This then is the point of departure for the current research, which examines the networked landscapes of gas and grain from the perspective of industrial archaeology, and which departs from previous works in two fundamental ways. By developing what may at first appear to be two disparate case studies, this thesis aims to demonstrate how an approach informed by industrial archaeology can further our understanding of networked landscapes. It then seeks to show how an understanding based on the extant material evidence of such networks can contribute to effective conservation planning in the historic environment, within the broader framework of sustainable development. Whilst the sustainable development of South Africa's natural environment has been the subject of much research, the historic environment has not been similarly addressed.

Thus it will be seen that this research, while firmly embedded in industrial archaeology, is multi-disciplinary. Its scope crosses boundaries between industrial archaeology, economic history and

¹ Personal Communication: Terence Timoney, retired water engineer. February 2001. Mr. Timoney was largely responsible for setting up and managing the Table Mountain Waterworks Museum [Worth 1993]. Sadly, he died before he could complete his history of Cape Town's waterworks, and it is not certain if it will ever be completed for publication.

economic geography in order to address the theme of planning for the conservation of the historic environment.

There have been many definitions of 'industrial archaeology' over the past fifty years, from Hudson and Cossons [1975 & 2000], through to Stratton and Trinder [2000]. In the South African context, it is not enough to define "industrial archaeology" as the archaeology of "the industrial period", usually understood to mean within the last three hundred years; or as the archaeology of specific industrial processes. This type of understanding of industrial archaeology, often stemming from a tradition of amateur enthusiasts, has tended to focus on buildings and machines as icons of the age. The lives and experiences, social structures and cultures of working populations were ignored in many early works on the subject. More recently, writers such as Palmer and Neaverson [1998] have promoted extending the scope of the discipline to encompass such issues.

So, whilst industrial archaeology must have a grounding in the analysis of landscapes, sites, structures, and artefacts relating to industrial processes, it is important that we continually attempt to contextualise such analysis within a broader social and economic framework.

In the United Kingdom, where industrial archaeology originated as an amateur study in the 1950s, industrial archaeology was firmly tied up with notions of British identity: the industrial revolution of the eighteenth century, and Victorian Empire of the nineteenth. Though twentieth century industrial decline has never had quite the same appeal, it does have its adherents [Stratton & Trinder 1997]. The late Michael Stratton, for example, wrote extensively on British car factories [Collins & Stratton 1988] and about electricity generating stations [Stratton 1994].

Although industrial archaeology is in many aspects no more than a subset of historical archaeology, nonetheless it does present its own particular and peculiar challenges and opportunities, at times requiring specialised technical knowledge. Sites can be extremely complex (as in the case of a chemical plant, or a large manufacturing concern) and it can be difficult to engender public support for their conservation.

The immense scope of the subject, and its wide adoption as a discipline, was well illustrated in 1993 by the publication of *The Blackwell Encyclopaedia of Industrial Archaeology*, which featured contributions, sites and topics from around the world [Trinder 1992]. Further evidence of this scope may be found in the journals *Patrimoine de l'Industrie* and *Industrial Archaeology Review*, which have covered such diverse subjects as the history of sulphur mining, in Peticara, Italy [Fabbri 2000]; Lisbon's EPAL water museum [Ruas dos Santos 2000]; a strategy for the conservation of Poland's industrial heritage [Jaskiewicz 2001]; the re-use of industrial sites in Sweden [Bergdahl 2001]; and Cape Town's neglected industrial heritage [Worth 1999].

In North America and Australia, the contributions of professional and amateur researchers in the field of industrial archaeology have long been recognised. However, in developing regions such as Latin America, there is also increasing awareness of the richness of the industrial heritage as a resource. Cuba's nineteenth century 'Albear Aqueduct', its sugar mills, and its tobacco industry, were all showcased at the 2nd *Latin American Conference on the Conservation, Preservation and Re-use of the Industrial Heritage* [Havana, 8-10 Sep. 1998]. At the same conference, papers were presented on the

'National Power Company Museum', in Lima, Peru; a cluster of silver mining sites in Mexico; and the industrial heritage of Uruguay.

A definition of 'industrial heritage' is perhaps even more problematic than that of 'industrial archaeology'. Alfrey and Putnam [1992] suggest that industrial heritage involves managing the relationships between a range of resources and a range of possible uses. Among these possible uses, they suggest, are examination of the physical remains of an industry; the protection of and care of sites; the finding of new uses for sites; the restoration of disused machinery and working practices; and the demonstration of how past generations of working people lived. The unifying factor is that all these options involve actively managing the resource, though often for the benefit of a vaguely defined constituency.

Often however, there is little understanding of the site before policies affecting its future are put into effect. In extreme cases this may result in the total loss of a site, whilst in others it may simply lead to poor interpretation or no interpretation at all. London's Bankside Power Station, recently reborn as Tate Modern, is an important example of a significant industrial building reused for its architectural qualities, yet in which the archaeology has been totally ignored [Moore & Ryan 2000]. This can be seen to validate an approach to industrial buildings that supposes it sufficient retain only the shell of the existing structure, while stripping the inside and ignore its context within the broader industrial network of which it was part.

Notions of industrial heritage in South Africa have been limited. Of the heritage sites formerly designated as National Monuments, for those that might be termed industrial, there has been a strong emphasis on the aesthetic and the picturesque. Mills and bridges predominate. There has been no place for the dirty, the foul smelling, or the ugly; yet those types of environment have formed the experience of many working people. Those industrial buildings which are conserved by being adapted for re-use nearly always have strong aesthetic or architectural qualities [Worth 1993 & Attwell 1998]. Attwell notes that this bias towards the picturesque "draws from a safe, romantic view of the past, low on conflict."

Defining the research problem

In South Africa, it is seen that both the industrial heritage, and the built environment of the twentieth century, are under represented, and that there is lack of clear policy for their conservation. This is particularly true of sites designated as national heritage sites, though twentieth century sites with significance in the political struggle against apartheid have recently begun to be recognised. There has been some acknowledgement of the economic potential of industrial buildings for re-use, but little awareness of the range of other potential values that may be attached to such sites. South Africa cannot, even with an exceptional case such as Robben Island, afford the luxury of preservation for its own sake, and conservation must work in partnership with development if it is to be sustainable.

The Woodstock gas works site, and the site of the Cape Town grain elevator, together with the networks of which they form an integral part, fall within the research domain of networked industrial

landscapes, and will be discussed in detail in Chapters 5 and 6. There are a number of examples of this type of networked landscape in Southern Africa. Water supply, for example, is represented at the trans-national scale by the recent Lesotho Highlands water scheme and at the local scale by the late Victorian dams on Cape Town's Table Mountain. Transport routes, and the infrastructures for power and telecommunications, also form networked landscapes, and are also invariably created with either the explicit or implicit purpose of economic, political and social development.

The case studies presented here are intended to be representative of that larger domain, in order to demonstrate a methodology, and to suggest ways in which other networked industrial landscapes might be researched.

For networked industrial landscapes, it follows that there is value in viewing industrial landscapes as networks, and in assessing their role in the economic, political and social development of South Africa with a view to formulating appropriate policies for their conservation and management. This leads to the key question of this thesis:

Can networked industrial landscapes, built to facilitate economic, political and social development, be conserved and re-used to further developmental objectives in the future?

The broad methodological approach used for this thesis is based on the value-led conservation work of Kerr [1985 & 2000] and Clark [2001], which is in turn closely linked to the guidelines in the Burra Charter [1999]. Thus it combines the descriptive with the evaluative, to provide a basis for designing policies.

The two case studies are described in terms of their basic characteristics, and address how and why they were built and modified, how they operated, and the reasons why their original functions were finally no longer considered appropriate. These sites, and the industries they represent, may be considered a constant element of South Africa's historic environment during the nineteenth century and twentieth centuries. There are, however, a number of variables that have impacted on these sites, of which the most significant has been the changing political environment throughout the period of their use and subsequent disuse. Other important variables have included changes in technology, agricultural practice, international trade and the economic use of fossil fuels. The purpose for which these sites were built, social and economic development, has changed over time. As will be argued, notions of development have changed significantly over the years, and are now coming full circle to again be a major focus for the government of the day.

The destruction of the Woodstock gas works was not the seminal event that the destruction of the Euston Arch was to prove for industrial archaeology in Britain. In that instance, the "demolition of this dramatic entry to the first main-line London railway terminus in 1962 was a powerful incentive to the emergence of industrial archaeology as a significant conservation movement" [Buchanan 2000].

The destruction of the gas works, however, raised important questions, though not in the public awareness, that are most simply expressed as:

- What do we understand about the roles and functions of networked industrial landscapes in the development of South Africa?
- What remains that is significant?
- What are the issues that might affect that significance?
- What are we going to do about it?

In this thesis, the first of these questions is largely addressed by reference to archival and other historical sources, whilst the second and third largely rely on an archaeological approach to the material evidence. Suggesting possible answers to the fourth question, this thesis considers how the material remains of these landscapes might be managed as part of the historic environment, while contributing to contemporary development needs.

There was little public awareness of, or concern about, the demise of the gas works, and to date there has been no public debate regarding possible futures for the derelict grain elevators. By locating this debate within the framework of sustainable development, this thesis attempts to show that there are good reasons why the public should care, and should actively participate in deciding the future of South Africa's networked industrial landscapes.

Outline of thesis

Chapter 2: Literature Review sets out the theoretical and methodological context of the work, derived principally from landscape archaeology; from industrial archaeology; and from current theory and practice in the conservation of the historic environment. This is supported by reference to work carried out using Geographic Information Systems in history and archaeology. It is within the context of contemporary industrial archaeological theory [Trinder 2000] that the work derives its methodological basis from combining an examination of landscapes, sites, structures, artefacts and images (the archaeological evidence) with the documentary record.

Secondary sources employed covered a number of subject areas, the need for which is indicated by the inter-disciplinary nature of the research. Thus this thesis is informed by readings in history, archaeology, use of GIS with historic maps, conservation planning, and development. Scientific and technical information about the gas and grain industries is also discussed in the review of literature.

Chapter 3: Past, Present and Future Contexts describes the historical, contemporary and future contexts within which this research has been carried out. The early history of Cape Town, and the transition from direct Colonial rule to Municipal government in 1840, is provided in overview, including the impact of major events such as the abolition of slavery. This chapter then describes Cape Town's growth, and the concomitant need for public improvement, and how this was significantly impacted by the discoveries of diamonds in Kimberley, and gold around Johannesburg in the 1860s and 1880s respectively. Social polarisation between established landowners and a maturing mercantile elite was

played out in increasing economic and political polarisation, and in increasing awareness of racial and ethnic divides [Bickford-Smith 1995].

Nineteenth century Cape Town saw the construction of infrastructural networks that included water supply; the provision of water-borne sewerage; refuse disposal; public street lighting, by oil, gas and finally electricity; gas supply to homes and factories; and public tramways systems. Such developments had a profound impact on both the economic base of Cape Town and on its demographics, and are provided as background to the history of the gas company that follows in Chapter 5.

The contextual history for the twentieth century is broader in scope, recognising Cape Town's broader role in the affairs of the Cape Colony, later the Union, and finally the Republic of South Africa. It is sketched largely in terms of the major events that impacted on the agricultural sector of the economy, but also encompasses the most significant political developments of the period.

Chapter 4: Methodology demonstrates the type and range of documentary material used, from local newspaper and magazines to trade journals and municipal records, and outlines the way in which the documentary record was integrated into a desktop survey, using historic maps and images, to establish the visibility of networked industrial landscapes. The chapter then describes the fieldwork component of the research, necessarily different for each of the two case-studies.

Chapter 5: The Networked Landscape of Gas Supply presents the first case study, examining the networked landscape of gas: the gas works and the pipes through which town gas was supplied in Cape Town from 1840 to 1996. It presents a largely documentary history of the company, together with an archaeological description of the Woodstock gas works during its final days of operation. Taken together with the new knowledge derived from a variety of historic maps, this thesis attempts to develop an understanding of this industry, and its role in the development of Cape Town, particularly during the nineteenth century.

Brief mention is made of a range of other public utilities that were introduced into Cape Town during the second half of the nineteenth century. Introduction of these utilities provides a clear indicator of a transition from self contained living units (with wells and refuse pits in the back yards) to a networked landscape of pipes and services. People became connected in many senses, as health and welfare, safety and security, became public issues.

The emphasis is on trying to establish the existence, or otherwise, of archaeological evidence for what is in the documentary record, and of course, for what is not.

Chapter 6: The Networked Landscape of Grain Elevators presents the second case study. The networked landscape of grain comprises the series of grain elevators built and operated at ports and alongside rural railway lines from the 1920s to the present day. A historical overview shows how the building of the elevator system was explicitly directed to development of the economic, political and social landscapes.

Documentary history derived from primary sources is presented alongside the results of fieldwork to present a comprehensive survey of the extant buildings. The elevator at Cape Town harbour is described

in detail, and the principles of value-led conservation management are used to suggest that this site should be conserved.

Artistic responses to the building of the elevator system appear to have been minimal. This contrasts strongly with the North American model in which grain elevators are seen to have had an enormous impact on artistic, and particularly architectural, thinking. The value ascribed to these buildings in the early twentieth century contrasts strongly with which they way in which they are considered now, and thus allows for the notion that these buildings can again have value to a community.

Having developed an enhanced understanding of the nature of the surviving archaeological evidence for networked industrial landscapes, and shown how that evidence reflects the important role of those landscapes in South Africa's development, *Chapter 7: Conserving the Networked Landscapes of Gas and Grain* considers how such landscapes might be conserved.

Using the conservation planning principles espoused by Kerr, Clark and others, or what is becoming known as value-led management planning, this thesis critically assesses the cultural significance of the material evidence for networked industrial landscapes, examines the issues that make that significance vulnerable, and suggests that it is possible to devise policies for retention of that significance.

In *Chapter 8: Conclusions*, this thesis demonstrates how conservation, or retention of significance, can appropriately be linked to development needs. Thus, this thesis proposes that the sites and structures that make up the networked industrial landscapes of the past can be conserved by re-using them in the cause of development for current and future needs.

Chapter 2: Literature Review

Introduction

As a field, we have come to recognise that conservation cannot unify or advance with any real innovation or vision if we continue to concentrate the bulk of heritage discourse on physical condition. Conservation risks losing ground within the social agenda unless the non-technical complexities of cultural heritage preservation, the role it plays in modern society, and the social, economic, political and cultural mechanisms through which conservation works are better understood and articulated.

Avrami, Mason & de la Torre 2000b: 6

This chapter will review the literature that informed the methodology used in the collection and subsequent analysis of data for this thesis. Thus it will show how the current research is appropriately located within the field of industrial archaeology, and why the case-studies selected are argued to represent a concept I have chosen to call ‘networked industrial landscapes’. It will then go on to review the literature informing an understanding of value-led conservation, and the background to current initiatives centered on sustainable development, showing why these have been thought an appropriate frameworks within which to consider the networked industrial landscapes of gas and grain.

This chapter will not deal in any detail with the literature which informs the past, present and future contexts, discussed in Chapter Three, nor will it attempt to engage with the technical literature on the gas and grain industries, discussed in Chapters Five and Six, or the literature on conservation planning, discussed in Chapter Seven. In each case, reference to the relevant literature is integrated into the appropriate chapter.

The period covered by the study starts in 1840, shortly after the abolition of slavery, and the subsequent inflow of capital that this engendered (see page 24). This was the year in which Cape Town was established as a Municipality, and the start of a decade that saw the introduction of piped gas to Cape Town, first for private householders, and subsequently for public street lighting.

The significance of fresh water in the establishment and layout of early Cape Town, together with economic and defensive considerations, will be acknowledged in Chapter 3. Nonetheless, it was gas that was to become one of the first markers of Cape Town as a truly networked city, before the widespread introduction of piped water supply or proper sewerage systems. The development of utilities and public transport was to have a considerable influence on Cape Town’s urban form in the nineteenth century, as suburban tramways extended the boundaries of the town, and railways connected it to the hinterland [Urban Problems Research Unit 1990]. This contrasts strongly with later twentieth century apartheid-era planning, which dispersed communities into areas where there were no services, and no public transport.

Even if one may look upon the regeneration of Norrköpping as a very successful project, it raises a lot of questions. What happened to the industrial heritage? The physical remains of the former production ... are still there, but is that enough? Can anybody walking through the area today understand its former function, smell the smoke or hear the echo of the spinning engines? The price we paid for preserving this large industrial area ... may be a high one. Heritage ... has been used as a tool for creating an exciting environment rather than conserving its historical values.

[Bergdahl 2001:71]

In South Africa, perhaps the most well-known example of conservation-led regeneration is the Victoria and Alfred Waterfront (V&AW), in the oldest part of Cape Town's harbour. From being initially branded as 'impractical, impossible, unsafe, expensive and ridiculous' [Cape Argus 5 Mar. 1980], the Waterfront's mixture of retail, commercial and residential uses has made it one of Cape Town's most popular tourist attractions. The development is based around a number of historic structures, including fifteen designated National Monuments under old legislation, and has won the company numerous international and national awards [Worth 1993]. It will be suggested in Chapter 7 that the Waterfront's stated conservation policy, based on the Burra Charter, is in direct conflict with the economic and design imperatives that align it with the Rouse international model of waterfront developments, and that the grain elevator and its associated structures, exemplifies this conflict.

Defining networked industrial landscapes

The study of industrial landscapes parallels broader work on the archaeology of landscape. This body of work has produced a number of approaches to considering landscape, not all of them complementary. As Layton and Ucko have suggested [1999], the main point of contention is whether landscape is regarded as a physical manifestation of human action, or as a conceptual way of viewing the world. Fairclough [1999a] also suggests that cultural landscapes are either a result of human action or cultural perceptions.

Hall writes that "social relationships cannot be seen directly in the archaeological record", but that what we can see is the material evidence produced by such relationships: that is, by "people forming networks" [1996: 185]. Also emphasising the important role of social relationships is Tilley, who challenges what he sees as the 'standard' approaches based on environmental factors such as relief, climate and resources, to argue for a phenomenological approach. Thus the environmental and economic attributes of landscape are subsumed by symbolism and meaning [1994: 12]. Darvill also complains that the archaeology of landscape has focused for too long on the physical and structural dimensions of landscape, rather than on its metaphysical and social aspects. As with that of Tilley, Darvill's work deals with prehistoric landscapes. He argues for the role of landscape as context, and suggests that there are three key theoretical aspects to this work: space, time and social action. It is this last aspect, linking both space and time, that "manifests archaeologically as material culture" [Darvill 1999: 109].

In recent years, the idea of landscape has become increasingly important in archaeology, not just from an academic point of view but also in relation to the protection and management of sites and areas. Terms such as “the historic environment” and “historic landscapes” are widely used with almost reckless abandon, and seemingly attached to almost every research design or report on the archaeology of a chosen area.

[Darvill 1999: 104]

Work undertaken by English Heritage on landscapes is, by the nature of the organisation’s mission, focused towards conservation and management [Fairclough 1999a]. The three key theoretical concepts used by English Heritage to determine the ‘character’ of landscape closely shadow those set out by Darvill. Fairclough also emphasises the importance of space and time, and brings to bear a synthesis which allows for ‘complexity and diversity’ [Fairclough 1999a: 121].

It has been suggested that the conservation and management of landscapes needs to take place both at the level of the individual site level (where such sites exist) and also at the level of the broader landscape. A problem encountered with this is the definition of an appropriate “academically justifiable unit” at which landscape may be characterised [Darvill 1999: 116]. Fairclough, reporting the same difficulty, suggests that the success of a Cornish survey based on fields and land parcels could be attributed to the presence of historical data, local expertise, and the characterisation of the landscape by broad themes and patterns [Fairclough 1999a: 131].

McGlade [1999] suggests that landscape study has diverged into two distinct strands, but posits a different dichotomy to that provided by Layton and Ucko [1999]. The first, the ‘new’ archaeology of Bender, Thomas, Tilley, and others, which has focused on meaning in the landscape; and the second, of Hewison, Fowler and Ucko, which has focused rather on the conservation issues pertaining to the landscape.

It is in the context of this assertion that this research aligns itself principally with cultural resource management, yet at the same time considers the symbolism of the landscapes under review. Indeed, it will be argued that McGlade’s assertion that the “view that landscapes are not ‘neutral’ but ideologically constructed, is critically important if we are to arrive at any real understanding of structural change in prehistoric societies” [McGlade 1999: 460] is equally applicable to modern industrial landscapes.

Industrial landscapes have been explored in various ways. There have been numerous thematic surveys, dealing with subjects such as mining in Cornwall [Sharpe, Smith & Jenkins 1990; Sharpe, Lewis & Massie 1991], canal railway and road transportation in Wales, water supply in Cape Town² and industrial housing in Shropshire [Muter 1979]. Canal history, for example, was well served by Stephen Hughes’ documentation of the Montgomeryshire Canal [1988], which “firmly abandons the silly, traditional boundaries of archaeology” and provides a “blueprint for conservation” [Clark 1993] by first explaining the building and siting of the canal, and then detailing the extant material evidence in a gazetteer. There have also been many area based studies, such as those undertaken at Ironbridge Gorge [Trinder 1982; Alfrey & Clark 1993], and the Staffordshire Potteries [Baker 1991].

² Personal Communication: Terence Timoney, retired water engineer. February 2001. See footnote on page 2.

Landscape of Industry used individual plots of land as the unit of analysis. This survey of the Ironbridge Gorge was strongly grounded in the material evidence, and included a wide range of features in its definition of landscape (*Figure 1*). The research was firmly embedded within the discipline of archaeology by the use of time and space as framing concepts, together with the creation of typologies. With conservation as one of its objectives, the work aimed to develop a more “rigorous appraisal of resources” by contributing to a deeper understanding of the landscape and its components [Alfrey & Clark 1993: 202].



Figure 1

The Iron Bridge, Shropshire, UK, 1992.
Archetypal ‘landscape of industry’.

Key readings on the practice of industrial archaeology include works by Palmer and Neaverson [1998], and Stratton and Trinder [2000], with the latter being particularly useful in the consideration of twentieth century industrial sites. *Perspectives on Industrial Archaeology* [Cossons 2000a] provides a valuable overview of the development of the discipline since the 1950s, together with examples of current practice.

In examining the archaeology of networked industrial landscapes, works such as that on Cornwall’s mineral tramways [Sharpe, Lewis &

Massie 1991], and Britain’s twentieth century military defences [Lake 2000] provided useful models, while Rumsey & Williams [2002] was particularly useful on the use of historic maps with geographic information systems (GIS).

A useful example of a descriptive history of a networked industrial landscape is the work of Caseiro, Pena and Vital [1999] on Portugal’s 250 year old, 58 kilometer, Águas Livres Aqueduct. This richly illustrated work combines an archival history with contemporary photographs but is not archaeological in nature, and does not attempt to address the hugely complex conservation issues. The aqueduct, and its wealth of associated structures, has been conserved for ‘cultural, environmental and educational’ purposes [Ruas dos Santos 2000].

A holistic approach to conservation of industrial landscapes has been called for by some writers. It has been suggested that as well as considering historical significance and structural condition, there is also a need to consider diverse issues such as present and potential uses, ownership patterning, owner attitudes to amenity use, development proposals and public safety [Sharpe, Lewis & Massie 1991; Edgecombe 1998]. In this research, gas supply and grain distribution have been termed ‘networked industrial landscapes’. This definition is informed by many aspects of the above. Clearly both are complex systems forming networks, and both are industrial in nature. It is the definition of the studies as ‘landscape’ that is perhaps more contentious. In the gas supply case-study, the two gas works are physically linked to each other, and to their customers, by a network of supply pipes. In the grain elevator case-study, the port elevators and inland elevators are physically linked to each other by the

railway network. Thus in a functional sense, these are physically constructed landscapes. As importantly, however, they are landscapes in the sense that they are socially constructed and as such are rich in meaning and symbolism.

Value-led conservation

Conservation has long been seen as a way of retarding development and change, and as a way of “creating and recreating heritage”; while cultural heritage is now broadly accepted as a ‘social construction’, a set of processes, rather than a collection of objects. These perspectives, among others suggested by Avrami, Mason and de la Torre [2000b: 7], remind us that the very act of defining something as heritage is a value judgement. Thus the act of conserving a valued place or object has the effect of adding further value to it. This process, this valorisation of the place or object, takes place, they suggest, as soon as the place is identified as conservation-worthy, and continues as interventions are made, and throughout subsequent use and interpretation. Lowenthal, however, warns against ‘neutralising the past’ by the act of display and interpretation [1985: 68].

Avrami, Mason and de la Torre further suggest that “we lack any conceptual or theoretical overviews for modelling or mapping the interplay of economic, cultural, political and other social contexts in which conservation is situated”, and are thus unable to adequately assess the “social impacts and influences of conservation”. Such an overview would, they propose, “assure the relevance of conservation to society ... and frame conservation as a social, rather than technical activity” [2000b: 10].

In Africa, management of cultural heritage has tended to focus on the technical, with an emphasis being placed on great architectural structures, such as the pyramids, Ghana’s forts, and Great Zimbabwe. Ndoro suggests that “the interests of local communities are often still being ignored at the expense of international guidelines and frames of operation”, and that adherence to these guidelines often ignores traditional African ways which see landscape as a shared resource [Ndoro 2001: 20]. The selected case-studies for this thesis have little in common with African tradition, yet nonetheless, Ndoro’s argument that we should “adopt a code of practice that reconciles the needs of the heritage and its environment with those of the general public” remains valid [Ndoro 2001: 20].

Lowenthal has suggested that heritage can be more of a burden than a benefit, simply due to its over-accumulation and an unwillingness to let anything go. Furthermore, that it is not relevant enough to the real issues that people face every day, that it can foster conflict as people lay claim to what is claimed as valuable, and that it is seen to be too closely tied to the self-interests of professionals. He argues that there needs to be acceptance “that destruction is integral to the creation of heritage” [Lowenthal 2000: 21]. Elsewhere, Lowenthal has highlighted the dangers inherent in keeping more than we know what to do with, of creating a heritage ‘glut’ [1998]. These observations are echoed by Banham, cautioning that “if we let the paranoid preservers manoeuvre us into keeping everything, we shall bring the normal life-processes of decay and replacement to a halt, we shall straitjacket ourselves in embalmed cities of the past” [1973: 15].

The challenges facing nations undergoing “difficult political transition”, which surely includes South Africa less than ten years after its first democratic elections, are addressed by Serageldin.

In the West, the legacy of conflicting social and environmental policies that prevailed until the early 1960s has slowly faded away. Three decades of stability and prosperity have allowed policies for preservation and appropriate valorization of the cultural heritage to take shape. In countries in transition, conflicting economic, social and environmental policies prevail and are sustained by legal and institutional frameworks in a state of flux. Their detrimental effect on the historic fabric endures over prolonged periods and can be devastating.

[Serageldin 2000: 54]

She argues that cultural heritage is impacted by “the dynamics of development and transformation as they affect population movements and real estate markets ... and by perceptual and practical links between people and their ... cultural heritage” [Serageldin 2000: 51]. Thus, ideas about the conservation of cultural heritage that may have been introduced from countries “enjoying long periods of stability and growth”, are often entirely at odds with developmental objectives. Chapter 6 of this thesis will argue that this exactly describes the situation at the grain elevator at Cape Town harbour.

Economic values are examined by Throsby, who writes that there are two broad types of theory relating to value. In economic terms there are the absolute values that relate to cost of production, espoused by Marx and Smith, and relative values that are sensitive to social context, such as ‘utility’ [Throsby 2000: 27]. These theories are paralleled by theories of cultural value wherein absolute values are assigned to the intrinsic qualities of a site or object, and relative values are assigned according to subjective preferences.

Throsby suggests that the attributes which characterise cultural value, whether absolute or relative are as follows:

- aesthetic value: beauty, harmony;
- spiritual value: understanding, enlightenment, insight;
- social value: connection with others, a sense of identity;
- historical value: connection with the past;
- symbolic value: a repository or conveyor of meaning.

Quoting McGuigan [1996], Throsby suggests that the multi-dimensional character of these attributes, which are very similar to those of the *Burra Charter* [1999], makes it impossible to reduce them to a single value. Indeed, he says, “economists are deluding themselves if they believe that economic measures such as price or willingness to pay can provide an adequate indicator of cultural value”. Nonetheless, whilst separating economic and cultural values, and insisting that they cannot be equated to each other, he contends that both must be allowed to inform conservation policy.

Contesting the manner in which economic values often appear to be given undue consideration, McGuigan says that:

The notion that a cultural product is as valuable as its price in the marketplace, determined by the choices of the 'sovereign consumer' and by the laws of supply and demand, is currently a prevalent notion of cultural value and maybe the most prevalent one, albeit deeply flawed. Its fundamental flaw is the reduction of all value, which is so manifestly various and contestable, to a one-dimensional and economic logic, the logic of 'the free market'.

[McGuigan 1996: 31]

Fraser, presenting the concept of 'historic environment capital', suggests that characteristics representing quality of life, sense of identity, sense of place, local distinctiveness, relationship to natural environment, the effectiveness of past economic regimes and a contribution to the viability of a local community should also be considered.³

The work of Kerr [1985 & 2000] and Clark [2001] closely parallels the processes set out in the Burra Charter [1999], and those for Heritage Impact Assessments, now required to be undertaken in terms of South Africa's National Heritage Resources Act [1999].

The Burra Charter was first adopted by Australia ICOMOS in 1979, and subsequently revised in 1999. It was a response to, and a local variation of, the Venice Charter which had been adopted in 1966 by the International Council on Monuments and Sites (ICOMOS) to address issues relating to the treatment of historic monuments [Marquis-Kyle and Walker 1992]. The role of value, or significance, in the conservation of heritage places, is a central tenet of the Burra Charter, Article 5.1 of which states that "Conservation of a place should take into consideration all aspects of its cultural significance without unwarranted emphasis on any one at the expense of others."

Kerr's work built on the principles in the Burra Charter, for which he served on the drafting committee, and introduced the concept of the 'Conservation Plan' [Kerr 1985 & 2000]. A specialist on prisons and other public institutions, Kerr has prepared conservation plans for the Yungaba Immigration Depot [1992], Goulburn Correctional Centre [1994] and Fremantle Prison [1992 revised 1998].

Clark, who has endorsed and promoted Kerr's methodology for many years, has been a key role-player in seeing the adoption of conservation planning principles in Britain. This adoption has been due in part to the insistence by Britain's Heritage Lottery Fund on Conservation Plans as a pre-requisite for the provision of funding for heritage projects [Heritage Lottery Fund 1998]. *Informed Conservation*, Clark's book for English Heritage, provides a refinement of Kerr's work, and coins a new phrase, 'Conservation-Based Research and Analysis'. This is defined as "the research, analysis, survey and investigation necessary to understand the significance of a building and its landscape, and thus inform decisions about repair, alteration, use and management" [Clark 2001: 9].

Clark consistently argues the primacy of fabric, the material evidence that is the lifeblood of the archaeologist. "Put at its simplest", she says, "if we don't look after it now, there'll be nothing left for us

³ Personal Communication: Shannon Fraser, Sep. 2000. Paper presented at The Annual Conference of the European Association of Archaeologists, Lisbon.

to value or interpret”.⁴ “In making conservation decisions, we should respect not just the values, but the fabric to which they are attached . . . (and) if we decide to demolish a building, or excavate a site or not conserve a landscape for other reasons, we . . . (should) not use specious arguments about keeping the value as a sop to our conscience” [Clark in press 2003]. This view is in opposition to that of Avrami, Mason and de la Torre, who argue that it is not the object or place that is important, but rather the meanings and values that are attached to it [Avrami, Mason and de la Torre 2000].

Fairclough argues that finding balance between these views is the essence of sustaining the historic environment. Thus ‘significance’ is not synonymous with ‘social value’, the latter reflecting the importance of reflecting community needs in assessment and planning. “Conservation Planning”, he says, “must not focus exclusively on the inherent significance of buildings and monuments. If they do, they might not contribute as much to sustainability as we would hope” [1999b: 128].

The approach taken in this thesis to value-led conservation and management is strongly influenced by the work of Kerr and Clark, and the methodology of the Conservation Plan process will be discussed in greater depth in Chapter 7 of this thesis. From an archaeological view point, it is clear that proper understanding of the material evidence, and the values that are presently, or have in the past been attached to it. Furthermore, there needs to be an acknowledgement that future generations may attach different values to the same materiality, and that this will not be possible if we arrogantly decide that ‘our’ values need to be conserved.

Establishing contexts

To establish contexts for this work, it was necessary to work at both the municipal level, for nineteenth century Cape Town, and at the national level, for twentieth century South Africa.

In considering the development of municipal structures and interventions in nineteenth century Cape Town, parallel developments in Britain are relevant. In *Power and Authority in the Victorian City*, clear links are drawn between the scientifically based surveys of the 1835 Poor Law Report and the Municipal Corporations Report, and the legislation that ensued. Fraser argues that the local government institutions established in towns of “novel and rapid growth” were in the next fifty years “transformed into powerful agencies with wide social purposes” [Fraser 1979: 151]. Early interventions in health and sanitation issues were gradually superceded by attention to the provision of public baths, parks, libraries and other social facilities. Some municipalities developed trading interests, partly in furtherance of social objectives, and partly as a way of subsidising rate income. This principal was applied variously to the provision of gas and electricity, and public baths and transport.

Shorten’s municipal history was published in 1963 to mark the fiftieth anniversary of the City of Cape Town Unification Ordinance. This had amalgamated Cape Town with the neighbouring municipalities of Green Point & Sea Point, Woodstock, Mowbray, Rondebosch, Claremont, Maitland and

⁴ Personal Communication: Kate Clark, Sep. 2000. Paper presented at The Annual Conference of the European Association of Archaeologists, Lisbon.

which *Concrete Atlantis* [1986] is particularly important. These works will be referred to extensively in Chapter 6.

Sustainable development

The English Heritage discussion document *Sustaining the Historic Environment: New Perspectives on the Future* [1997], previously referred to in the introductory chapter (on page 1), was followed by a leading article in the same organisation's Conservation Bulletin two years later. These papers emphasised the importance of basing sustainability on a "long-term and broadly based view of society's needs", and suggested that "developing a stronger understanding of the historic environment and promoting a wide awareness of its role in modern life" was a key tenet.

Agenda 21: a Global Plan for Sustainable Development, was the principle outcome of the 1992 Earth Summit held in Rio de Janeiro, Brazil. A decade later, the Earth Summit was followed by the 2002 World Summit on Sustainable Development (WSSD), held in Johannesburg, South Africa.

In the lead-time before this event, and since, organs of South African national and provincial governments have show-cased their engagements with sustainable development. In this regard, the Gauteng Provincial Government, in a document entitled *WSSD and You* [2002], set out the key challenges faced by "one of the most unequal societies in the world", where the poorest 40% of population receive 11% of national income, and the richest 10% of population receive 40% of national income; and where 18 million people lack proper access to adequate water and sanitation.

Sustainable development: the key challenges for South Africa:

- high unemployment (currently at between 23% and 38% depending on the definition used);
- threats to biodiversity due the transformation of eco-systems through human activity;
- limited water resources and over exploitation by wasteful domestic, agricultural and domestic users;
- dependence on fossil fuels for energy resources, and excessive greenhouse gas emissions;
- degradation of land through over collection of wood fuel, intensive livestock grazing, and cultivation of marginal soils;
- HIV/AIDS (estimated 4.7 million people HIV positive at the end of 2000);
- link between poverty and the quality of the environment (downgrading of inferior land increases poverty which in turn leads to further downgrading of land).

Gauteng Provincial Government 2002

One response of the Department of Public Works has been the creation of Community Production Centres (CPCs). This initiative, which is principally aimed at emerging farmers and others in the rural communities, is designed to address the twin aims of job creation and poverty relief. Milling, leather working, sewing and weaving, arts and crafts, and baking and confectionery, are all represented in the existing CPCs [Department of Public Works 2000: 7].

The South African Regional Poverty Network, an initiative of the Department of Arts, Culture, Science and Technology, “is a real and virtual platform for stimulating information exchange and debate between policy-makers, civil society, and the research community.” In this model, scientists work with communities in the ongoing struggle against poverty, resulting in projects such as the “Recipes for Success Project”, which uses indigenous foods; the “Kgabane Jewellery Project”; “The Papermaking Poverty Relief Programme” which comprises twenty-one papermaking units in seven provinces, and primarily targets unemployed rural women; and “The Beekeeping Poverty Relief Programme” whereby 6,500 historically disadvantaged families are equipped with beekeeping skills. As with the other projects mentioned here, there is a focus on women, the elderly and the disabled [Department of Arts, Culture, Science and Technology 2002].

A final example is *The Strategic Plan for South African Agriculture*, and the *Integrated and Sustainable Rural Development Strategy* which forms its core. The strategic plan lists government’s concerns and priorities, and promotes:

- local economic development, with a focus on rural towns, service centres and villages;
- strengthening the profile and role of agriculture and related industries;
- giving special attention to income generation and livelihood activities by women, youth and the disabled;
- rural development nodes;
- rural settlement planning.

[Department of Agriculture 2002]

Clearly, the concerns of South Africa with respect to sustainable development are very different to those of the United Kingdom. Whilst the principles are universal, and thus applicable in all societies, even the best intentioned governments, as Richard Leakey has pointed out, have difficulty in prioritising conservation of the natural environment when there are competing and desperate needs for water, housing, health care and education.⁵ Inevitably, the same is true of the historic environment.

There is increasingly “recognition that heritage industrial buildings represent a sustainable resource from past generations capable of being ‘recycled’ for new uses” [HRH The Prince of Wales 2000: 3]. In the United Kingdom, *Regeneration Through Heritage* was established in 1996 to promote awareness of the potential which heritage industrial buildings offer for developing new and sustainable economic, social and cultural uses [Business in the Community 1999: 2], and there have been many industrial heritage projects around the world which have been formulated to address job creation, civic regeneration and social inclusion. Some of these initiatives will be discussed further in Chapter 7 of this thesis.

⁵ Richard Leakey made this observation during a public lecture at the University of Cape Town, July 1998.

A very useful review of the adaptive reuse of industrial buildings in Cape Town has been provided by Hadewig Quaghebeur. After reviewing international practice, she assessed ways in which the adaptation and reuse of these sites had been implemented. For example, Quaghebeur showed how international practice stresses the importance of not only assessing the structure and settings of industrial buildings but also associated artefacts, suggesting that “the integration of artefacts into new design contributes considerably to an overall appreciation of the original building and use, and thus, the design quality of the reuse project” [Quaghebeur 2001: 221].

Synthesis

It will be seen, therefore, that this thesis adopts a common approach to both the Woodstock gas works and the Cape Town grain elevator. This approach is grounded within the field of industrial archaeology, and views both sites as integral parts of networked industrial landscapes. The principles of value-led conservation are then brought to bear in considering how these sites might be used to further sustainable economic, political and social development in the future.

Chapter 3: Past, Present and Future Contexts

Introduction

This chapter provides a series of contexts for the study of networked industrial landscapes in South Africa, and introduces the conservation debate by proposing a policy for the conservation of networked landscapes within the broader historic environment. To achieve this, it is also necessary to review the contexts which inform management of the historic environment in contemporary South Africa, and to consider those which may impact on it in the future.

Past contexts

Cape Town is more usually thought of as a commercial, rather than an industrial centre. The most significant industrial concerns in the country were, and still are, located sixteen hundred kilometres to the north-east. It is there that we find the extractive industries, predominantly diamonds, gold and coal, that continue to underpin South Africa's industrial economy.

The Dutch East India Company (V.O.C.) recognised the potential of Table Bay to provide water, fresh supplies and shelter and in 1652 established a permanent station in what was to become Cape Town. Fresh water was one of the most significant factors in determining the location and layout of the early settlement, as mountain streams were canalised, and fresh produce gardens planted. The other consideration was the town's need to be able to defend itself. Encountering local Khoi herders the settlers traded limited economic opportunity for submissiveness and servitude. Nonetheless, as Worden et al point out, "rather than providing the intended support for the V.O.C.'s trading vessels, the early Cape settlement was in its initial stages completely dependent on food supplies shipped from Amsterdam and Batavia for its survival" [Worden, Van Heynigen and Bickford-Smith 1998: 19].

Corn mills were among the first 'industrial' sites to be established, with the earliest ones being on the Platteklip Stream, flowing from the north face of Table Mountain. However, with the exception of a

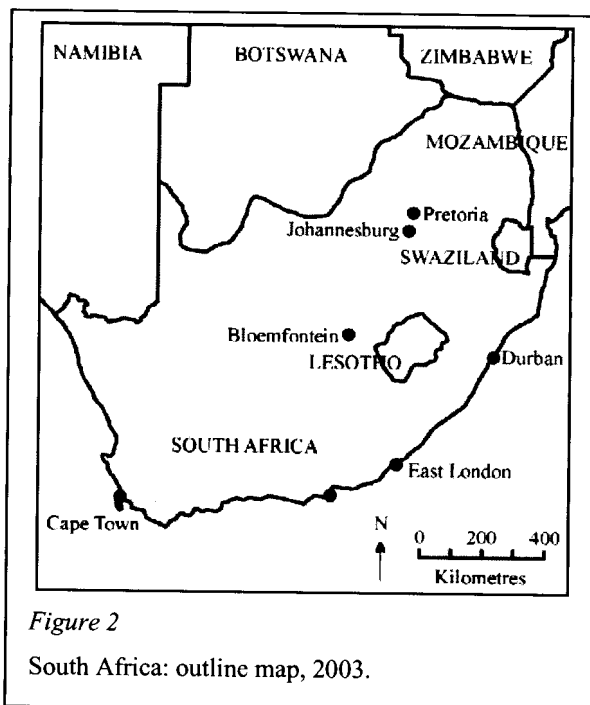


Figure 2
South Africa: outline map, 2003.

single silk spinning factory, no manufacturing industry was permitted by the Company. Early excursions into the interior led the settler population to make its first significant mineral discoveries in 1685 when significant copper deposits were discovered in Namaqualand, some 600km north of Cape Town. Today, copper is still mined in the area, and low grade copper imported from South America for smelting.

Early Cape Town was principally a market town, trading in sheep and cattle. The Castle was the focal point of the community, with “workshops for blacksmiths, wheelwrights, locksmiths, coppersmiths, tinkers, carpenters, joiners, turners, glaziers, gun-stock makers, etc.” [Mentzel I :60, quoted in Worden 1998: 43]. Throughout the eighteenth century, slave labour was employed on works such as the making of new roads, and on the first attempt at building a safe anchorage [Worden et al 1998].

The colony came temporarily under British rule in 1795, and then after a short break, returned to British rule in 1806. This in turn led to a further wave of settlement, most notably in the early 1820s, when some 6,000 Britons were settled in the eastern Cape to serve as a frontier between the colony and the indigenous Xhosa population already in that area.

By the earlier part of the nineteenth century, industrial activity in Cape Town was similar to what might be expected in any small market town of the same period. Brewers, tinsmiths, coopers, tanners, bakers, joiners and soap manufacturers are all represented in the Almanac of 1834. Reflecting the town’s role as a harbour, there were also numerous boarding houses and taverns, and ship repair and warehousing facilities [Urban Problems Research Unit 1990: 11].

However, by as late as the 1870s Cape Town’s economy was still dominated by a handful of merchants, and local industry was limited to satisfying immediate local needs. With no local source of cheap fuel, there were few factories, with little capital investment.

In 1834, at the time of emancipation, there were 39,021 slaves recorded for the whole of the Cape Colony. Cape Town itself was still a small town, with an estimated population of less than 20,000 people in 1840 [Shorten 1963: 119]. In Britain, while the Reform Act was transforming national and local politics [Fraser 1979], the abolition of slavery was transforming both the demographics and the economy of Cape Town as former slave owners, financially compensated by the Colonial Government, invested in land and property. The value of the slaves was set at £3,041,290, though the Cape only received compensation from the Colonial Government in cash and stock totaling £1,247,401 [Shorten 1963: 116-117].

The Colonial Office ‘Blue Books’ of the nineteenth century indicate that before 1840 the Colonial Government was responsible for all the public works in the town. Buildings such as the Post Office, the Port Office and the Governor’s Residence, were built and maintained by the Colonial Government, which also took responsibility for the jetties and wharves in Table Bay. They also took care of the building and maintenance of roads and bridges, and the placement of private waterleadings. Many of these functions and responsibilities were transferred to the town when it was granted municipal status in 1840 [Shorten 1963: 119]. The new Municipality, as well as building, or at least authorising, new public works, also began to take a hand in what is now termed “planning control”, and letter books of the early 1840s reveal a continuing programme of both new and repair works by the Municipality. This record indicates where

people of the town were authorised to dump rubbish; where the removal of stoeps was to be encouraged; and where gutters, drains and private waterleadings were to be laid.

It was to continue to be the Municipality that took responsibility for the provision of water and sewerage throughout, and beyond, the nineteenth century. However, a proposal for the introduction of gas supply to Cape Town came not from emerging municipal structures, but rather from private capital interests. The role of 'joint stock companies' was the subject of an extensive editorial in the *South African Commercial Advertiser*, in April 1854. Citing the recent successful funding by joint stock companies in London of the Crystal Palace, the paper argued that they would be "hailed at the Cape as a symptom of awakening vigour and self-reliance in the community" [*South African Commercial Advertiser* 1854-04-13]. It was common practice, both in Britain and its colonies, for large infrastructural works and public utilities to be financed by government. Initially, capital would be borrowed, creating what the paper called "a burden on the community", and later repaid, with money raised by taxation. By way of contrast, it was suggested, joint stock companies had several advantages. Because of having a direct financial interest, directors would have a vested interest in ensuring that work was carried out with a view to generating the most profitable returns. Investors at the Cape were eventually provided with improved financial security, and thus more attractive investment opportunities, by the Joint Stock Companies Limited Liability Act of 1861 [Worden et al 1998].

As will be seen in Chapter 5, the relationship between the gas company, representing private capital, and the Municipality, charged with representing public interest, was to prove contentious for as long as the gas company was tasked with providing public street lighting for the town.

The changing relationship between the Cape, the rest of the area later to become South Africa, and Britain, as the colonial power, was defined first as 'representative government', in 1853, and later as 'responsible government', in 1872 [Giliomee 1989]. In the former, a Legislative Assembly was elected as a lower house, whilst the latter also provided for a Legislative Council. During this period, commercial activity in Cape Town increasingly encompassed investment, insurance and banking enterprises, with the Cape Town Railway and Dock Company being a major constituent [Worden et al 1998].

After the formal abolition of slavery, in 1834, labour for the emergent colony's proto-industrial base was drawn from diverse sources. The construction of roads and mountain passes was carried out largely using convict labour. Cape Town successfully resisted efforts by the British government to turn the Cape Colony into an Australian style penal colony, but nonetheless there was a plentiful supply of local convicts available. When work was begun on extending Cape Town harbour, in the 1860s, a prison was built nearby, specifically to house the convicts working on the new breakwater [Worden et al 1998]. To build the new railway line, initially from Cape Town to Wellington, much of the labour was provided in the form of British 'navvies'. Many of these men settled near the railway workshops, in the Cape Town suburb of Salt River.

Important for the new council's administrative control of Cape Town was an understanding of its spatial geography. Thus, in the early 1860s, a number of maps of the town were published. Alexander

Wilson, manager of the Cape Town gas works, first surveyed the town in 1858. His “Topographical Plan of Cape Town and Suburbs” will be discussed further in Chapter 5 for local publisher Saul Solomon, was a surveyor named Gamble, and the council itself commissioned a map in 1862 from William Barclay Snow, whose survey showed the streets and the outlines of individual buildings [Worden et al 1998]. Solomon was owner of the *Cape Argus*, a newspaper which has been variously described as “crusading” [Worden et al 1998] and “muck-raking” [Coates 1980], but which had replaced John Fairbairn’s *South African Commercial Advertiser* as Cape Town’s leading newspaper.

By the middle of the nineteenth century, the lack of adequate drainage and the limited number of fountains and pumps from which the public could draw water, meant that the sanitation of the town was deplorable. A fever epidemic, which started in 1863, was to force a re-examination of the town’s infrastructure. Complaints included the failure to clear night soil and other refuse from the town, the presence of the ‘shambles’ outside the castle walls, where animals were slaughtered for meat, and of fish curing which took place at Roggebaai [Worden et al 1998].

With Cape Town’s mercantile elite enjoying new prosperity, they had both the means and motivation to invest in infrastructure and industry [Bickford-Smith 1995]. Reformers, known in the local press as the “Clean Party”, were intent on sanitary and infrastructural reforms. Their opponents, labelled variously as “reactionary”, and as the “Dirty Party”, represented the established landlord and property owning classes, and were opposed to reforms which would necessarily lead to the imposition of higher municipal rates. The “Cleans” eventually carried the day, and this period saw the establishment of municipal wash-houses; the relocation of the shambles; the completion of the Molteno reservoir; and the implementation of a town wide drainage scheme. Worden et al suggest that many of the property owning class were of Dutch origin, whilst the many of the reformers were British immigrants, anxious to promote investment in the town on the London stock markets [Worden et al 1998].

The discoveries of diamonds, in Kimberley, and gold, on the Witwatersrand, transformed the economy of South Africa during the latter part of the nineteenth century. Thousands of immigrants passed through the town on their way to the diamond fields, and later the gold fields, to the north and east. Cape Town’s railway link to the interior made it the preferred port of entry for many [Bickford-Smith 1995]. With them came an influx of capital, and new industrial centres, including the city of Johannesburg, were created out of nothing. The domestic market for Cape Town’s commercial and industrial interests grew, while it continued to be the major port for the Cape Colony’s imports and exports, and thus the economic driver for the town rapidly changed from being one primarily focused on servicing the agricultural sector to one based on industrial capitalism. Worden et al have noted that this transformed both the age and gender profile of the town, as many young, male, English speakers arrived in the Cape [Worden et al 1998]. Some saw the expansion of the Transvaal mines as a mixed blessing. While providing new markets and economic growth, nonetheless they diverted investment capital away from the Cape [Giliomee 1989].

The first railway in the Cape Colony, extending from Cape Town into the hinterland, and the agricultural district of Wellington, was opened in 1862, though principally for goods traffic, while the

first predominantly passenger service was opened between Cape Town and the southern suburb of Wynberg from 1865, both encouraging and facilitating the development of dormitory suburbs along the route [Urban Problems Research Unit 1990].

Close to Cape Town, areas such as Woodstock and Salt River were developed by speculative builders for the labouring classes that worked in the new industries. Salt River, in particular, became the home of the largest railway workshops on the continent, and one of Cape Town's largest employers. Much of Woodstock was developed between 1880 and 1920, with an emphasis on the speculative building of row housing and semi-detached houses by absentee landlords during the 1890s [Dowden n.d.].

Trams were also introduced to Cape Town during the closing decades of the nineteenth century [Coates 1976]. Like the gas works, the tramways were privately financed. A number of companies established routes across the town, and into the adjoining suburbs, first using horse-drawn, and from 1896, electric trams. The tram service to Green and Sea Point, in turn stimulated development in those areas.

The 1890s saw the building of a rival gas works in the neighbouring suburb of Woodstock. In the same decade, when existing water sources proved inadequate to the growing town, new reservoirs were built on top of the mountain, and water from these was used to drive turbines at the Graaf Electric Light Works as Cape Town finally switched from gas to electricity for street lighting after 1892. Walter Thom, an English surveyor, was contracted in 1892 by the Municipality to map the city for a new drainage scheme [Sims 1997: 25]. It is Thom's survey, completed in 1900, that forms the basis of the historic maps used in Chapter 5.

The South African War brought tens of thousands of refugees to Cape Town, and also swelled its transient population with the garrisoning of British troops. The resultant overcrowding, and importation of forage from Argentina for the British army's horses, led to a plague epidemic in the city. This in turn led to a range of initiatives, including the segregation of 'races' into different residential areas. Africans were forced to move from District Six to a location at Uitvlugt (later to become the 'garden suburb' of Pinelands). As Bickford-Smith has shown, a smallpox epidemic in 1882 had led to similar calls for the segregation of the races, as moral, economic and sanitary conditions were equated with race. 'Blacks' were regarded as 'dirty' and "sanitation and psychological discourse turned into institutional practice" [Bickford-Smith 1995: 105].

Whilst the city's infrastructure was overburdened by the enlarged refugee population, particularly with regard to public health, the port facilities were also found to be inadequate. New stores were built, cranes erected, and the coaling jetty (later referred to in this work as the Collier Jetty) commissioned for the first time [Bickford-Smith et al 1999].

After the war, the Cape experienced economic depression until 1909 [Playne 1910]. To combat this, the Municipality offered incentives to help establish local industry, helping establish "a cooldrink factory, a bakery and a wagon building works" [Jacobs 1986].

In 1910, the Cape Colony, Natal, the Transvaal, and the Orange Free State, were brought together to form the Union of South Africa. This was followed in 1913 by the amalgamation of the Cape Town,

Green Point, Woodstock, Maitland, Mowbray, Rondebosch and Kalk Bay municipalities into the Greater Cape Town Municipality [Todeschini & Japha 1990].

The First World War was a period of increased manufacturing output in South Africa, due mainly to the inability of Britain to provide what was required. After the war, however, South Africa was still importing more than ever [Callinicos 1987].

In the period between the two world wars, in both of which South Africa was allied with the Britain against Germany, South Africa shared in the effects of the great depression of the late 1920s and early 1930s. Thereafter the country experienced significant industrial growth, to which several government initiatives contributed. Predominant among these were the establishment of a number of 'state corporations', most importantly ESKOM and ISKOR. The most powerful economic sector in the country at this time was represented by the major mining companies. Both they, and the government owned South African Railways, needed cheap and reliable sources of electricity and steel. ESKOM was established to provide the former and ISKOR the latter. Underlying these initiatives was the political necessity of providing jobs for more than 100,000 unemployed 'poor whites', and developments in commercial agriculture which forced small farmers off the land [Clark 1994].

In industrialised Cape Town, the period was marked by the establishment of its first two industrial estates, in Paarden Eiland (1935) and Epping (1947), and the reclamation of some 480 hectares from Table Bay for the Foreshore Scheme [Urban Problems Research Unit 1990].

The widely-held myth that racially discriminatory practices were initiated in South Africa by the newly elected National Party government of 1948, has long since been dispelled. The infamous history of South Africa's apartheid years, and the subsequent transformation to democratic structures in the past decade, is outside the scope of this thesis. However, it is important to acknowledge the legacy of that history as it is exhibited in poverty, in unemployment, in poor public health, in a lack of education, and in a lack of

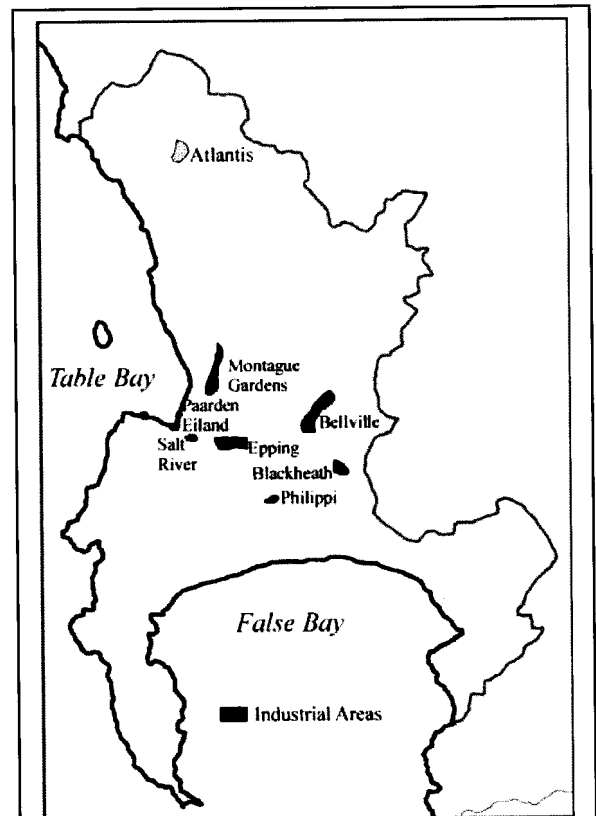


Figure 3
Cape Town: map showing principle industrial areas, 2003.

housing. These issues form the basis of the 'present and future' contexts within which any meaningful plan for conservation of these landscapes would need to be formulated.

Present and future contexts

Since South Africa's relatively peaceful transition to democratic governance, in 1994, it has seen two successive African National Congress (ANC) led governments in power at the national level, and ANC led governments controlling seven, and more recently eight, of the nine provinces.

Critical priorities for these governments have been, and continue to be, poverty alleviation and job creation, while housing, primary health care (particularly in respect of HIV/AIDS) and education are also ranked highly. Following the 1992 Earth Summit, in Rio de Janeiro, which produced *Agenda 21: a Global Plan for Sustainable Development*, the 2002 World Summit for Sustainable Development (WSSD) was held in Johannesburg, South Africa. The particular relevance of the WSSD to South Africa will be discussed in Chapter 8, though at this point it is necessary to emphasise the importance of Agenda 21 as the over-arching policy framework within which development, and thus also conservation, need to be considered.

Conservation, of both the natural and historic environments, is not, and perhaps cannot be expected to be, a priority for its own sake. Conservation of the natural environment may be seen in purely scientific terms (for example the fynbos of the Western Cape), in economic terms (most notably for attracting tourist dollars in places such as the Kruger National Park), and amenity value. South African National Parks (SANP), attempting to transform its staff and its visitor profiles to match more closely the demographics of the country, is the most public face of the state's commitment to conservation of the natural environment. South Africa's National Parks are justly world-famous, the oldest having been established for more than a century, and are regarded as a major draw-card for foreign tourists. Amenity societies, such as the Wildlife and Environment Society of South Africa (WESA), represent a substantial lobby group.

The historic environment has no sponsor analogous to SANP, and no amenity group to compare with WESA. The National Trust of South Africa is similar in name only to the National Trusts in countries such as Britain and Australia, and is not an effective lobby group.

Townsend [2002], noting that "for development to be sustainable, its management must be sustainable", offers a critique of the current morass of legislation governing (and often failing to govern) matters involving the environment, heritage and land-use management. Listing six separate pieces of relevant legislation, Townsend argues that the current system is "dysfunctional" that there is "incoherence of action between state agencies", and that radical overhaul is needed.

The replacement of the National Monuments Council by the South African Heritage Resources Agency (SAHRA), in terms of the National Heritage Resources Act (No.25 of 1999), has not yet led to any real change in the conservation of the country's heritage sites, and the Provincial Heritage Resources Agencies also provided for in this legislation have been slow to materialise. Along with an over-

abundance of bureaucracy, Townsend suggests that “engagement with ‘interested and affected parties’ is out of control”. Public participation is now seen, by Townsend, to have become part of the problem.

In a newly emergent democratic society, such as South Africa’s, consultation is fundamental to much of what needs to be done, and especially to the contentious, value-laden debates around heritage. Public participation is central to a range of guiding documents, from *Agenda 21* to the *Burra Charter*, and this thesis argues that there can be no such thing as too much consultation.

The historic contexts outlined above provide evidence of the important role of gas and grain in the economic, social and political development of their respective areas. The future contexts, of which *Agenda 21* is perhaps most important, provide a framework within which to consider the conservation issues arising out of recognition of that importance.

With the above contexts in mind, the following chapter sets out the methodology used to examine the networked industrial landscapes of gas and grain.

Chapter 4: Methodology

The hypothesis for this research is that there is value in viewing industrial landscapes as networks, and in assessing their role in the economic, political and social development of South Africa with a view to formulating appropriate policies for their conservation and management.

For the grain elevator case study, the descriptive element of the research incorporates a typology of the extant sites. In the descriptive chapters, a number of issues are addressed in considering the impact of networked landscapes on the development of the social, economic and political landscapes. Principal among these are questions regarding power, ownership, and access to resources. Three broad problem areas are suggested, for which parallel questions may be asked of both the selected case-studies.

The first question, and from an archaeological viewpoint, perhaps most important, is what do we learn by an examination at the fabric, and in particular how does this add to our understanding of the role of networked landscapes in development? This in turn leads to consideration of whether the introduction and adoption of these networks continues to manifest itself today, and of the process by which what was once new technology has become obsolescent.

The second question relates to the issue of location and spatial distribution, and considers how these reflect patterns of power and ownership?

The third issue relates to the roles of the various stakeholders, past and present. Thus questions are raised with regard to the ownership and management of these networks, their employees and their customers. Importantly, also, questions are raised regarding the relationship of these networks to the communities within which they were located.

The first case study examines the material evidence left by the Cape of Good Hope Gas Light and Coke Company (later known as Cape Gas); a privately owned enterprise whose late nineteenth century gas works was closed, and quickly demolished, in the 1990s. In this instance, the “landscape” principally comprised the sites of two gas works, and the network of supply pipes that linked them to each other and to their customers, both domestic and industrial.

The second case study is very different, and comprises a state funded, nationwide system of grain elevators, established in the 1920s for the express purpose of increasing the country’s maize exports. Built for the South African Railways and Harbours Board, only one of the thirty-five elevators has failed to survive. Some of the sites have been heavily modified, and adapted as part of more modern, and considerably larger, grain handling facilities, while others have fallen into dereliction. In both case studies, the spatial organization of the networks is considered in terms of their principle nodes (the gas works and the elevators) and the inter-connecting networks (the pipes and the railways).

This question may be split into two strands: the historical, and the contemporary. A greater understanding of networked landscapes is attempted through an examination of the material evidence presented by the two case studies, and looking forward, this thesis considers how such sites may be actively managed in the historic environment within a framework of sustainable development.

The research design and methodology follows logically from the statement of the research problems set out above. In order to construct an understanding of the networked landscapes examined in the case studies, great emphasis was placed on fieldwork survey to establish the extent and condition of the remaining material evidence. Each survey was backed up by appropriate archival research and desktop survey. Five categories of material evidence (landscapes, sites, structures, artefacts, images) were considered, supported by primary archival sources, appropriate secondary sources, and oral evidence.

The gas works was extensively photographed before and during demolition, and an understanding of the manufacturing and distribution process gained through interviews with staff and management. This material was linked to a close reading of the company's history, particularly during the nineteenth century, as recorded in Cape Town's daily newspapers. Historic maps, including an incomplete series of strip maps salvaged from the gas works site, were used to provide an overview of the distribution network as it was at the end of the nineteenth century (*Figure 4*).

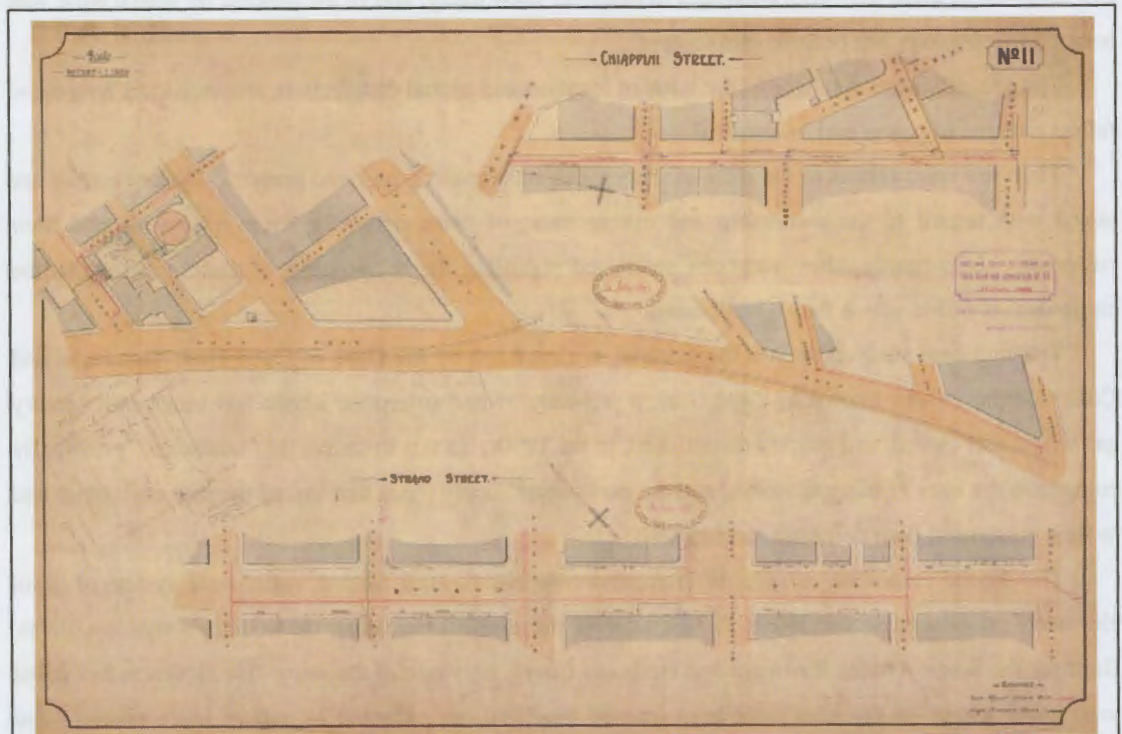


Figure 4
Strip map showing site of Long Street Gas Works, 1895.
[Cape Gas]

Archival resources for the grain elevator network were largely concentrated in material published at the time by South African Railways and Harbours Administration, there being very little in the newspapers. Without the pressure of impending demolition, a far greater degree of detailed recording was possible with the Cape Town grain elevator site. Together with a field survey trip which enabled all the extant country elevators to be viewed, at the very least from the outside, an extensive database of these sites has been established and cross-checked to the archival evidence.

In both cases, use has been made of geographic information systems (GIS) to produce simple maps. In the base of the gas supply network, these have been overlaid on nineteenth century street maps of Cape Town.

As indicated in Chapters 2 and 3 there are indications of a limited understanding regarding the role of networked industrial landscapes in the development of South Africa. Furthermore, where the remains of such landscapes are deemed to be of value, policies for their conservation and management are inadequate. Given the harsh realities of South Africa's economic and social needs, and the government's stated commitment to the nation's sustainable development, the key question for this thesis can be stated as follows:

Can networked industrial landscapes, built to facilitate economic, political and social development, be conserved and re-used to further developmental objectives in the future?

As stated previously, the initial motivation for researching the networked landscapes of both gas and grain was an immediate threat to the survival of the archaeological evidence. However, it is clear that while the landscapes presented by these two case studies have many contrasting characteristics, they both fall within the broad domain of industrial landscapes.

The broad methodological approach used for this thesis is based on the value-led conservation work of Kerr [1985 & 2000] and Clark [2001], and thus combines the descriptive with the evaluative, to provide the basis for designing conservation and management policies, within a framework of sustainable development.

The process of data collection has largely consisted of describing the basic characteristics of each site, where possible indicating how they have been built and modified, how they operated, and the reasons why, in some cases, they no longer retain their original function.

In order to construct an understanding of the networked landscapes examined in the case studies, emphasis was placed on fieldwork to establish the extent and condition of the remaining material evidence, complemented by primary archival sources, appropriate secondary sources, and oral evidence. In describing the material and documentary evidence, focus was maintained on the following issues:

- the original role of networked landscapes in development;
- ways in which these landscapes are manifested in the present;
- the process by which their technologies have become obsolescent;
- ways in which location and spatial distribution reflect patterns of power and ownership;
- the roles of the various stakeholders, past and present, in particular the owners, managers, employees, customers and communities;

- public perception of the image and status of these industries.

Furthermore, each of the four analytical models described by Clark [2001] has had a role to play in the recording and understanding of the networked landscapes of gas and grain:

- PHASING: the development of the gas works over two sites has been described in detail, and site plan of the Woodstock works prepared from available maps (see *Figure 28*);
- NUMBERING: though numbering was not used for the gas works, due principally to time constraints, this model was used extensively for the Cape Town grain elevator site (see Appendices D and E).
- TYPOLOGIES: this technique was used as a method of structuring and presenting the information relating to the country elevators;
- ROOM DATA SHEETS AND GAZETTEERS: this principle was used to prepare the two databases for the entire network of grain elevators, with particular emphasis on that at Cape Town (see Appendix).

Strategies for examining the two industries could not be entirely consistent, for reasons which will be explained. Nonetheless, a common descriptive approach, grounded in the practice of industrial archaeology, could be formulated, and it will be seen that five categories of material evidence were considered: landscapes, structures, sites, artefacts and images.

The gas supply network in Cape Town and the Woodstock gas works

The nature of the evidence relating to the Cape Town's gas supply network is not homogenous. Thus it was possible to gain an understanding of the twentieth century Woodstock site by direct observation, supported by reference to text-books and engineering drawings, and with assistance of serving employees. Such an approach, however, was not possible for the nineteenth century Long Street works, or for the distribution network. In this case, much reliance had to be placed on newspaper accounts, maps and contemporary images. This lack of continuity and consistency of evidence in turn required different methodologies to be applied.

Data collection for the Cape Gas site at Woodstock commenced in 1995 with an initial site orientation visit, guided by staff of the gas works. At this time the works was still fully operational. Access to the site was severely restricted while Cape Gas was still operating, principally due to Health and Safety regulations. Thus it was only in February 1996, during the final month of operation, and in August 1996, during demolition, that unlimited access was granted to the site.

Two aspects of the networked landscape of gas supply in Cape Town needed to be recorded in that brief window of opportunity. Firstly, the buildings and plant on the site; and secondly the processes which were involved in the manufacture and distribution of gas. The third aspect, that of the relationship between the Woodstock site and the distribution network that it served, was held over until after closure.

The buildings and plant which comprised much of the materiality of the Woodstock site were largely documented in a comprehensive set of engineering drawings held in the company's drawing

office. These drawings, together with a limited amount of recent business records, were secured at the time of closure, and transferred to the custody of the State Archives.

Consideration was given to documenting the exterior of the principle structures (the retort houses) using photogrammetry. Unfortunately, this was considered not feasible by the photogrammetry section of the University of Cape Town's Department of Geomatics. This was largely due to the nature of the site and in particular the difficulties involved in obtaining proper sight lines. Whilst photogrammetry might arguably have been possible had funding been available to provide scaffolding for proper access, this was not the case.

The production of detailed measured drawings of the site was also considered, but given the scale, complexity and nature of the site, the limited time available, and the existence of the company's own engineering drawings, this option had also to be discounted. Detailed recording of the site was, therefore, limited to still photography and video recording. Photographic recording of the site continued after closure and during subsequent demolition, with colour transparencies being taken in most cases.

Considerable guidance to the operational processes of the site was provided by various members of the Cape Gas staff during the final month of production. Sadly, most of these staff members were men who had worked at the site for many years and for whom closure meant redundancy. Ideally, formal interviews would have been conducted with a representative number of individuals to produce an oral history of recent activities at the site, but this was not within the capacity of this project.

At the request of The City of Cape Town's Urban Conservation Unit, the council's Electrical Department visited the site on the final day before closure, and using broadcast quality equipment, recorded the operation of the site under the guidance of this researcher.

The lack of formal interviews notwithstanding, the information provided, together with the photographic and video records, provided an enhanced understanding of the site's operation. This was later supplemented by reference to a number of standard texts produced for the managers of gas works such as this.

The Woodstock gas works was the second of Cape Town's two gas works. The first, at Long Street, was built in 1845, closed in 1910, and subsequently built over, most recently in the 1970s. An office tower block with an underground parking garage now stands on the site, and the archaeological potential of the site is minimal. Understanding of the site, and how it operated, is thus limited to the documentary record, and in particular to the newspaper archive. The value of referring to the newspaper archive is that the political and economic dynamics of the time are played out in its pages. By close reading of the archive, a detailed history of the nineteenth century works has been possible.

The relationship of the Cape Gas site to the distribution network it supplied was best demonstrated by reference to the documentary record and by reference to a series of maps which were held by the company. Most interesting, not least because they had not previously been accessible to researchers, was a series of large scale hand-drawn strip maps of Cape Town, dating to between 1895 and 1909, and showing the routes of the gas mains then extant in the city (*Figure 4*). These maps have been scanned at a high resolution, and will in due course be deposited with the State Archives.

The highest number in the sequence of maps found is 45 though only twenty-nine of the maps were found. Using a desktop mapping programme (ArcView GIS) the routes of the 1890s gas supply pipelines were used to create a new data layer overlay on current topographical and cadastral datasets provided by the City of Cape Town. These in turn were overlaid on scanned and rectified maps produced in the late nineteenth century. Initially this work was done using only copies of the small-scale index sheets of the historic maps. Subsequently, new scans of the original large-scale historic map sheets have been produced and made available for this research by Elliot Jordan.⁶ Using these new scans, much greater accuracy has been possible than hitherto. The mapping of Cape Town during the nineteenth century will be discussed further in Chapter 3.

A number of artistic representations of nineteenth century Cape Town were examined for references to the networked landscape of gas supply. In particular, attention was paid to panoramic views which might show the Long Street gas works, and to those wherein gas street lamps were portrayed. Attempts were made to map the data thus derived as an additional layer on the GIS generated maps, though this did not prove particularly effective.

Archival sources, principally newspaper reports, were reviewed at the South African Library. This work was enormously aided by prior research done by Peter Coates, then Deputy Director of the South African Library. All English language newspapers published in Cape Town between 1840 and 1996 were scrutinised, together with a number of other local publications of the same period. Of the newspapers used, *The South African Commercial Advertiser* and *The Cape Argus* were the most useful. At the British Gas Archives, in Manchester, trade journals such as *The Journal of Gas Lighting*, *The Gas Journal*, and *Gas World*, were also checked for references to Cape Town's gas industry. These primary sources revealed much about the political, social and economic contexts within which the gas works operated, while secondary sources of the sort used by the gas works managers themselves, provided critical technical information. A number of historical accounts of the British gas industry, and some of its major role players, provided further contextual history.

A detailed review was attempted of the letter books and archival records of the Town Clerk for Cape Town, for the period from the inception of the new municipality in 1840. The letter books for the period from August 1840 to February 1843 revealed a wealth of information about municipal issues such as water-leadings, markets, quarries and the paving of streets. However, thereafter the sequence of letter books is incomplete, and no correspondence with the gas company was found.

The cultural significance of the Woodstock gas works was not formally assessed as part of this research, it having been demolished before a satisfactory case could be made for its proper consideration. A 1987 Conservation Study of Woodstock, however, had recommended the site "for inclusion in a listing of significant buildings and sites" [Munnik et al 1987].

Perhaps one of the most important points to note regarding the methodology employed for the gas supply case study, is that it was both facilitated and constrained by the rapid closure and demolition of the

⁶ Elliott Jordan was working on a Masters Dissertation at the University of Cape Town (2003), exploring the methodology for producing a historical atlas of Cape Town.

Woodstock site. With the second case study, the methodology was also informed by the sense that the Cape Town site was nearing the end of its working life. As will be seen, this indeed transpired during the course of the research, and the site is now derelict.

The grain elevator network built by the South African Railways and Harbours Administration

In the case of the grain elevator system, the data collection phase of this research was commenced with an initial site orientation visit to the Cape Town elevator in 1995.

A more methodical approach to the networked landscape of the grain elevators was possible, with 100% of the total population of extant sites being inspected and recorded. In addition, the Cape Town elevator was subjected to a far more detailed recording process than the other sites. This closer scrutiny was in part a response to the closure, and possible demolition of the site, and in part a matter of geographical convenience.

Like the gas works, the Cape Town grain elevator was fully operational when this research was commenced, and closed during the research period. As stated in Chapter 1, whilst the gas works was demolished in 1996, in 2003 the Cape Town elevator remains waiting an uncertain future.

Again, measured drawings were eschewed in favour of still and video photography. Documentary evidence relating to the site included an extensive collection of engineering drawings, this time held by Portnet (in the Engineering Department of the Port Captain's Office). Additionally, an extensive photographic archive (over two hundred dated black and white prints) showing the construction of the Cape Town elevator was also found at Portnet. This collection was re-photographed, using colour transparencies, and has subsequently been digitised.

The archives of South African Railways and Harbours are now housed in the Transnet Archives, in Johannesburg. This archive produced additional documentary and photographic material relating to the construction and early use of the system.

Further documentary research of primary resources relating to the grain elevator system was undertaken at the National Archives in Cape Town and Pretoria.

For data collection relating to the Cape Town elevator, a database (MS-Access) was constructed, and a standard data form used as the basis of a descriptive inventory (see Appendices D and E). Each individual structure on the site was assigned a unique letter code. The steel frame of the principle structure (known as the Working House) comprises thirty-two cells formed by a four by eight grid on the horizontal plane. On the vertical plane, there are ten major levels, from the floor of the basement to the roof. All artefacts and other attributes of the Cape Town elevator were assigned context numbers, placing them within a specific structure, horizontal cell and vertical level.

This research is very much indebted to Robert Hurn, then the Operations Manager of the site, who spent a great deal of time ensuring that the inventory accurately described the function of the elevator and its component parts.

Understanding of the functioning of the Cape Town site was further enhanced by reference to a series of General Manager's Bulletins, Annual Reports, and Magazines produced by South African Railways and Harbours. Particularly useful were those produced between 1923 and 1928.

As will be explained in Chapter 6, the grain elevator at Cape Town harbour was part of a network that comprised another similar, though larger, site at Durban harbour, and a series of thirty-three smaller inland elevators in the grain producing areas. The approximate locations of these sites were established by reference to the documentary record, and field trips undertaken to visit each site to establish their current status. A database (MS-Access) was constructed to record the data, for which a standard data form was used as the basis for describing various attributes of the sites (see Appendices D to F). It was neither appropriate, nor possible, to record the inland elevators, or the Durban port elevator, in the same detail as that of the Cape Town elevator. This was due partly to resource constraints, and partly to varying degrees of access to the sites. By reference to the field study, supported by the documentary evidence, a basic typology of the grain elevators constructed by South African Railways and Harbours in 1924 has been possible.

Each of the inland elevator sites was photographed using a digital camera, and conventional colour transparencies were used for the Durban site. A hand-held GPS unit was used to provide accurate location data for each site, and maps created using the ArcView GIS desktop mapping software.

Two long-standing employees of the inland elevators were interviewed during this research, and their testimonies are included to support the descriptive data gathered.

Following the descriptive phase of this research, in which data on which to base an understanding of networked industrial landscapes, and their role in development in South Africa, the second phase of this research was evaluative and design oriented, being intended to facilitate the formulation of conservation and management policies, within a framework of sustainable development.

As in the descriptive phase, the Cape Town grain elevator was subjected to a more intensive consideration in the evaluative and design phases of this research. This coincided with a commission from the Victoria and Alfred Waterfront Company, the owners of the site, for a draft conservation plan. For reasons which will be explained in Chapter 7, this plan, presented in August 2001, remains in draft form.

The Durban port elevator, and the surviving inland elevators have not been assessed in the same detail as the Cape Town site. This is principally because it is only the Cape Town site that appears to be under immediate threat.

Assessment of the cultural significance of the Cape Town elevator was based on guidelines provided in the Burra Charter 1999, and guidelines in the National Heritage Resources Act, with reference to internationally accepted norms. A statement of significance was written for the site as a whole, and the cultural significance of individual attributes of the site was recorded in the inventory. The criteria for this evaluation will be set out in Chapter 7. Based on the perceived cultural significance of the site, policies were then proposed for the retention of cultural significance embedded in the site.

Synthesis

Finally, consideration was given to how the features of networked industrial landscapes can be reused in the cause of future development. This was done by close reference to Agenda 21, in which potential values other than cultural significance could be considered. Possible alternative values, including educational values, economic values, resource values and recreational values, will be discussed further in Chapter 8 (on page 195).

In this way, it is possible to address the key question posed in Chapter 1. *“Can historic networked industrial landscapes, built to facilitate economic, political and social development, be conserved and re-used to serve similar purposes in the future?”*

A number of shortcomings are apparent in the methodology presented above. With regard to the assessment of significance for the Cape Town grain elevator, the most important shortcoming of the above process is the limited consultation with other stake-holders. The lack of broad public participation has limited the value of the assessment of significance. This is as much a reflection of the inadequately developed public participation processes around matters concerning the historic environment, as it is of the site’s owners reluctance to engage with a wider public at this stage.

Access to individual sites in the case study networks was extremely variable. Thus whilst the interiors of some of the inland elevators were examined in detail, others were only viewed from behind a boundary fence. The difficulties of accessing the gas works site have already been described above.

As with many industrial sites, operational or derelict, health and safety issues also restrict what is possible in terms of recording and analysis. Hazards range from the physical attributes of the structures and processes, such as their heights, low dark spaces, insecure ladders, excessive noise levels and unsecured void spaces, to the presence of toxic materials. In the case of the gas works, contamination is a serious issue, and one which even in 2003, some years after demolition, is still to be adequately addressed by the relevant authorities. This point will be discussed further in Chapter 5. The securing of soil and air samples from the gas works site during its operation, and during and subsequent to demolition, would have provided additional material evidence of the site’s operation, but was not within the scope of this research.

Language is another limiting factor in this research, with a reliance on English, to the exclusion of other local languages such as Xhosa and Afrikaans. Most of the labourers at the Woodstock gas works and the Cape Town grain elevator were Xhosa speakers, and inter-actions with them was therefore largely mediated through English speaking management at each site. At the inland grain elevators still in operation, most of the management and staff are Afrikaans speaking, and again communication was limited.

With regard to the documentary evidence, the changing nature of the newspaper reports in the early twentieth century has created an inconsistent level of detail for the story of gas supply in Cape Town. The incomplete nature of the nineteenth century archives of the Cape Town Municipality also negatively impacted the results of this work.

The above limitations notwithstanding, it is nonetheless apparent that a range of methodologies have been brought to bear as appropriate, enabling a composite picture to be formed of the networked industrial landscapes of gas and grain. By examining these industries in terms of landscape, site, structure and artefact, supported by extensive reference to images, maps and other archival sources, a comprehensive understanding is possible. Based on that understanding it is then possible to consider options for appropriate management in the future.

Chapter 5: The Networked Landscape of Gas Supply

Introduction

This chapter examines gas supply in Cape Town as the first of two case studies. Gas supply is characterised in this example by being a privately funded enterprise, operated at a local level. The two gas works formed nodal points of a network distributing gas for public, domestic and industrial use through a contiguous network of buried supply pipes. The networked landscape, though largely underground and invisible to the public gaze, has similarities with supply systems for water and for hydraulic power.

Recent historical studies have addressed many of the issues of 19th century municipal politics, whilst others have considered the specific histories of Cape Town's waterworks and tramways systems. This research departs from previous works in two fundamental ways. Firstly, it argues that the provision of a gas supply network played an integral role in the development of nineteenth century Cape Town; and secondly by identifying what, if any, physical evidence remains for this provision, it also seeks to inform the sustainable development of the historic environment in today's city.

The origins of gas supply in Britain, and elsewhere, are examined, followed by a detailed history of Cape Gas drawn principally from contemporary newspaper accounts and other archival records.

Included within the history is discussion regarding the ways in which gas lighting in Cape Town was depicted by nineteenth century artists. Portrayal of gas lamps not only contributes to an understanding of the contemporary view of such innovations, but also shows how such depictions become important material evidence in their own right. It will be shown that the provision of public street lighting by gas was seen as a moral and political battleground; and that this particular aspect of Cape Town's material culture was represented by commentators and graphic artists of the day as symbolising Cape Town's emergence as a "modern" industrial city.

The next sections explain the operation of a 'typical' gas works, based largely on standard technical texts such as Meade's *Modern Gasworks Practice* [1921], and then describe the specific operation of the Woodstock gas works. The description of the Cape Gas works at Woodstock is as a result of extensive fieldwork undertaken in the final phase of its operation and during the subsequent demolition.

As stated previously (page 34 above), the evidence on which this chapter has been based is not homogenous. Thus for the nineteenth century the emphasis is on archival sources, principally newspaper reports. The site of the original gas works is now occupied by high-rise office accommodation, and there is no physical evidence to be discerned. However, as the frequency of newspaper reports is far less in the twentieth, and the Woodstock gas works was still in use when this research commenced, greater emphasis is placed on direct observation for the later years.

Finally, this chapter begins to raise some of the linked questions that a modern perspective brings regarding the potential ‘heritage value’ or ‘cultural significance’ of a site such as Cape Gas. Is there any reason why anyone should care about such a site, and if so, what should be done about it? The conservation issues will be more fully explored in Chapter 7.

The centrality of contemporary municipal politics to the gas company’s role as a privately owned ‘public utility’ is clearly seen as the historical narrative unfolds, and demonstrates how the introduction of public utilities in Cape Town was both motivated and impeded by the political landscape of the time.

Two guiding principles were used in the construction of this chapter. First was the integration of archival and historical data, much of it in the form of newspaper reports, with contemporary map data and images of Cape Town. To achieve this, modern topographical and cadastral data, supplied by the City of Cape Town in digital form, were overlaid on a series of scanned historic maps using the ArcView GIS software package. Second was a focus on references to fabric and materiality, and thus there has not been an undue emphasis on the economics or profitability of gas supply.

A review of graphic representations of the city produced further spatial data, enabling the mapping of some of the streets and key buildings provided with gas lighting in nineteenth century Cape Town. Though it has to be acknowledged that the use of such a data source leads to a degree of pre-selection, it does begin to indicate which areas were considered important enough to be lit. It also provides an indication as to which aspects of the town were thought worth recording by the artists of the day, and by those who commissioned them, as they sought to reflect the modernity of the colony. It consequently does not reveal anything about the poorer and politically less significant areas other by omission.

Alexander Wilson, for many years the manager of the gas works, carried out a comprehensive survey of Cape Town in 1857, which he subsequently revised in the 1870s. Regrettably no copies of the 1857 map have been found, though one copy of the 1870s revision survives. A series of hand-drawn strip maps, produced by the gas company in the 1890s, has also been incorporated with the GIS data sets, as has a series of maps commissioned by the municipality from Walter Thom in 1898. The Thom maps show gas pipes, manholes in the streets, lamp poles for the new electric lights, and tramways.

The origins of gas supply

The earliest uses of gas are reputed to have been in China, some four thousand years ago. However, in modern times some of the earliest experiments were undertaken in Britain, by a Lord Dundonald, seeking ways of extracting tar and pitch from coal. Also in Britain, on the west coast of Cumbria, a Whitehaven land-owner erected a chimney and flue to draw off methane gas, known colloquially as ‘firedamp’, from his coal mine, and lit the resulting flare.

The potential for producing and using gas, in its own right, rather than simply as a by-product of tar and pitch production, is generally attributed to William Murdoch (also known as Murdock). The Soho Foundry of Matthew Boulton and James Watt supplied pumping engines and other equipment to the mining industry, and it was in 1792, while working as an engine erector and agent for Boulton and Watt,

that Murdoch built a small gas plant at his house in Redruth, Cornwall. He heated coal in a sealed vessel, and used the resulting gas to light his home. Murdoch's work with Boulton and Watt led to them installing a gas lighting plant for the Lancashire cotton mill of Phillips and Lee in 1805, a move that was to prove highly significant in the development of the factory system because it enabled longer working hours to be established. Over a period of three years, Murdoch lit the entire mill, together with Lee's residence and a short stretch of road. To do this he used 271 'Argand Burners' and 633 'Cockspur' lights, said to be equivalent to 2,500 tallow candles, yet costing approximately a quarter of the price [Gledhill 1999: 6].

Contemporaneous experiments had also been made by Philippe Lebon, working in Paris in the 1790s. Lebon's experiments used wood to make gas, and were witnessed by the German entrepreneur Winsor (also known as Winzler). Whilst Winsor was not himself a scientist, he recognised the



Figure 5

Cartoon by Thomas Rowlandson, *A Peep at the Gas Lights in Pall Mall*, 1809.

from left to right:

1. "The coals being cleaned produce tar or paint for the outside of houses – the smoke passing thro' water is deprived of substance and burns as you see."
2. "... if this man brings fire through water we shall soon have the Thames and the Liffey burned down, and all the pretty little herrings and the whales burned to cinders."
3. "What a pretty light it be, we have nothing like it in our county."
4. "Aye friend, but it is all vanity. What is this to the inward light?"
5. "'If this light is not put a stop to, we must give up our business. We may as well shut up shop."
6. "True my dear, not a dark corner to be had for love or money."

[Gledhill 1999: 1]

commercial possibilities of what he had seen. Arriving in London, he replicated Lebon's experiments before public audiences, and tried to win backing for the commercial exploitation of the process.

What made Winsor important to the history of gas supply was his vision was of distributing gas from a central gas making plant, thus freeing the new enterprise from the constraints inherent in having separate plants for each site where it was to be used. In 1807, Winsor successfully demonstrated the potential of the new light source at London's Carlton House, and in Pall Mall, and proved himself the consummate showman, if not scientist or businessman. A cartoon by Thomas Rowlandson (*Figure 5*), reproduced in many histories of the gas industry, provides contemporary comment on Winsor's show. Nonetheless, in 1807 Winsor's endeavours led to the establishment in London of the Gas Light and Coke Company.

The history of the Gas Light and Coke Company is detailed in Everard's company history, originally published in 1942 [1992]. The Gas Light and Coke Company needed parliamentary approval before it could be properly established, with rights to dig up streets to lay pipes, and to raise the necessary capital. Murdoch, and by association Boulton and Watt, attempted to assert their sole claim to rights over the process, but there was also another significant reason for their contestation of the Bill. Boulton and Watt were concerned that some of the workmen, currently in their employ, would be lost to the new concern with an attendant loss of skills and specialised knowledge. Although they successfully opposed the original Bill in 1809, the legislation was passed at the second attempt, and the Royal Charter subsequently granted in 1812.

Whilst giving the new company rights to operate for 21 years in the cities of London, Westminster and Southwark, the Act also committed it to raising a capital amount £200,000 within three years, and to making provision for public street lighting wherever it laid its mains. The Act also proscribed the creation of a monopoly, the selling of gas appliances by the company, and the payment of dividends from capital, while allowing that no maximum price be set.

As the company began to establish itself, among the earliest proposals were those to light the approaches to the Houses of Parliament, as well as the home of one of the company's directors. The new company employed Murdoch's former assistant, Samuel Clegg, as its engineer in 1813, and set up what was to become the "first permanent gasworks ever to be erected for public supply" [Everard 1992].

Prior to this time all services, such as lighting, night-soil removal, and paving, had been controlled by and within each parish, but a characteristic of the new utility was that it was the first to cross parish boundaries. The benefits of public street lighting had already been acknowledged, with London being described by Everard as a "a city of narrow streets, courts and alleyways, full of dark corners which at night provide hiding places for petty thieves and pickpockets." He continued, "the more progressive authorities were quick to see the advantages of brightly-lit streets in preventing crime, particularly if the lighting could be obtained at lower cost than that of oil" [Everard 1992: 33]. It will be shown that this motivation was to be echoed in Cape Town, some thirty years later, when gas street lighting was first proposed there.

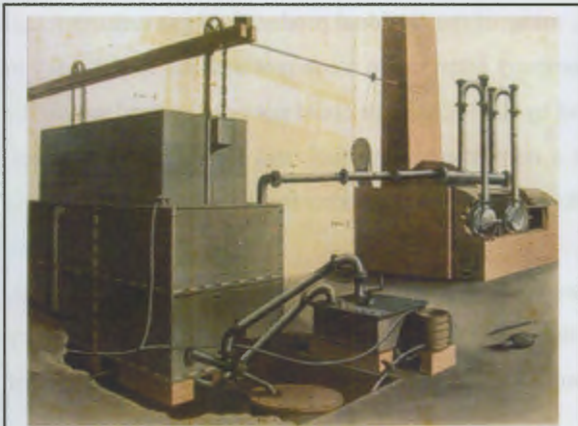


Figure 6 Early gas works illustrated in Accum's *Treatise on Gas Light*, 1818.

[Accum 1818: fig.3a]

In London, reflecting acceptance and take up of the new technology, the system was extended towards London's 'West End' creating a need for additional production capacity. Other companies established themselves in competition to the Gas Light and Coke Company, and insurance companies agreed not to charge additional premiums for gas lit houses [Everard 1992: 51]. Experiencing frequent problems with the quality of the materials it needed for its gas holders and mains, in the early days the company experienced more problems in executing orders than it did it first securing them [Everard 1992:

44]. Also among the major concerns for the gas companies were the economic and reliable sourcing of coal; setting up their works, with attendant storage and distribution systems; purifying the noxious smelling; and disposing of the residual and waste products of the gas-making process.

As competition between the various London based concerns increased in the 1820s, boundaries between their supply areas were drawn and re-drawn [Everard 1992: 86-97], and various means were sought to reduce costs and improve operating efficiency. By 1827, the Gas Light and Coke Company was chartering boats to bring coal from Newcastle to its various works in London, in order to make it less reliant on third party suppliers.

Wrought iron was consistently found to be the most efficient material for the construction of retorts. Though numerous attempts were made to found alternatives, including various trials of retorts built from refractory clays, it was only in 1831 that cast-iron retorts were used for the first time.

The foul odour of town gas was always, and somewhat ironically, regarded as one of its safety features. The characteristic smell meant that leaks were easily identified, and more speedily attended to. However, purification was still necessary, not only to remove the worst of the smell, but also the tar and ammonia that would build up in mains and service pipes and block supply. A process that used wet lime was first tried, but used a lot of water and meant that additional problems were created in disposing of the foul water, and the spent lime from the process, known as 'blue billy'. It was to be 1841 before an effective dry lime purification method was introduced.

It was Clegg, again, who was credited with the invention of the first gas meter and who was tasked with mapping the company's distribution system "distinguishing the position of siphons, crosses, bends etc with their respective distance from the kerb stone" [Everard 1992: 69]. Gas mains were laid at the company's expense, and had to be kept close to kerbs in order to minimise disruption of roads and pathways. Lamp posts, for public street lights, were first introduced in 1815.

Though purification was a continual problem, many of the 'residual products' of gas making found ready markets. In 1818 the Gas Light and Coke Company entered into a contract with the Royal Navy to supply them with refined tar [Everard 1992: 89], and by the 1830s coke could not only be used within the gas works to fire the retorts, but was also sold as a domestic heating fuel, and for firing locomotives. Ammonia products works meant that many gasworks also had ready markets for the sulphate of ammonia which they produced.

Clegg's innovations notwithstanding, meters were not generally used before the 1830s. Prior to this, charging had been based on the number of burners that a consumer used. This proved very unsatisfactory as there was no agreed standard on either the pressure the gas was to be supplied at, or on the types of burners to be used [Gledhill 1999].

Thus London's adoption of Winsor's notion of gas being supplied through a distribution network from a central works gradually became the model for similar enterprises elsewhere in Britain, its colonies, and the rest of the world. Thirty-five years after Winsor's demonstration, gas lighting arrived in Cape Town.

The history of gas supply in Cape Town

The introduction of gas to Cape Town

This section focuses on the history of the gas works in Long Street, and in Woodstock, up to the time when the Long Street works was demolished, in 1910.

The earliest evidence for public intervention in the provision of lighting for Cape Town's streets appears in 1809. At this time the Burgher Senate, which acted in an intermediary role between the Colonial Government and the people of Cape Town, encouraged householders to put up oil lamps on the corners of their houses. This was to be done at the householders own expense, and it is not recorded how well accepted the idea was [Shorten 1963: 93].

As discussed in Chapter 3, Cape Town of the 1840s was a small town, with an estimated population of less than 20,000 people [Shorten 1963: 119]. In Britain, while the Reform Act was transforming national and local politics [Fraser 1979: 5], the abolition of slavery was transforming both the demographics and the economy of Cape Town. Former slave owners, financially compensated by the Colonial Government, invested in land and property.

The first recorded use of gas in Cape Town occurred in June 1842, at was then known locally as 'The Scotch Church'. The Presbyterian Church of St Andrew, in Somerset Road, had a small plant installed to produce gas from whale oil. With a whale factory located close by at the end of Long Street, supply of the raw material was not a problem, and it was claimed that gas made from whale oil gave a better light at a lower cost than the gas made from coal was used in Britain [South African Commercial

Advertiser 22 June 1846].⁷ It seems entirely appropriate that it was the church that was the first to bring light to the darkness that was perceived to exist in nineteenth century Cape Town.

The plant, comprising a gas producer and six burners, was installed and paid for by James McGregor, one of the church elders. McGregor, originally from Scotland, lived in nearby Boom Street [Cape of Good Hope Almanac 1842]. As a stonemason, he frequently carried out contract work for the new Municipality, in 1841 being regularly commissioned by the Town Clerk to repair, relay or cover gutters and drains, as the Municipal authorities began their programme of improvements⁸. It was reported that the lighting worked to “excellent effect” [Cape of Good Hope Almanac 1843].

In 1843, a year after McGregor’s successful endeavours to light the Scotch Church, the Cape Town’s Board of Municipal Commissioners received proposals from Thomson, Watson and Co, acting as agents for an “English Manufacturer and Contractor for Gas Works” for the establishment of a company to provide coal gas in Cape Town [South African Commercial Advertiser 11 Aug. 1866].

Early responses to this proposal included the opinion that this was “a ridiculous proposition”. An editorial in *The Cape Town Mail* supported the Municipality’s initial rejection of the scheme, claiming that Cape Town’s regular, parallel streets could be effectively lit with as few as ten “Bude” lights, properly deployed. The editorial argued that “London is becoming ashamed of gas” and supported the Commissioners’ rejection of “introducing such an antiquated absurdity in the ‘metropolis’ of South Africa” [Cape Town Mail 2 Sep. 1843].

An anonymous nineteenth century poem expressed the following cynical view:

Gasbags

I’m thankful that the sun and moon
Are both hung up so high
That no pretentious hand can stretch
And pull them from the sky.
If they were not, I have no doubt,
But some reforming ass
Would recommend to take them down
And light the world with gas.

[Anonymous, 19th century.]

Whilst being unwilling to become involved in the management of such a company, or indeed to invest in it, the Board nonetheless agreed in August 1843 to make land available for the building of the gas works, and to give permission for the laying of the necessary supply pipes [Cape Gas n.d]. It acknowledged the tendency of such works to become “great public utilities” and agreed that there would be considerable advantages to Cape Town if it was subsequently decided to light the streets. Because the Municipality had been able to give no commitments about street lighting, this early plan was abandoned,

⁷ One gallon of whale oil produced an average 90 cubic feet of gas. At 3,054 cubic inches per hour of oil, gas would yield light equivalent to 10.55 candles. Therefore one gallon of oil would supply light for 280 candles for two hours [South African Commercial Advertiser 1842-06-22].

⁸ National Archives, Cape Town: Town Clerk Letters Dispatched 1842 (1): 12 July 1841, 18 Aug. 1841, 23 Oct. 1841, 13 Nov 1841 all to James McGregor.

and local investors subsequently determined to start a Gas Company without depending on street lights [South African Commercial Advertiser 11 Aug. 1866].

The Cape of Good Hope Gas Light Company was formed in April 1844, at a meeting chaired by Harrison Watson. Provisional Directors were tasked with drawing up a Trust Deed, and Carl Ferdinand Heinrich, also known as Baron von Ludwig, was appointed Provisional Chairman [South African Commercial Advertiser 24 Apr. 1844]. Alexander Wilson, from Edinburgh, was appointed as the company's engineer, and was to serve as engineer and manager of the works until his death in 1890 [Cape Argus 13 Mar. 1890].

The new enterprise quickly began to source the necessary equipment with which to set up its plant, and in July 1844 called for tenders [South African Commercial Advertiser 27 July 1844]. In June of that year the Gas Company had already informed the Municipality that they had started works and that their engineer, Alexander Wilson, had gone to England to procure plant and machinery. It offered to arrange for Wilson to procure lamp posts if they wanted them, but they declined, not having made provision for them in the annual budget [South African Commercial Advertiser 11 Aug. 1866]. Further tenders were advertised in May 1845 for tanks and buildings [South African Commercial Advertiser 10 May 1845].⁹

By October 1845 the gas company was ready to lay the foundation stone for its new works [South African Commercial Advertiser 4 Oct. 1845], to be situated at the lower end of Cape Town's Long Street, close to the docks. The land was initially leased from the Municipality at £20 per annum for 15 years, but was subsequently purchased outright for £600 [South African Commercial Advertiser 11 Aug. 1866]. The foundation stone laying ceremony was a grand affair, and signals the importance with which this venture was seen in Cape Town. The ceremony, which took place on the 6th October 1845, was attended by the full 'Honours of Masonry', with tickets being issued to admit women to a viewing platform, while the men marched in procession from the Commercial Exchange [South African Commercial Advertiser 4 Oct. 1845]. The laying of the foundation stone was performed by the Governor of the Cape, the Honourable John Montague, and the South African Commercial Advertiser reported that "everything passed off in the happiest manner" [South African Commercial Advertiser 8 Oct. 1845]. Eighteen miniatures of the ceremonial trowel used by Montague were made for the occasion [Pama 1977], and presented to some of the ladies present. Sam Slys' African Journal [African Journal 6 Oct. 1845], which related in detail the names of all the men in the ceremonial procession, and the order of their going, noted that the builder was James McGregor, the same man who had been initially responsible for lighting the Scotch Church.

The ceremony was recorded by the artist, Thomas Baines, whose watercolour now forms part of the William Fehr Collection housed at the Castle of Good Hope (*Figure 7*). The scene depicts a large and mixed crowd, and an attempt is made to show broad interest in the event by portraying men wearing top

⁹ Tenders were required for 10,000 yards cast iron pipes, from 1½ to 4 inches with receivers, street boxes etc.; 18 Birch's Patent Slide Valves; a gasometer 36ft. 6in. diameter x 12ft. deep; 8 retorts; a hydraulic main; an iron roof for the retort house; a condenser; 3 purifiers; Patent Wrought Iron Welded Tubes with connections, cocks etc; 5,000 Stourbridge Fire Bricks and 2 tons of fire clay [South African Commercial Advertiser 27 July 1844].



Figure 7

Thomas Baines, *Laying the Foundations for the Long Street Gas Works*, 1845.

[William Fehr Collection, Castle of Good Hope]

hats, turbans, or the conical hats seen at the time as being identifiably ‘Malay’. Women also all wear hats, and carry parasols, while flags and bunting are seen draped over the site of the ceremony. Press reports described how the laying of the foundation stone of the “Gas Light Building” was carried out with the “usual forms and ceremonies in the sight and amid the hearty cheers of a vast concourse of good citizens.”

The speech by Baron von Ludwig, in his capacity as chairman of the gas company, as well as the terms in which he was portrayed by the *Commercial Advertiser*, is worth dwelling on. Von Ludwig, who had premises at 46 St George’s Street where he ran a snuff and

tobacco shop [Cape Argus 15 Sept. 1965], was described by the newspaper as “the intelligent, patriotic and active friend of improvement in this colony”. In his speech, the Baron described how the company was “not guided by mere sordid views of pecuniary gain, but that, by the first introduction of extensive gas works into this Town, they aim at something higher; namely, the contributing, in however small a degree, towards that general improvement in our religious, moral and social relations, which is so visible a sign of the present period of the Colony’s history, and they therefore leave the ultimate results to the All-merciful Disposer of human events; resting satisfied, that, if the first Members of the Society are not to enjoy the fruits of their labours, they will nevertheless prove of extensive utility to those who will succeed them. Thus it is the improvement of the town, as much as financial gain, that the company would have people believe is its driving force: not just a practical, utilitarian improvement that provides light to walk and work by, but religious, social and moral improvement” [South African Commercial Advertiser 11 Oct. 1845]. This theme was to be repeated over the remaining years of the nineteenth century, as opposing notions of Light and Darkness, popular with Christian reformers, were played out against each other.

Thus the gas company boldly asserts its role in the ‘religious, social and moral’ development of Cape Town, suggesting that this is at least as important to them as their own profit. It is appropriate at this point to remember Christie’s caution about the claim for Eskom’s role in the development of South Africa, previously referred to in Chapter Two [Christie 1984]. The gas company’s paternalistic view of ‘improvement’ appears to have encompassed all socio-economic strata of contemporary Cape Town only as far as public street lighting was concerned. Yet, as Christie has argued in respect of electricity, this could also be seen as a means of social control.

By March 1846, the London based company of West & Bradford, who claimed 26 years of experience as carpenters, plumbers and gas-fitters, had established premises at 6½ Market Square (now

Green market Square), and were advertising their services as gas-fitters [South African Commercial Advertiser 7 Mar. 1846]. In June 1846 the Municipality wrote to the company expressing the concerns of J Chisholm, Superintendent of Waterworks, who needed re-assurance that the laying of gas pipes would not damage existing water pipes. It also, for the first time, enquired about the terms under which street lighting could be provided [South African Commercial Advertiser 11 Aug. 1866]. In July of that same year, the gas company announced that it had received an consignment of fittings from England, and that these were now on display at the works [South African Commercial Advertiser 18 July 1846].

Although the gas company had been forced to raise additional finance at a Special General Meeting [South African Commercial Advertiser 25 July 1846], by September 1846 the gas works had been completed, and the buildings illuminated. Soon thereafter a joint meeting of Commissioners and Wardmasters met to discuss whether or not the streets should be lit and by November the Municipality had agreed to take an initial 100 lamps, for which the first contract was signed in March 1847 [South African Commercial Advertiser 11 Aug. 1866]. Less than three years after dismissing the idea as a “ridiculous proposition” [Cape Town Mail 2 Sep. 1843], the Cape Town Mail enthusiastically reported that “the streets of Cape Town were illuminated with the long promised brilliancy of gas” [Cape Town Mail 6 Mar. 1847].

The primeval darkness that from the earliest ages has brooded over South Africa during the former part of the night at this season, was yesterday evening suddenly dispelled, and the streets of Cape Town were illuminated with the long promised brilliancy of gas. Crowds of the inhabitants of all classes perambulated the streets, to enjoy the novel spectacle, and the general feeling of delight was everywhere manifested at the success which has attended this once pronounced ‘impossible’ achievement.

[Cape Town Mail 6 Mar. 1847.]

As 1847 drew to a close, the death of von Ludwig was announced in the local press. Whilst the South African Commercial Advertiser cited various decorations and awards he had received, no mention

was made of his endeavours with the gas works [29 Dec. 1847]. In the following year, De Lima’s Almanac recorded that 34C St Georges Street now housed the offices of the Gas Light Company [De Lima 1848].

Tenders for a new brick tank and boundary wall were called for in 1849. This may have been the boundary wall illustrated in a pencil drawing, by George Duff, entitled “*The Gas House, Cape Town*” (Figure 8). Duff, an English draughtsman, was also a relatively unsuccessful Cape Town artist between 1848 and 1856 [Gordon-Brown 1975: 153].

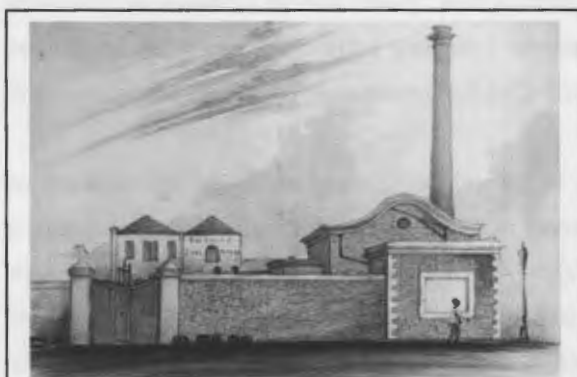


Figure 8
George Duff, *The Gas House, Cape Town*, c.1850.
[South African Library]

An unexpected benefit of the site layout was the proximity of the retort house to the boundary wall. Two decades later, the *Standard and Mail* was to report that this warm wall was popular with Cape Town's vagrants, who presumably found comfort and shelter against it [29 Aug. 1871].

The drawing shows one corner of the gas works site, with a rubble stone wall, into which a pair of wooden cart gates, themselves containing a wicket gate, is set. To the right of the image there is a stone built rectangular structure (perhaps the 'brick tank' referred to) and a larger building with a chimney. This is likely to be the engine house, rather than the retort house. A single figure in the foreground gives a sense of scale, and from that it would appear that the chimney stack was approximately 20 metres in height. A single gas lamp is shown on the street corner outside the works.

By 1851 demands were being made on the company to increase its supply of gas to the municipality for lighting the streets [South African Commercial Advertiser 26 Apr. 1851], while at the same time reducing the price [South African Commercial Advertiser 12 May 1851]. The supply of gas to private homes and businesses was tightly controlled, as one would expect given the infrastructure required for supply to be possible. The gas company advertised that it could supply fittings at cost plus 10%, but allowed that those who wanted to supply and install their own fittings were welcome to do so as long as they followed the gas company's rules.

The Cape of Good Hope Government Gazette [CHGGG 4 Feb. 1852] carried the gas company's annual report for 1851. This report provides some explanation regarding the construction costs and problems of capitalisation being experienced by the company and indicated that a further gas tank had now been built. These financial issues were to become increasingly problematic as the gas company embarked on what was to become a long-running argument with the municipality about the pricing and supply of gas.

The Municipal Commissioners were faced with signing a new five year contract with the gas company and this led them to re-examine the economics of the existing agreement. In particular there was concern that an alternative to coal might be found that would enable gas to be produced less expensively. The major part of the cost of gas was the extensive capital investment that the production and distribution infrastructure required and buildings, purifiers, gas tanks and pipes would be required whatever source of fuel might be used. The gas company's requirement for a five year contract was based on the premise that it would have to lay new mains to service additional areas to which the municipality wished to provide street lighting. As the company thought it unlikely that it would find new customers in these areas, a five year contract with the municipality would be needed if it was to recover the capital expenditure on the additional infrastructure [South African Commercial Advertiser 1 Dec. 1852].

As has been discussed elsewhere, the sale of residual products was all important to the commercial success of the gas company. Thus in January 1853 the company was inviting tenders for the purchase of the 'breeze' (small coke) it would produce that year [Supplement to the Cape Mercantile Advertiser and Shopkeepers Journal 22 Jan. 1853].

Towards the close of 1853, the company complained of high freight rates that it was now having to pay. This was to be an ongoing problem for a gas company so far removed from any source of coal. On this occasion the company considered, but declined, the idea of a temporary price increase to accommodate the additional freight costs [South African Commercial Advertiser 3 Mar. 1853]. It chose this time to dispose of its entire stock of fittings to J & W Fell, of (Green)Market Square, who took out an advertisement in the South African Commercial Advertiser to announce its acquisition [South African Commercial Advertiser 2 July 1853].

As the use of gas for lighting became more commonplace, retailers such as R M Ross began to import and sell gas heaters and cookers [South African Commercial Advertiser 2 July 1853], and Parke's Hotel was to advertise that gas was used for cooking on its premises. "By means of a simple and elegant apparatus", the advertisement claimed, gas could now be used for cooking as well as lighting. Its advantages were that heat could be regulated and that could be lit quickly and easily [South African Commercial Advertiser 12 July 1853].

At the annual Society of Arts Exhibition, the gas company promoted a number of new gas stoves with asbestos covered bars. The bars were made red hot by the gas, and were said to give the 'flickering effect of a coal fire'. The invention of a new gas fired water heater was also announced [South African Commercial Advertiser 11 Feb. 1854].

A leading article in the South African Commercial Advertiser of 13th April 1854 [South African Commercial Advertiser 13 Apr. 1854] argued strongly that 'joint stock companies', such as the gas company, had a major role to play in the Cape and elsewhere. It suggested that when large scale investment in infrastructure such as docks and railways was met from government finances, the burden of capital repayment and interest was met by the ratepayer or taxpayer. It contrasted this with investment by joint stock companies which not only provided 'profitable investment for hundreds of thousands', but also, because of its directors' financial stake, was more likely to be managed efficiently and economically.

As the Long Street gas works was finally completed, and a new contract for street lighting signed, the gas company's annual report for 1854 reflected a 10/- per share dividend payable to its shareholders [South African Commercial Advertiser 1 Feb. 1855]. The entire cost of the works was now said to be over £15,000.

'Light and Darkness'

"There is general complaint in this town, and with some reason, that in dark nights the lamps are almost useless." [South African Commercial Advertiser 1856-08-30] The Municipality was soon complaining about the quality and volume of the light provided under the new contract, which it claimed was inferior to that supplied previously. The new contract had incorporated two significant changes. Firstly, the amount of gas supplied had been reduced from 5 to 4.5 cubic feet per hour, and secondly, the lights were now required to be left burning throughout the night. The city's engineer, James Cameron, had used a photometer (to check the brightness of the lamps) and a gasometer (to check the volume of gas

supplied). He had found that only 3.6 cubic feet of gas per hour was being supplied to the lamp outside the Town House in (Green)Market Square, and the municipality therefore argued that it was now being overcharged for an inferior product. Cameron also reported on the results of his tests on “the one at the corner of Mr. Christian’s, in St Georges Street, and another at the corner of Grave Street, at the Public Buildings” [South African Commercial Advertiser 30 Aug. 1856].

The company was quick to dispute the municipality’s claims, and questioned the effectiveness of Cameron’s tests. The company’s engineer and superintendent of the works, Alexander Wilson, complained that he had not been given the opportunity of testing Cameron’s equipment, or verifying his results. Nonetheless, he felt confident enough to argue that over a sixteen mile network, it was unreasonable to expect all the lamps to be adjusted to the same degree, and wondered whether perhaps the municipality had chosen to highlight the worst three it could find. He also pointed out that the company had stopped using the larger “batswing” burners, which used 6 cubic feet of gas per hour, and had replaced them with a smaller lamp at the municipality’s request. The new lamps, as used outside the Town House, failed more often than the old, and were also subject to additional pressure loss due to the use of an integrated meter [South African Commercial Advertiser 13 Sep. 1856].

The company and the municipality continued to argue about schedules and terms of supply. The municipal commissioners complained that a number of lamps had not been lit on specific evenings, and the company, represented by Wilson, defended itself on the grounds that the schedules they were expected to work from were impractical to administer. Some lights were now being lit up to an hour and half before they were needed, whilst others were not needed at the scheduled times because of the moon phases. Wilson had therefore seen fit to balance these while trying to stay within the spirit of the agreement, and still provide a total of 2,225 hours per annum [South African Commercial Advertiser 19 Sep. 1857].

The basis of Wilson’s argument, that the schedules provided by the municipality were impractical, continued to be an issue as the parties approached the end of a contract due to end in July 1858. In September 1857 the company reminded the municipality that it need to know its requirements for 1858 by November 1857, and suggested that the new schedule should stipulate only the number of hours of light to be provided in any given month, and allow the company to use its discretion as to how that was to be managed. It argued that the costs of employing a lamplighter to light and extinguish lamps for periods as short as two or three hours, was often greater than the value of the gas used. At this time the company was operating 252 lamps along 16 miles of pipeline, and supplying gas at 12s per thousand cubic feet [South African Commercial Advertiser 19 July 1857]. This charge, the company pointed out, had not only to cover the cost of the gas, but also the wages of the four men who each had to travel about 15km each night to light and extinguish the lamps. Cameron, who by now had resigned his post as City Engineer, refuted the Gas Company’s claim that his schedules had been “almost, if not wholly, impracticable” [South African Commercial Advertiser 19 Sep. 1857], and the row raged on.

The Colonial Office Blue Book for 1862 reported that the gas works by now supplied 253 street lamps, nearly all public and mercantile buildings, and a considerable number of private residences [Blue

Book 1862 section FF]. During 1861 it had manufactured 9 million cubic feet of gas, of which 6.5 million were supplied to private persons, and the remainder to the street lamps.

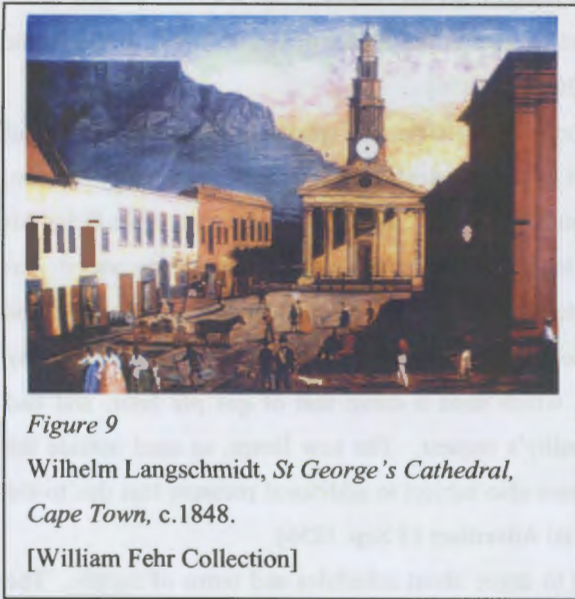


Figure 9
Wilhelm Langschmidt, *St George's Cathedral, Cape Town, c.1848.*
[William Fehr Collection]

A painting by Wilhelm Langschmidt dates to about 1848, and shows St George's Cathedral at sunset, with the last rays of sun streaming through a gap in the mountains (*Figure 9*). A gas lamp lights the evening shadow, and greatly emphasises the contrast between light and dark in doing so. The cathedral clock is not painted, but is an enamel watch face set into the painting. Langschmidt moved to Cape Town from Berlin, in 1842, and was primarily known as a "portrait painter, drawing master, lithographer and retail dealer" [Gordon-Brown 1975: 185].

The issue of differential pricing, between the public and private consumer, was highlighted in 1862 when the Gas Company was forced to admit that its small number of private customers effectively subsidised the supply of gas for public street lamps, which was done at no profit. Correspondence in the *Cape Argus*, under the headline 'Enlightened by Gas', suggested that there was great potential for a second gas company to be formed as a rival to the first [Cape Argus 3 Feb. 1862] though it was to be another thirty years before another company was formed.

The question of differential pricing was not unique to Cape Town, with arguments for price equalisation being debated more widely in the *Journal of Gas Lighting*, the industry standard journal published in the United Kingdom. In the local authority's favour were the arguments that it was a bulk user, and that it brought with it easier collection, and minimal risk of bad debt. Set against that were the additional expenses associated with laying and maintaining the pipes to each lamp, as gas companies argued that supplying a single street lamp incurred the same overhead cost as supplying a private consumer [Journal of Gas Lighting 4 Nov. 1862].

The Gas Company was later to report that while in the cities of Paris and Hamburg it had long been the practice to undercharge municipalities at the expense of the private consumer, in England the practice had been outlawed by Acts of 1862 and 1863 incorporating Gas Companies [South African Commercial Advertiser 11 Aug. 1866].



Figure 10

Gas works at Table Bay Harbour, 1864.

The single lift, cable-guided gas holder, is seen to the right of the photograph.

[National Library of South Africa, Cape Town: Special Collections]

In the 1860s, the Table Bay Harbour authority appears to have erected its own small gas works. A photograph, dated 6th March 1864, shows a single lift, cable-guided gas holder carried on three pylons, with guide wheels at top of each pylon. A small brick building to the east of the gas holder has a pitched roof, possibly covered in slate, while there is a coal stack to the south of the site (*Figure 10*). A similar small gas works (reproduced here as *Figure 11*) is illustrated in *King's Treatise on the Science and Practice of the Manufacture and Distribution of Coal Gas* [Newbigging & Fewtrell 1878]. Research has revealed nothing further about the harbour gas works, beyond this single image and the evidence for it on various maps and charts. A British Admiralty chart of 1870 shows a gas works to the west of the harbour whilst a 'gas house' is indicated on Sir John Coode's map of 1877. A later, undated, Coode map shows a 'gas store' and Coode's map of 1893 shows the same buildings being used as a cement store [Transport 12 May 1893]. The site, as far as can be estimated, would be beneath the present BMW Pavilion at the Victoria and Alfred Waterfront.

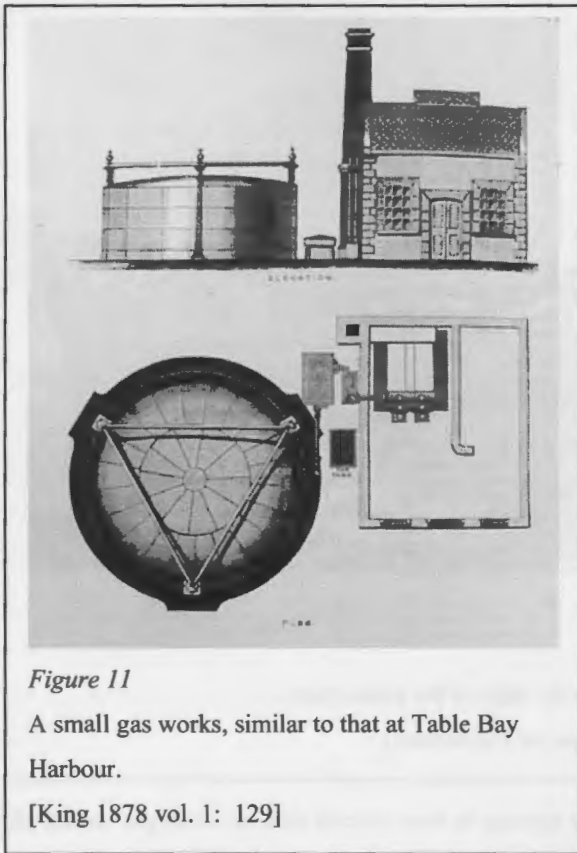


Figure 11

A small gas works, similar to that at Table Bay Harbour.

[King 1878 vol. 1: 129]

In its Annual Reports of 1863 and 1864, the company asserted that had done all it reasonably could to satisfy the demand for public lamps. Private consumers in new suburbs had already suffered through non-provision of promised services, and the company could see no justification for increasing its current losses by increasing the number of street lamps [South African Commercial Advertiser 31 Jan. 1866].

With street lighting proving unprofitable, the company complained that it was faced with pressure from the Municipal Commissioners for a widening of supply and questioned whether it was in any way obliged to provide more than it was already committed to doing. No new contract had yet been entered into with the Municipality because the Commissioners insisted on extensions the Company were not prepared to make, while the Municipality argued that the company was “bound by verbal

or implied agreement to erect the lamps demanded”. In January 1865 the Municipality had threatened to withhold payment unless the company agreed to the required extension of service; and in April the company had responded with counter-threats of legal action to recover the outstanding debt. When the Municipality had again demanded that supply be extended to additional lamps in June of 1865, the company had given it twelve months notice that it would terminate supply, and the debt had been settled [South African Commercial Advertiser 31 Jan. 1866].

By 1866 the “Gas Question” had a strong presence in the local press and in political consciousness. In July 1865 the Municipality had called for tenders for lighting the streets by gas or oil, giving would-be tenderers until January 1866 to reply. The Municipality reported in January 1866 that whilst it was busy investigating the possibility of setting up its own gas works, it had received two tenders in response to its invitation. While one had come from the United Kingdom, and the other from the Cape of Good Hope Gas Light Co., both were considered to be unsatisfactory. The first, from Defries and Son, of London, proposed to use paraffin or other oil, rather than gas, using 300 cast iron lamps to light the streets for 2,000 hours a year for seven years. At 1s 4¼d per lamp per night (more than £25 per annum), the price was considered by the Municipality to be too high, [CS 25 Jan. 1866] and would have cost £5,128 more than the tender submitted by the Gas Company [South African Commercial Advertiser 11 Aug. 1866].

The second tender, from the existing gas company, met with hostility from those council members like Mr. Cauvin, who argued that the company had abused its monopoly [CS 25 Jan. 1866]. At £2,402 for the year (an increase of £632), again the price was considered too high, and the company had attached other conditions which the Municipality was unhappy with as well [South African Commercial Advertiser 11 Aug. 1866]. For example, while the company was prepared to relocate any of the street lamps as required, the cost of the relocation was to be carried by the Municipality.

The Cape Standard, in an editorial on the price of street lighting in January 1866, criticised the Gas Company's unfair monopoly and what it regarded as its excessive profits, while warning the Municipality against starting its own works. The Gas Company regularly declared profits, and dividends to its shareholders, while claiming that the street lighting was supplied at a loss. The Standard therefore drew the conclusion that private consumers must therefore be overcharged to subsidise not only the public street lighting, but also the profits of the company as well. Stating that Gas Company monopolies in London had just been "voted a public nuisance", the paper argued that the Gas Company's dividend should be limited to 10% per annum, as allowed to railway companies [CS 27 Jan. 1866].

The "Gas Question", therefore, was seen to be about more than whether Cape Town had street lighting or not. It was also about the broader issues relating to monopolistic practices, the relationship between private capital and the public interest, and the future development of Cape Town. The Cape Standard's editorial, however, acknowledged that finding a solution to the problem was not easy. One option would be for the Municipality to set up its own gas works, and treat gas supply in the same way as water supply, but the paper felt that the Municipality's limited capital was better not tied up in this way, and that the Municipality had other priorities. Another option, which the Standard appeared to tacitly support, was for the government to intervene and thus force the Gas Company's hand if it would not cooperate willingly [CS 27 Jan. 1866].

Three days after the Cape Standard's somewhat damning editorial appeared, the Gas Company held its Annual General meeting at the Long Street works, and expressed its regret that recent newspaper articles had "damaged them with the public" [CS 31 Jan. 1866]. It was reported to the meeting that as well as the street lamps for which the Municipality was paying £8 per annum, there were now also nine private street lamps, burning for the same number of hours, for which the householders were paying £10 per annum. It was further stated that the Municipality had calculated that the Gas Company's shares were worth £35, and that it had appointed a committee to investigate whether they should take on the business of supplying gas. The Gas Company's response was that as long as the Municipality was prepared to pay it the £35 per share, then they were welcome to take over the enterprise, about which it declared "for its size, our establishment is perhaps as perfect as any in the world."

With the Annual General Meeting came the Gas Company's opportunity to present its Annual Report for 1865, and recap the row that had developed during the previous years. The report was published, as was then the practice, in the South African Commercial Advertiser [South African Commercial Advertiser 31 Jan. 1866]. They reported declining sales of both gas and coke, and that their "apparent" profit had made no allowance for bad debts, or depreciation of buildings and machinery.

Responding to assertions that it was taking advantage of its monopolistic position, the company felt it “has no favours to return” to the Municipality, having never “had, or sought, any privileges from the Commissioners. They asked no monopoly and possess none. The shareholders of the Company, at their own risk, made this venture at a time when the project was looked upon with so little favour and so much distrust that it was with the greatest difficulty a sufficient number of shareholders could be secured to enable the Company to commence operations even on a most limited scale”. The Company had never received special assistance or encouragement from the Municipality, which had not installed public street lamps for some three years after the Company started operating [South African Commercial Advertiser 31 Jan. 1866].

Having said all this, however, the company did not question the Municipality’s responsibility to find the best price available from wherever it could, and noted that it had responded to the Municipality’s tender call by tendering rates that would give them the “smallest profit they think they ought to expect” [South African Commercial Advertiser 31 Jan. 1866].

The company received no response to its tender until 22nd May 1866, only five weeks before the existing contract was due to expire. They were informed that the Municipality were not willing to deal with them unless they agreed to work according to the old contract, and also to supply additional lamps as required [South African Commercial Advertiser 11 Aug. 1866].

With the contract due to end at the end of June 1866, the Cape Argus reported on the 21st of that month that the Municipality were now considering asking an independent arbitrator to examine the issue. Soon the only lights to be seen would be those in private houses and the lanterns of policemen and cabmen. These, it noted, were only obliged to carry lights if the streets were lit. Two days later, coming out clearly in support of the Municipality’s call for arbitration, the Argus suggested that there should be an independent assessment of what would be a fair price, based on the price of coal and the current consumption, and that this should be followed by a public meeting [Cape Argus 23 June 1866].

“All agree”, the Cape Argus had claimed, that the “town must not be left in darkness” [Cape Argus 23 June 1866]. Nonetheless, the Gas Company removed “their lanterns from the Public Lamps” and from 1st July 1866 stopped lighting Cape Town’s streets. The Municipality, in something of a futile gesture, decided that it would charge the Gas Company £600 per annum for the use of the streets under which its supply network ran, and the Gas Company, in its turn, refused to comply with this demand [South African Commercial Advertiser 11 Aug. 1866]. Meanwhile, anticipating the “coming darkness”, merchants such as Jamieson & Co., and Collison & Co, were granted permission to erect private gas lamps in front of their stores [Cape Argus 30 June 1866].

A public meeting, planned for 10th July 1866, was advertised in the Cape Argus, which hoped that the meeting would insist on the two parties “meeting and talking sensibly instead of challenging each other to mortal combat” [Cape Argus 4 July 1866]. This, it said, would be better than the retaliation planned by the Municipality, questioning how charging the Gas Company £600 per annum would help to get the streets lit. The Argus suggested that the meeting should not be taken up with charges and recriminations, but rather that it should seek to appoint arbitrators. These, it said, would probably need to

be brought from England as there was so little independent expertise in Cape Town. Furthermore, the Argus argued, the Gas Company should continue to provide street lighting under the existing terms until an arbitrator's decision had been given [Cape Argus 4 July 1866].

At the public meeting the Gas Company stated that it was willing to submit to arbitration, or, if the Municipality was willing to withdraw its demand for additional lights, to reconsider the tender. No decisions appear to have been taken at the meeting, however, and the company's next move was to pay for a lengthy notice in the South African Commercial Advertiser. Here they again took the opportunity to defend themselves; to justify their pricing policy; and to re-state their case from the earliest beginnings of the company. In summary, they claimed, the "Company was not started on dependence of street lamps, and that permission to lay pipes was not dependant on provision of street lamps. The company had been formed, the works had been constructed, the plant and machinery imported, the permission to lay pipes obtained, long before the Municipal Commissioners had decided to take any Public lamps for the town" [South African Commercial Advertiser 11 Aug. 1866].

In October of 1866, the Commercial Advertiser reported that the Board of Commissioners was now ready to accept the Gas Company's latest offer to light the streets for £2,000 per annum. Now, however, it was the Wardmasters who opposed the deal, complaining first that they had not been properly consulted, and that secondly the Gas Company had still managed to increase its rates without providing the additional lights which had featured so strongly in the original disagreement. The offer was described as being neither "equitable, fair nor reasonable". It was decided that no further action be taken until the next Municipal budget had been formulated [South African Commercial Advertiser 10 Oct. 1866]. The Gas Company's Annual Report for 1867 makes clear that the contract was not yet renewed. The company claimed to have had a "fairly prosperous" year, despite a general depression, and the loss of the municipal contract. Plans to install a new gasholder and tank, at a cost of £2,400, had been abandoned, though preparatory works, costing £1,600 had already been carried out during the previous three years. Private consumption, whilst having almost doubled in ten years, was marginally less in 1857 than in 1856. Nonetheless, the company was still able to pay out £1,800 in dividends from its profit of £2,464 for the year.

The company report also briefly mentions the gas used for illuminating the various concerts and balls given to honour a visit to Cape Town by Britain's Duke of Edinburgh. Clearly the imperial connection was one to be exploited [South African Commercial Advertiser 31 Jan. 1868].

In October 1868, the Cape Standard published an editorial under the headline, "The Gas Question". It described how a recent election for District 3 had been won by a representative of Darkness who vanquished the representative of Light. "'Light' and 'Darkness' will soon become the watchwords of different parties here", it claimed, asserting that "Darkness was only an advantage to those who do evil ... loafers, thieves etc". But then, with a satirical addition, acknowledged that crime nonetheless creates employment for judges, lawyers and jailors, and asked "Where would our Harbour Works be if it were not for our convicts?" The key question in the election had been "gas or no gas".

Emphasising the newspaper's support for continuing development of the city, the editorial concluded, "We have a beautiful city, with excellent natural advantages; we have plenty of water at command for the trouble of getting it; and we have fine, wide, handsome streets; and yet with all this we have an amount of dirt, filth, aridity, and darkness that would put to shame the smallest and worst managed village in England" [CS 10 Oct. 1868].

At this time, a petition with 670 signatories, most of whom were ratepayers, lobbied the council to re-introduce gas lighting to the streets, whilst a counter petition presented only 159 signatures. While the Gas Company now offered to provide 295 lamps for £212 10s per annum, the matter was again referred to the council's General Committee for further consideration.

Control of the gas supply industry in South Africa was first formalised in 1871 with the introduction of the Gas Works Clauses Act. As the gas companies and other utility providers began to compete for sub-surface access, problems were almost bound to occur, and water mains, sewers and electrical cables needed to be protected. The other issue which the Act was designed to address was the illuminating power of gas. Thus an examiner of gas was to be appointed, and standardised methods of testing the gas established [Gas Works Clauses Act of 1871 (34 and 35 Vic. Cap. 45)]. For the first time, the municipality was effectively gaining some powers in respect of the gas company operating in its midst.

In February 1871, publishing their Annual Report for 1870, the Gas Company was finally able to report that it had secured a new contract with the municipality, which it hoped would be permanent. At the same time, it announced that it had secured a contract with the Commissioners of Table Bay Harbour to light the docks [Standard and Mail 2 Feb. 1871].

The Standard and Mail enthusiastically welcomed the news that "the long eclipsed gas lights" would "again blaze forth" from the beginning of April [21 Feb. 1871], which news was confirmed by both the Cape Argus [11 Apr. 1871] and the Standard and Mail [9 Mar. 1871] when the contract was approved by council a few weeks later.

So, in April 1871, after a break in supply of almost five years, the streets of Cape Town were again lit with gas. The Argus reported that "the streets, though far from brilliant, were cheerful in appearance", and declared that the Reformers in the Town Council must have the thanks of the community for their efforts [11 Apr. 1871]. The new contract stipulated that the entire town was to be lit by the beginning of November 1871 [Standard and Mail 1 June 1871] and to this end the Gas Company reported in July that year its progress in installing an additional eighty lamps [Cape Argus 13 July 1871].

The Gas Company, needing to enlarge its operation to service the new contracts, now sought to buy from the Municipality a parcel of land adjoining its existing site. This land was bounded to the north by Sea Street, to the east by land belonging to the Harbour Board, to the west by the gas works itself, and to the south by Long Street. Again, it appears, things did not go smoothly between the Gas Company and the Town Council, as the latter refused to reduce its £175 asking price for the land [Standard and Mail 16 Sep. 1871].

By 1873 the gas works in Long Street was producing 10 million cubic feet (283,000 cubic metres) of gas and 40,000 bushels (1,456 hectolitres) of coke annually [Blue Book 1873]. The Gas Company's

Annual Report for that year declared 'gas rentals', and sales of coke, tar and breeze, had all increased; that good profits had been made, and dividends paid; and that they were in a position to pay off some of their accumulated debts [Cape Argus 3 Feb. 1874]. Similar results were reported for 1874, with the company noting that its buildings and plant were still perfect after thirty years of service [Cape Argus 2 Feb. 1875].

In April 1875, the Gas Company's contract with the Council was again due for renewal, and the Mayor proposed renewing it for a further four years. There was concern expressed against entering into a costly new contract when a new council was due to be elected, but nonetheless the contract was duly signed on the same terms as before [Cape Argus 29 July 1875].

The nature of the relationship between the gas company and the Council, and the protracted wrangling over the terms and conditions of their contract, is fundamental to the development of Cape Town as a networked industrial landscape, and to the development of the city itself. Gas supply, however, was anomalous in that its supply required the Council to regularly re-negotiate its relationship with the gas company. Parallel developments in the supply of fresh water, solid and liquid waste removal, improved road infrastructure, and the provision of municipal services such as the abattoir and produce markets, were wholly managed by the city, and required no ongoing contractual engagement with private companies. By way of contrast, other developing networks such as the tramways and telegraph systems, required no commitment from the city. This is not to suggest that the city did not have a role to play, and authorisation was indeed required for the laying of tram-tracks as it was for the laying of gas-pipes. Thus the engagement of the municipal authority with the development of the city's networks was variable, and the gas company sat uncomfortably between two extremes. 'Public interest', as it would have been narrowly defined by the council of the day, and private capital, each tried to protect their own interests, whilst covertly maintaining ambivalent views on what those interests actually were. The council, tasked with asserting the public interest, was entirely comprised of propertied men, whose motivations could cynically be said to range from improving their property values to keeping their rents high and their rates low. The gas company, ready to claim the moral high ground since its inception, would always argue that what was best for the company was also best for the city.

Towards the end of 1878, the Gas Company was preparing to double its capacity by building on the "whole of the triangular space on Dock Road". A new stone retort house was to be put up close to the existing one, together with a new coal shed and a new brick gas holder [Cape Argus 17 Oct. 1878].¹⁰ Tenders for the new gas holder were invited in August 1879, though a year later, while the Council heard complaints that "parts of the town were in a terrible state through being deprived of gas", the new gas holder was still being erected [Cape Argus 26 Aug. 1880]. Though described as being small in

¹⁰ Improvements at Long Street: A new retort building will be erected near the present one, and will be 54' x 36' in dimension. "will contain 30 retorts of slightly larger capacity than the 23 existing ones; new coal shed 80' x 22' to be erected capable of holding several thousand tons; new gasometer to be fitted up; new works will supply gas for a population of more than 50,000; new building will be of stone and cost £2,500; contract let to Messrs Ball and Smart. [Cape Argus 1878-10-17]

Wilson was to explain his motivation for making the map some years later, in correspondence with the Cape Argus [Cape Argus 11 Dec. 1875]. Mr. Gamble, Cape Town's Hydraulic Engineer, had been complaining of a lack of available maps, and Wilson wrote to say that it was that very lack of them that had prompted him to make his own. The original 1857 edition, he wrote, had shown the whole system, comprising fifteen miles mains and valves, while by 1860 he had extended the survey by taking levels "all over the town" and detailed "every spring in the valley and back of the mountain", sketching "every ravine and water course from observation and measurement". At this time, 1860, local publishers Solomons and Co. had produced an alternative plan, though Wilson claimed not to have seen it.

The making of these maps, was in itself an important validation of Cape Town's own acknowledgement of itself as a 'networked landscape'. The maps themselves, which blur the line between artefactual and archival evidence, and the time of their making, show that various interests within the city were recognising the organic nature of its growth, and the importance of understanding the broader landscape. Later mapping of the city and its suburbs, and in particular Thom's survey (see pages 27 and 42 above), clearly demonstrated the integration of gas, electricity, water, sewers, storm water drains and tramways into the city landscape.

The increasing role of gas in the life of Cape Town in the 1870s is witnessed by its use at a number of public occasions, in public buildings, and by the re-issue of Wilson's 1858 map.¹¹ When the first sod was turned for the Cape Town and Wellington railway, on March 31st 1872, the council marked the occasion by lighting the Town House in (Green)Market Square [Cape Town Weekly Magazine 25 Mar. 1872]. The Houses of Parliament were also lit with gas, although a gas leak in May of 1872 gave cause for concern [Standard and Mail 2 May 1872], and the new Dutch Reformed Church in Bree Street was said to be lit by "three beautiful gasoliers" [Cape Argus 22 Aug. 1879]. A particularly ornate style of Victorian gas light used brackets and pipes made of cut-glass, and when a group of four or six was assembled on a central stem it was known as a 'gasolier' [Gledhill 1999: 22].

Gas pipes were laid throughout the Company's Garden, and at the "Goede Hoop" Lodge, and the grounds were lit with gas for a series of evening entertainments [Standard and Mail 19 Nov. 1872]. Things did not always go as planned though, and while some householders lit their houses with gas lamps to celebrate the marriage of the Duke of Edinburgh, the lamps at Government House reportedly could not be kept alight due to a strong south-easterly wind.

¹¹ The 'Wilson map' held by the City of Cape Town is dated 1878. However, this version makes no reference to gas supply, with even the gas works itself being represented only in outline, and not identified. It seems likely therefore that the Council's map was re-drawn from an earlier edition, and that there is in fact no surviving copy of Wilson's map either in its original or reprinted form.

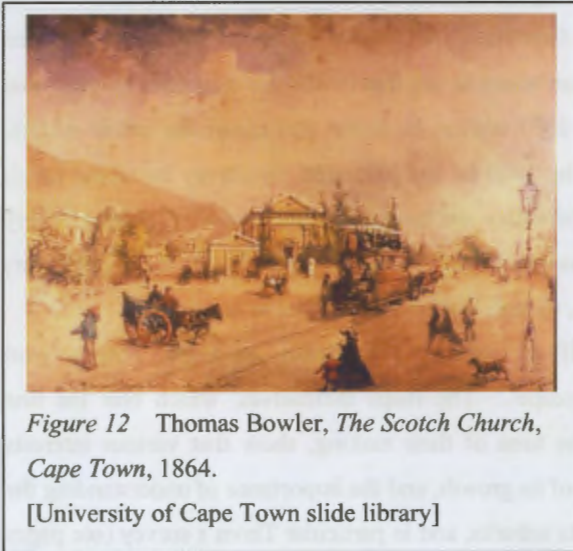


Figure 12 Thomas Bowler, *The Scotch Church, Cape Town*, 1864.

[University of Cape Town slide library]

Artists, such as Bowler, chose to illustrate gas lamps as symbols of Cape Town's development, perhaps with an eye to European markets, or perhaps to affirm Cape Town's continuing development for its own residents. St Andrews Church, the church that had originally installed its own whale oil plant, is shown here in 1864. A line of gas lamps extends away from the city towards the developing Atlantic seaboard suburb of Sea Point, served by horse trams (Figure 12).

Hall [1991] has cautioned against a too literal reading of such images, arguing rather that they should be analysed as texts within a

broader 'social discourse'. He argues that Bowler was selective in his choice of subject, favouring landscapes and fine buildings above representations of over-crowded backyard slums. Whilst Bowler might choose to emphasise modernity and prosperity by the inclusion of a well placed gas lamp, his lithographers would in some cases further emphasise this aspect of the original work.

Facing the future

The 1880s saw gas begin to be seriously challenged by the increasing public acceptance of electricity as an alternative. The Commercial Exchange had been lit with electricity two decades earlier, in celebration of the visit to Cape Town by Albert, Prince of Wales, and the noon gun first fired by electricity in 1864 [Shorten 1963: 144].

In Cape Town, the heat generated by gas lighting was regarded as a serious nuisance. In particular, it "would be a great boon for places such as House of Assembly where the combined effects of legislating and gas light make the place nearly unendurable late in the evening". It seems that even then, politicians were regarded as being full of hot air [Cape Argus Weekly 15 Mar. 1881].

The Municipality was reportedly enthusiastic about the potential benefits of electric lighting, and in November 1881 gave the Gas Company the twelve notice required to cancel its contract. Expressing "little doubt that electric light will soon be in general use", it resolved to call for tenders for an alternative to gas lighting. It is ironic that at that time the future of the Gas Company was seen to lay in finding uses other than lighting, such as fuelling electricity generators [Cape Argus 3 Nov. 1881]. More than a century later, as the Gas Company's successors, Cape Gas, finally prepared to shut down, the dream of electricity generation was still seen as their lifeline. Sadly, as will be seen, a dream was all that it was to be.



Figure 13
Map of gas street lamps derived principally from artists' images.¹²

¹² Adderley Street: attr. Schonegevel, c.1853; Bowler, 1866; photographs, 1890s and 1900. Government House: Bowler, 1854. Greenmarket Square: Various, 1860s to 1890s. Groote Kerk, Adderley Street: Bowler, c.1860. Lutheran Church, Strand Street: Bowler, 1854; Elliot photograph, c.1900. Roman Catholic Cathedral, Roeland Street: Bowler, 1866. Chiappini Street: Gas company strip map, CTDGC#11, 1909. St Andrew's Church, Somerset

“Gas has always been accepted like machinery, as highly convenient, but not altogether pleasant or beautiful; but the electric light is as pure and bright as any manufactured light can be expected to be”, wrote the Cape Argus. The challenge of electricity notwithstanding, the Annual Report published by the Gas Company in February 1882 claimed that “demand had greatly increased over the last few years”, and paid a dividend of £3/5s per share. The new gas holder had been completed, and some 3.9km of new mains had been laid in the town [Cape Argus 1 Feb. 1882].

Clearly the supplanting of gas by electricity was neither immediate nor given universal acceptance. Gas had been chosen to light Cape Town’s new Houses of Parliament, and found to be “a vast improvement” on the electric lighting that had been installed in the older buildings, with gasoliers being used in the library and vestibule, and three ‘sunburners’ lighting the council chambers. The docks and the railway station had electric lamps installed in 1882 [Shorten 1963: 145], while some hotel owners were said to be replacing their electric lights with high powered gas lamps [Journal of Gas Lighting 1884: 958].

There were complaints about the high price of gas in April 1886, with a number of companies signing a “remonstrance” asking for a price reduction. Otherwise, they threatened, they would have to consider ways of ending the Gas Company’s monopoly [Cape Argus 9 Apr. 1886]. Two months later, it seemed that at last the monopoly was indeed about to be ended. The Cape Argus announced the formation by Thomas Haven Wheeler of a new Gas Company, to be based in Woodstock. The new company promised to provide lamps and lamp posts at no charge, and to charge for its gas at no more than 8s per thousand cubic feet. The Woodstock Municipality readily agreed to terms with the new company, which promised to start supplying gas within eighteen months [Cape Argus 16 Jun. 1886]. A week later, the Argus reported that Wheeler was also trying to agree terms with the Liesbeek Municipality, for which it wanted the sole concession, as in Woodstock. Its anticipated charge, of 8s 6d per thousand cubic feet (28.3 cubic metres) was considerably cheaper than the 13s 6d then being charged by the older established company in Cape Town.

Wheeler quickly found a site near the abandoned Craig’s Battery for his proposed works, and approached Woodstock Municipality “asking for a piece of land, on a lease of twenty years, adjoining the reclaimed ground ... to be used as a site for the works of the company” [Cape Argus 29 June 1886]. The Municipality agreed to let Wheeler have the land at £12 per annum, though concerns were expressed lest any of the effluent from the works drain on to the marshy ground [Cape Argus 6 July 1886].¹³

Later that year, 1886, the Argus ran a piece arguing for the municipal, rather than private ownership, of gas works. Focusing principally on Great Britain, where it said more than eighty gas works had been transferred to their local authorities during the previous decade, the article also cited the situations in the English cities of Birmingham and Manchester, as well as at Dunedin and Nelson (New Zealand), and Richmond, Virginia and New York (United States). The trend for municipal authorities to take over

Road: Bowler (?), 1853; Bowler 1864. St George's Cathedral, Wale Street: Bowler, c.1850; Langschmidt, 1854; photographs, 1860s, 1875. Strand Street: Bowler, 1852.

¹³ Some of the more common pollutants found on gas works sites are discussed later in this chapter, in the section on ‘Material Evidence’.

existing works, or start their own, was well established, with any profits going back into supporting the rates in these towns [Cape Argus 1886-10-28]. Municipal ownership of the Cape Town gas works would have once and for all have dealt with the relationship between the Gas Company and the Municipality, and have allowed the Municipality to control the price of what had become an essential service.

In spite of the looming challenge from electricity, other entrepreneurs eyed southern Africa as potential sites for gas works. In 1887, a syndicate known as the South African Lighting Association was represented by Corbet Woodall. He considered that “all the surplus money in South Africa is employed in the gold-fields, which are developing considerably ... therefore imported capital for the construction of gas-works will be welcome” [Journal of Gas Lighting 1887: 711]. To this end, the syndicate examined the possibilities of acquiring the existing gas works in Port Elizabeth [Journal of Gas Lighting 1888: 931] and establishing works in Grahamstown, King William’s Town, East London, Durban, Pietermaritzburg, Kimberley and Johannesburg. Woodall felt that gas could not only be used to fuel gas engines for wool pressing and packing, but could also be used for electricity generation. He considered that as “recent gold discoveries had stimulated all trade in South Africa”, the increased demand would lead to reduced prices, and further noted that “in South Africa ... the efficient supply of kafir labour, while shutting out the unskilled European labourer, is a great help to traders and manufacturers” [Journal of Gas Lighting 1888: 931].

The Johannesburg Gas Company was established in May 1889, and though the future of the town was said to be “difficult to predict”, nonetheless there were expectations that at least 2,000 street lights would be required. A site was selected in Braamfontein, and the company expressed its intention to acquire “one of the best gas coal mines in the Transvaal” [Journal of Gas Lighting 1889: 922].

As Wheeler’s “South African Gas Company” prepared to build its new works in Woodstock, it was reported in London’s Times newspaper that they were prepared not only to supply Woodstock, but parts of Cape Town as well, and did not expect the existing company to object to this. The existing company almost inevitably did object, and said they would not be willing to give up any part of their business to Wheeler’s operation. The response of the new South African Gas Company was to dismiss the old company’s concerns by saying that they did not have exclusive rights in Cape Town, while it did have exclusive rights for the southern suburbs [Gas & Water Review 1887: 613]. Nonetheless, the new company’s plans did not go smoothly, and in May 1887 it had to request that the Woodstock Municipality give it extra time in which to lay its mains [Cape Argus 10 May 1887]. At that time, the plant for the gas works had still not been received from England, and was only expected in another six weeks or so [Cape Argus 5 July 1887].

On the other side of Cape Town, the Green Point and Sea Point Municipality was also negotiating with Wheeler to light the suburb’s streets. The Municipality was asked to give the company a twenty one year concession, and agree to a minimum of twenty street lamps. These would be charged at not more than £8 per annum, while private consumers would pay the same rates as those charged in Cape Town [Cape Argus 19 Oct. 1887]. Perhaps unsurprisingly, the Cape Town Gas Company submitted its own

counter-proposal, and the Green Point and Sea Point Municipality resolved to circulate both proposals among its ratepayers for consideration [Cape Argus 24 Oct. 1887].¹⁴

The proposals were summarised by the Cape Argus in November 1887, reporting on a meeting in Sea Point Hall by a “moderate attendance” of ratepayers and householders. Satisfied that the majority was indeed in favour of having gas supplied to the area, the Chairman argued that the Municipality could afford 30 lamps at £7 without needing to increase the rates, and the meeting agreed that the Municipality should “proceed with securing a contract” [Cape Argus 8 Nov. 1887].

At the meeting it was reported that Wheeler’s company would be commencing work in the following month, December 1887. The company then asked the Woodstock Municipality if it could buy the land it had previously agreed to lease [Cape Argus 24 Jan. 1888], and wishing to encourage local industry to invest in the area, the Municipality agreed to sell it to them for £250 [Cape Argus 20 Mar. 1888]. As work progressed on laying the foundations for the new works, the Argus noted it saw “no reason why gas lighting should not be provided all the way to Wynberg” [Cape Argus 3 Sep. 1888].

October 1888 finally saw the foundation stone of the new works laid, some forty three years after that of the Long Street works. Responding to the imminent competition, the Cape Town Gas Company set about reducing its rates by 20%, to 8s 4d, and asked its customers to commit themselves to three year contracts. The Cape Argus advised consumers to disregard this “stale device” intended to “choke off” the new company, and not to be taken in by the ploy [Cape Argus 17 Nov. 1888].

Towards the end of 1890, the two gas companies in Cape Town negotiated a merger. The Cape Town Gas Company (the original Long Street works dating to the 1840s) and the South African Gas Company (the newer works in Woodstock) joined to form the Cape Town and District Gas Light and Coke Company. An advertisement in the British trade journal ‘The Journal of Gas Lighting’, in October 1890, invited investors to invest a total of £100,000 by buying 10,000 ordinary shares at £10 each. The company then planned to raise an additional £50,000 through the issuing of 6% debentures. The

¹⁴ Proposals were as follows:

Cape Town Gas Company: for not less than 30 lamps on the main road from Cape Town Municipality to the Queen’s Hotel, Sea Point, £7 per annum; burners to be of the best quality, consuming average 5 cubic feet per hour; gas to private consumers to cost 10s 6d per thousand cubic feet, with 15% discount if used for cooking or heating; service pipes to be laid free of charge to 100 feet from main, beyond that consumer to pay half actual cost; gas quality to be “14-candle gas”; main pipe from works to Three Anchor Bay to be 6” diameter where a branch will be left for future supply of Beach Road; contract to be for 5 years; whole of main road to be lit within 12 months.

Wheeler’s Gas Company: work planned to be started at Woodstock in November 1887; Green Point and Sea Point Municipality to be supplied within 12 months of signing contract; cost to private consumers not more than 8s per thousand cubic feet; mains laid to boundaries of private properties; minimum number of lamps to be supplied will be thirty; gas quality not less than 12-candle power (as tested by a Bunsen photometer and Sugg’s London argand burner, consuming 5 cubic feet per hour against a sperm candle consuming 120 grains per hour; all gas to be absolutely free of sulphuretted hydrogen; price per lamps £8 10s per lamp using 5 cubic feet per hour, or 10,000 cubic feet per annum; contract term 20 years; Municipality to have option to purchase Gas Company as a going concern after 10 years, on 6 months notice; Municipality to take gas for any purpose other than lighting at same rate as paid by private consumers; works to be constructed on latest method, giving great savings in manufacture, to the benefit of consumers; conditions relating to repairs of roads, accidents etc, to be on same terms as for Woodstock. Meeting agreed to proceed with securing a contract.

advertisement claimed that the plant and buildings in Long Street, which as has been noted earlier were mainly stone built, were in “very good condition”, and that “nothing needs to be spent”. The newly built Woodstock works were described as comprising “buildings of brick laid with cement mortar”, with “roofs covered in cast iron sheet except the manager’s residence which is boarded and slated” [Journal of Gas Lighting 1890: 816]. The new company was registered in London, and only 20% of its shares were offered for sale in the Cape [Cape Argus 12 Nov. 1890].¹⁵

A leading article in the Cape Argus provided commentary on the merger between the erstwhile rivals. It asserted that the public would, in the end, have to pay for competition between rival companies, and that the merger was therefore in the town’s best interest. As regards possible concerns over the monopoly the newly merged company would have, the Argus said that if it ever “presumes on its powers” then action might need to be taken. The rest of the Argus’ leader reads more like a paid advertisement than an objective editorial. Describing gas as “perfectly clean, safe, convenient and economical”, the paper reported that gas was already available in Sea Point and would soon be available as far south as Wynberg. The company would supply gas fittings on hire to consumers, who were now encouraged to use gas for heating and cooking as well as lighting. Again, the idea of gas being used to generate electricity was promoted, through the use of gas engines [Cape Argus 12 Nov. 1890].

By January 1891, the London office had been advised that the transfer had been finalised [SA 3 Jan. 1891]. As work progressed at Woodstock, the new company negotiated to purchase a disused reservoir from the Municipality, and announced the location of its first three dozen street lamps, due to arrive shortly [Cape Argus 10 Mar. 1891]. In March, when the Cape Town and District Gas Light and Coke Company held its first Annual General Meeting, at its registered offices in London, it reported that it expected the Woodstock works to be completed “any day now”. One of the London based directors, who had recently visited Cape Town, was R A Fairclough. He was able to reassure his fellow directors on the “excellence” of the works that they had recently purchased [Cape Argus 14 Mar. 1891 & JGL 1891].

After an eventful career spanning 45 years as engineer and manager of the Gas Works in Long Street, Alexander Wilson died in March 1890 at the age of 77. On Wilson’s death, the Cape Town Gas Company appointed a Mr. B A Lewis as manager [Cape Argus 13 Mar. 1890]. However, on the merging of the competing concerns, William Arnott was appointed as manager, and Lewis, together with company secretary Herbert, and ‘collector’ Versfeld, had been retrenched. Each was presented with a ring in

¹⁵ Cape Town and District Gas Light and Coke Company shares offered:

List will open on 11 Nov. 1890 and close on or before 18 Nov. 1890; Share Capital of 10,000 Ordinary Shares at £10 each = £100,000; Debenture Capital of 1,000 6% First Mortgage Debentures [repayable on 1 Nov. 1910 at par] of £50 each = £50,000; Total Share and Debenture Capital = £150,000. London Directors: Henry Noel (Director of the Gas Light and Coke Company); John Boustead (Director of Lambeth Water Works); R A Fairclough (G B Lennon and Co., Merchants); Horace Reginald Savory (Director of Goldsmith’s Alliance). Cape Town Directors: James William Attwell (Attwell and Co., Merchants); A Ohlsson (Merchant); An additional Cape Town Director will join Board after the allotment. Consulting Engineers: Stevenson and Burstall, 38 Parliament Street, Westminster. [CA 17 Nov. 1890]

recognition of his services to the company, when they left in May of 1891. Arnott was instructed by the London office to pay particular attention to the “unaccounted gas” lost through leaking pipes and valves, and was also tasked with modernising the Long Street works in order to produce a better quality lighting gas, while reducing costs [Cape Argus 14 Mar. 1890].

Woodstock Municipality finally got its first thirteen street lamps operating in May 1891, with an additional 36 lamps being promised, as soon as they arrived from England. At this time they requested the Municipality to lay a water main to the site for the first time, to serve both the works, and the manager’s house [Cape Argus 5 May 1891]. Gas consumption in the previous twelve months had risen by 25% (from 3.267 million cubic feet to 4.086 million cubic feet), and without the new plant, the company was forced to admit that it would not have been able to meet demand [Journal of Gas Lighting 1891: 81].

As Woodstock received its first lamps, Cape Town was again considering dropping gas in favour of electricity. By mid-1891, with four and a half years of a five year contract already past, and the company now supplying “nearly 400 lamps for 2,000 hours” per annum, there were “no specific complaints against the Gas Company” but the Argus reported that the lights were not as bright as they ought to be [Argus Annual 1892: 687]. While speculating that this might be due to bad coal, or to gas that was poor in quality and short in quantity, the Municipality again raised the possibility of electricity as an alternative power source. With Kimberley and Pretoria having already installed electric lighting, Cape Town was in danger of being left behind. At that time the only electric lighting in Cape Town was being supplied by the Harbour Board’s generating station in Dock Road, for the breakwater, the docks, the railway station and the Somerset Hospital [Argus Annual 1892: 689].

It may be recalled that at the merged company’s first Annual General meeting the directors had reported on the “excellence” of their purchase at Long Street. A year later, however, justifying a loss for 1891 of £1,000, they were describing the works as “not a model gas works”, but rather as being in a “beggared state” [Cape Argus 22 July 1892]. Not only were storage facilities inadequate, as described in the news articles above, but the mains were in such a “rotten” state that it had been necessary to lay 5,000 yards of new main. The company thus resolved to address the question of its profitability, and thus its sustainability, in three ways. It had to increase the amount of gas that could be produced from each ton of coal; to increase sales of gas by not expanding its consumer base, but also the uses to which gas could be put; and to reduce the losses incurred through leakage, estimated at 5m cubic feet per annum. If these improvements were effected, the company calculated that it could earn an additional £9,000 per annum [Cape Argus 22 July 1892 & JGL 1893: 956].

The historically bad association between the Cape Town Municipality and the old gas company continued to sour the relationship with the new. In December 1893, with the contract between the two parties about to expire again, there was “loud laughter” in the council chamber when the gas company suggested renewing the contract [Cape Argus 29 Dec. 1892]. Gas was by this time being seen as a last resort for lighting the streets, as the Municipality waited for its own electric lighting service to come into service [Cape Argus 30 Dec. 1892]. Cape Town Mayor D P de Villiers Graaf had by now been

instrumental in persuading the Council to set up its electricity generating system, for the provision of both street and domestic lighting. As a result, the gas company's contract was renewed for a mere nine months, with the charges for lamps within a mile of the gas works all being increased [Cape Argus 14 Sep. 1893].

Nonetheless, the Cape Town gas company still continued to upgrade its works, and considered extending its mains as far south as Wynberg [Cape Argus 6 Aug. 1891]. Journalists were invited to visit the works, and lengthy descriptive articles duly appeared in the local press. Unfortunately, however, the Cape Argus and the Cape Review provided conflicting details, and descriptions of the works were confused and contradictory. The Cape Argus reported that a new telescopic holder to the south of the works, constructed with eight cast iron columns, and designed to hold 120,000 cubic feet of gas, was 72 ft in diameter, and would be the largest in the Cape [Cape Argus 18 Mar. 1892]. In the Cape Argus Weekly, published three months later, it was reported that the new holder was being built by Messrs. Renshaw, of Kidsgrove, Staffordshire, and that its diameter was 65 ft. [Cape Argus Weekly 1 June 1892]. The Cape Review, however, wrote that the existing 80,000 cubic feet capacity of the Long Street works was to be increased by the addition of a new 82,000 cubic feet holder. According to the Review, the 120,000 cubic feet holder was to be at Woodstock [Cape Review 19 Mar. 1892]. On the existing capacity of the works, the Argus reported that it comprised three holders of 41,000 cubic feet, 18,000 cubic feet and 14,000 cubic feet, totalling 76,000 cubic feet [Cape Argus 18 Mar. 1892].

The Argus described the "well planned out and snug little factory" of the Long Street works in some detail, together with its operation. With sixty employees working under the management of William Arnott, the works provided for a daily consumption in Cape Town of 100,000 cubic feet. However, the works could only make 120,000 cubic feet per day, or 135,000 cubic ft. "at an absolute maximum", while demand was said to have increased by 30% in the previous couple of years. If the demand from Woodstock was counted as well, then the combined consumption was about 160,000 cubic feet, which could be as much as 200,000 cubic feet on a Saturday. Clearly the works needed to expand both its manufacturing capacity and its storage capacity. Renovation of the Long Street works was planned for the summer of 1893, both in

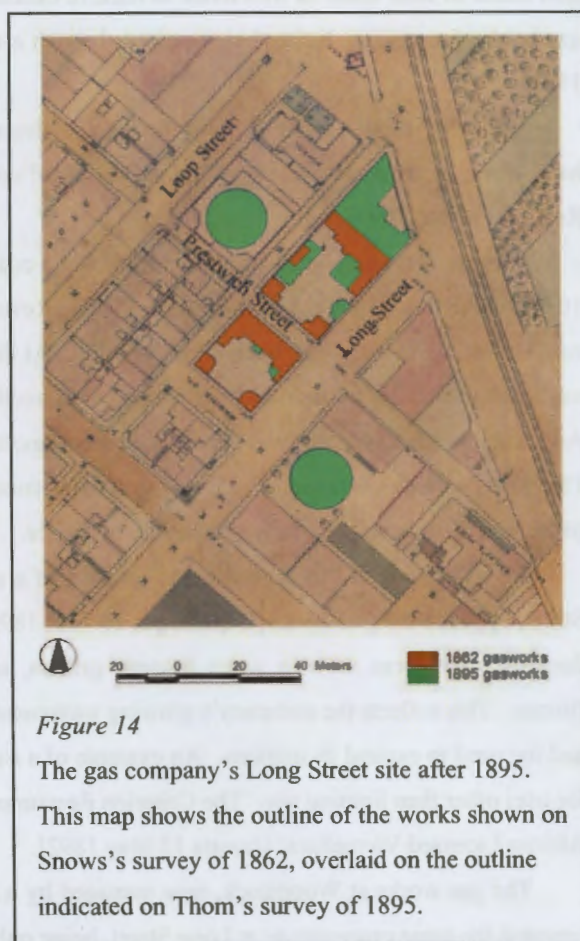


Figure 14

The gas company's Long Street site after 1895.

This map shows the outline of the works shown on Snows's survey of 1862, overlaid on the outline indicated on Thom's survey of 1895.

order to reduce operating costs, and to double manufacturing capacity to 250,000 cubic feet per day [Cape Argus Weekly 1 June 1892]. In order to maximise the potential benefits of owning both the gas works in Cape Town, the company laid a 9" trunk main between the two. This main would allow the two works to supplement each other in times of high demand, and by March 1892 had been laid from Woodstock as far as the Castle [Cape Argus 18 Mar. 1892].

In 1892 the Long Street works comprised two retort houses, one of which contained five benches of six retorts each, and the other three benches of five retorts. The Argus described how the retorts each held a charge of between 2 and 3½ cwt (101 and 178 kg) of coal which was sealed behind iron doors or lids into the retorts. The use of the words 'doors' and 'lids' suggests that some of the retorts were of the older horizontal form, while others may have been vertical. No other evidence has been found to support this. The coal was carbonised by being heated for six hours at temperatures between 1,800° and 2,000° Fahrenheit (982° to 1,093° Celsius). This process of carbonisation, during which the coal was converted into coke, produced a vapour containing gas, tar and water. This vapour was conducted up through 'ascension' pipes and was then collected in a 'hydraulic main'. Gas was then separated from the tar and water, and passed to condensers, described as looking like "cathedral organ" pipes, where it cooled by 50°. More tar and water were separated out in the tar tank, before the gas was washed and scrubbed in iron boxes of lime water or iron oxide to remove excess ammonia. Finally, the gas was metered into the gas holder for storage, before being passed through a regulator to the consumer [Cape Review 19 Mar. 1892].

William Arnott's office at Long Street was described as containing a copy of Wilson's map "all hand work ... artistically coloured", a collection of coal samples, and some coal tar based dyes [Cape Review 19 Mar. 1892].

An essential component of the works was the coal stack. As a ton of coal was needed to produce 10,000 cubic feet of gas (283 cubic metres) [Cape Review 19 Mar. 1892], it will be seen that Long Street could consume in excess of twelve tons per day. At the time of the journalist's visit, there was a 4,000 ton stockpile at the bottom of Bree Street, with another 1,000 tons having just arrived at the docks. Additionally, the company was reported to have another six large stores [Cape Argus Weekly 1 June 1892]. As well as gas, a ton of coal was said to produce 1,540 lbs (700 kg) of coke, 11 gallons (50 litres) of tar, and 20 gallons (91 litres) of ammoniacal liquor.

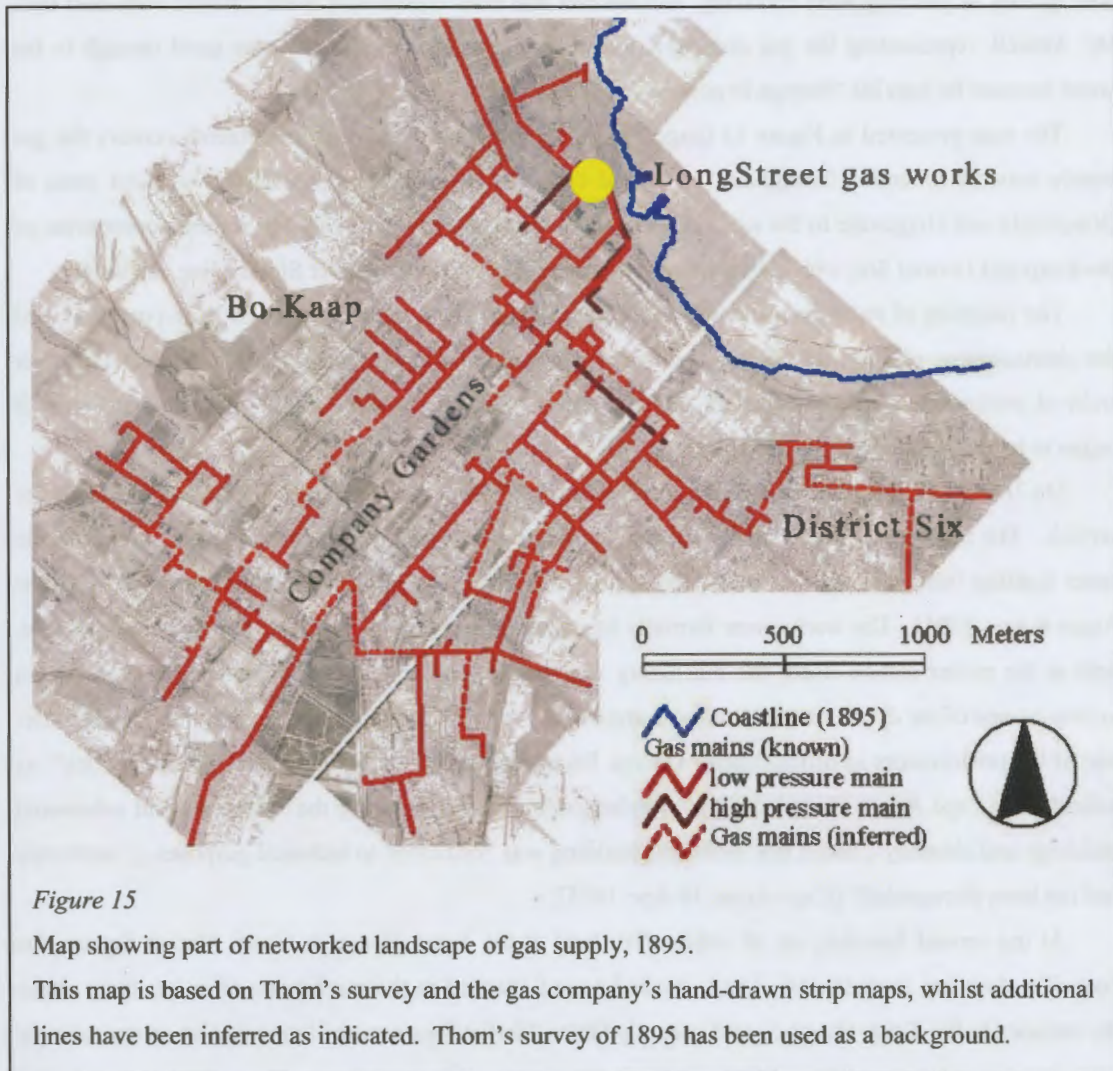
An innovation at this time was the creation of a showroom [Cape Review 19 Mar. 1892] in Long Street, opposite the gas works [Cape Argus 13 Feb. 1893]. It carried a range of stoves for gas stoves and domestic appliances such as water heaters, grillers, and boilers, as well as gasoliers and other light fittings. This reflects the company's growing awareness of the perhaps short lived future of gas lighting, and the need to expand its markets. An example of a customer reflecting the commercial adoption of gas for uses other than lighting was 'The Criterion Restaurant', which installed a new gas grill in 1892 [South African Licensed Victuallers' Gazette 15 May 1892].

The gas works at Woodstock, now managed by a Mr. Blake, employed only 20 men, and whilst it operated the same processes as at Long Street, being only three years old it used more modern equipment.

A significant advantage was that coal could be delivered by railway straight into the site [Cape Argus Weekly 1 June 1892].

Arnott, speaking to the Argus as manager of the gas works in late 1894, claimed that it was “a fallacy that electricity will put out the light, so to speak, of the Gas Company”. Reviewing the recent improvements carried out under his direction, Arnott said that when he had taken over in 1890, some 23% of output had been lost through leakage, and that the works themselves had been out of date. Now the retort house had been upgraded with larger and more modern benches, and production capacity had been trebled to 90 million cubic feet per annum. All the purification equipment had been modernised, with the four new purifiers having four times the capacity of the older units. Storage capacity had been increased by the building of the new large holder, and the only left to do was to replace the works meter. The original, dating to 1847, was still in use, but a new one would have four times the capacity of the old.

Supply pressure continued to be regulated by governors to allow for differential needs at different times of the day and of the week, while, the 3½ mile trunk main between the Woodstock and Cape Town



brilliant light". Echoing the words of Baron Von Ludwig some sixty years previously, at the inauguration of the gas works, the Mayor said that the "increased illumination ... would bring about a very great improvement in the moral atmosphere of the city, and would also afford protection to property of the citizens which was so necessary". Again, the developmental aspects were being emphasised. The town's new lights were promised to be twice as bright as the soon to be discarded gas lamps [Cape Argus 15 Apr. 1895], themselves due to be taken out of service by the end of May [Cape Argus 16 Apr. 1895].

The electric light works was unusual in that it was designed to be powered either by steam, or by the flow of water off Table Mountain into the Molteno Reservoir. It had "two complete sets of boilers, feed pumps, engines, dynamos and turbines" each of which was said to be capable of supplying the entire demand [Cape Argus 16 Apr. 1895]. The ability of the water to power the turbines was demonstrated at the inauguration by admitting water at the rate of 1,600 gallons per minute to one of the turbines, though on this occasion steam on the other turbine was used to power the lights [Cape Argus 15 Apr. 1895].

The cost of the new works to the council was £75,000 [Cape Argus 15 Apr. 1895]. An accumulator station was built in Dorp Street to house 264 accumulators and an automatic switch board for regulating supply, and this was linked to the power station by a 1¼ mile "concentric underground main".¹⁶

In an article headlined "Light upon Light - Gas or Electricity", the gas company's manager, S E Stevenson, denied that there was any ill feeling towards to electric lighting works. Whilst admitting that electricity was proving more suited to street lighting than gas, he nonetheless argued that the gas company had not lost anything with the ending of their contract. Rather, he said, they were now in a better position to supply gas for cooking, which electricity was less suited to. With 40% of electrical current being allegedly lost between the generating station and the consumer, and with the "defective powers of storage now available", electricity was proving too expensive for this purpose. According to Stevenson, the only two types of consumer who chose electricity over gas either liked, and could afford to pay for, "fancy lights"; or found it good advertisement for commercial premises. Thus he claimed to be "amused" at the Electrical Engineer's claims that "in time all shops and private houses will use electric light" [Cape Argus 30 Nov. 1895].¹⁷

¹⁶ The Accumulator Station used compound condensing engines, making 250 rpm and developing 250 brake horse-power; supplied with steam at a boiler pressure of 150lbs per square inch; turbines were of Girard pattern, capable of developing 200 brake horse-power with 760 feet fall; dynamos could be driven by water or steam; boilers were water tube quick steaming type, and steam could be raised from cold to 150lbs pressure in 20 minutes [CA 16 Apr. 1895].

¹⁷ Relative costs of consumption: one unit of electricity would supply a 16-candle power lamp for 17 hours, therefore at 1s 2d per unit, a 16-candle power electric lamp cost 0.82d per hour; with flat flame burners. 6 cubic feet of gas per hour was needed to give 16-candle power at a cost of 0.66d per hour, with gas @ 9s 2d per thousand cubic feet. Argand and Regenerator burners would reduce that cost; most modern type is incandescent lamp; consumes 3½ cubic feet per hour giving 55-candle power, costing for 16 candles 0.112d therefore electricity costs 25% more than gas when gas is burned on flat flame burners, and 7 times as much as when gas is used in incandescent lamps.

Relative costs of installation: example - St George's Cathedral, fitted with new pipes, incandescent burners, and new pendants from roof; total cost £50; compared with estimates of between £400 and £500 for electricity.

A year later, when water was scarce, and electricity became less reliable, the gas company allowed itself a small victory, claiming it was “a good thing the railways had retained gas lighting at their goods yard” [Journal of Gas Lighting 1896: 1179].

In 1895, the year that the Graaf Electric Light Works opened, saw Mowbray municipality replacing its electric lights with gas. Until 1893 the municipality had used oil lamps, and thereafter had had a contract with the Cape Town and Suburban Electric Lighting Syndicate. However, in 1903, when the contract was due for renewal, the gas company provided a more competitive tender, and took over the supply [Peninsula Herald 5 Dec. 1903].

In 1907, local newspapers reported that Woodstock Municipality was considering taking over the Woodstock gas works, and had sought legal advice on the matter. In spite of a positive opinion, the council appears to have decided that the status quo should remain [Wynberg Times 6 Apr. 1907].

After consolidating its manufacturing operation at Woodstock, the company was able to report improved efficiencies, and increased profits, for 1908 [SA Commerce June 1909].

Notwithstanding the above, complaints about the reliability and quality of gas continued throughout the early twentieth century. The city council, recognising that it had no power over the gas company, then drew up legislation that would allow it charge penalties for gas leaks and to protect its own water mains, sewers and electricity cables. Furthermore, for the first time it provided for the appointment of a gas examiner, and prescribed the way in which the quality of the gas supplied should be tested [Cape Argus 11 Feb. 1911].

The Cape Argus summarised the state of the gas company in 1911 under the headline ‘Matters Illuminatory’, and drew attention to a series of cooking demonstrations that were then being organized by the company. Gas was, it said, “holding its own” against electricity, particularly for cooking, and the company now had 112 miles of mains laid between Sea Point and Wynberg. By this time there were five storage holders (two at Woodstock, two at Long Street, and one at Mowbray), and the company could produce up to 600,000 cu.ft of gas per day [Cape Argus 19 Aug. 1911].

After many years of not being in a position to pay dividends, the company was again able to do so in 1915. Financial results, it argued at the twenty-fifth Annual General Meeting, would have been further improved but for an eight month delay in the delivery and installation of the new retorts. Two large government contracts, for the Salt River Railway Workshops and the Somerset Hospital, had helped offset the negative effects of the first year of the Great War, characterised in Cape Town by the closure of shops at 6pm [Cape Argus 14 June 1915].

After the First World War, relatively little appears in the Cape Town press regarding the city’s gas supply

The following men were asphyxiated in the tar distillation plant at the Woodstock gas works. After Attie Adams was overcome by fumes at four in the morning, the others died attempting to rescue him.

Frank Hagen, 40.
European. Foreman. Lived on premises.

John Williams, 38.
European. Boiler attendant. Vasco.

Martin Pietersen, 37.
Coloured. Labourer. Woodstock.

Attie Adams, 36.
Coloured. Labourer. Maitland.

[Cape Times. 20 July 1940]

network. The Second World War saw the death of four workmen asphyxiated by fumes whilst attempting to rescue a colleague who had collapsed working in the tar stills. As was common practice at the time, the names, ages, home areas, and 'races' of the deceased were provided, and thus this story provides one of the very few instances when the men employed at the gas works are given individual identities [Cape Times 20 July 1940].

"Housewives and others" were urged to limit the amount of gas they used in 1943, as war-time industrial demands took precedence over domestic requirements.

Municipal control

In 1906, the Cape Town Ratepayer's Association brought complaints to the Municipality regarding the quality and unreliable pressure of the gas being supplied by the company. As things stood, the Municipality had no power to act, being cast as another consumer itself. The Municipality's 'Revision of Acts Committee' was tasked with drawing up legislation based on the British "Gas Works Clauses Act" of 1871, which would give the Municipality powers to penalise the company for gas leakage, and to appoint an 'examiner of gas'. Such legislation, if enacted, would also provide for the protection of water mains, sewer pipes and electricity cables. The examiner's role would be to check the quality (illuminating power) of the gas supplied by using a prescribed standard method of testing [Mayors Minutes 1906: 56-57].

Having drafted its proposals, the Municipality was advised by the Colonial Office that it would seek legislation to control gas companies throughout the colony. Pending the enacting of such legislation, the Municipality referred its draft proposals to the Cape Town and District Gas Light and Coke Company and asked it to agree to them. The Mayor's Minutes record that the Gas Company referred the matter to its London Head Office [Mayor's Minutes 1906: 56-57].

Despite various Municipal initiatives for taking over Cape Town's gas works, they remained in private hands until the end. By way of contrast, a gas works built in 1892 for the Johannesburg Lighting Company was eventually taken over by the City Council's Gas Department. In 1969 the works covered a 28 acre (11 hectare) site in Cottlesloe, and produced 2,700 million cubic feet of gas per annum. Five gas holders on the site had a total capacity of 11 million cubic feet of gas [Star 24 Sep. 1969]. The South African Lighting Association was paid £65,000 for the local gas works by the Port Elizabeth Municipality in 1944. The Cape Times reported that a number of important industries had located to Port Elizabeth because of the availability of gas [Cape Times 8 July 1944].

At the beginning of the twentieth century, the new gas company's relationship with Cape Town's neighbouring municipalities was unstable. The duels between the proponents of gas and electricity appear to have been fought and re-fought in each area. The Mayor of Mowbray was reported as saying that the company did not have the capacity to supply his municipality, provoking a from the gas company to the editor of the Argus. Refuting the Mayor's claim, in 1893 the company said it was capable of supplying anywhere as long as the quantity of gas sold would justify the cost of laying the mains [Cape Argus 10 Feb. 1893]. Nonetheless, Mowbray, which had hitherto been "only dimly lit with oil lamps",

entered into a five year contract with the Cape Town and Suburban Electric Lighting Syndicate in June 1893. Initially, twenty lamps, each of twenty candle-power, were provided at a total cost of £198 per annum. In November 1898, when a new contract was agreed, 120 lamps were provided at a cost of £990 per annum, and by November 1903, when the second contract expired, there were 148 lamps costing £1,221 per annum [Peninsula Herald 5 Dec. 1903].

Surprisingly, after ten years, the Mowbray Municipality opted to change from electric lighting to gas. In the summer of 1903/1904, the Peninsula Herald was to describe Mowbray as “the best lit place in the Peninsula”, with 311 lamps “carefully sited so to avoid obstructions such as poles, trees and balconies”. Whilst the electric lighting had been provided from seven in the evening until midnight, the new ten year contract for gas lighting stipulated that it would be provided from an hour after sunset to an hour before sunrise [Peninsula Herald 5 Dec. 1903].¹⁸

The Green Point and Sea Point Municipality heard complaints about the “wretchedness of supply” and argued for the replacement of gas lighting by electricity as soon as possible [Cape Argus 21 Mar. 1894], and in Simon’s Town the local authority was still weighing up the relative merits of gas and electricity as late as 1906. Indeed, a draft agreement was actually signed with the Peninsula Gas Lighting Company, but was held back by the proponents of an electrical scheme. Gas was considered as ‘likely to be expensive’ at a time when imported coal was costing up to 30s per ton, but there were also concerns that in times of drought there may not be enough water to meet the needs of an electricity supplier [British and South Africa Export Gazette Feb. 1906: 793].

The Kalk Bay and Muizenberg Municipality granted permission to put up a gas works to a Mr. F Cook in 1903. Although plans were reportedly passed, it has not been possible to trace them, to identify the site of the proposed works, or to learn why they were not in fact built [Seaside News 5 Mar. 1903 & SN 27 June 1903]. By 1906, however, the Municipality had spent £20,000 on building an electrical power station, the first in the country to use a ‘refuse destructor’ to fire the boilers [British and South Africa Export Gazette Feb. 1906: 793].

Marketing

By the turn of the century, Cape Town streets were all lit by electricity, even though the gas company was still increasing the number of lights it provided in Woodstock. It thus became necessary to reposition gas in the market place as a fuel for cooking and heating.

¹⁸ **Contract details:** Total of 311 lamps. 283 Windsor lamps of 45 candle-power at £7/5s per lamp per annum = £2,051/15s (equivalent to 6.59d per light per night) and 24 Scott-Snell lamps and 4 others in the principal thoroughfares of Main Road and Lower Main Road, all of 600 candle-power at £12 per annum = £336 (equivalent to 10.90d per light per night). Contract was for 10 years, with the Council to have the advantage of any improvements in incandescent lighting. Maintenance, painting, and cleaning included in price. Illuminating power could be tested at any time, and a provision was made to decrease price per lamp if numbers increased [Peninsula Herald 5 Dec. 1903].

Sales of coke, and other 'residuals' from the gas making process, would have been dependent on the gas company's own needs. In the middle of 1895 the company stopped using selling agents R Warner & Co, and sold coke directly from both the Long Street and Woodstock works [Cape Argus 29 May 1895].

Although the company's future was described as "rosy" at the Annual General Meeting of 1901, a number of problems negatively affecting profitability were highlighted, some of which were direct consequences of the Anglo-Boer South African War. With the government taking precedence over mercantile requirements for all traffic through the docks, high freight charges were being encountered on imported coal. The company had to use lighters to bring coal ashore when the quayside facilities proved inadequate, greatly increasing handling costs, and though it tried using a local source of coal, the gas yield proved insufficient. In addition to increased freight charges, the company also faced increased manufacturing costs because it paid half-wages to men serving at the front, in order to retain their jobs. Notwithstanding all of the above, the company was nonetheless able to report improved coke sales and an increased use of gas stoves. Storage capacity was no longer sufficient, and a new holder was to be built [Journal of Gas Lighting 4 June 1901].

It is clear that the gas supply industry was a totally male dominated industry, with the only female employees, if any in the nineteenth century, being in secretarial roles. Men it was who made the gas, who made the political and commercial decisions regarding its use, and who made the economic decisions regarding its use in the home.

Marketing appears to have been a priority for Edward P Reilly, formerly manager of the Guildford gas works, in south-east England, who arrived in Cape Town in March 1901 to take over as manager from Sidney Stevenson [Journal of Gas Lighting 4 June 1901]. Now it was women who were the customers whose opinions had to be fought for. In 1902, the company produced two advertising pamphlets entitled "Gas as a Domestic Servant" [Reilly 1902a] and "Coal Gas as a Cooking Agent" [Reilly 1902b]. The latter asserted that "by the use of Gas Stoves, ladies and their daughters are enabled, in the absence of servants, to undertake their own cooking with the greatest of ease and pleasure, without fear of soiling their hands or dresses." Losing one market, the industry was aggressive in striving for this new one. With gas now being available for domestic use between Sea Point and Wynberg, the gas company advertised a range of 'Richmond Best Grade Model Cookers'. With a choice of ten models, it was claimed they were suited for families from two to thirty people, and the coin operated shilling "slot" meters were supplied with all the "Richmond" cookers, ensured that consumers paid only for the gas they used. Hot plates and boiling stoves completed the "Richmond" range, while Gulf Stream water heaters with a capacity of up to two gallons supplemented it [Reilly 1902a].

In the pamphlet "Coal Gas as a Cooking Agent", the company introduced a hire purchase scheme whereby the customer could spread payments for cookers and water heaters over twelve months or four quarters of a year. Accessibility to all was further promoted by the use of the "Shilling in the Slot" Gas Meters. With these, the gas company also provided the option of four lights and a small stove or two lights and a small oven, at no additional charge.

A reduction in the price of gas was significant enough to warrant public information sessions being held by the gas company at “at Mr. R McBeth, Cogill’s Hotel, Wynberg on Tuesdays, Thursdays and Saturdays and at Mr. W Thomson, Hotel Cecil, Newlands on Mondays, Wednesdays and Fridays” [Peninsula Herald 29 Nov. 1902], and free advice could always be sought from the gas company’s showroom in Darling Street.

The following attributes were claimed for gas cooking and gas cookers:

- gas is cheaper than wood or coal
- gas saves labour
- gas bakes, cooks and roasts to perfection
- meats retain flavour and weight when cooked with gas
- no possible danger of explosion
- gas cookers last for many years, especially if enameled
- takes little space
- fuel requires no labour or cellar accommodation
- no cinders or ash to be removed
- no flues to sweep
- hands keep clean
- instant readiness
- heat is uniform and easily regulated

“By careful use”, it was said, “great fuel savings were possible”. Gas was expensive only if it was wasted, claimed the company, who helpfully provided the estimate that all the cooking for an average middle class family could be done for 1/- per day, compared with coal at 2/- per day.

The pamphlet claimed that, “as a Lighting agent it is without a successful rival; as a cooking agent it takes a foremost place; whilst as a Motion Power the fact that over 70 gas engines, varying in size from 1/2 to 14 horse power, are working daily in this town is sufficient to enable us to realise that Coal Gas is among the many things in Cape Town to be appreciated”. It then went on to address some commonly held beliefs about the “alleged disadvantages” of using gas, and point up the advantages. The use of gas cooking in some London hospitals, backed up by an impressively weighty reference to “The Lancet”, was used to disabuse people of the notion that cooking with gas would taint their food; and it was further claimed that it saved dirt, because there was no soot or smoke; that it saved money, because it was only used when needed; and that it saved “annoyance”, because it was both reliable and controllable.

Incandescent burners had been supplied by the gas company since 1897 [Cape Times 7 July 1897], and their advantages, principally better light for less money, were also expounded in Reilly’s pamphlets [Reilly 1902b].

Light versus Darkness – Gas in the Suburbs

The gas company is now making very active preparations for the supply of gas to the residents of Rosebank, Newlands, Kenilworth, Rondebosch, Claremont and Wynberg and will be prepared to connect up the pipes for intending consumers in the course of the next few weeks. Sixty feet of service pipe, together with the meter, will be fixed free of charge, and where longer services are necessary (100 feet or thereabouts) they will be fixed without extra charge if application for Gas is made before, or at the time, the trenches in the streets are opened. The company undertake the entire fitting-up of consumer's premises, and have on sale gas cooking stoves, bath geysers, chandeliers, etc., and every requisite appertaining to gas supply. They also supply gas on the now well-known 'Shilling-in-the-Slot' system, by which gas is laid on with the necessary fittings, cooking stoves, chandeliers, pendants, etc., free of any initial cost; the only charge being for gas actually consumed, and this is paid for by simply putting a shilling in the slot. A qualified engineer will be sent to any address to give estimates (free of charge), or information on gas matters and fullest particulars.

Pamphlets, Catalogues, etc., can be had on receipt of a post card addressed to the General Manager, Gas Offices, Long Street, Cape Town and 58 Main Road, Mowbray (facing Municipal Offices).

Works: Dock Road, Cape Town and Craig's Battery, Woodstock

Show Rooms: Theatre Buildings, Darling Street, and Main Road, Mowbray.

Edward P Reilly, Engineer and General Manager

PO Box 321 Telephone 523

Advertisement, Peninsula Herald 22 Nov. 1902

The symbolism of "Light versus Darkness" was again used in 1902, this time in press advertisements [Peninsula Herald 22 Nov. 1902]. As new gas mains were laid into Cape Town's southern suburbs of Rosebank, Newlands, Kenilworth, Rondebosch, Claremont and Wynberg, the city itself embraced the new electric street lighting. A new retort house was built at the Woodstock works in 1907, and production was shut down at the now worn out Long Street site in the following year. From then on, the site was for a long time used as showrooms and offices.

The most comprehensive documentary evidence of what was to be found at the gas company's Long Street and Woodstock works is an insurance policy schedule dated 1907. This is the year before that in which the Long Street works was closed. Unfortunately the plans that would have accompanied the schedules have not been found. (The schedule to this policy is included in this thesis as Appendix C).

Advertising its stand at a 1914 industrial exhibition, the gas company said that, "Visitors should not fail to visit our stand, the brightest feature of the exhibition," where they would see "working demonstrations of Tailors' Pressing, Laundering and Soldering, Water Heating and High Pressure Gas Lighting" [Cape Argus 27 Feb. 1914]. Later the same year, the company announced that it intended to erect new vertical retorts at Woodstock [Cape Argus 10 June 1914 & CA 12 June 1916]. British coal had



Figure 16 Demonstration being provided to 'white' customers of the gas company, c.1940.

[Cape Gas]

become prohibitively expensive following a miner's strike, and then a shipping strike. The new retorts would be capable of using local coal, from Natal, and were thus expected to be more economical to operate. That the new installation was indeed more economical, both in terms of fuel and labour, was confirmed when the company was able to announce that the economies had justified the expense [South African Commerce 1915].

A box of photographs, salvaged from Cape Gas at the time of closure, provides other glimpses into the twentieth century history of the company. Some of these are

reproduced here, though sadly dates and locations are rarely recorded.

The cookery demonstrations referred to above were held in the town halls of the various local municipalities, and photographed for the company. It is clear that demonstrations were provided on separate occasions for the 'black maids', and their 'white madams' (*Figure 16* and *Figure 17*). Though these photographs are undated it seems likely that they were taken in the late 1930s. They provide a small insight into the racial segregation that was already apparent in Cape Town at that time.

Exterior views of the Long Street showroom and offices, and company vehicles, were clearly taken



Figure 17 Demonstration being provided to 'black' domestic workers, c.1940.

[Cape Gas]

during the second world war, and window displays clearly indicate the company's strong identification with British wartime interests. The Long Street elevation of the building is illustrated at *Figure 18*. The industrial structure to the left, which has open ventilation arches below the eaves, appears to have been constructed with brick or concrete piers, though may in fact be a fire-proofed steel frame. The pitched roof is covered with corrugated iron, and the windows are steel framed.

The building housing the showroom is a double-storey structure, with a parapeted flat roof, classical pilasters, and wooden sash windows on the upper floor. There is



Figure 18

Exterior of the gas company's Long Street showroom, c.1940.

[Cape Gas]

a central door, with a large display window to each side.

Above the left-hand window is the legend "GAS COOKERS FOR QUICKNESS AND PERFECT RESULTS", whilst the display itself contains a 'Kabineat' gas cooker, "the very latest in cooking appliances". Below the window, another sign indicates availability of "THE LATEST COOKERS ON EASY TERMS".

The right-hand window has the sign "HOT WATER INSTANTLY AND IN ABUNDANCE" above it, whilst

the display shows a 'High Beam' gas fire, and below the window is the wording "WATER HEATING APPLIANCES FOR EVERY PURPOSE". Something of the range of appliances supplied by the gas company, together with the system of 'hire purchase', or buying on terms, is indicated by these displays.



Figure 19

Gas service van No.7, c.1940.

[Cape Gas]

Three of the gas company's sign-written open trucks and a car stand in front of the building. Reading from left to right the trucks carry the numbers, 10, 9 and 8 respectively, while service van No.7, shown in Figure



Figure 20
Showroom window, c.1940.
[Cape Gas]

19, is sign-written with the slogan “GAS – AS SURE AS VICTORY”.

An alternative window display clearly indicates the company’s strong identification with British wartime interests. In this case, the left-hand window comprises gas cookers and models of warships and a lighthouse to encourage customers to “USE GAS AND SCUTTLE YOUR TROUBLES”. The right-hand window (*Figure 20*), which display Electrolux gas refrigerators, also has models of warships and wishes “A MERRY XMAS TO ALL THANKS TO THE BRITISH NAVY”. Partially visible

through the left-hand window is a board bearing the names of some members of staff, and indicating whether or not they were in the office. The manager’s name appears as H. N. Port, while the names Cotton and Poole also appear. It may be assumed that Cotton is D. H. Cotton, whose name appears as draughtsman on the 1940 site plan of the Woodstock works.

In this section it has been shown that the supply of gas, and more particularly public street lighting, came to symbolise of Cape Town’s continuing development, and how that supply relates to much broader debates about crime, and public sanitation and health. It has also been seen how late nineteenth city politics polarised around the opposing notions of ‘Clean and Dirty’, and ‘Light and Dark’, and that the issue of gas supply was fundamental to such debates.

Thus the shaping of Cape Town’s municipal identity is seen as being tied to the developing networked landscape of service provision.

The operation of a gas works

Introduction

The preceding sections of this chapter, based largely on historical sources, have considered the way in which the networked landscape of gas supply was part of Cape Town’s broader economic, political and social development, and how gas represents but one aspect of the multi-layered networked landscape of public utilities and service provision. In order to address the issue of how such a networked industrial landscape can be conserved and re-used to serve similar purposes in the future, it is necessary to have a proper understanding of the material evidence. Thus the next sections of this chapter describe first the operation of a generic gas works, and secondly the material evidence for the Woodstock gas works and the rest of the Cape Town system.

Production

Siting of a gas works was influenced by a number of factors. Access to raw materials, in this case coal, meant that proximity to sea, river, canal, railway or road transport was important. Links to transport networks were also important for the sale and distribution of residual products such as coke. For the distribution of the gas itself, it was necessary for the gas works to be placed on the lowest lying ground in the area to be supplied, with the natural tendency of the gas to rise facilitating its distribution. A stable site was needed for building the foundations of the retort house, both for structural stability, and for cost of building.

The spatial relationship of the gas company to its customers was a further determining factor. From the point of view of the gas company, it was essential to ensure that the distance from the works to the point of consumption remained economical. Laying long pipelines through areas of low consumption was not a viable option, and gas companies therefore tended to stay as close as possible to their customers. However, even in 1921 it was recognised that “a gas works is essentially a thing of utility, and can lay little claim to aestheticism ... a site should not be chosen in the fashionable quarter of the town, otherwise complaints from well-to-do residents will be a continual source of annoyance” [Meade 1921: 11].

Coal gas is produced by carbonisation of coal in closed retorts. The process of ‘destructive distillation’ means that most of the volatile material in the coal is driven off as gas, leaving a residue of coke in the retort. To heat the retorts, a secondary gas, known as producer gas, was burned in flues surrounding the retorts, at temperatures up to 1,400°C. The coal gas produced was then led off to be first purified, then stored, and finally distributed.

Early gas works were operated with horizontal retorts, originally made of iron, though by the middle of the nineteenth century iron had largely been replaced by refractory ceramics.

Horizontal retorts were charged manually, and had, by their very nature, to be operated on an intermittent basis. This meant that following charging, and the reduction of the coal to coke, the coke had to be raked out of the retort before it could be filled with a fresh charge of coal.

Retorts were generally arranged in ‘settings’ of four or five pairs, with each pair stacked above another. Producer gases were led into combustion flues running between the pairs, and burnt to heat the retorts. The cross section of a typical horizontal retort was a ‘D’ shape, with the straight side to the bottom. They were usually about 20 feet (6.1 metres) in length, with a cross section of 24 inches by 16 inches (0.6 metres by 0.4 metres), and though not completely filled, nonetheless would contain a coal charge of about 0.65 tons.

According to Ward [1952] horizontal retorts made possible the building of smaller production units, capable of more flexible operation, and the coke produced was particularly suitable for domestic use. However, horizontal retorts needed a large labour force, working in very poor conditions, and occupied a larger ground area than the equivalent capacity installation using vertical retorts. An example of a horizontal retort setting may be seen in the 'Gas Gallery' of London's Science Museum, where an accompanying video shows the last days of operation at Biggar gas works, Scotland.

Systems employing vertical retorts (*Figure 21*) could be operated on an intermittent basis, like the horizontal retorts, or alternatively be operated continuously. As with the horizontal retort based systems,

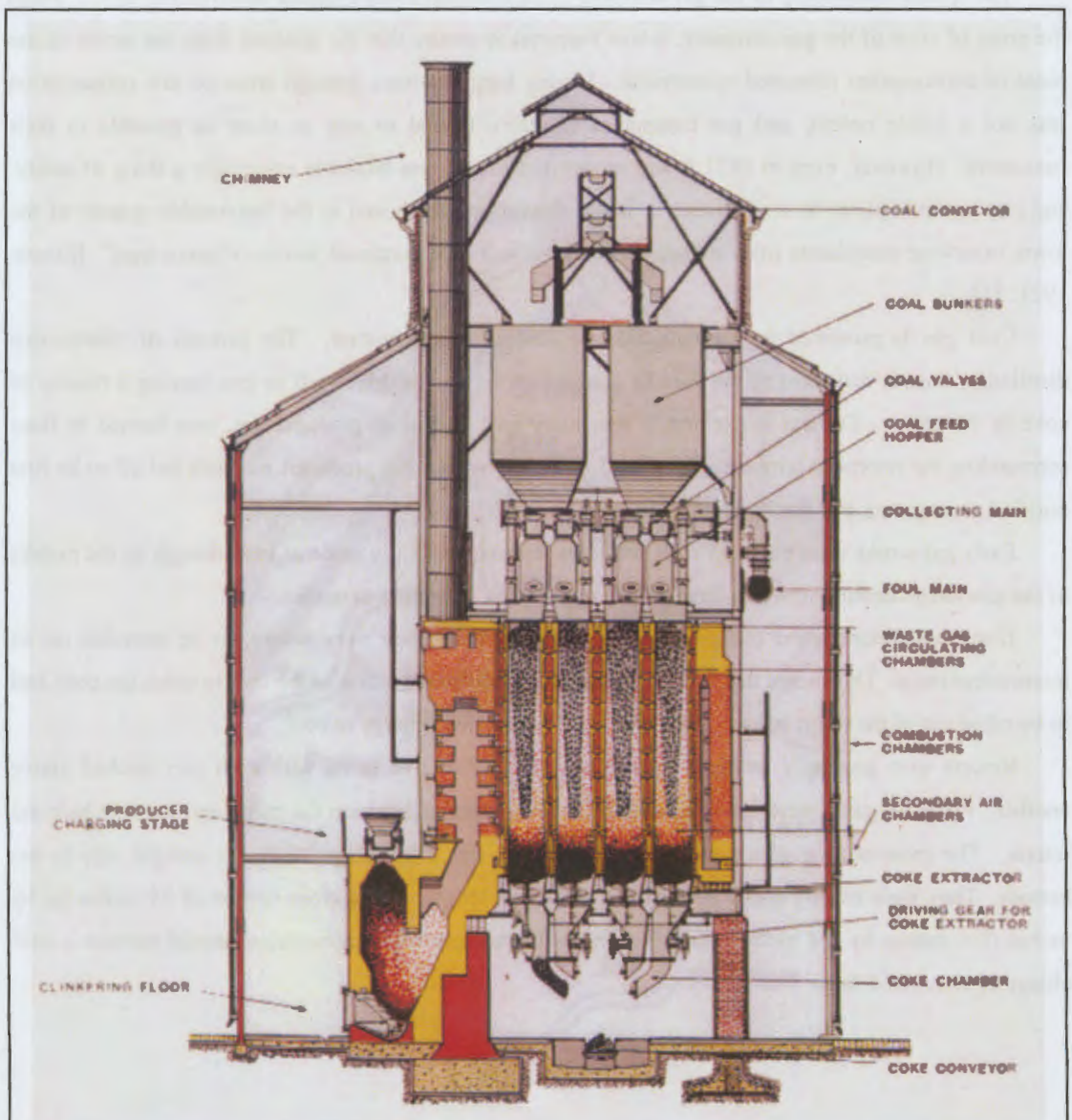


Figure 21

Transverse section of a Glover-West retort house for units of four retorts.

[Meade 1934: 25]

the use of vertical retorts on an intermittent basis also involved the coal charge remaining static during carbonisation, and the complete removal of the depleted charge at the end of the process. The quality and quantity of gas, coke and tar produced were comparable to that produced from horizontal retorts, as was the efficiency of the process [Ward 1952: 36].

A number of proprietary systems of continuously operated vertical retorts worked on similar principles, but differed in the detail. The account that follows describes the Glover-West system, as this was latterly employed at Cape Gas, and thus documented and recorded during the fieldwork phase of this research (see page 92 onwards).



Figure 22

Glover-West system: bottom discharging chambers and extraction gear.

[Meade 1921: 160]

Continuous operation of vertical retorts allowed for the charging of the retort from top, and the drawing of coke from below. Carbonisation of the charge took place over a period of approximately 12 hours, as the coal slowly dropped through the retort and was converted to coke. “Slacking off”, as the removal of the coke was known at Cape Gas, involved quenching the hot coke with water as it tumbled into hand-pushed wheeled-bogies (Figure 22). Continuous vertical retorts were approximately 25’ long and “50 inches or 100 inches on the major axis and 10” on the minor”. Typical retorts were built primarily of silica refractory bricks, and tapered towards the top to facilitate the downward movement of the charge. Individual retorts, depending on size, might contain anything between 1.5 and 4.5 tons of coal, and were usually contained in settings of two or four units [Ward 1952: 34].

Whilst continuous operation meant that gas production was made more economical, with no significant variation in temperature throughout the carbonisation process, it also brought with it disadvantages. With retorts designed to operate on a continuous basis, heating them from cold was relatively costly. Thus at times of reduced demand, it was still necessary to maintain production. Unlike most other manufacturing enterprises, gas companies had very little opportunity to make stock in times of low demand, with a view to satisfying stock shortages later due to the limited storage capacity of their gas holders.

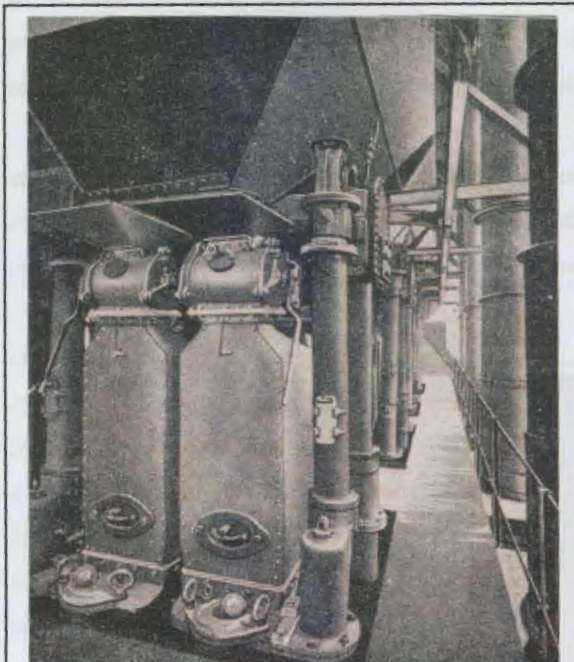


Figure 23
 Glover-West system: top of retort bench, charging
 arrangements and gas outlets.
 [Meade 1921: 161]

Coal was loaded into the top of the retorts, and extracted from the bottom, on an ongoing, if not actually continuous basis (*Figure 22* and *Figure 23*). It will be shown that the arrangements at the Woodstock gas works are very much the same as those illustrated by Meade [1921]. As was the case with the horizontal retorts, heat was provided by the combustion of producer gas in flues passing between the retorts. Waste gases from the flues would then pass to a waste heat boiler or to the outside of the retort house where they would be vented to atmosphere. The coke produced by this process is porous and soft, and though it is suitable for domestic use is easily crushed to breeze [Ward 1952: 34].

Ward [1952] lists the advantages and disadvantages of vertical retorts as follows. Foremost was the increased thermal efficiency of this system, due primarily to the savings made by not having to reheat the retorts with

each fresh charge. Another significant advantage was reduced atmospheric pollution, although Ward cautions that inadequate wetting of the coke residue could cause problems due to the fine dust created [Ward 1952: 36]. In contrast to systems using horizontal retorts, those using vertical retorts required less labour, and less ground space, which was often at a premium even though gas works site tended never to be on prime development land. The relative increase in the production of breeze has already been mentioned, but other disadvantages included a lack of flexibility, making appropriate response to seasonal

and peak loads problematic, and “high and relatively unpredictable maintenance and renewal costs” [Ward 1952: 36].

Purification, storage and distribution

Coal gas has a very distinctive sulphurous smell, reminiscent of rotten eggs, which it has always been thought useful to retain as an indicator in the event of leaks. However, coal gas is thick with ammonia, hydrogen cyanide and hydrogen sulphide compounds, and the

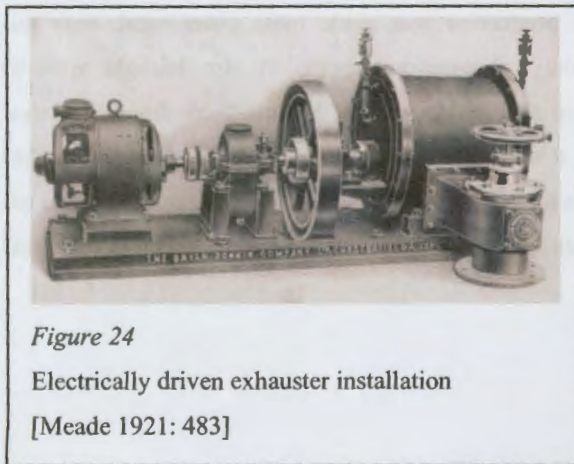


Figure 24
 Electrically driven exhauster installation
 [Meade 1921: 483]

majority of these impurities need to be removed before the gas can be used. Some, such as ammonia liquor, phenols and tar, were subsequently refined to produce by-products such as creosote [Gibb Africa 1996: 24].

Some impurities were removed from the gas at the point of leaving the retorts. This would happen by the deposition of 'aqueous liquor' in the hydraulic main, which would be led off for subsequent disposal. However, significant quantities of tar, ammonia, sulphuretted hydrogen, carbon disulphide, carbon dioxide, cyanogens and naphthalene would remain. Of these, the tar, ammonia and sulphuretted hydrogen were the most problematic, though excessive amounts of carbon dioxide would reduce the thermal properties of the gas produced [Meade 1921].

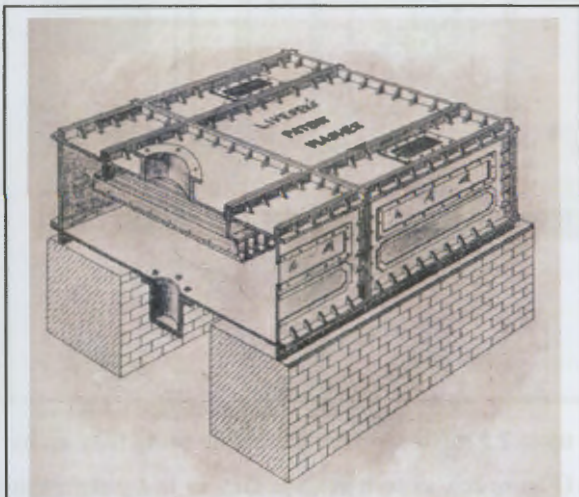


Figure 25
The Livesey Washer
[Meade 1921: 509]

Two purification systems were commonly used, one colloquially known as 'wet purification' and the other 'dry'. Wet purification was done by passing the gas through a series of washers and scrubbers. Washing, which consisted of bubbling the ammonia rich gas through a cistern of water, relied on the affinity of ammonia for water, and the capacity of water to absorb up to 780 times its own volume in ammonia gas (Figure 25). After washing, the gas passed to scrubbers. Here, gas came into contact with wetted surfaces such as wood or bristle to remove almost all the last traces of ammonia [Meade 1921].

Some gas works would also remove hydrocyanic acid, also known as cyanogens, in order to enable the subsequent extraction of cyanide for the gold-mining industry.

The purpose of the dry purification system was to remove sulphuretted hydrogen. This involved passing gas through a series of boxes, usually cast-iron, containing a powdered substance such as iron oxide, manganese dioxide or hydrated lime. Variables such as the moisture content, consistency and operating temperature of the material used were important factors in the efficiency and effectiveness of the process. Sawdust was often added to the iron oxide to help keep it in a powdered form, and to inhibit 'caking', which would in turn inhibit the flow of gas through the purifiers.

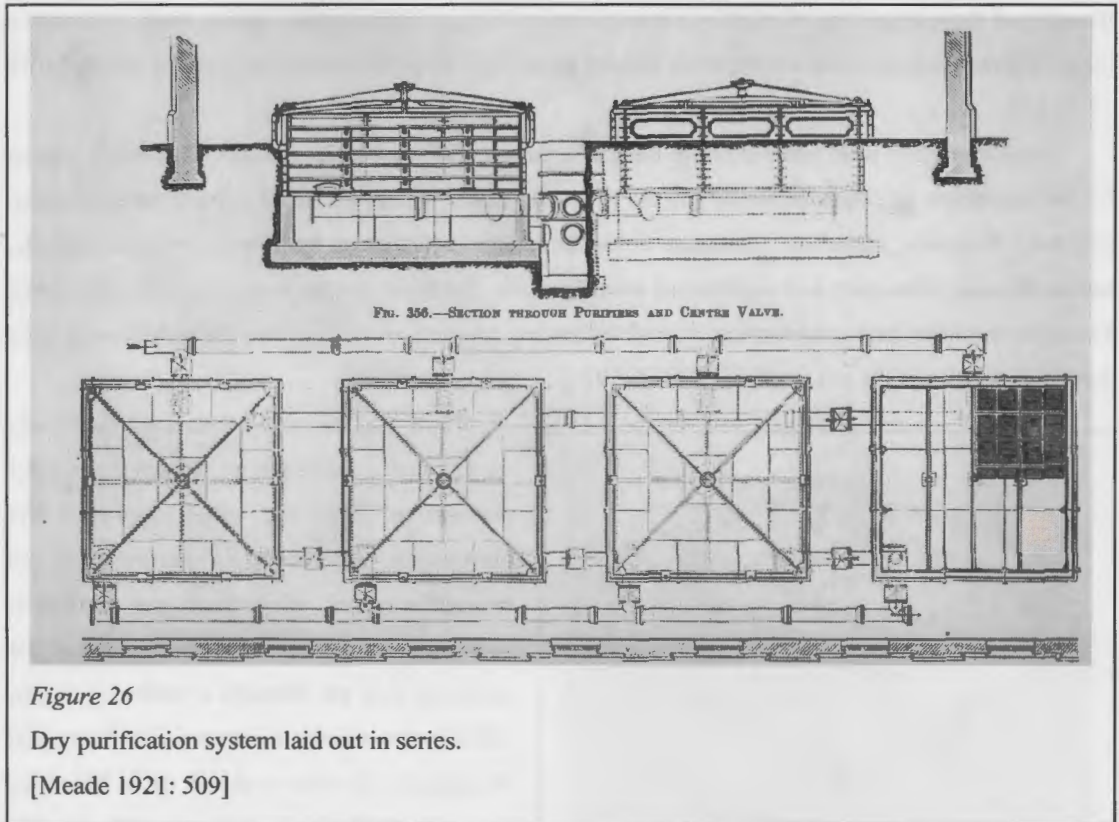


Figure 26

Dry purification system laid out in series.

[Meade 1921: 509]

One ton of iron oxide could be used to purify up to 2.5 million tons of gas before being fully up by the process. Purifiers were either laid out in series (*Figure 26*), as seen as Cape Gas, or in a pattern that allowed them to be used by rotation. Typically, in either case, not all the purifiers would be on line at once, thus allowing for the most ‘fouled’ to be cleaned out and refilled.

Early gas mains were generally of cast iron, by nature brittle, and therefore prone to fracture when placed under load. The Paris Gas Company used riveted and soldered ‘tinned sheet-iron’, covered in asphalt, but whereas this was malleable, unlike the cast iron, it was prone to damage from workmen’s picks. Woodall and Parkinson’s “Distribution by Steel”, written in 1920, provides a useful summary of the transition from cast iron to steel pipes in the early twentieth century. Foremost among the distinct advantages recorded was that longer sections of pipe were possible than with cast iron pipes, resulting in the number of joints required being reduced by thirty-three percent. This reduced both labour costs, and loss through leakage. Further advantages included the capability to bend steel pipes through curves, lightness in handling, and the fact that it was not necessary to bury them at such a depth because of the reduced risk of breakage. Only in relatively recent times was high-density polythene used.

For low pressure distribution, gas was drawn from the retorts using ‘exhausters’ as the pressure in the retorts was only marginally above atmospheric pressure at 2” wa together with the remaining twenty-eight ter gauge (0.04 pounds per square inch). ‘Blowers’ were then used to push it out into the system. However, as has been stated above, the use of steel pipes allowed the distribution of gas at higher

pressures, and compressors were used to put the gas under pressure for distribution to those customers who required it.

The inability of gas companies to store their product for more than a day or two at most, is related to the earlier discussion regarding the continuity of the manufacturing process. Various types of gas holder (often colloquially, but strictly speaking, incorrectly, known as 'gasometers') have been developed, but most common are those that expand or contract according to the volume of gas to be contained.

A common type of holder, of which some British examples have been legally protected, has a fixed frame, into which a number of sections are set. These sections, known as 'lifts', fit within each other in the manner of a telescope, rising to contain the required amount of gas. Many Victorian holders had ornate cast iron frames, and were erected either singly or in conjoined groups. At St Pancras, in London, a landmark conjoined group of seven holders has recently been the subject of much discussion among conservationists and the statutory planning authorities, resulting in a decision to dismantle and re-locate some of the group [Clark, J. 2002]. The gas holders at Long Street, as well as the earliest holders at Woodstock, were of the framed type.

Another type of holder had spiral guide rails fitted to each lifting section, and thus dispensed with the need for an external frame. The Gadd system, patented in 1888 [Groves and Thorp 1900, vol.3: 163] meant that the physical marker of the gasholder on the urban landscape virtually disappeared when the holders were empty, whereas the framed holders remained as landmarks even when empty. The later holders at Woodstock, in use until they were demolished, were of the Gadd spirally-guided type (*Figure 38*).

In some countries fixed holders were built, often of brick or iron. An example of a brick built holder is still to be found outside Vienna, where the exteriors have been retained as part of an imaginative adaptive re-use scheme.

Residuals and waste products

Whilst the principle output of the gas works was, of course, coal gas, nonetheless the manufacturing process produced many by-products. Some of these 'residuals', as they were known, had a marketable value, while others were simply waste products to be disposed of.

Coke was the most significant residual product, being what remained of the coal after the gas had been driven off. Much of the coke produced was used by the gas works itself in the production of the 'producer gas' which would in turn be used to heat the retorts. However, there was a buoyant market for coke as a domestic heating fuel, as well as for use by the railways and other manufacturing concerns.

Gas works sites are among the most heavily polluted of all former industrial sites. Many carcinogenic and other pollutants reside in the soil and in the water table below a site for many years, and require extensive, and expensive, remedial work before they can be reused.

Contamination levels have important implications when considering adaptive re-use as a conservation option for a former gas works site. One of the highest profile sites to have been re-used in recent years is that of the Millennium Dome, east of London, England. The polluted nature of the site

creates serious limitations with regard to future use options, and thus impacts negatively on the land values and linked development potential.

The gasworks district, portrayed graphically by writers as diverse as Charles Dickens [1854] and Lewis Mumford [1940], not only had an all-pervasive noxious smell, but also meant that the atmosphere was frequently polluted with the oily soot and smoke of the retorts. For this reason gas works were usually to be found located in the poorer, working-class districts, of a town, and consequently contributed to the depression of land and property values.

Chief among the solid wastes was the spent lime from the dry purification process. 'Blue billy', as it was known in London at least, was a difficult material to dispose off, and on-site burial accounts for much of the pollution which now makes former gas works site such an unattractive investment option.

The archaeology of Cape Gas

The description of the Woodstock gas works recorded here is drawn largely from field notes and photographs recorded between March 1994, and August 1996. It thus reflects the situation at the works in the years immediately before and after closure. Photographs taken during demolition of the site are useful because they enable 'cut-a-way' views of the retort houses that would have otherwise have been impossible. Extensive reference has also been made to a series of site plans dating from 1940, 1947, 1966 and 1980, which have subsequently been transferred to the National Archives, Cape Town.

The following table provides a summary of the archival site plans, and may be used as an index for the synthesized site plan provided at *Figure 28* on page 95. In the text which follows, references to the site plan are indicated thus [34].

Ref	1940 plan	1947 plan	1966 plan	1980 plan	1996 observation
1			Coal stacking ground	Coal stacking ground	Coal stock-pile
2			Coal grab	Coal grab	Priestman grab-crane
3	New vertical retorts	New vertical retort house	Retort house V2 and adjoining native mess rooms	Retort house V2	Retort house V2
4	Railway access	Railway access	Railway access	Railway access with 'shaker room' and coal elevator	Railway access with 'shaker room' and coal elevator
5	Old vertical retorts	Old vertical retort house	Retort house V1	Retort house V1	Retort house V1
6					Offices
7					Weighbridge
8	Engineer's office	Engineer's office and laboratory	Engineer's office and Drawing office	Drawing office and laboratory	Drawing office
9	Tar well	Tar well	Tar well	Tar & liquor well	Garages

Chapter 5: The Networked Landscape of Gas Supply

Ref	1940 plan	1947 plan	1966 plan	1980 plan	1996 observation
10	Tank	Tar tank	Tar	?	Old waste heat boiler now containing ammonia liquor
11					Old tank base
12	Coal store	Coal store	Carburetted water gas plant	Carburetted water gas plant	Waste heat boiler (upper level) and carburetted water gas plant
13			Gas oil storage	?	Tank containing ammonia liquor
14		Condenser	Condenser	Condenser #1	Condenser #1
15			Tar storage	?	Tank containing ammonia liquor
16			Visco	Visco	Water tank for recycled condenser water
17			Tar storage	Tar storage	Tank for storage of crude tar
18	Tar shed	Tar distillation shed	Tar stills (4)	Tar stills (4)	Tar stills (4)
19			Condenser #2	Condenser #2	Condenser #2
20	Tar well	Tar well	?	?	Tank for storage of coal tar fuel
21	Coke fired boilers	Coke fired boilers	B & W Boilers	?	Boiler house - Babcock & Wilcox - 1909
22	Coke fired boilers	Coke fired boilers	B & W Boilers	?	Boiler house - 'demipak' boiler - 1975
23					Cabinet makers workshop
24	Exhausters	Exhausters	?	Engine room	Engine house
25	Boosters	Boosters	Exhausters	Exhausters	Exhausters
26	Tar fired boiler	Tar fired boiler	Boosters	Boosters	Boosters
27	Maitland main compressor	Compressor room	Compressor room	Compressors	Compressors
28					Control panel
29			Stores	Stores	Main stores
30			Garages	Garages	Mechanics workshop
31			Garages	Garages	Electricians workshop
32			Garages	Garages	Main line store
33	Fitters shop	Fitters shop	Stove shop	Stove shop	Store

Ref	1940 plan	1947 plan	1966 plan	1980 plan	1996 observation
34			Stove shop	Stove shop	Boiler shop
35			Stove shop	Stove shop	Machine shop
36			Blacksmiths workshop (forge)	Blacksmiths workshop (forge)	Blacksmiths workshop (forge)
37	Relief holder	Relief holder	No.2 holder, CWG relief, capacity 75,000 cu.ft.	Tar	Old gas holder (taken down)
38			No.3 holder, mixed, capacity 750,000 cu.ft.	No.3 holder	No.3 gas holder, supplying Cape Town, Woodstock and Mowbray
39				No.5 relief holder	Carburetted water gas holder
40		Store	Livesey & ammonia washers	Livesey & ammonia washers	Livesey & ammonia washers
41	Purifier boxes (1-6)	Purifier boxes (1-6)	Purifier boxes (1-6)	Dry purification No.1 set (1-6)	Dry purification No.1 set (1-6)
42				Dry purification No.2 set (7-10)	Dry purification No.2 set (7-10)
43				No.4 gas holder	No.4 gas holder for high pressure system supplying larger industrial customers
44	Mixed holder	Mixed holder	No.1 holder, capacity 60,000 cu.ft.	Tar	Old gas holder (taken down)
45					Tank containing coal tar fuel
46	Foreman's cottage	Foreman's cottage	?	General offices	Offices, mess areas and showroom
47		Mess rooms	Mess rooms	Mess rooms	Mess rooms
48	Works office	Works office	Works office	Residuals office	demolished
49			Tar storage	?	removed
50		Store	Fitting shop	Fitting shop	demolished
51	Livesey washer	?	removed	removed	removed

Figure 27

Cape Gas: table detailing structures shown on site plans, 1940 – 1980.

The Woodstock site is bounded to the south by a railway line, with the retort houses laying on a north-south axis to the east of the site.¹⁹ A railway siding enters the site from the eastern side, and passes between the two retort houses to the coal stockpile beyond.

¹⁹ The Woodstock gas works occupied erf 14679, with a total extent of 2.2857 morgen or 4.5981 acres. [Surveyor-General's diagram S.G. 8844/65 approved 1 Oct. 1965].

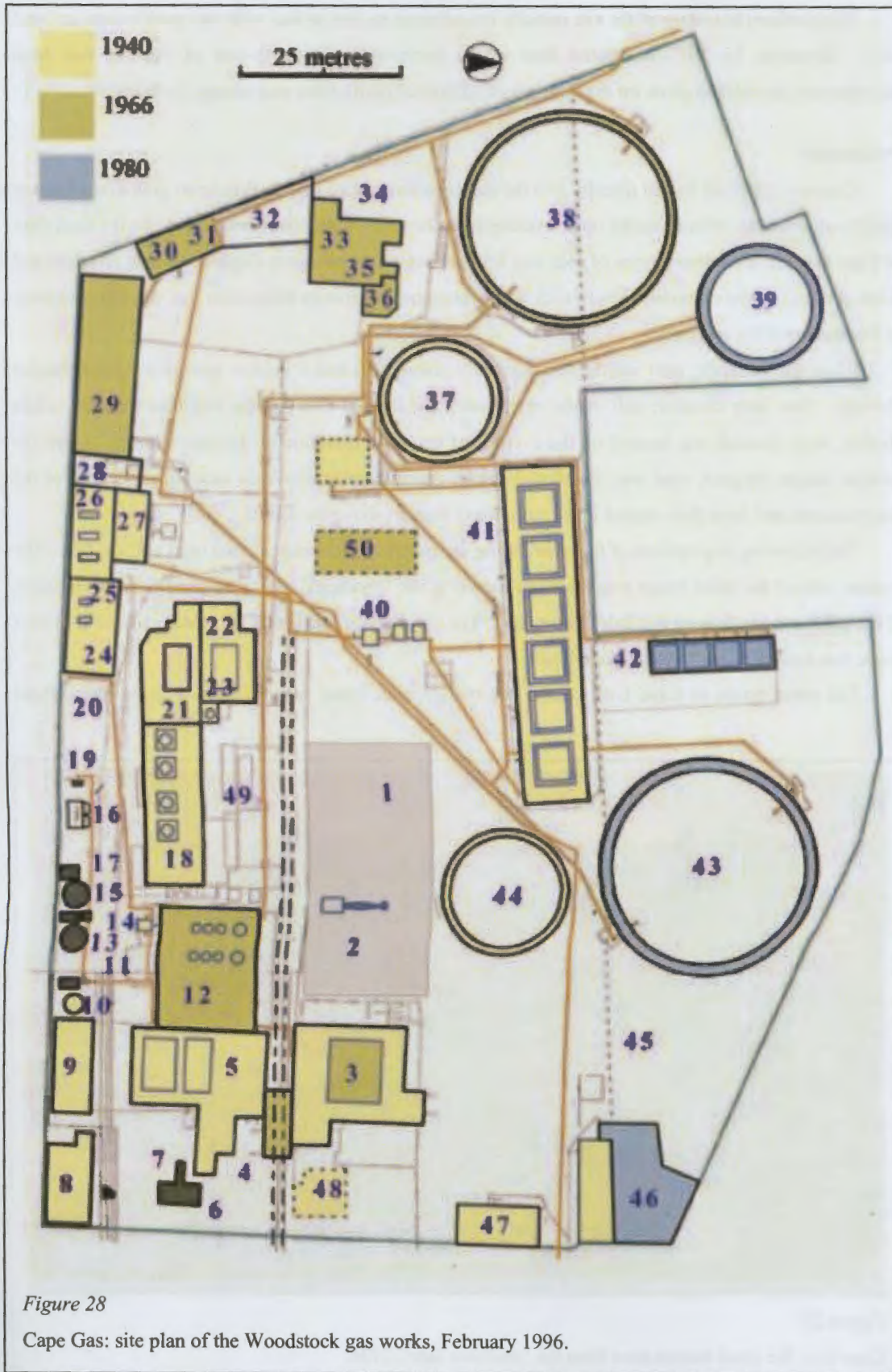


Figure 28
Cape Gas: site plan of the Woodstock gas works, February 1996.

The northern boundary of the site initially ran adjacent to, and in line with, dry purification set No.1 [41]. However, by 1965 additional land to the north-west and north-east of the site had been incorporated, in order to allow for the building of additional purification and storage facilities.

Production

Coal was received by rail directly into the gas company's yard [4]. A Priestman grab-crane [2] was used to off-load the railway trucks onto a stockpile to the west of the retort houses [1]. In the final days of Cape Gas, the ex-delivery price of coal was R55 per ton, while railage to Cape Town cost an additional R145 per ton. It was economic factors such as the relationship between these costs that were to contribute to the closure of the company.

From the stockpile, coal was loaded, again by grab-crane, into a bunker serving a vertical bucket elevator. One such elevator, still in use at closure, was located between the two retort houses, while another, long disused, was located on the exterior of the north elevation of the retort houses. From the vertical bucket elevator, coal was transferred onto a gravity-bucket conveyor running the length of the retort houses, and from there tipped into coal bunkers located above the retorts.

The following descriptions of the retort house are based on the nomenclature used at Cape Gas. The western side of the retort house was therefore known as the "producer" side, stemming from the location of the producer gas fires on this side (*Figure 29*). The corollary of this is that the eastern side of the retort house was known as the "non-producer" side.

The retort house at Cape Gas was in fact two separate retort houses, built in three phases, and



Figure 29

Cape Gas: the retort houses seen from the 'producer side', 1996.

measured a total of 45.1 metres on its longitudinal axis. Retort House V1, to the south, was built in 1907 and extended southward in 1980 [3]. Retort House V2 was built in 1947 [5]. It should be noted that the ages of the retort houses do not coincide with the retorts contained therein.

Gas was manufactured in Glover-West vertical retorts (*Figure 30*), set in seven beds comprising a total of forty-six retorts. The retorts were installed in three phases, with the three 'settings', or 'beds' (numbered 1 - 3) containing eight 33" retorts each, in Retort House V2, having been installed in 1947.

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Figure 30 Advertisement for Glover-West.
[Meade 1921: ix]

South of Retort House V2, in Retort House V1, the next two beds (numbered 4 & 5) contained three 50" retorts each. These had a capacity approximately fifty per cent greater than the others, and were reconstructed in 1953.

The southernmost two beds (numbered 6 & 7) again comprised eight 33" retorts each. These were the last beds to be installed, having only been brought into operation in the 1980s after the retort house had been extended to accommodate them.

The structure of each retort house comprised a steel frame, with ventilated brickwork infill. The complexity of the structure created a far from conventional building as there was little in the way of the normally vertical or horizontal divisions of walls and floors. Rather, the retort house structure was a shell created around the retorts to keep out the weather, and a series of steel floors and ladder ways to facilitate charging and

access. The steel structure of both retort houses created five longitudinal bays.

The ventilated brickwork panels of the older retort house V1 [5] extended from ground level [D] to the top of the retorts. At the retort charging level [B] side panels of pitched corrugated asbestos provided the weather proofing, whilst the lower part of the conveyor level, that part housing the coal bunkers, was clad in vertical corrugated asbestos sheets. The upper part of the conveyor level [A] was clad with opening louvered asbestos sheeting, and the whole was covered with a pitched corrugated asbestos roof.

Retort house V2 was similar, though the ventilated brickwork panels extended from ground level to a little above the top of the retorts. The steelwork in this retort house, much of which was sourced from the English manufacturer, Dorman & Long, of Middlesborough, had been showing serious signs of structural weakness, and much additional steelwork had been added in the 1980s to minimise the risk of collapse.

The retort houses comprised main four working levels, and a number of intermediate service levels. In the description that follows, the four levels are referred to as [A] to [D] as indicated on *Figure 29* and *Figure 31*.

On top, at the conveyor level [A], retort house V2 was served by a chain driven gravity-bucket conveyors, while retort house V1 was served by two chain driven band conveyors. These in turn were served by a coal elevator situated between the two retort houses. Each retort setting had its own coal bunker into which coal was tipped from the appropriate conveyor.

On this level there were also two 'fire bunkers' containing coke for the producer fires. Chutes run from these to the producer charging level at the base of the retorts.

Immediately below the conveyor level were the coal bunkers, and below these was the retort charging, or 'stack' level [B]. Each retort was fitted with a coal box, and dropping coal from the bunkers into the coal boxes was a simple mechanical task, performed by



Figure 31

Cape Gas: retort house V2, north elevation, 1996. A Conveyor level; B Retort charging, or 'stack' level; C Producer charging level; D Coke discharge level.

Compare this view to the drawing at *Figure 21*.



Figure 32

Cape Gas: gas off-takes at the retort charging level, 1996.

moving a lever to open a sliding 'coal valve'. A long steel rod, inserted through a hole, was used to free up any coal that had jammed in the coal valve.

Located next to each coal box were the gas off-take systems. Gas flowed first through an 'ascension pipe' into the foul main (*Figure 32*). This main contained water to catch some of the tar before the gas reached the main gas valve. From there the gas flowed through a governor, though at closure this was no longer in use, and then to the gas main leading outside from the retort house.

Retort settings 4 - 7, being those in Retort House VI, had in addition a 'liquor water spray' which served to wash through the gas before it reached the foul main. The tar enriched water was led through an overflow to a tar tank before being further cleaned.

Descending from the retort charging level, was a series of steel walkways and ladder ways comprising the intermediate service levels. These allowed access to the retort settings, from where 'air and producer gas flows could be regulated by adjusting the producer dampers at the base of each retort setting, and by further adjustment of the 'nostrils' set into each flue. The operating temperature range in the retorts was between 1,300°C at the bottom, and 700°C at the top of each retort.



Figure 33

Cape Gas: the producer charging level, 1996.

Note that this posed photograph on the last day of operation shows the producer charging bogie being handled by a 'white' supervisor, whereas this was in fact the task of 'black' labourers.

At the base of the retorts was the producer charging level [C]. Producer fires were charged with coke, not coal, which was conveyed to the fire-hole in a steel bogie itself filled from a chute leading from the 'fire bunkers' up on the conveyor level. The bogie was pushed by hand along a rail track to a manhole cover known as the 'producer charging lid' above the required producer fire. After removing the steel lid covering the producer fire, the operator then manually opened the bottom of the producer charging bogie to allow coke to fall into the producer fire among a cloud of hot ash, sparks and smoke. Producer charging was carried out on an eight hourly cycle, whilst the producer fires had to be cleared of ash and clinker every twelve hours.



Figure 34

Cape Gas: 'slacking off' on the coke discharge level, 1996.

Underneath the retorts, at ground level, was the coke discharge level [D]. Removal of coke from the retorts was known at Cape Gas as 'slacking off'. Like all operations at Cape Gas, this was largely a labour-intensive, manual operation (Figure 34). Steel bogies were wheeled on tracks to positions below the settings, and although the coke was partially quenched whilst still in the retort, water was thrown over the hot coke to further cool it. This resulted in clouds of steam and dust, and made for extremely difficult and unpleasant working conditions. The bogies were manually pushed

to the north end of the retort house and then tipped to empty onto a band conveyor running longitudinally through the end of the retort house. This in turn fed onto a cross belt, and then to another longitudinal belt which served the 'Globe' elevator at the north end of the building.

The burning of coke in a reduced air supply created 'producer gas' and it was this gas that was passed through the flues surrounding the retorts to heat them sufficiently to carbonise the coal, thus creating the marketable town gas, and more coke which was used to create producer gas. Producer gas heated the brickwork surrounding the retorts to a temperature of between 1,200°C and 1,300°C leaving a residual heat in the exhausted producer gas which could then be passed to a waste heat boiler. Each retort house had a single waste heat flue shared by all the retort settings in that house, and this could either be routed via the production box to the waste heat boiler, or vented to atmosphere if the boiler was off line.

Purification, distribution and storage

From the gas main inside the retort house, gas flowed to one of the two Holmes Multipass Condensers (manufactured by Holmes of Huddersfield in 1949). The condensers consisted of square steel boxes, approximately 20' tall, filled with tubes of cooling water [14 & 19]. A nearby brick structure housed two fans for cooling the constantly re-circulating condenser water [16].

With the pressure in the retorts being only marginally above atmospheric pressure, at 2" water gauge, it was necessary to draw off the gas using machines known as 'exhausters' (*Figure 35*). Cape Gas, two "Connersville" exhausters, manufactured by W. C. Holmes & Co. Ltd. of Huddersfield, were driven by two steam engines, manufactured by Reader & Sons of Nottingham (serial numbers: #24463 1948 & #27050 1952). A third exhauster, manufactured by George Waller & Son, of the Phoenix Iron Works, Stroud, Gloucestershire, was electrically driven [24, 25 & 26].

Low pressure gas was 'pushed' out into the rest of the works, and subsequently into the distribution system, by 'blowers' or 'boosters'. At Cape Gas the boosters, manufactured in 1946,

were supplied by W. Sissons and Co, of Gloucester, England. The steam engine driving the boosters was, like that for the exhausters, supplied by Reader & Sons.

From Woodstock, distribution to Cape Gas customers was through a system of low and high pressure mains. Originally the mains themselves were of cast iron, but latterly these had been replaced by high density polythene piping. At closure the customer base had been reduced to approximately 450



Figure 35

Cape Gas: the exhausting and boosting house, 1996.

domestic, and 400 industrial users.²⁰ Of the industrial users, the Blue Ribbon Bakery, Premix, the University of Cape Town, and the President Hotel in Sea Point were among the most significant.

For low pressure distribution, gas passed from the storage holders through fans and governors to a 'station governor', and then into the distribution mains.

For high pressure distribution, gas had first to pass through a compressor. Cape Gas had two compressors, manufactured by Bryan Donkin of Chesterfield and also a high pressure steam booster with a Reader engine [27].

The building indicated as housing the boosters [26], at least since 1966, appears to have earlier housed a tar fired boiler. No trace of this earlier installation was apparent at the time of demolition.

The wet purification system consisted of a pair of 'Livesey' washers and a pair of ammonia washers, the function of which was to remove the majority of the tar fog from the gas, and to reduce the ammonia content [40]. The 'Livesey' washers consisted of steel tanks filled with plates into which steel plates were set to collect the tar (Figure 36).

As the name implies, the major function of the ammonia washers was to further reduce the ammonia content of the gas. This was done by passing the gas through water in which there were revolving brushes, the bristles of which maximised the surface area by which the ammonia could be taken off. The ammonia rich water thus created was much sought after as a fertiliser. It was stored in a tank at the entrance of the works, from where members of the public could collect it without charge for use in their gardens.

The 1940 site plan indicates that an earlier site for the Livesey washer was south of the railway siding [51], though no trace of this remained visible at the time of demolition. It is not known when this unit was moved, but the 1966 plan shows it in a new position to the north of the siding.

Following wet purification, the gas was passed through the dry purification system. Here, a combination of iron oxide, sawdust and lime was used to remove much of the sulphuretted hydrogen (also known as hydrogen sulphide) which gave the gas a distinctive 'rotten egg' smell. The dry purification systems at Cape Gas were built by R. & J. Dempster Ltd. of Manchester. Dry purification set No.1,



Figure 36

Cape Gas: the wet purification system, 1996.

²⁰ Personal Communication: Glyn Evans, Production Manager, Cape Gas. February 1996.

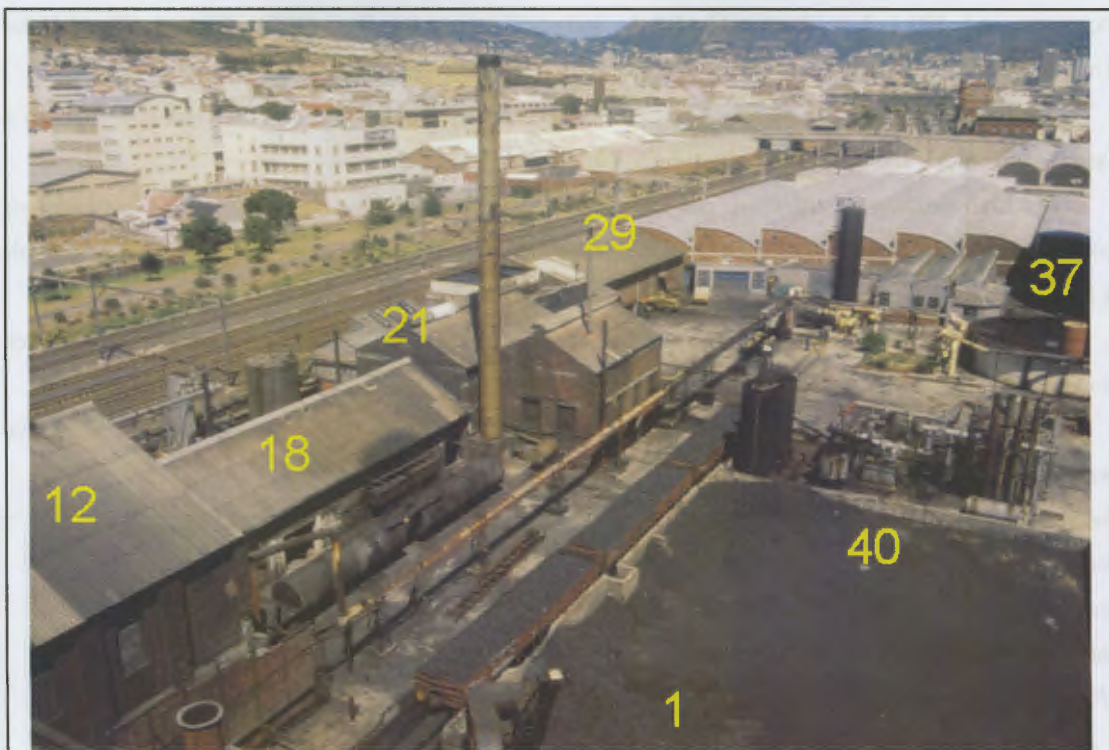


Figure 37

Cape Gas: view west from retort house V2, 1996.

Looking west from the conveyor level of retort house V2, with the carburetted water gas plant [12] in the foreground, and the tar stills building [18], boiler house [21] and main stores [29] receding into distance. The remains of No.2 holder [37] are seen to the right, behind the Livesey and ammonia washers [40].

comprising six purifier boxes in series, is shown on the site 1940 site plan [41], whilst set No.2, comprising four purifier boxes in series, appears only on the 1980 plan [42].

The plans for set No.1 date to 1903, and show that it originally had two suspended floors. The roof and upper floor were removed in the 1940s as the purifier had become structurally dangerous [Urban Conservation Unit 1996].

Two triple lift gas holders were in use at the time of the Cape Gas closure. Each had a capacity of approximately 750,000 cubic feet, meaning that the works had a maximum total storage capacity of 1.5 million cubic feet. No.3 holder had 9 steel plates for each 'lift' while No.4 had only 8 per 'lift', with each plate revealed by the ascent of the holder representing approximately 25,000 cubic feet of gas in storage.

The gas holders latterly at Cape Gas were constructed on the Gadd system. Instead of being provided with an external guide frame, the holders were fitted with self guiding rails fixed spirally to each 'lift'. This means that as the holders emptied, and the descending 'lifts' telescoped into each other, there was very little visible above ground. This is in contrast to the landmark structures familiar in Britain and elsewhere, where the external frames remain as features on the landscape even after the holders



Figure 38

Cape Gas: storage holders, 1996.

Looking west from the conveyor level of retort house V2, towards gas holders No.3 [38] and No.4 [43] with dry purification beds [41 & 42] in the foreground. The base of the old No.2 gas holder [37] is seen to the left, behind the wet purification plant [40].

themselves have been emptied and removed. The spiral guides on No.3 were left-handed, causing the holder to rotate clockwise as it ascended, and those on the No.4 holder were right-handed, causing the holder to rotate anti-clockwise as it ascended.

It is not known when holders No.3 and 4 were built, though No.3 appears first on the 1966 site plan [38], and No.4 appears first on the 1980 site plan [43]. Of the earlier holders, that to the east of the site [44] is recorded in 1940 as being a 'mixed holder' with a capacity of 60,000 cubic feet, and by 1966 was designated as No.1 holder. On the west of the site, a larger holder [37], with a capacity of 75,000 cubic feet, was designated by 1966 as No.2 holder for carburetted water gas (CWG) relief.

Augmentation, residuals and waste products

The calorific value of coal gas was usually augmented by 'water gas', made with steam. This process allowed the gas supplier to regulate the properties of the gas produced, and also to provide additional quantities at times of peak demand. The water-gas plant at Cape Gas was supplied and installed in 1948 by R J Dempster, of Glasgow.

A carburetted water gas plant, manufactured by Humphreys & Glasgow [see advertisement in Meade 1921,: v], was rarely used towards the end of operations at Woodstock. Water gas was produced by blasting coke with hot air, then injecting steam and diesel oil through the resulting gas to raise its calorific value. The water gas could then be used when necessary to raise the calorific value of the town

gas produced for distribution. The water gas plant had the advantage of being able to be fired up and operational within a few hours, thus enabling the gas company to respond to peaks in demand, or problems with the calorific value of the town gas.

The plant consisted of four principle components. Viewed from east to west, these components were:

- Generator
- Carburettor & diesel injector
- Superheater
- Washer

The generator was filled with coke, and combustion started. To further raise the temperature, the hot coke was then blasted with steam from the 'demi-pak' boiler in the adjacent boiler house. The resulting mixture of producer gas and steam was then passed to the carburettor.

Coke dust in the carburettor was heated until it started sparking, and at approximately 300°C ignition of the producer gas and steam mixture would take place. Continued heat raising then took place until the gas and steam reached a temperature of approximately 900°C, and which point diesel was injected into the gas under pressure. This was an iterative process in that next the gas would be returned to the generator for further heating in a 'back run', and then back to the carburettor again. Waste heat was vented through the stack situated between the two superheaters, and finally the gas would pass to the last component, the washer. This performed the same function as the wet and dry purification systems of the town gas system, separating and removing most of the

tar and ammonia from the water gas.

The principal residual product sold by the gas company was coke. The first call on the company's coke was inevitably the fuelling of the producer fires by which more gas, and coke, would be made. However, only 'cobbles' or 'nuts' were appropriate for use in the producer fires, so coke was passed to the coke conveyor for transfer to the 'shaker' room above the railway siding where it was screened. The smallest pieces of coke, known as 'breeze' were then loaded directly to rail trucks, while the larger 'cobbles' or 'nuts' were transferred to the producer fires.



Figure 39
Cape Gas: the coke 'shaker' room, 1996.

Ammonia rich water produced by the wet purification process was generally given away free by the gas companies to gardeners, who highly valued it as a lawn fertilizer.

Archival and other material evidence

The drawing office at Cape Gas was still fully functional at the time of closure, and contained a wealth of material. Whilst most of the drawings held by the company related to the 1948 reconstruction and upgrading of the works, some older material was also present. Arrangements were made with the National Archives (Cape Town), then the Cape Archive Depot, to uplift the bulk of the documentary material on the site.

The oldest material present in the drawing office was a partial series of hand-drawn strip maps, drawn at a scale of fifty feet to one inch (1:600), of the company's supply system in the 1890s. Twenty-nine of the original forty-five survive, and provide the best evidence found of the extent of the company's operation at that time.

A copy of the 'Surveyor-General's Map of Cape Town and Environs', published by the Cape Times in 1930, had been hand-coloured to show the company's distribution system in the twentieth century, though sadly neither the original annotation, nor subsequent amendments, had been dated.

The Long Street gas works, which as shown pre-dates the Woodstock works by half a century, has long been obliterated by successive developments. On the opposite side of Long Street, the gas works is commemorated by a simple plaque, placed in 1995 to commemorate the 150th anniversary of the gas company's foundation (*Figure 40*), although not actually located on the site of the former works.



Figure 40

Plaque commemorating the 150th anniversary of the gas company, 2003.

There is no longer any obvious trace of the gas company's showroom in the Theatre Buildings, Darling Street (formerly known as Kaizergracht), known to have functioned during the first decade of the twentieth century [Peninsula Herald 1902: 242]. Again, subsequent phases of building development have removed any trace of its existence.

At the beginning of the twentieth century, at a time when the company was "making very active preparations for the supply of gas to the residents of Rosebank, Newlands, Kenilworth,

Rondebosch, Claremont and Wynberg" the company had a second office at 58 Main Road, Mowbray, opposite the municipal offices [Peninsula Herald 22 Nov. 1902]. Again, no obvious trace is apparent.

The site of the Mowbray gas holder, at the corner of Main and Kotze Roads, is now under modern commercial premises. While conventional archaeological excavation might be expected to reveal traces of the holder's footprint, a more likely source of evidence would be phenols and other contaminants (*Figure 41*).

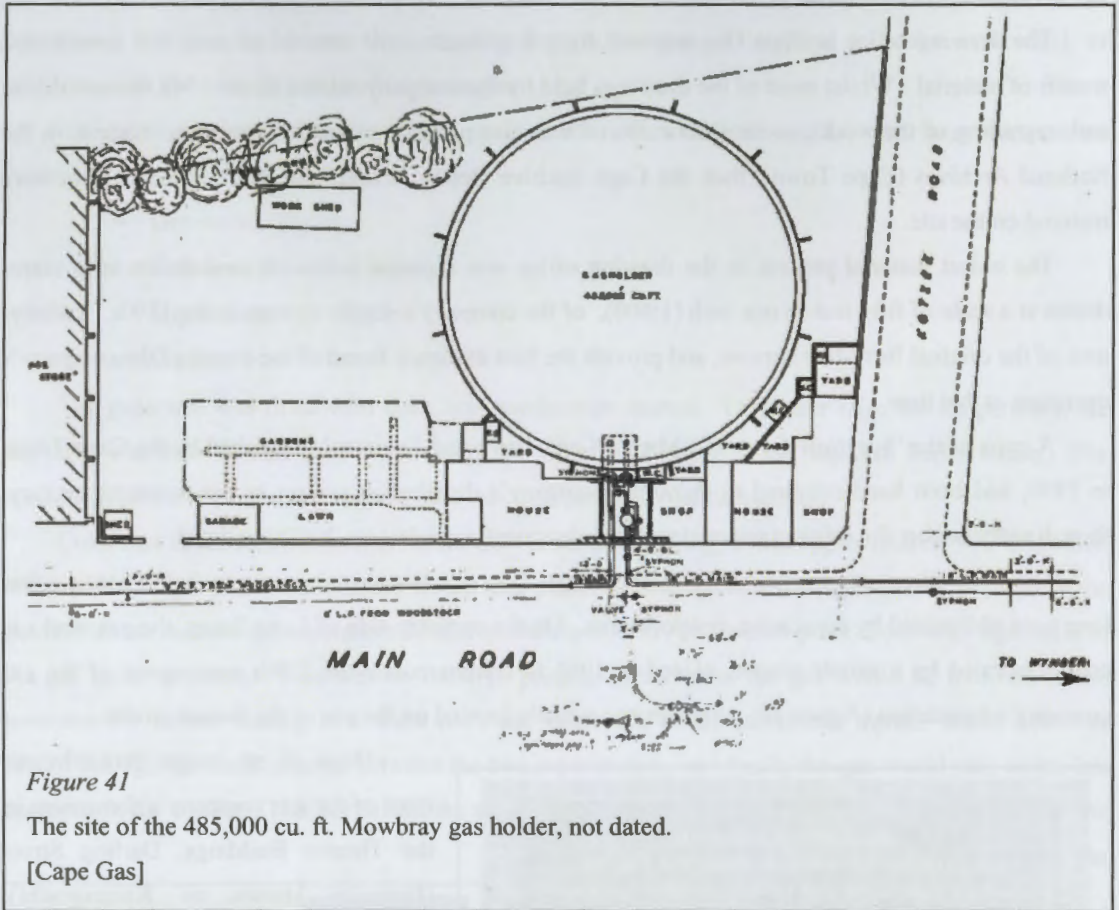


Figure 41

The site of the 485,000 cu. ft. Mowbray gas holder, not dated.

[Cape Gas]

If the gas works in Long Street and Woodstock may be regarded as the key nodal points in the networked landscape of gas supply in Cape Town, then it is the gas supply pipes themselves that formed the network structure. Analysis of the incomplete set of strip maps dating to the 1890s has provided a partial picture of the extent of this network at that time. By recording the information derived from these maps onto Thom's survey, produced at the same time, it has been possible to estimate the full extent of the network. The material evidence for this remains largely buried beneath the streets and buildings of the modern city.

A map of the northern part of the Cape Peninsula, surveyed in 1932 and reprinted in 1942, had been annotated by the gas company to show its supply network at some time thereafter. Unfortunately there is no indication as to when these annotations were made. However, this map shows the network extending round the western seaboard as far Sea Point, into the southern suburbs as far as Wynberg, and towards Milnerton in the north. The central area of Cape Town appears to be comprehensively served, with the exception of the upper parts of the Bo-Kaap, as are Woodstock and Mowbray. District Six, sited between the city centre and Woodstock, appears sparsely served, with only the principal thoroughfare, Hanover Street and few other streets being supplied [Trigonometrical Survey 1932, with annotations by Cape Gas after 1942].

It is understood that upon the closure of the company, the network of supply pipes was sold to Telkom, South Africa's parastatal telecommunications provider. Few traces remain above ground, with the exception of some inspection and access plates still to be found set into the town's pavements and streets (Figure 42).



Figure 42
Typical gas company inspection plate, 2001.

The conservation of Cape Town's gas supply network

The Woodstock Gas Works was an outstanding example of a dirty, smelly, unsightly, and ultimately uneconomic industry. As an industrial complex it had, with its Long Street predecessor, played an important part in the development of Cape Town's public, domestic and industrial life. Yet in 1996, when its owners applied for permission to demolish the works and clear the site, not only was it impossible to motivate support for its conservation, there was not even sufficient support for adequate recording to be undertaken.

Gas company inspection plates which remain set into pavements and roads (Figure 42) are all that remain visible above ground of the city-wide network of gas supply.

Chapter 6 will examine the history of, and material evidence for, South Africa's grain elevators. This will be followed by in Chapter 7 by an analysis of the conservation issues arising out of the study of the networked landscapes of both gas supply and grain elevators.

Chapter 6: The Networked Landscape of Grain Elevators

Introduction

The second networked landscape examined in this thesis is that built in the 1920s for the development of the South African agricultural economy, and the improvement of its maize exports. Whereas Chapter 5 was concerned with a privately owned, largely nineteenth century infrastructure, operating on a local scale, this chapter examines a state funded twentieth century infrastructure, operated at a national level. It will be shown that in this case, the study comprises a number of discrete sites bound together into a network by political and economic intention, and by use.

The network of grain elevators was overlaid onto, and integrated into, the railway network on which its day to day operation, its long term management, and indeed its very existence depended. Its presence in all four provinces of South Africa (as it was then) served to bind the new Union, and its role in expanding the export markets of the agricultural economy served in turn to bind South Africa and Britain, as colonised and colonising power, with the rest of the world.

The origins of grain elevators

The creation of the first 'grain elevator', in 1842, is usually attributed to Joseph Dart, a merchant in Buffalo, New York.²¹ Dart, however, in a speech to the Buffalo Historical Society in 1865, insisted that credit should rather go to one Oliver Evans, who had worked out the principles in the 1780s. In the 1830s Buffalo was already handling significant volumes of grain, in a trade that employed as many as 500 Irish labourers. A competitor of Dart's is alleged to have claimed that "Irish backs are the cheapest elevators ever built", but nonetheless the elevator greatly accelerated the rate at which ships arriving in Buffalo



Figure 43

Charles E. Peers, *The Docks*. c.1930.

Reproduction of pencil sketch of Cape Town harbour.

²¹ Terminology: in this chapter, 'country elevator' should be regarded as synonymous with 'inland elevator'; 'port elevator' as synonymous with 'terminal elevator'; and 'bin' as synonymous with 'silo'. All weights are expressed in metric tons, equivalent to 10 bags, or 'muids', of 200lbs each.

could be offloaded, and they were regarded as a common feature of the United States by 1860 [South African Society of Civil Engineers 1915].

The ‘elevator’ which Dart built was a wooden structure, and would have looked nothing like the cylindrical concrete silos familiar today. The principle purpose of Dart’s building was to store grain. The innovation was in the mechanical processes installed to discharge grain from arriving ships. A steam driven belt, with buckets attached, was lowered into the hold of the ship, and from there it would raise the grain to the top of the storage structure into which it could be tipped. It was the application of this mechanical process that defined the structure as an ‘elevator’ and it is this distinction that still applies today. Silos, whose function is purely storage, do not in themselves constitute an elevator.

By 1863 the North American city of Buffalo had twenty-seven wooden elevators either along the shore of Lake Erie, or very close to it. Over the next thirty years many other building methods were tried and tested. Rayner Banham, the late architectural historian, documented this history in ‘Concrete Atlantis’, his important work on American industrial architecture of the early twentieth century [Banham 1986]. Banham was particularly concerned with the influence of grain elevators on Modern Movement architecture, due to their enthusiastic endorsement by influential architects such as Walter Gropius, and Le Corbusier. The significance of this influence, and Banham’s analysis of it, will be reviewed in Chapter 7.

The highly combustible nature of grain dust has always signified an ever present danger of fire and explosion, and many early wooden elevators were indeed lost to fire. Grain also has a tendency to spontaneous combustion, which is exacerbated when damp grain is taken into storage. When it cannot dry naturally it starts to ferment, thus raising the temperature in the stockpile or bin. The fermentation, even if it does not lead to fire, leads to loss of weight and quality, as the starch is converted first to sugar, then alcohol, and finally to acetic acid, which spoils the grain with a musty smell [Burt-Davy 1912].

Wrought iron, and then steel, were tried as building materials, but were costly, and needed highly skilled labour to erect. Additional disadvantages were to be found in their poor thermal properties, and, of particular importance at the coast, their vulnerability to corrosion. Brick and tile were also tried, but by the early twentieth century reinforced concrete had become the material of choice for elevator construction [Banham 1986].



Figure 44

Woodcut of the Cape Town elevator.

[Report of the General Manager, South African Railways & Harbours, for the year ended 31 Mar. 1923]

The history of grain elevators in South Africa

As previously indicated, grain elevators were designed to fulfill two principle functions. The first was to enable grain, formerly man-handled in bags, to be mechanically handled in bulk, and the second was to provide safe storage, secure against damp, fire and pests. These functions will be described in some detail later in this chapter, where extensive reference will be made to the country and port elevators built in South Africa during the 1920s.

Two types of elevator may be broadly defined at this point. The first, known as the 'inland' or 'country' elevator, was relatively small and would be found servicing local grain producing communities. The storage capacity of the South African country elevators ranged between 1,800 and 5,800 tons. Typically, country elevators comprised a place for farm wagons to drop their loads, scales, dryers, cleaners and elevators to transfer grain into storage silos.

The second type, the 'terminal' or 'port' elevator, was huge by comparison, and was to be found at trans-shipment or export ports. Terminal elevators in places such as Buffalo, London and Manchester, were designed to discharge grain from ships or barges, while at harbours such as Buenos Aires and Cape Town the elevators were designed to load onto ships for export.

Prior to the introduction of elevators, all South African grain was handled in 200lb bags (known by the Dutch term 'muids'), and the change to bulk handling implied that an entire network of elevators had to be introduced simultaneously for it to be effective. The physical linkage between the grain elevators would, as elsewhere in the world, be provided by, and dependent on, the railways.

In the late nineteenth century, the Cape and Natal Colonies had been served by Cape Government Railways and Natal Government Railways respectively, while the Transvaal and Orange Free State republics had been served by Central South African Railways. Union between these states, effected in 1910, was in part a response to the need to unify the three railway systems and thus negate the effects of competitive rates and tariffs, and the eventual formation of South African Railways in 1916 was a natural corollary of this. It is clear that most of the country's railway system was in place before the 1920s, and that no new lines were constructed specifically for the elevators. It seems highly probable, however, that earlier decisions on where to place lines through the maize growing areas were a direct response to the needs of the farmers.

The history of South African Railways, however, is scant. Whilst much has been written regarding locomotives and other rolling stock, there appears to have been no analysis of the political, economic and social background to, and implications of, the railway system. To provide that is outside the scope of this thesis, though possible future research directions are indicated.

The government's decision to task South African Railways and Harbours (SAR&H) with the construction and management of the system was not entirely surprising, though this was not the only possible model. In the United States and Canada, for example, competing grain elevator companies built and operated sites entirely independently of the railways, even while being totally dependent on the railway companies for transport [Hudson 1992]. Whilst grain traffic accounted for a significant part of

South African railway traffic, and thus revenue generation, there were nonetheless suggestions that the Department of Agriculture should be given the responsibility for the new system.

A series of Government Reports into the country's grain industry, presented in 1911, 1918 and 1919, all supported the building of an elevator system in South Africa [Price 1911; Report of the Grain Elevator Committee 1918; Littlejohn Philip 1919]. The first in this series of reports was commissioned in 1909, from Sir Thomas Price. He concluded that the adoption of an elevator system, similar to those already established in areas such as North America, Eastern Europe and Russia, would benefit the country's trade, but that at that time the volume of grain produced did not justify the provision of such a system [Price 1911].

Price enumerated a number of economic benefits that would accrue from adopting a bulk handling system. Farmers who delivered bagged maize into the system would be able to retain and re-use bags, while those who delivered in bulk would be saved the costs associated with bags entirely. A unified system would facilitate and improve cleaning, weighing and grading of grain, resulting in a reduced number of disputes, and improved prices. Shipping costs would be reduced because of reduced loading and unloading times; and greater uniformity in cargoes would maximise stowage space and therefore again reduce shipping costs. Price wrote that, "Odessa and other Russian and Danubian maize is almost invariably shipped in bulk ... so is North American" [Burt-Davy 1912: 575]. To compete internationally, South Africa needed to operate in a comparable manner. Bulk handling, it was claimed, saved at least one third of handling time at the port of export. The elevator at Bahia Blanca, Buenos Aires, then considered the largest elevator in the world with a storage capacity of 90,000 tons, was cited as evidence that bulk grain could be handled at a rate of 150 tons per hour, but as bagged cargo at a maximum of only 100 tons per hour [Burt-Davy 1912: 575]. Lastly, a proposal to use negotiable 'elevator receipts', for all grain deposited into the system, would assist farmers in managing their finances more effectively, and maximising profits [Price 1911].

With international examples to draw on, the principle elements of the elevator system were already well established by the time of Price's report, though necessarily there were differences in detail. Significantly, the principal European grain ports were all equipped for offloading bulk grain. However, due to the fact that shipments in Russia were separated in the ships' holds by mats, pneumatic elevators were often favoured over bucket elevators for offloading [South African Society of Civil Engineers 1915]. However, though pneumatic systems worked more rapidly, they were more expensive to maintain, and there were complaints that they 'floured' the grain [Burt-Davy 1912].

Price's report was followed by the publication of *Maize, its History, Cultivation, Handling and Uses* in 1912 [Burt-Davy 1912]. This book refers extensively to Price's work, and appears to be written for a wider readership, perhaps in order to encourage investment. Burt-Davy showed how the grain trade had grown to such an extent in the United States that the Chicago elevators, for examples, had more than doubled their storage capacity from 780,000 tons in 1901 to 1,630,000 tons by 1910.

After the First World War, a committee was appointed to "inquire in and report upon the desirability or otherwise of establishing Grain Elevators in South Africa". The conclusions of the Committee echoed

Chapter 6: The Networked Landscape of Grain Elevators

those of Price, seven years earlier. They considered that the adoption of an elevator system would lead to financial savings for the national economy due to:

- savings by SAR&H because of the quicker handling of grain traffic, and more effective use of rolling stock;
- savings by SAR&H because of more economic use of expensive wharf and harbour facilities, principally due to faster turnaround times, but also because the vertical nature of the elevators creates a smaller building footprint than the hitherto conventional grain sheds;
- pooling of grain for transport and storage as individual consignments are aggregated;
- use of negotiable certificates would smooth the progress of trade, for farmers and merchants alike;
- improved storage and transport system would boost agricultural sector and provide improved returns;
- more efficient use of labour;
- disputes over weight and grading of maize would be minimised.

Though admitting that it was difficult to calculate the financial value of the anticipated savings with any real accuracy, the committee nonetheless suggested that such savings were likely to amount half a million pounds a year, after allowing for interest on capital, depreciation, and running costs. Thus, in that model, the capital investment would be recovered in four years. The Committee's report, in 1918, recommended that work on the system start as soon as possible [Report of the Grain Elevator Committee 1918].

The Railways Administration responded to the report of the Grain Elevator Committee by appointing William Littlejohn Philip, a Canadian, as Consulting Engineer. His 1919 report on the design, equipment, capacity and location of the proposed elevators was to form the basis of what followed [Littlejohn Philip 1919], and indeed his signature is present on many of the design drawings dating to 1920. Littlejohn Philip was a director of one of the principal English firms engaged in supplying and fitting out grain handling equipment. This relationship, with Messrs Spencer and Company of Melksham, was to prove contentious later, as alleged conflicts of interest arose in the handling of tenders and contracts.

Littlejohn Philip recommended the building of two 'port elevators', at Cape Town and Durban, together with a total of seventy-one 'country elevators' (*Figure 45*). It was the General Manager of South African Railways and Harbours, Sir William Hoy, who ruled that only thirty-four of the 'country elevators' be built at first.

The thirty four 'country elevators' were to be erected at stations handling large volumes of grain traffic. One, at Moorreesburg, served the wheat lands of the Western Cape, whilst the remainder were located in the maize producing areas of what were then known as the Orange Free State and Transvaal (*Figure 46*). The total storage capacity of the new system would be 181,200 tons, of which the elevators at Cape Town and Durban accounted for 30,000 and 42,000 tons respectively, and it was anticipated that it would cost little less than two million pounds sterling to construct.

In some countries, such as Canada, country elevators were usually privately owned and operated by grain traders and millers. In South Africa, however, it was decided that the entire system should be controlled by the South African Railways and Harbours Administration (hereafter abbreviated as SAR&H). The functions and responsibilities of SAR&H included cleaning, weighing, grading, storing and transporting grain, but did not extend to trading in it [SAR&H Bulletin (54) 1923: 99]. (A detailed exposition of these functions and responsibilities follows later in this chapter.)

A critically important aspect of the South African grain elevator system was that grain received into an elevator lost its identity once it had been weighed, graded and transferred to a storage bin. The system worked on the principle that a ton of grain, at a specified grade, was equivalent anywhere in the system. This was not the case in all other places that exported grain, and at Bahia Blanca, Buenos Aires, for example, a different grain handling paradigm was developed. Here, the port elevator received bagged grain from different suppliers, and kept it in discrete consignments, even after it had been received into the elevator. This necessitated the allocation of storage bins to individual suppliers, and meant that grain could not be aggregated into larger consignments based on grade [Henry Simon 1933]. In 1908 the elevator at Buenos Aires was the largest in the world, with a storage capacity of 90,000 tons, and was said to be a “typical example of silos constructed in reinforced brick” [South African Society of Civil Engineers 1915: j.4]. Alongside was a 660 square metre shed, equipped with sixteen fixed and fifteen movable conveyors, for the transfer of bagged grain from storage sheds to the holds of ships [Burt-Davy 1912: 613].

The motivation behind the grain elevator scheme, for government, was the development of the agricultural sector as an export industry. This needs to be considered within the context of increasing state involvement in the industrial sector, as described by Clark [1994] and Christie [1984]. The 1920s saw the conception and birth of major government sponsored interventions into South Africa’s manufacturing economy with both the creation of a state funded electricity supply commission (ESKOM), and a state funded iron and steel industry (ISKOR). The creation and management of these corporations was a specific response to a number of political and economic factors most significant of which was that at the beginning of the twentieth century, the mining sector was by far the most powerful sector of the South African economy. By 1897 gold was accounting for 96% of exports from, and between 60% and 80% of capital invested in, the Transvaal [Clark 1994: 18].

The mining industry needed cost efficient and reliable sources of both electricity and steel, and by the 1920s the rapidly expanding railway network had also become a major consumer of both. Coupled to these economic considerations was a perceived political need to address rising unemployment amongst the white population. A fall in real wages in the mining industry, and the simultaneous development of commercial agriculture, particularly in the Transvaal, led to as many as 100,000 landless ‘poor whites’ looking for employment [Clark 1994]. When the Chamber of Mines announced its intention to lift the ‘colour bar’ and employ increasing numbers of black workers, the white workers went on strike in what was to become known as the ‘Rand Revolt’. The strike was savagely crushed by Smuts’ government,

which called on the army to use tanks, artillery and aircraft against the strikers. Seventy three people were killed in the action.

The Smuts government saw state sponsorship of the electricity and iron and steel industries as vital in stimulating the manufacturing economy, and thus for creating employment opportunities for 'poor whites'. They, in turn, were attracted by the ethno-centric policies of Hertzog's National party to whom Smuts lost the 1924 elections.

Sir William Hoy played an important role in the formulation of government policies in this area, where his own interests were inextricably linked with the outcome of proposals to establish ESKOM. Hoy, in his capacity as General Manager of SAR&H, had been urging state involvement in the provision of electricity and steel in order to meet the needs of the railways, since 1917, and in 1921 was actually involved in drafting the first Electricity Bill.

It is useful to closely examine the 1919 report by Littlejohn Philip, as the broad principles of elevator operation outlined above are described in detail for the South African context. Littlejohn Philip's report needs to be considered in the context of the two earlier reports, for it reiterates many points already covered in them.

At the time of compiling his report and recommendations, Littlejohn Philip had already been appointed as Consulting Engineer for the design and equipment of the proposed elevators. Sir William Hoy added his own memorandum in which he recommended adopting in principle Littlejohn Philips's proposals. However, where Littlejohn Philip concluded that seventy-one country elevators should be built, Hoy reduced this to an initial thirty-four. It was also Hoy who recommended that special box trucks be designed and made ready for when the new system was introduced.

Littlejohn Philip argued that elevator systems were now well established overseas, and that even in countries where grain exports were declining, elevators were still being built. This, he said, was because the value of elevators was far greater than to the export markets alone. South Africa, which benefited from having a dry climate during harvest time, and from a unified railway system, was ideally suited to the implementation of an elevator system.

The government, as represented in this case by Hoy and SAR&H, agreed that although it was their role to build and manage such a system, it was not appropriate for them to make a profit from it. Thus tariffs should be sufficient to cover operating costs and the interest on capital invested, but no more. Such benefits as would accrue would therefore be for the national economy as a whole, as well as for the grain farmers and merchants [Littlejohn Philip 1919 para. 1-18]. The benefits of having a single unified system, managed by SAR&H, would mean more effective use of capital, and also leave less room for disputes [Littlejohn Philip 1919 para. 67-68].

Exports of maize meal to Europe, which had commenced during the First World War, were expected to give way to an increased trade in maize, while there was consistently increasing demand in the home market. With greater areas of agricultural land being developed for maize farming, and continuing improvement in prices, it was expected that not only would there an increased surplus available for

export, but that there would also be potential for the establishment of maize based industries close to the ports.

Comparing the distribution of grain elevators to the areas in which maize was produced (*Figure 46*), it is apparent that the entire system was concentrated in the white owned commercial farming areas, and that no provision whatsoever was made for the rural black population in the Transkei area between East London and Durban. That the provision of elevators was 'development' for only a limited part of a highly segmented population is very clear.

The form of the grain elevator is solely derived from its function. There are three major factors which influence that form:

- the need to provide height in order to allow gravity to pass grain through the storage bins;
- the tendency of grain to act as both liquid and solid;
- and the fire hazard created by the presence of grain dust.

It is when it acts as a liquid that grain is most hazardous, exerting an outward lateral pressure on whatever contains it, and also tending to create a vacuum if that container is suddenly emptied from below [Banham 1986: 115]. The cylindrical form is best suited to withstand both the outward and inward pressures, although this creates what might be wasted space between the bins. This has been resolved by using those interstices as storage space as well, in what are termed 'interstitial bins' or 'star bins'.

The storage capacities and locations of the proposed elevators were determined by the expected volumes of maize that each was expected to handle in the course of a year. On the basis of a stock turn of eight times per year, it was calculated that the two port elevators would need a combined storage capacity of 72,000 tons, in order to handle a total of 580,000 tons of maize per year. The country elevators, meanwhile, were calculated on the basis of five times per year. Thus a total storage capacity of 160,000 tons would be required to handle 800,000 tons of maize per year [Littlejohn Philip 1919 para. 20-56].

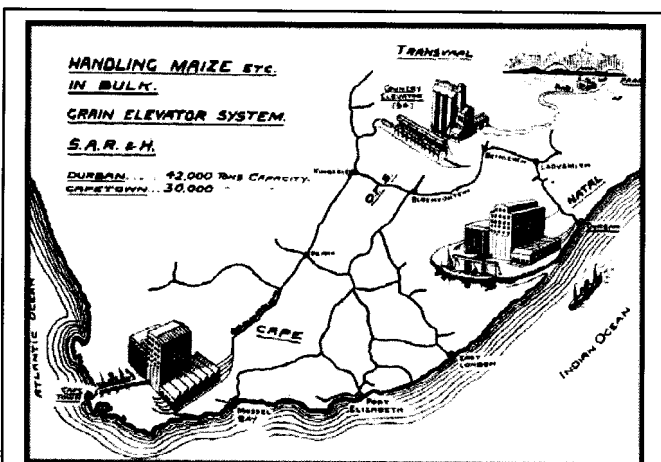


Figure 45

Pictorial map of the proposed South African grain elevator network, 1923.

[SAR&H Magazine, No.60, Aug. 1923]

Whilst the system was principally designed to facilitate the maize market, the storage of wheat and oats outside the maize season was also expected to enhance the earning capacity of the elevators, particularly in Cape Town.

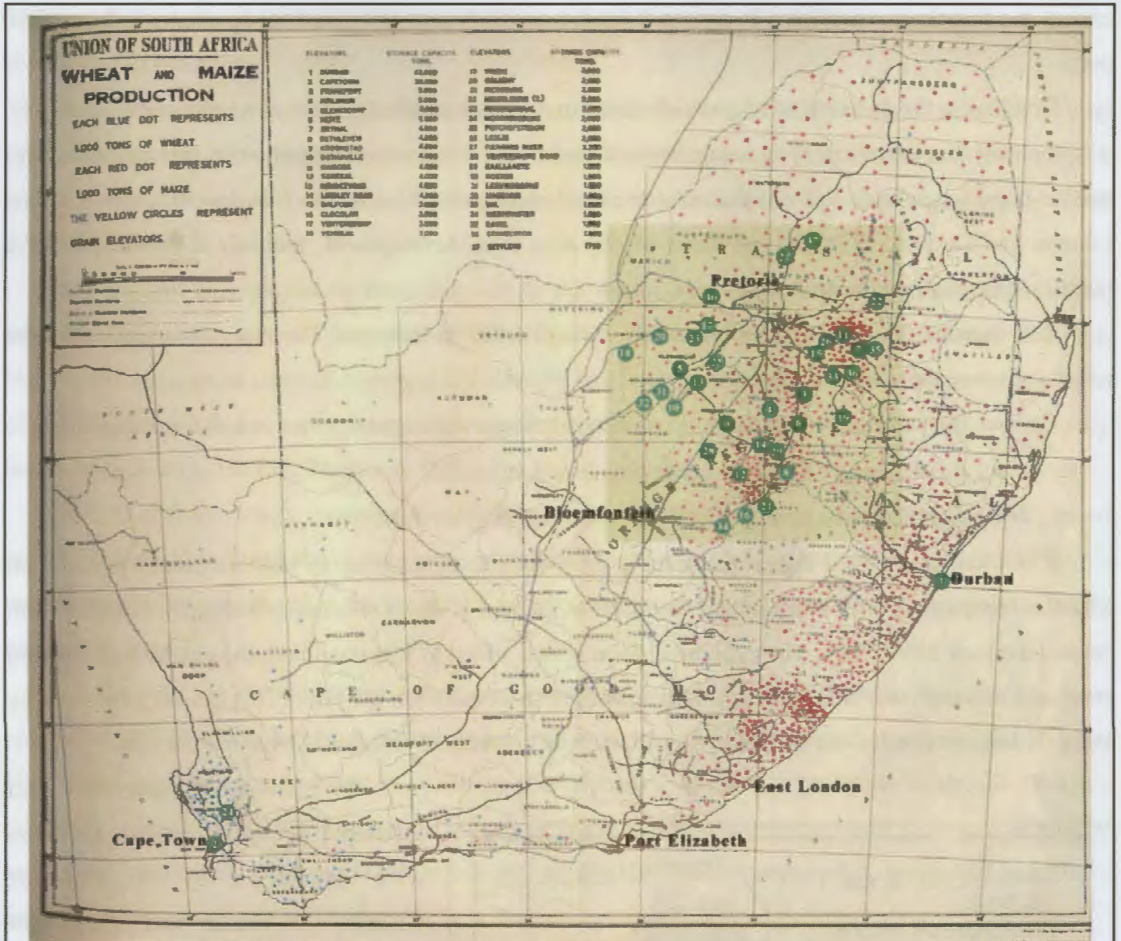


Figure 46

Map showing areas of wheat and maize production, with locations of elevators, 1927.

Red dots represent the maize growing areas, blue dots the wheat growing areas, and the larger green dots the locations of the country elevators. It will be seen that no elevators were provided in the Eastern Cape / Transkei area between East London and Durban. (The area shaded green is reproduced at a larger scale as Figure 47 on page 117.) [SAR&H Magazine, 1927 (and annotated)]

The costs directly associated with using grain bags was a major issue for maize farmers. Principally, for the farmers, there was the cost of the bags themselves. Though bags could be returned for re-use, South African bags were not always wanted. In Britain, for example, a different size and quality of bag was used. But was not the bag cost alone that concerned the proponents of the elevator system. The cost of discharging bagged grain in Europe was said to be between 30% and 50% greater than it was for bulk grain. For South African maize to compete in the international market, it was clearly necessary to minimise unnecessary additional costs.

A key concept in the design and management of the system was the ‘negotiable certificate’ that was issued to the farmer depositing grain into an elevator. Farmers had customarily been obliged to sell their grain as soon as it was harvested, tending to lead to seasonally depressed prices. There were two

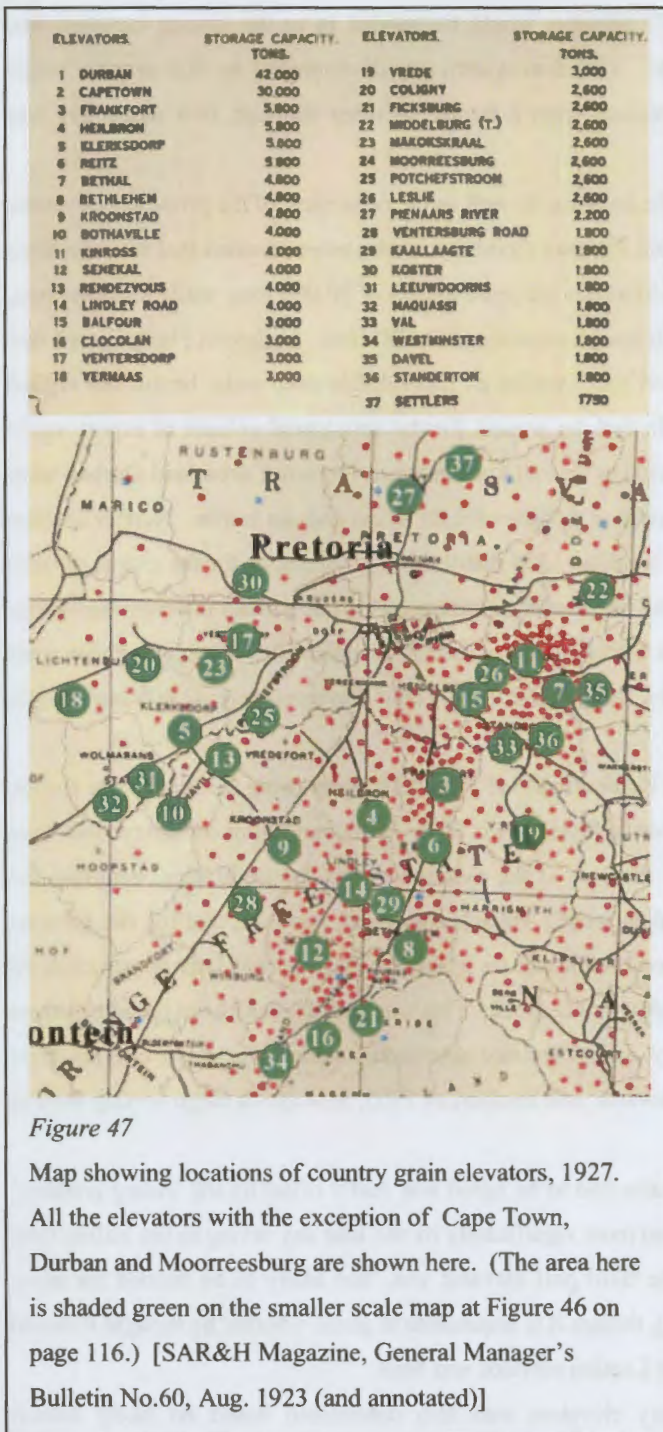


Figure 47

Map showing locations of country grain elevators, 1927. All the elevators with the exception of Cape Town, Durban and Moorreesburg are shown here. (The area here is shaded green on the smaller scale map at Figure 46 on page 116.) [SAR&H Magazine, General Manager's Bulletin No.60, Aug. 1923 (and annotated)]

principal reasons why they did this. The first was that, because of a low capital base, they needed the sale of one year's harvest in order to pay for the next. The second reason was that farmers generally did not have adequate storage facilities in which to store the harvest. In this sense, adequate storage meant not just the ability to store the harvest, but to store it safely, free of moisture, weevil, rats and other hazards.

Once a farmer had delivered grain into the elevator system, and it had been cleaned, weighed and graded, he was issued with a 'negotiable certificate' sometimes alternatively referred to as a 'grain elevator receipt'. He was immediately relieved of the need to worry about storage, or the conditions under which the grain was stored. His grain had lost its individual identity within the broader system, and was insured against all losses. The certificate could thus be traded, or used as security with a bank, against which the farmer could raise the working capital necessary for preparing the next year's crop [Littlejohn Philip 1919 para. 70-77].

From the inception of the system, through until 1956, two types of receipt were used. The 'A' receipt was issued

for each multiple of 10 tons (100 bags), and the 'B' receipt for any amount less than 10 tons (100 bags). In the early days of the system, when ox wagons were still being used to deliver grain from farm to elevator, farmers were allowed five days in which to complete a delivery of 100 bags to the elevator, before storage charges were levied. The 'B' receipt was in effect a temporary, or pro-forma receipt, and was not negotiable. The farmer would receive a 'B' receipt for each part of the consignment brought in.

When the total load was complete, the 'B' receipts would be handed in to the issuing elevator, and exchanged for the negotiable 'A' certificate. This dual system was discontinued in 1956 when a single negotiable receipt for the total quantity received from a farmer, or other supplier, in a single day was issued.²²

Littlejohn Philip's report considered the location, as well as the capacities, of the proposed elevators. He differed with the conclusions of the Grain Elevator Committee, who recommended that there be three port elevators. The largest, at Durban, would have a storage capacity of 30,000 tons, while the other two, at Cape Town and East London, would each have a capacity of 20,000 tons. Littlejohn Philip agreed that that the harbours at Cape Town, Durban and East London all had suitable deep water berths, but argued that only two were required at that time. In fact, he argued, for the anticipated volume of export maize traffic, Durban alone would probably suffice, but the rail lines between the maize areas and Durban were already overworked, and Cape Town also needed facilities for its wheat and oat traffic. Neither Durban nor East London would be appropriate for handling local distribution of wheat, or for the export of oats, while neither of these crops compete with the needs of the maize growers due to their different harvesting cycles. A port elevator for Cape Town was therefore also considered worthwhile. Littlejohn Philip went on to recommend that the storage capacities Durban and Cape Town elevators were 42,000 and 30,000 tons respectively.

Lack of available space at Table Bay Harbour had led Price to suggest using the quarry site for the elevator, but this would have been too expensive [Price 1911: 207]. Littlejohn Philip considered the "best available site, although not by any means ideal, is at the extreme end of the grain shed, entailing the provision of galleries leading on to the coaling jetty". He acknowledged, however, that the site gave no scope for further extension. This indeed became the site on which the elevator was later constructed, on which the foundations could be taken straight down to bedrock. This was land that had been reclaimed from the sea in later part of the nineteenth century, and an undated nineteenth century map shows coal sheds on what was to become the site of the grain elevator, and another, of 1905, indicates a cargo sorting shed in the same position.

The additional distance over which maize had to be railed was partly offset by the 'ruling gradient' which was less than on the Durban route, and more significantly by the four day saving in the sailing time to Europe. Littlejohn Philip stated that the third port elevator was "not likely to be needed for some years" [Littlejohn Philip 1919 para. 87-100], though it is impossible to guess whether he thought it would be almost another fifty years before the East London elevator was built.

The location and size of the country elevators was also determined based on likely annual throughput. Some of the country elevators were located according to the specific needs of the districts they served, whilst others were to serve as collecting centres. According to Hudson [1992: 89], the maximum distance that north American grain farmers would expect to have to travel to a railway was about five miles, or eight kilometres, but it is clear that South African maize growers were required to

²² Transnet Archives (SIL/8353) : Grain Elevators in South Africa 1961: 6

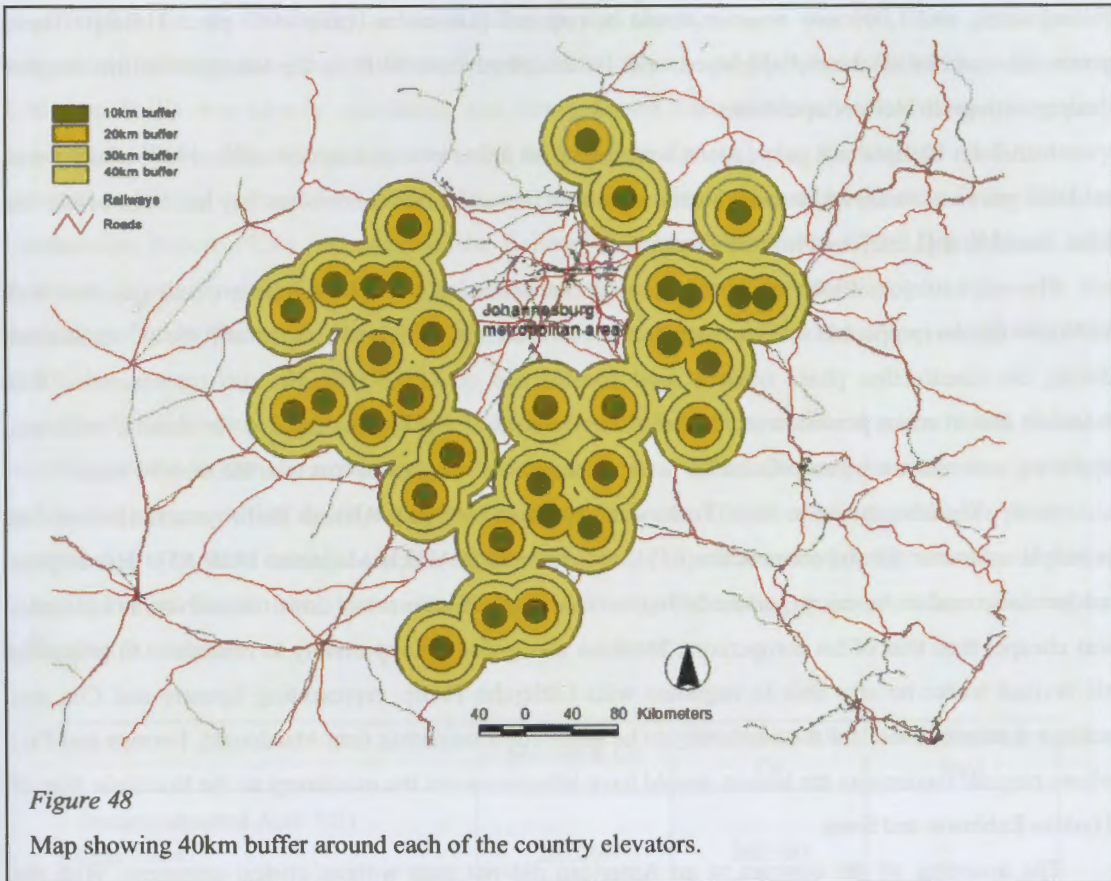


Figure 48

Map showing 40km buffer around each of the country elevators.

travel up to 40km to the nearest elevator (Figure 48). The round trip would need to be made many times during the harvest, often in extreme conditions, and railway companies competed to provide services that would enable the farmer to deliver grain most efficiently and economically.

A critical factor, if farmers were to be encouraged to use the new system from the outset, was that the elevators were designed to allow for the continued use of ox-wagons. Hoppers allowed bagged or loose grain to be tipped quickly efficiently, and large ‘dormant scales’ were provided to ensure that entire wagon loads could be weighed in a single operation, and kept separate from that of other farmers until it had been weighed and graded. For the loading of railway trucks, a separate system of ‘loading out bins’ (see page 134) ensured that good control could be maintained at all times over the movement of stock [Littlejohn Philip 1919 para. 103-112].

The elevator system not only transported and stored grain, but, to use the modern idiom, value was added in the system as well. This was done by the very act of grading, which assured quality, and through the cleaning and drying processes. Grain was to be ‘rough cleaned’ at the country elevators, and dried, if required, at the port elevators [Littlejohn Philip 1919 para. 120-123].

Whilst delivery of maize to country elevators was a manual affair, using ox-wagons and the farmer’s own labourers, grain handling at the port elevators was highly mechanised. Here, hydraulic lifts would tip special designed railway wagons in a manner which unloaded a forty-ton load in five minutes [Littlejohn Philip 1919 para. 124-126]. The railways were already experiencing a shortage of suitable

rolling stock, and 1,000 new wagons would be required [Littlejohn Philip 1919 para. 215 E]. These processes, and the machinery employed, will be described more fully in the later part of this chapter dealing with grain elevator operations.

Littlejohn Philip's cost calculations were based on prices obtained in November 1919, when it was said that prices of steelwork and machinery were now two and a half times what they had been before the First World War [Littlejohn Philip 1919 para. 202].

Overall, Littlejohn Philip estimated a capital expenditure of £814,000 for the two port elevators, and £890,000 for the (proposed) seventy-one country elevators. An additional amount of R95,000 for interest during the construction phase made a total construction of £1,799,000. He also recommended that SAR&H should make provision in its annual expenditure of 5% for interest, 2% for repairs, renewals, operating costs and management, and 1.5% for redemption of the capital cost over the next 30 years.

A. W. Menkins, based in New York, was appointed by South African Railways and Harbours as principal contractor for the construction of all the elevators [SAR&H Magazine 1926: 83]. His original tender conformed to American standards, but not to the specifications laid down. However, as his tender was cheaper than that of his competitors, Menkins was given the opportunity to resubmit. In preparing his revised tender he was able to negotiate with Littlejohn Philip, representing Spencer and Co., and achieve a reduced price for the machinery to be installed. Competing firm Macdonald, Forman and Co., whose original tender was the lowest, would have sub-contracted the machinery to the Rochdale firm of *Thomas Robinson and Sons*.

The awarding of the contract to an American did not pass without critical comment. With the Colonial Government in Britain having recently loaned six million pounds to the Union Government for investment in infrastructure, the Federation of British Industries felt it wrong that the main contract was going to an American and lobbied Winston Churchill to take up the cause of the British manufacturers who wanted the work. Smuts, then the South African Prime Minister, responded to Churchill by pointing out that only the main contract for the building work was going to an American, and that the structural steel and machinery were all being sourced from Britain. Meanwhile, sixty per cent of the total cost of the elevators would be spent in South Africa, with concrete, reinforcing steel, and labour all being supplied locally.²³ However, South African interests were not satisfied either, and the Association of Certified (SA) Mechanical and Electrical Engineers wrote to Smuts in 1923 complaining of the limited opportunities for its members since the contract for the elevators had been “let as one ... with the only South African materials used in the whole plant being the reinforcing bars, cement, stone, sand and water for the concrete”. The Association argued that all the machinery, with the possible exception of specialised machinery such as the scales, could have been made in South Africa at as good a quality and probably as cheaply as that imported from overseas.²⁴

²³ National Archives, Pretoria (PM 1/2/51 PM13/6): cutting from *The Morning Post* (UK) 18 Oct. 1921 & letter from Sir Edgar Walton to Prime Minister Smuts 20 Oct. 1921.

²⁴ National Archives, Pretoria (PM 1/2/51 PM13/6): letter from Association of Certified (SA) Mechanical and Electrical Engineers to Prime Minister Smuts 7 Mar. 1923

Tenders for the machinery to be installed in the elevators were received from a number of companies, including two English firms: Spencer and Company, of Melksham, Wiltshire, with whom Littlejohn Philip was closely associated, and Henry Simon Ltd. of Cheadle Heath, near Stockport, Lancashire (*Figure 49*). Spencer was awarded the contracts for equipping Durban and all the country elevators, while the contract for Cape Town was granted to Henry Simon Ltd [Durban Grain Elevator Commission Report 1924]. Meanwhile, the Railway Administration's own Chief Draughtsman, and Assistant Bridge Engineer, William Clark, was to render 'special services in connection with the designing of grain elevators'. For this he was paid an initial bonus of £250 and a 'special allowance' of £150.²⁵

The Grain Elevator Committee Report of 1918 had declared that reinforced concrete was the most suitable material for the elevators, particularly those at the sea. It had also stated a preference for a belt and bucket system, which it said was better suited to South African conditions than the pneumatic systems said to be more complex and less economical [para. 212]. It also needs to be remembered that at Cape Town and Durban the system was designed primarily for loading grain into ships, and not for offloading from them.

	Spencer & Co	Henry Simon & Co	T Robinson & Sons
Tenders submitted April 1921			
Cape Town	205,000	202,500	tender amounts not known
Durban	207,500	213,000	
Large Country Elevators	223,500	227,000	
Small Country Elevators	126,350	123,000	
	762,350	765,500	
Tenders submitted December 1921			
Cape Town	159,500	155,575	no tender
Durban	169,800	174,000	submitted
Country Elevators	244,150	252,300	246,240
	573,450	581,875	246,240

Figure 49

Table showing relative quotes of Spencer, Simon and Robinson, April 1921.

[Durban Grain Elevator Commission Report 1924]

In silo construction, horizontal rounds steel bars were used to mitigate against 'bursting pressure', the tendency of grain to act like a liquid, and push out the walls of the bin. Vertical bars were provided in response to temperature and setting stresses that might be set up in the concrete [South African Society of Civil Engineers 1915: h.1].

The development of movable shuttering had revolutionised the use of concrete, and more particularly the speed with which structures such as silos and chimneys could be constructed. In the

²⁵ National Archives, Pretoria (URU 439 490) and (URU 489 88): correspondence 18 Feb. 1920 and Dec. 1920.

United States and Canada, where the use of movable shuttering had by 1915 become common practice, construction advanced far rapidly than in the United Kingdom, where it had yet to be widely adopted. Cited as an example was the No.1 Elevator in Montreal, where the silos had risen vertically 6'4" per day, compared with an elevator in Manchester (UK), where only 1'6" per day had been achieved [South African Society of Civil Engineers 1915: g.8].

The principle behind movable shuttering was make the pouring of the concrete a continuous, rather than an intermittent process. This not only provided much improved structural integrity, but was also more economical to build. Once a form, perhaps four feet high, had been created on the ground, belts of double 'sheeting' were formed right round the exterior and interior of the structure. This 'sheeting' consisted of vertical wooden boards, set closely together, though not abutting, attached to horizontal ribs. The boards could not be too close to each other because space was needed for expansion when they came into contact with the wet cement. The horizontal ribs were in turn suspended from yokes to which screw jacks were attached at intervals of between five and seven feet.

The entire process became a complex management problem, requiring close supervision and co-ordination of the various teams involved. The vertical steel reinforcing needed to be in position, as it was on these rods that the jacks were fixed. The horizontal steel reinforcing rods needed to be prepared (bent) ready for fixing, and the concrete mixing plant properly resourced. Backup systems were recommended in case the mixing plant, or the hoists used for the concrete, were to fail. Once the process was under way, it was critical that work proceeded, day and night, until it was finished. If the concrete was allowed to dry between sessions then the structural integrity of the work would suffer, and the shuttering would become impossible to move. The rate of climb was governed by the rate at which materials could be delivered, and by the weather, and whilst in warm weather it was possible to achieve six feet per day, cold weather would slow this considerably.

An operating cycle started when the shuttering was filled to the top with fresh concrete. In a typical operation, each screw jack was given a succession of quarter turns, raising it by half an inch each time, until the entire belt of shuttering had been raised six inches. Whistles were used to signal to the men, each operating a dozen jacks, to make another turn. In this way the concrete at the bottom of the last pour would have time to set before the shuttering was raised. In the hour that the shuttering had been raised six inches, the concrete should have set sufficiently for a new pour to be made. The steel-fixers then had to place the next section of horizontal reinforcing rods whilst not obstructing the concrete pouring gang working closely beside them [Reynolds 1938; Buffalo and Erie County Historical Society 2000]. The structural steel for all the elevators was sourced from "Cargo Fleet", an iron and steel works near Middlesbrough, England.²⁶

²⁶ As recorded by direct observation at Kroonstad and elsewhere.



Figure 50

The Vereeniging Milling Company's grain elevator, 2001.

The first elevators to be constructed in South Africa belonged not to SAR&H, but to East Rand Proprietary Mines and the Vereeniging Milling Company (Figure 50). In 1923, complaining that contract for building the railway elevators had gone overseas, the Association of Certified (SA) Mechanical and Electrical Engineers wrote to Prime Minister Smuts saying that "E.R.P.M. has had an elevator in operation for many years", and also noted the building of the Vereeniging elevator, built by Lewis and Marks during the First World War.²⁷

The Vereeniging elevator, which had cost £85,000 to build, had a capacity of 12,000 bags (1,200 tons) per day [Industrial South Africa 1924: 376]. The Rand Daily Mail reported in 1922 that, "visitors to Vereeniging cannot fail to be struck with the imposing concrete structure which stands on open ground on the Johannesburg side of the railway station. It is a grain elevator of the latest design, equipped with the very latest conveyors and machinery, and is the first of its kind in South Africa. Later we are to have thirty-six (sic) grain elevators erected to the order of the Union Government, but the Vereeniging Milling Company, realising the need for such a structure, took the matter in hand some time ago, and the elevator has already done big and profitable service" [Rand Daily Mail 7 Apr. 1922]. The Vereeniging elevator has eight storage bins, and still functions in conjunction with the company's adjacent roller mill.

As has already been stated, a decision was made to build port, or terminal, elevators at Cape Town and Durban harbours. The cost of building the Cape Town Grain Elevator was originally estimated at £316,500 but by October 1923 this had been increased to £390,493. Of this about ten per cent was related to the cost of the foundations. The contract price did not cover "the removal and re-erection of a building to clear the site required for the elevator", which was paid for by the Railway Administration [SAR&H Annual Report 1923: 9]. That building was the existing grain handling facility, not the earlier coal sheds, and is shown on the early site plan.²⁸

Work on the foundations of Cape Town's elevator began in January 1921, though with some initial difficulties [SAR&H Bulletin (51) 1923: 26]. "When a considerable portion of the foundation work had been completed it was found necessary to suspend operations and to cancel the contract. It appears that the site of the work is on made-up ground of rubble debris reclaimed about 45 years ago, and as the

²⁷ National Archives, Pretoria (PM 1/2/51 PM13/6): letter from Association of Certified (SA) Mechanical and Electrical Engineers to Prime Minister Smuts 7 Mar. 1923.

²⁸ Plan of Table Bay Harbour (106 L3-2000). Signed by Engineer-in-Chief A M Tippet (1920), amended Oct. 1922.

foundation got down below water-level the sea poured in with high tides.”²⁹ The Controller and Auditor-General’s Report for 1921-22 says it was well known that the site was reclaimed - but it was such a good position that everyone involved was unanimous in choosing it anyway.³⁰ By February 1923, the problems had been overcome, and work on the superstructure was commenced in June that year [Cape Argus 17 May 1924].

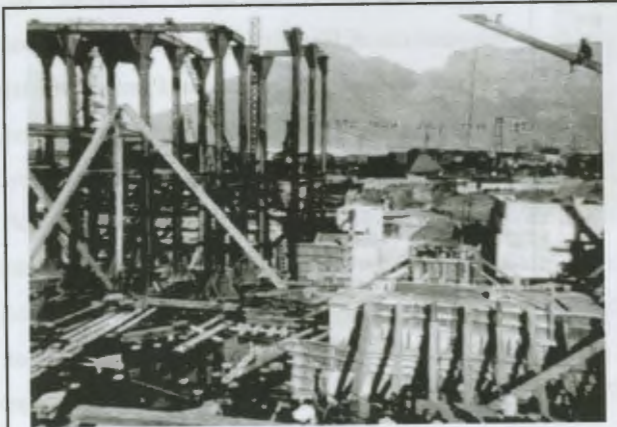


Figure 51
Cape Town: construction of the working house and track shed. 17 July 1923.
[Port Engineer, Table Bay Harbour]



Figure 52
Cape Town: construction of the storage annexe. 31 July 1923.
[Port Engineer, Table Bay Harbour]

The building works were extensively photographed, from foundation to completion. Though the quality of the surviving prints is poor, and there is a need for professional conservation, nonetheless they provide valuable insights into the construction. It is apparent, for example, that the bins in the working house are carried on steel work right through to the basement. The supports visible in the basement, which at first to appear to be concrete, are in fact steel covered in concrete. This was to provide protection to the steelwork in the event of a fire, and was similarly specified for the Durban elevator.³¹ The storage bins in the working house and the storage annexe or of reinforced concrete, whilst above the bins the part of the structure known as the ‘cupola’ is again all steel framed.

The archival photographs show the use of the slipform method of reinforced concrete construction (as described on page 122). Work continued on the “grey towering slab of concrete” throughout the day and night, with up to 400 “Europeans” and 600 “non-Europeans” being employed on the construction at any one time [Cape Argus 17 May 1924].

²⁹ National Archives, Pretoria (SAS 410 F16912).

³⁰ National Archives, Pretoria (SAS 410 F16912).

³¹ Transnet Archives: specifications for Durban elevator 1921: 31.

Cape Portland Cement was used in the structure. The Cape Portland Cement Company was formed in 1921, when it took over the assets of the ‘Hermon Piquetberg Lime Company’, at De Hoek approximately 130km north of Cape Town. In 1922, their first kiln produced 70,000 tons of cement, but though their product exceeded the stipulated British Standard Specifications, nonetheless the company had difficulty persuading local architects and builders to buy it in preference to imported products. It seems that a breakthrough in the company’s fortunes came about, and its reputation secured, when Cape Portland Cement was specified for the Cape Town Grain Elevator [Shorten 1963: 616-617]. Under the headline, “The tallest building in South Africa – and why it is so tall”, the Cape Argus reported that the

forty-two silos were erected “in record time”, with 4,800 cubic yards of concrete having been laid in fourteen and a half days, using 17,500 bags of Cape Portland cement and 145 tons of reinforcing steel [Cape Argus 17 May 1924]. As the silos were ninety feet tall, this equates to a rate of climb of approximately six feet per day, which appears to have been the norm rather than a record. However, given that it was one of the first times it had been done in South Africa, it was indeed an extraordinary achievement and the Argus should perhaps be forgiven its poetic licence. The Argus also reported that the engineer and contractor, A W Menkins, was from Canada. Seemingly they had confused the engineer, Littlejohn Philip, who was from Canada, with the contractor, Menkins, who was American [Cape Argus 17 May 1924].

There were human costs to working at such a pace, and there were many injuries. By February 1924, there had already been 53 accidents recorded, of which six had been fatal. In response to a question in the House of Assembly, it was argued that most accidents occurred in spite of safety precautions, and because of a refusal to wear safety ropes and other equipment [Cape Times 16 Feb. 1924]. Ten days earlier, when a ‘native’ was reported to have fallen into a bin and died, between four

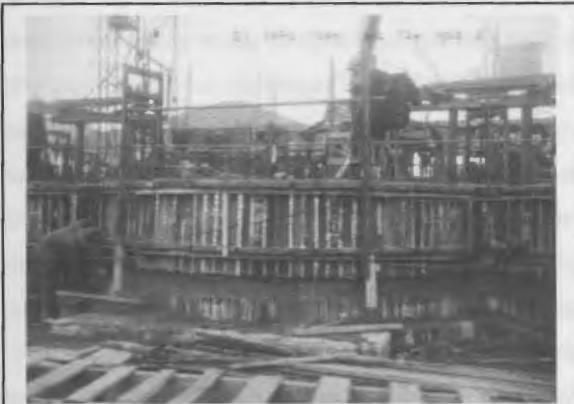


Figure 53

Cape Town: construction of the storage annex.

22 Aug. 1923.

[Port Engineer, Table Bay Harbour]



Figure 54

Cape Town: construction of the storage annex.

25 Aug. 1923.

[Port Engineer, Table Bay Harbour]

and five hundred 'native and coloured men' had taken strike action, demanding that they be paid in proportion to the risks they incurred. Thus, they demanded, the men working on top of the structure should have their pay increased from four to seven shillings per day, whilst wages for those working at *ground level should increase from three shillings and sixpence, to six shillings per day. It is not known* how the strike was resolved, though the Cape Times reported that "by the action of the natives and others eleven Europeans were thrown out of work." An aside reports that "many of the natives on strike were *brought round from Natal, and have been housed in a location at the back of the old Amsterdam Battery. The coloured men live at Maitland and various parts of the Peninsula*" [Cape Times 6 Feb. 1924].

In an undated, though apparently contemporary catalogue, Henry Simon Ltd, described the machinery installed by them in the Cape Town Grain Elevator. Storage in the working-house was provided for 6,000 tons of maize, and in the annexe for 24,000 tons. The catalogue describes how the grain arrived in 40-ton railway wagons, was discharged by four hydraulic tippers into four intake systems comprising elevators, conveyors and weighers. The intake capacity was 25 wagons (or 1,000 tones) per hour. Loading-out was done into four lines of conveyors to the Collier Jetty, which allowed two ships to berth simultaneously. The catalogue further describes facilities to load-out in bulk or sacks from the working house to railway wagons, and how machinery was installed for cleaning and grain, and for dust extraction from the site. The plant was electrically driven and lit [Henry Simon n.d.].

By August 1924 the elevator was ready, and a well publicised trial run was deemed a success [SAR&H Magazine 1924: 897]. With the country elevators now also ready, the first load of maize was received into the grain elevator at Cape Town in September 1924 [SAR&H Annual Report 1925: 55], to be followed two months later by the first export from the site aboard the *S.S. Willaston* [SAR&H Bulletin (81) 1924: 262].



Figure 55

Cape Town: construction of the storage annexe.
27 Aug. 1923.

[Port Engineer, Table Bay Harbour]

While the elevator was reported as having a shipping capacity of 750 tons per hour, this was rarely achieved at first due to time lost trimming vessels, many of which were not equipped for elevator operation [SAR&H Annual Report 1925: 105]. The system was judged a success, however, and requests were made for the construction of additional country elevators [SAR&H Annual Report 1925: 11].

As well as handling exports, the port elevators also provided storage facilities when markets were slack or harvests were particularly good. In 1927, when all the country elevators were full of white maize, for which at the time there was insufficient demand, extra capacity was found by transferring stock to the port

elevators at both Cape Town and Durban [SAR&H Magazine 1927: 1442].

Durban harbour had become important for maize exports in the early part of the twentieth century. By 1918 there were approximately 400 'natives' and twenty 'whites' employed on the Congella grain wharf, which was also equipped with travelling belt conveyors, to assist with the loading of bagged grain. It was estimated that the introduction of the elevator system at Durban would reduce that labour requirement to just two dozen 'natives' and nine 'whites'. The grain storage sheds at the harbour were government owned and controlled, and storage charges were levied on maize stored for more than five days. This led to merchants making up smaller shipments in order to keep the wharves and sheds clear, and meant less economical handling. Not only would the port elevator provide more storage, but the country elevators would make it possible to store greater quantities 'up-country', away from the ports [Report of the Grain Elevator Committee 1918: para. d & Burtt-Davy 1912: 586]. Responding to the 1918 report SAR&H had immediately reserved a site for the proposed elevator at the Congella wharf in July that year, a month before government approval for the scheme had been given.

The construction of the Durban and Cape Town port elevators was begun in 1921, but the Durban elevator was to be both more problematic and controversial. Inadequate testing of the site before laying foundations led to expensive delays, and additional expenditure in the region of almost £220,000 [SAR&H Annual Report 1923: 9-12]. Temporary arrangements had to be made to handle bulk grain at Maydon's Wharf, pending resolution of these problems [Union of South Africa, Office of Census Statistics 1925: 425], and the government eventually appointed a Commission of Enquiry in February 1924 to look into the wasted expenditure on the Durban elevator; to assign the responsibility for that waste; and to examine the contracts between SAR&H, Littlejohn Philip, Spencer & Co., and the sub-contractors.

According to his family, Xavier Brain, a "resident engineer" working for SAR&H in Cape Town, was called upon to assist when the contractor, Menkins, ran into difficulties.³² The specifications supplied to tenderers had stated that the foundation of reinforced concrete slabs was to be carried on reinforced concrete piles. There was however a difference of opinion on how deep those piles should be, and accusations of conflict of interest were levelled at Littlejohn Philip, who had various other interests. In 1922, for example, he was reported as having left South Africa aboard the Windsor Castle to advise on the "erection of a grain elevator and cold storage plant in Kenya".³³

³² Personal Communication: Natalie Andrews, daughter of Xavier Brain, 9 Aug. 1994.

³³ National Archives, Pretoria (PM 1/2/51 PM13/6): minute from office of Prime Minister Smuts, 22 July 1922.

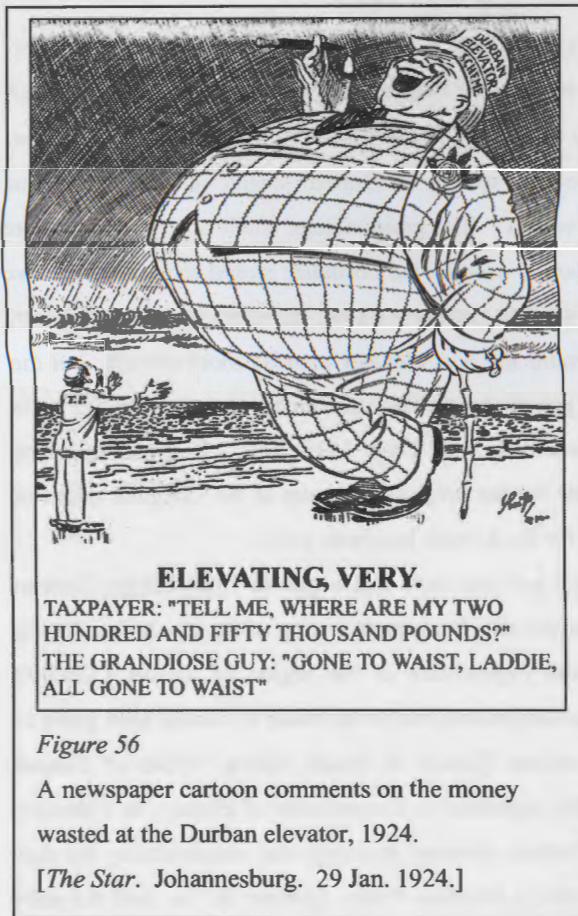


Figure 56

A newspaper cartoon comments on the money wasted at the Durban elevator, 1924.

[*The Star*. Johannesburg. 29 Jan. 1924.]

SAR&H had entered into three consecutive contracts with Littlejohn Philip, and though the Commission found nothing to complain about with the first contract, it “disapproved altogether” of the second. There were two circumstances which made Littlejohn Philip’s appointment contentious. Firstly, as a mechanical engineer he was well qualified and experienced in fitting out elevators, but he lacked the skills to address the complex civil engineering problems presented by the foundations of the Durban elevator. The Commission found that the SAR&H general Manager, Sir William Hoy, had not taken reasonable care when, contrary to the advice of his own senior staff, he had appointed Littlejohn Philip. Not only did Littlejohn Philip not have the required skills, but his contract only required him to make occasional visits from England, and the opinion was that the seriousness of the problems presented warranted constant attention.

The second area of contention was Littlejohn Philip’s relationship with Spencer and Co., of which he was a director. Though not tendering directly to SAR&H, Spencer, along with T. Robinson & Sons, Henry Simon, and others, was tendering to Menkins for the sub-contract to supply and install machinery to the elevators. Yet Littlejohn Philip was allowed to advise on and judge a tendering process from which his own company, and by extension, he himself, stood to benefit directly from. The Commission held firstly the Railway Board, and secondly Hoy, responsible for their poor judgement (*Figure 56*).

The Commission, asked to calculate the financial loss due to the engineering mistakes of Littlejohn Philip in particular, assessed it at £212,740. This was found to be due to insufficient testing of the pile driving, “failure to adopt sound engineering methods” when pile driving, failure to see the need for modifying the original design, and failure to see that Menkins’ contract ensured that the foundations were satisfactory before allowing work to start on the superstructure. Most damning of all was what it cited as Littlejohn Philip’s “culpable negligence” in giving contracts to Menkins, a contractor incompetent to undertake the work.

The last issue which the Commission was required to consider was the effects of Littlejohn Philip’s connection with Spencer. Here they found no evidence that his connections had led to any increase in the cost of the work, or that any faulty material had been supplied by Spencer’s, but said that it “undoubtedly

affected Littlejohn Philip's dealings with tenderers and influenced his recommendations". He had not, they said, given fair consideration to the tender of Macdonald, Forman and Co., because of their intention to buy machinery from Spencer's competitors.

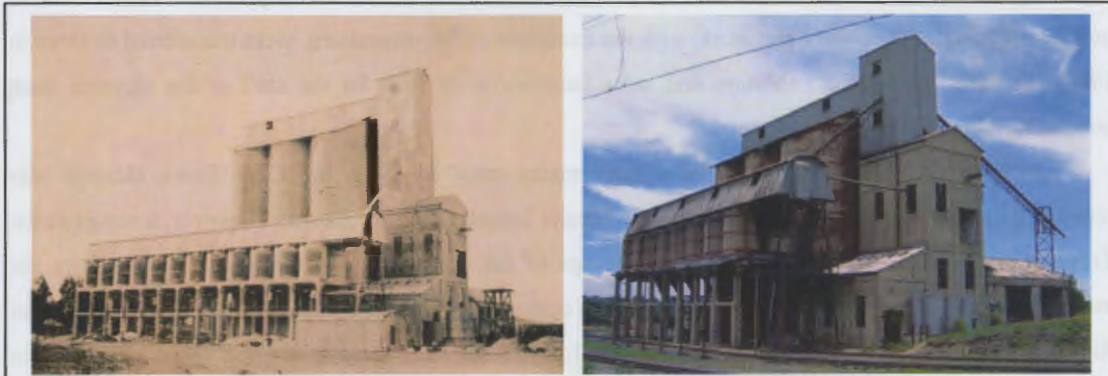


Figure 57

Standerton: country elevator c.1940 and 2001.

It is clear that little has changed in sixty years. The small shed next to railway siding has been cleared away, together with the trestle platform that may have held a water of fuel tank, whilst provision has been made for electricity in later years.

[Transnet Archives and DW.]

South Africa latterly had three operational port elevators, with the most recent being opened at East London in 1966. The Cape Town elevator has been closed; Durban is operated by Agriport, while the East London elevator continues to be operated by Portnet. The current ownership and use of the country elevators is detailed elsewhere, and it is sufficient to note here that nineteen of the original thirty-four country elevators remain in use, owned and operated by farmers' co-operatives, and that only the Moorreesburg elevator has been demolished.

State intervention in the agricultural sector is characterised in various ways during the formative days of the elevator system. Firstly, and most importantly, the investment in the elevators themselves was something that could only have been done by government on the scale that it was. Besides that, however, the government supported the development of agricultural co-operatives, beginning in 1908 when the Co-operatives Societies Act established the principle in the Transvaal, and continuing as the terms of the Act were extended throughout the Union in 1922. Direct government intervention in the marketing of maize began with the 1931 Mealie Control Act 1931, which established the Mealie Industry Control Board, and with the Marketing Act of 1937. After the Second World War, when poor crops and increased consumption led to shortages, the government appointed a Food Controller, maize was rationed, and the price strictly controlled. At that time, in particular between 1945 and 1947, South Africa was importing maize, although by 1948 was exporting again [Vorster 1952].

Very little is recorded about what happened at the Cape Town elevator between the 1930s and the 1950s, and much of what is known about the late 1950s and beyond is based on the oral testimony of former employee Willie de Jager, and the last silo manager, Robert Hurn.

Proposals for SAR&H to hand over the port elevators to the Mealie Industry Control Board came to nothing, although the country elevators, with the exception of Moorreesburg, were transferred to them in 1963. In 1966, new office, ablution and mess facilities were built for the staff of the elevator, then numbering about seventy-eight in total.³⁴

As South Africa 'battled to move a huge maize crop' in 1972, the Cape Town elevator was renovated by SAR&H, in consultation with the Mealie Industry Control Board. However, a report in the Transnet archives records that, "because of the age of the equipment and the great distance from the maize producing areas, the elevator is being kept in operation only until another has been built, perhaps at Richards Bay. It would therefore be uneconomical to provide extra storage at Cape Town" [Farming in South Africa July 1972: 24]. A major intervention was made into the structure with the installation of new dust extraction facilities at that time.

In the 1980s the lookout station on top of the storage annex was regarded as a strategic asset, and kept in service as a backup lookout station for the Port Captain in the event of 'terrorist' attack on the Lourens Muller Building.³⁵ Latterly it was used as a recreational facility by WPK, and also housed cellular telephone equipment.

Government subsidies on the railage costs of maize were gradually phased out, until, by the mid 1980s, it was no longer economically viable to use Cape Town as a major grain port.³⁶ This coincided with a general decline in the country's economy due to international pressure for political change in the country. The port was virtually at a standstill, and various port facilities were rented out on short term leases to a variety of tenants.

In 1987, Cape Town's grain elevator complex, excluding the conveyor gallery and the ship loaders, was leased by Portnet to the Western Province Farmers Co-op, known as WPK. The increased length and draught of modern bulk grain carriers, which means that many are unable to berth at the Collier Jetty, and the high railage costs from the maize producing areas, have resulted in the virtual cessation of grain exports from Cape Town. The last export shipment from the elevator was loaded in July 1995.

Latterly, WPK operated as wholesaler, distributor and storage facility of various grain products including wheat, yellow maize, white maize, grain sorghum, tapioca, soya, oats, sunflower oil cake, cotton oil cake and malt. Many of these products were imported, being off-loaded elsewhere in the docks, and loaded into railway wagons for delivery to the elevator. Shipment from the elevator was principally by road transport, although railway wagons were occasionally used.

³⁴ Plan of Table Bay Harbour 106/301 21 Apr. 1966.

³⁵ Personal Communication: Steven Bentley, Victoria and Alfred Waterfront, 22 Nov. 2000.

³⁶ Personal Communication: Francois Van Der Merwe, former manager, WPK, 24 Nov. 2000.

Since 1988, the Victoria and Alfred Waterfront Company have successfully redeveloped a large area of the historic part of Cape Town's harbour for a mixture of retail, commercial and leisure uses. Current development in the former tank farm will add a substantial element of residential use. Various buildings formerly owned by the Transnet, including the grain elevator site, were let for industrial use. A fuller account of the Victoria and Alfred Waterfront Company, and its conservation policies, will be provided in Chapter 7.

WPK's lease with the Victoria and Alfred Waterfront was due to expire in 2002, but

negotiations between the parties led to WPK agreeing to vacate the site in 2001. No grain was received into the elevator after the end of February 2001, and by the end of July 2001 it had been emptied of all stock. The elevator was vacated by WPK during July 2001 (*Figure 58*). There being no alternative facilities to which WPK could transfer their operation, and no plans to build one, there were approximately two dozen job losses when the facility closed.

The Durban elevator was modernised in the early 1970s, at a time when it was not thought that it would be economical to increase the storage capacity [Farming in South Africa July 1972: 24]. It was transferred to Agriport in 1987, at the time when the Cape Town elevator was transferred to WPK.

As noted earlier, Littlejohn Philip had considered, but rejected for the time being, the idea of building a third elevator at East London contemporaneously with those at Durban and Cape Town. It was not until 1962, following a record maize crop of the previous year, that SAR&H was take the decision to build the East London elevator. Special measures to handle the record volumes had included railing bagged grain, on flat tarpaulin covered trucks, to Maputo (then known as Lourenço Marques) [Littlejohn Philip 1919: para. 87].

With a capacity of 60,420 tons, and therefore twice the size of Cape Town and fifty percent larger than Durban, the East London elevator was planned to be ready for 1965 [SAR&H Annual Report 1962: 11]. It was not actually completed until the end of 1966, and was first used for the 1967/1968 maize crop [Mealie Industry Control Board Report 30 Apr. 1967] when it handled almost 50% of the total export tonnage [SAR&H Annual Report 1968: 41]. It very quickly became necessary to enlarge the capacity of the East London elevator, and by 1973 it had been increased to 75,000 tons. Suggestions of building a fourth export elevator at Richard's Bay, on the Kwa-Zulu Natal north coast, appear to have come to nothing [Farming in South Africa July 1972].



Figure 58

Last days at the Cape Town elevator, July 2001. WPK Silo manager, Robert Hurn (centre), with some of the staff.

This history of the networked landscape of grain elevators has focused exclusively on those built by SAR&H in the 1920s, and has not considered those built since by other organisations, or the greater history of the maize industry. It is important to note that in 2004 maize still plays a significant role in the local economy, though it is expected that the area planted with maize in 2003/2004 will be 2.55 million hectares, the lowest since records began in 1951/1952. The 'shrinking maize fields' now being experienced are attributed to low prices and prolonged spells of dry weather, as farmers plant crops such as sorghum, sunflower seed and soya beans in place of maize [Mail and Guardian 14 Jan. 2004].

The operation of the grain elevators

Introduction

The operating procedures of the elevators are described and illustrated from archival sources, supported by observation of current practices, and discussion with current operators. There are no significant differences between the operation of the smaller and the larger country elevators, except that the larger elevators have two working houses, and thus double the handling capacity. Differences between the country elevators and the port elevators are a function of their different purposes, rather than simply due to their size.

The country elevators

Reference is made in this text to the database reports included as Appendix F. The format for these references is a unique letter code based on the current (not the original) name of the site. Photographs have been incorporated into the database using a reference number added to the site code. Thus [KLERK-0078] refers to the country elevator at Klerksdorp, and indicates photograph reference number 0078. In this section the illustrative reference will be to a single example of any particular observable fact, and there is no attempt here to exhaustively list all occurrences. Additionally, in the following description, letters [A] to [L] are used to identify parts of the structure illustrated in *Figure 59* on page 133.

Country elevators were located at railway stations in the principal grain producing areas, and farmers could deliver either bagged or loose grain to the elevator (see *Figure 46* and *Figure 47* on pages 116 and 117 respectively). Ox wagons, and later trucks, would arrive at the intake shed [A] [KROONS-0023] where the farmer's own labour was required to off load the wagon into the intake hoppers. The hopper mechanism [KLERKS-0077] was controlled using a hand-wheel [RENDEZ-0029] on the ground floor of the working house, and by adjusting this, the operator was able to regulate the load on the machinery running the 'short leg'.

Each working house contained two bucket elevators. The 'short leg' [B] ran from the basement to the top of the cleaning machines, and the 'long leg' [C] from the basement to the very top of the structure, in order to transfer grain to the storage bins [D].

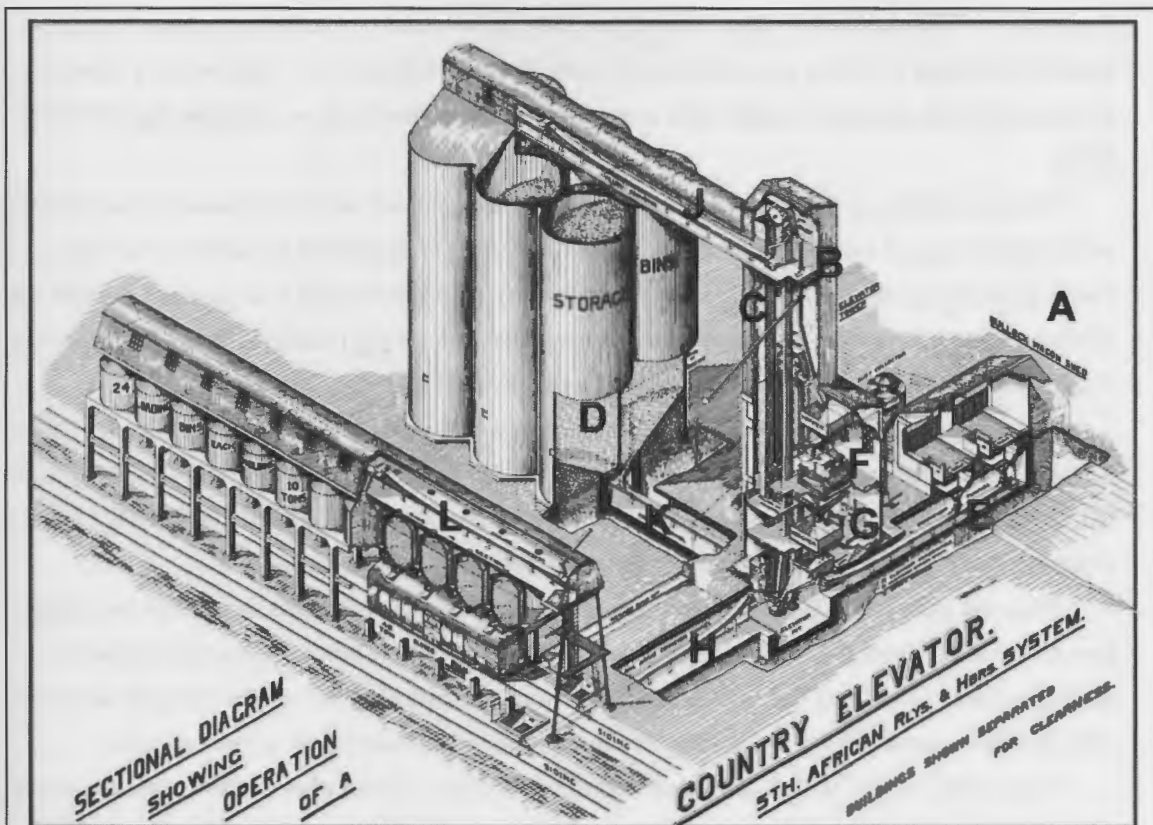


Figure 59

Sectional diagram showing operation of a small country elevator.

- A road intake shed
- B 'short' elevator leg
- C 'long' elevator leg
- D storage bins
- E road intake hopper tunnel
- F cleaning machine
- G scale
- H rail intake hopper tunnel
- J filling belt conveyor
- K transfer belt conveyor
- L loading out bins

[Transnet Archives (and annotated)]

Belt conveyors running in the road intake hopper tunnel [E] [KLERKS-0078] carried the grain to the boot of the 'short' leg from where it would be carried to the cleaning machine [F] [KROONS-0018] for rough cleaning. A spout from the cleaning machine directed the screenings back to the road intake shed, from where the farmer could take them away for re-use as stock feed. Below the cleaning machines was the scale floor [KROONS-0019] equipped with scales capable of weighing a full five-ton wagon load at a

time [G]. In instances where there was no requirement to clean the maize on receipt, it could be transferred through a by-pass spout direct to the scale floor [RENDEZ-0031]. The operating capacity of the 'long leg' was operated manually with a capacity slide lever fitted with an indicator flag [RENDEZ-0037].

Farmers wanting to deliver maize into the system who did not have a convenient local elevator would deliver bagged maize to other stations, from where it was dispatched by rail to the elevator. To handle grain being received by rail, a rail intake hopper [KROONS-0024] was provided beneath the loading out bins. From there a belt conveyor in the rail intake tunnel [H] [KLERKS-0079] ran to the boot of the short leg in the same way as that from the road intake shed .

After being weighed, and graded, the received grain was dropped to the boot of the 'long leg', from where it was carried up to the top of the working house and passed onto a horizontal belt conveyor [J] [KLERKS-0058]. This belt conveyor was equipped with a 'tripper' [RENDEZ-0035 & RENDEZ -0036] which directed the grain off the belt and into the appropriate bin [D] [KLERKS-0057].

When the grain was to be dispatched from the elevator, it was dropped onto the transfer belt running beneath the storage bins [K], and passed, via the 'short leg' through or past the cleaning machines to the scales, and then via the 'long leg' to the loading out bins [L], known as L.O.B.s. When the grain was to be dried, cooled, or moved within the elevator for any other reason, the same basic system was used.

The loading out bins (L.O.B.s) were each filled with 10 tons of grain when a railway delivery was to

be made. A linear group of four bins could thus be used simultaneously to fill a single railway wagon. At Viljoenskroon [RENDEZ], where there are two working houses, and two lines of L.O.B.s, the line closest to the elevators was served by working house 'B' and the further away line by working house 'A', although there was only one belt [RENDEZ-0041].

Bagged grain was also dispatched from the country elevators, and this was done by spouting it from the far end of the belt conveyor over the storage bins [VENTDP-0002], into a bagging out shed situated at the opposite end of the bins adjacent to the working house. In the bagging out shed, automatic scales which cut off at 200lbs, were used to fill the bags.

In June 1927, SAR&H commissioned a thirty-fifth elevator at Settlers, north of Pretoria (Figure 60). This was of a different design to the earlier country elevators, and was said to be

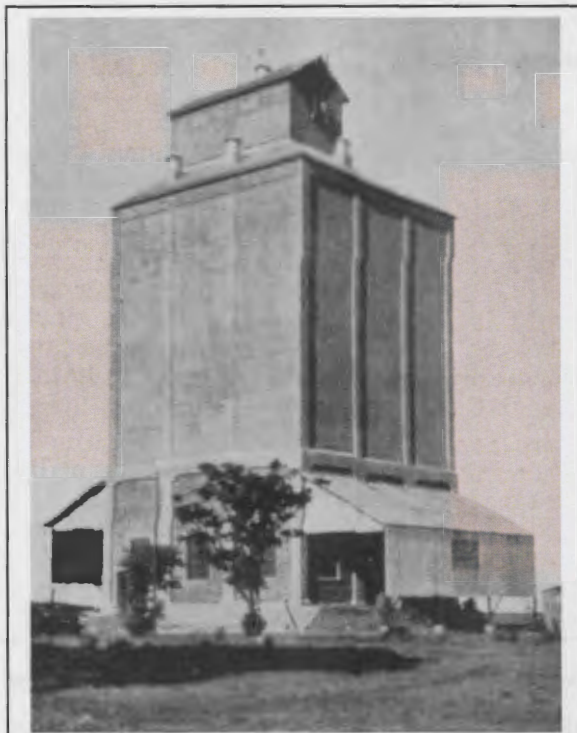


Figure 60 The grain elevator at Settlers, 1927. [SAR&H Magazine, Mar. 1927]

more efficient. In appearance and operation, it was more similar to North American and Canadian elevators, than its counterparts in South Africa. With a storage capacity of only 1,750 tons, it was the smallest elevator in the system, and though its experimental design was expected to be used more widely, it was in fact the only one of its kind to be constructed.

Structurally, the building comprises nine vertical compartments, of which one is used for the elevator legs, one for the cleaning machines and shipping bins, and the remaining seven for storage bins. Loading out bins were not used at Settlers, with grain being spouted directly from the shipping bins.

The Settlers elevator is still standing, and is today owned and operated by Northern Transvaal Ko-op (NTK). Although its Ruston & Hornsby is apparently still in working order, and the elevator and looks the same today as when built.³⁷

In 1947 bulk stores known as 'Bellman' hangars, were constructed at fifteen of the country elevator sites. The construction of these stores by the Department of Agriculture was in response to an acute shortage of bulk storage in the 1946/1947 season, thus the construction of ten additional stores of 7,000 tons capacity, and five of 3,500 tons, meant a total additional provision of 87,500 tons.³⁸ Stock was run into the stores by using a belt conveyor in an overhead gantry linked to the top of the working house [RENDEZ-0042]. This gantry entered the store at eaves level, and deposited grain onto a floor stack. A belt conveyor in a tunnel constructed beneath the bulk store, and running back towards the working house, enabled the grain to be moved back to the elevator. Scraper machines were used to move grain from the floor stack into the hoppers serving the new tunnels.

The port elevators

The manner in which the port elevators functioned was broadly similar to the country elevators, but differed in detail. Where the country elevators were principally designed to receive by road, and dispatch by rail, the port elevators were principally designed to receive by rail and dispatch by sea. The archaeology of the Cape Town elevator is explained extensively later in this chapter, and fully documented in Appendices D and E. Here, just an overview of the system is provided, and although the past tense is used, at the Durban elevator, at the time of writing (2003), the system still operates largely as described.

Stock was received from a train of rail wagons being shunted into the track shed. Once the wagons had been shunted, the locomotive could be dispensed with as the train could be pulled through using electrically powered capstans. Individual wagons were detached from the train, and once in place in position over the receiving hopper, the wagon was tipped end on, to an angle of thirty-five degrees from horizontal. Discharge gates in the end of the wagon were wound open, and grain would pour into the receiving hopper below the track. From the receiving hopper, a belt conveyor moved the grain to the boot of the intake elevator, from where it was carried to the topmost floor of the elevator, and then spouted one level to the 'Upper Scale Floor'. At this level, containers known as 'garners' would receive a full 40-ton

³⁷ Personal Communication: Yasmin Mayat, architectural student, University of the Witwatersrand, October 2003.

³⁸ Transnet Archives (SIL/8353) : Grain Elevators in South Africa 1961: 10.

wagon load at a time. Only when the wagon was empty, and the intake belt completely cleared, would the garner be opened to fill the 'dormant' scale located directly beneath it on the lower scale floor. In this way the process could become continuous as the contents of one wagon would be weighed in the scale while the next wagon was filling the garner above it.

Once weighed, the grain was released to fall to the 'Spout Floor' below. Here, an arrangement of articulated spouts allowed grain to be directed either into individual bins in the working house, onto the cross belts serving the storage annexe, or back to the basement for re-elevating to the cleaners and dryers.

Dispatch, or shipping, from the port elevators was done using a separate set of elevators on the opposite side of the working house. Grain was drawn from the bottom of the storage bins, conveyed to the boot of one of the shipping elevators, and then weighed off as required. The scales on the shipping side were automatic and weighed only 3 tons at a time. After weighing, grain was directed onto shipping belts which led up an inclined gantry and out of the working house.

In Cape Town, the loading gantry serviced four movable ship loaders located on the Collier Jetty. These loaders, each effectively a portable elevator, received grain from the gantry belts raised it using its own internal bucket elevator system, and then spouted it directly into the ship's hold. In contrast to the loading arrangements at Cape Town, those at Durban allowed grain to be spouted directly into the ship. The Cape Town gantry could not be built as high as that in Durban, and was therefore not tall enough to be able to pass grain directly into the ships.

The men who worked in the elevators

SAR&H decided that the best way to train elevator staff would be to bring in contract staff from overseas. To this end, a number of Americans, together with their families, were brought to South Africa to form a core group of expertise.³⁹ The group comprised one assistant elevator superintendent, one millwright, two travelling inspectors for the country elevators, one track foreman, one floor foreman, and one weighing foreman.

Staffing for the new elevators, at least for the first season, was controlled by the Divisional Offices of the SAR&H, with the operators at each location reporting to the station master.⁴⁰ Staff worked a 54 hour week, with overtime only being paid after seven in the evening.

The stories of two men are useful to an understanding of the way in which the elevator system operated in later years.

³⁹ National Archives, Pretoria (SAS LEER 114 FAE1581/1): Minute 9727 ME25/2. 19 Feb. 1923

⁴⁰ National Archives, Pretoria (SAS LEER 114 FAE1581/1): Minute 9729. 1923

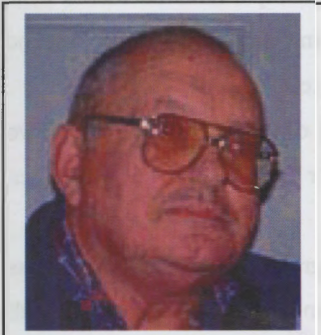


Figure 61
Willie de Jager, 2001.

In January 1955, eighteen year old Willie de Jager went to work for South African Railways and Harbours, first as a trainee steward, and then as a messenger (*Figure 61*). After three months in the army, at the beginning of 1956, de Jager was posted to the Cape Town Grain Elevator in June. Here, as a “second assistant”, his principle task was to operate the levers on the truck lift tables in the wagon shed.⁴¹

The duties of labourers included pulling the wagons through the track shed, operating the capstans, opening the trucks, and cleaning. In the late 1950s, the labourers at the Cape Town elevator were all Xhosa speakers, some of whom lived in the hostels in the docks, while others stayed in Langa. When required, casual staff were secured on a daily basis from a dedicated SAR&H office at the docks.

Only the foreman was English speaking, with all other supervisory staff being white Afrikaans speakers. Thus there was a clear race based divide, here as throughout South Africa, with ‘whites’ holding the positions of responsibility, and ‘black’ staff being employed only as ‘labour’. According to de Jager, there were no ‘coloured’ staff employed at the Cape Town elevator. Instructions to the labourers were communicated through an “induna” or “sarang” who acted as foreman for the labourers.

Mess and ablution facilities were originally in corrugated iron huts, with separate facilities being provided for “black” and ‘white’ staff. In the 1960s, when new brick facilities were built on the sites of the old, these discriminatory arrangements were repeated. As evidence of this, one toilet block still bore the words “Whites Only” stencilled in paint on its brickwork, until it was demolished in 2001.

One of de Jager’s most enduring memories of this period is the hours the elevator staff worked during the Suez Crisis of 1956-1957. With the Suez Canal closed, ships that would normally have gone to Durban to load grain instead put into Cape Town. With the port working at capacity, the elevator staff worked from seven in the morning until ten at night, five days a week, with only slightly shorter working days at the weekends.

At that time there were approximately fifty-six labourers on the site, together with a dozen “second assistants”, two “first assistants, class two” and two “first assistants, class one”. These reported to the Weighing Foreman and the Elevator Foreman, who in turn reported to the Supervisor of the elevator. The Supervisor’s role entailed office management; dealing with SAR&H and the shipping agents; and reporting to the Port Manager.

The Elevator Foreman carried all the day to day operational responsibility for the elevator, and had as his deputy one of the “first assistants, class one”, with the “induna” and twelve “second assistants” in turn reporting to him.

The Weighing Foreman had responsibility for the working house bins, and the floors above them, and all of the storage annexe. Thus his duties excluded the intake and shipping operations. The second of

⁴¹ Personal Communication: Interviewed Willie de Jager 2 July 2001.

the “first assistants, class one” reported to the Weighing Foreman, and his principal function was to write the weighbills. Two “first assistants, class two” worked on the shipping side, with three “second assistants” on the intake side and one “second assistant” in the storage annexe.

The other important function to be carried out at the elevator was that of the “Grain Graders”. Two Grain Graders were permanently employed at the elevator, while another three would be used when necessary at the quayside.

De Jager stayed in Cape Town until June 1959, and then, with the grade of “first assistant, class two” and a salary of £5 per month, left for Westminster, in the (former) Orange Free State. Working with a supervisor named Gert Rousseaw, and two labourers, de Jager was responsible for receiving and grading maize received from the local farmers, and loading it for rail shipment to Cape Town.

In August 1962, de Jager moved from Westminster to Balfour North in the Transvaal. This was one of the larger inland elevators, and shipped grain to Durban rather than Cape Town, but its basic operation was the same.

Just over a year later, in November 1963, de Jager returned to Cape Town elevator. He remembers working practices and staffing levels being as they were when he left.

There was a seasonal element to the work, and after maize exports peaked, de Jager would go to the country elevator at Moorreesburg to work with wheat for much of November and December each year. This continued until 1970, when Moorreesburg Co-op built a new elevator, and the old one was demolished.

During de Jager’s career in Cape Town he worked himself up through the grades as “first assistant, class one”, Grain Grader, Weighing Foreman, Elevator Foreman, and finally Supervisor.

By the 1980s, as railage costs became prohibitive, only grain from the western Transvaal was being shipped through Cape Town. Free State elevators were using East London, and the eastern Transvaal, Durban.

In 1987 the entire elevator complex was leased to WPK, and only five of the white SAR&H staff were kept on, together with some of the labourers. Willie de Jager was forced to retire through ill health in 1992. Maize dust, he says, does not tend to affect the health of those working in the elevator, but as an asthmatic, the dust encountered in the new products such as soya oil cake was much worse.

Koos van der Berg’s story also illustrates how the men who worked in the railway elevators moved around the country from place to place. Like de Jager, van der Berg is a white Afrikaans speaking male who started working in the elevators in 1955.⁴² He started as a trainee, and then as Second Assistant, at Kroonstad, spending five years there, including a thirteen month period of compulsory military service. He transferred to Clocolan in 1960, where he was promoted to First Assistant, Class 2, and then transferred to nearby Ventersdorp in 1961.

In 1963 van der Berg was transferred to Kaallaagte for the first time, leap-frogging the First Assistant, Class 1 grade and becoming Silo Manager. 1963 was the year that SAR&H sold the country

⁴² Personal Communication: Koos van der Berg, retired employee, Kaallaagte 27 Nov. 2001.

elevators to the Mealie Industry Control Board, which subsequently passed them on to the co-operatives. Like many other SAR&H employees, van der Berg, who had only spent six months at Kaallaagte, transferred with the elevator, and found himself an employee of the Drakensberg Ko-op. He went to Ficksburg as manager, and stayed there until 1987 when he moved to Eeram. When Drakensberg joined Sentrale-Oos Ko-op, in 1993, van der Berg left for South America.

After three years working at elevators in Montevideo, van der Berg returned to Kaallaagte in 1996. He retired in October 1999 when OTK took over the site.

The archaeology of the grain elevator system in South Africa

Introduction

The archaeological component of this work is vital to a proper technical understanding of the way in which the grain elevator system and its component sites worked, and thus for a proper assessment of cultural and other values. That there are also a comprehensive documentary sources for the history and construction of the elevator system, serves to provide invaluable social, economic and political context for the archaeological evidence gained by survey.

The description that follows of the archaeology of the grain elevator system focuses attention on the current condition and use of the elevators, and draws on extensive fieldwork. As in the previous section, reference is made in this text to the database reports included as Appendices D to F. The format for these references is a unique letter code based on the current (not the original) name of the site.

A detailed survey of the Cape Town site was undertaken over a long period whilst it was still in operation, and continuing at and after closure. This survey was incorporated into a Conservation Plan commissioned by the Victoria and Alfred Waterfront Company for the site. Video footage of the operation of the Cape Town elevator was recorded when the last ship was loaded there, in 1996, and subsequently in the final days of the site's operational use. An illustrated overview and detailed inventory of the site are provided at Appendices D and E respectively.

For the database of country elevators, provided at Appendix F, photographs have been incorporated into the database using a reference number added to the site code. Thus [KLERK-0078] refers to the country elevator at Klerksdorp, and indicates photograph reference number 78. For the sake of clarity, the illustrative reference will in many cases be to one or more examples, and is not intended to list all the sites at which a particular attribute may be found.

During the course of this research, a field trip was undertaken in which each of the original country elevator sites was visited. It was not always possible to gain access to the interior of the buildings, and thus the survey is to some extent patchy. However, enough was done to be able to make valid comparisons with the documentary record, and to broadly establish patterns of use and building condition.

Chapter 6: The Networked Landscape of Grain Elevators

For ease of reference, a brief overview of the sites is presented in a table on the next page, but for full details the reader should consult the appendices.

Short Name	Location	Type	Storage capacity (tons)	Number of Working houses	Use Status
BALFOR	BALFOUR	Country	3,000	1	In use
BETHAL	BETHAL	Country	4,800	2	Derelict
BETHLE	BETHLEHEM	Country	4,800	2	In use
BOTHAV	BOTHAVILLE	Country	4,000	2	In use
CAPETN	CAPE TOWN	Port	30,000	1	Derelict
CLOCOL	CLOCOLAN	Country	3,000	1	Derelict
COLIGN	COLIGNY	Country	2,600	1	Derelict
DAVEL	DAVEL	Country	1,800	1	Derelict
DURBAN	DURBAN	Port	42,000	1	In use
FICKSB	FICKSBURG	Country	2,600	1	In use
FRANKF	FRANKFORT	Country	5,800	2	In use
HEILBR	HEILBRON	Country	5,800	2	In use
HENNMAN	HENNENMAN	Country	1,800	1	Derelict
KAALAA	KAALLAAGTE	Country	1,800	1	In use
KINROS	KINROSS	Country	4,000	2	In use
KLERKS	KLERKSDORP	Country	5,800	2	In use
KOSTER	KOSTER	Country	1,800	1	In use
KROONS	KROONSTAD	Country	4,800	2	Derelict
LEEUDO	LEEUWDOORNS	Country	1,800	1	Derelict
LESLIE	LESLIE	Country	2,600	1	In use
LINDLE	ARLINGTON	Country	4,000	2	In use
MAKOKS	MAKOKSKRAAL	Country	2,600	1	In use
MAQUAS	MAQUASSI	Country	1,800	1	Derelict
MIDDEL	MIDDELBURG	Country	2,600	1	Derelict
MOOREE	MOOREESBURG	Country	2,600	1	Demolished
PIENAA	PIENAARS RIVER	Country	2,200	1	In use
POTCHE	POTCHEFSTROOM	Country	2,600	1	Occasional use
REITZ	REITZ	Country	5,800	2	In use
RENDEZ	VILJOENSKROON	Country	4,000	2	In use
SENEKA	SENEKAL	Country	4,000	2	In use
STANDE	STANDERTON	Country	1,800	1	Derelict
VAL	VAL	Country	1,800	1	Derelict
VENTDP	VENTERSDORP	Country	3,000	1	Occasional use
VERMAA	VERMAAS	Country	3,000	1	Derelict
VREDE	VREDE	Country	3,000	1	In use
WESTMI	WESTMINSTER	Country	1,800	1	In use

Figure 62

Reference Index for SAR&H Grain Elevators built 1923/1924.

There are two broad types of country elevator, whereby smaller country elevators are defined as having a single working house, whilst larger country elevators have a double working house. Within those categories, different handling and storage capacities were provided for, as shown in the following table.

Type	Size	Storage capacity (tons)	Locations	Intake Hoppers	Main Bins	Interstitial Bins	Loading Out Bins
Smaller Country Elevator - Single Working House	2	1,800	DAVEL HENNENMAN KAALLAAGTE KOSTER LEEUWDOORNS MAQUASSI STANDERTON VAL WESTMINSTER	2	6	2	16
	3	2,200	PIENAARS RIVER	2	6	2	24
	4	2,600	COLIGNY FICKSBURG LESLIE MAKOKSKRAAL MIDDELBURG MOOREESBURG POTCHEFSTROOM	2	6	2	24
Larger Country Elevator - Double Working House	5	3,000	BALFOUR CLOCOLAN VENTERSDORP VERMAAS VREDE	2	6	2	32
	6	4,000	ARLINGTON BOTHAVILLE KINROSS SENEKAL VILJOENSKROON	4	8	3	32
	7	4,800	BETHAL BETHLEHEM KROONSTAD	4	10	4	32
	8	5,800	FRANKFORT HEILBRON KLERKSDORP REITZ	4	12	5	32

Figure 63

Typology of SAR&H 'Inland' or 'Country' Grain Elevators built 1923/1924

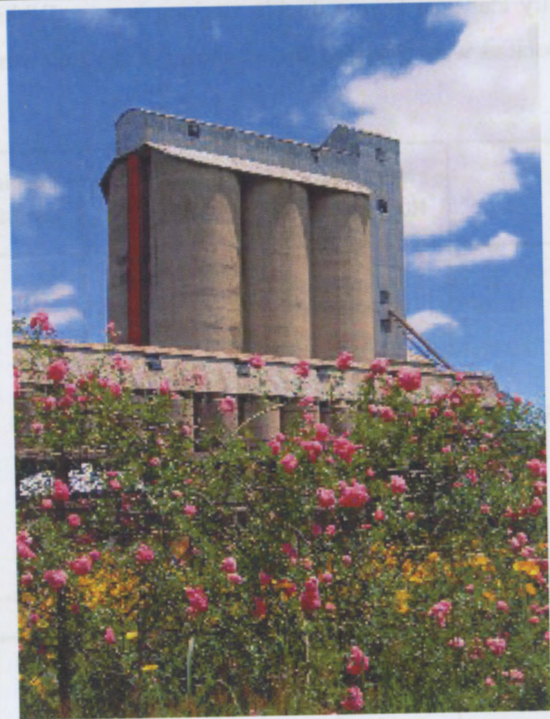


Figure 64

The grain elevator at Clocolan. 2001.

As indicated by the above typology, smaller elevators have a single working house and larger elevators a double working house. Within those two broad types there further categorisation is possible based on the number and size of the storage bins, and thus of the storage capacity. However, apart from that broad categorisation, the elevators were all built to the same specifications, by the same builder, for the same purpose; fitted out by the same engineers, with the same machinery; owned and financed by the same authority; and staffed by the same labour pool. In many ways, therefore, the elevators are indistinguishable from each other, and when built, would have had even fewer unique characteristics. It is with the changes that have taken place over time that these sites have acquired individual characteristics.

The men who worked in the elevators have left remarkably little in the way of personal markers. At three of the sites inspected, there are dates cut into wet cement under the loading out bins. Frankfort and Westminster bear the dates “8/8/23” and “26/9/23” respectively, on the underside of the loading out bins, almost certainly indicating the date they were constructed. At Potchefstroom, the mark “1-V-26” is inscribed beneath one of the loading out bins, but as the elevator was completed by 1924, it is not known what this date relates to.

Railway housing, some of which is associated with the grain elevators, could, and perhaps should, be the subject of another study. At Clocolan, the railway housing opposite the elevator has been robbed of anything that might be re-used as building materials, leaving a derelict house, standing in a garden, lush with yellow wild flowers, and pink roses (Figure 64). Perhaps in the future, when the seemingly robust archaeology of the concrete elevators has disappeared, it will only be the fragile domestic plants that survive as cultural markers above ground.

The country elevators

When the elevators were built, there was rarely electrical power available in the rural areas served by them. *Most of the country elevators therefore needed to have their own individual power source.* “The Lincoln firm of Ruston and Hornsby is reported to have secured a contract for 38 heavy oil engines for driving grain elevators and for electric lighting purposes” [Rand Daily Mail 13 Jan. 1922]. No

documentary evidence has been found to indicate which of the country elevators had engines installed. However, as the accompanying table shows, at seven of the smaller elevators inspected, engines remain in situ, while at another two, they have been partially broken up. Of the larger elevators, there are no sites at which engines remain largely intact, and only three sites on which there are partial remains. At Bethal, where the roof of the engine house has been removed, the depleted remains of both engines remain in situ [BETHAL-0024]. Each Ruston and Hornsby engine originally carried a brass maker's plate and serial number, though few of these remain (*Figure 66*).

	In Situ	Partly Broken Up	Not Present	Not Known	Totals
Single Working House	7	2	9	4	22
Double Working House	-	3	8	1	12
Totals	7	5	17	5	34

Figure 65

Table indicating status of Ruston-Hornsby engines. November 2001.

As described earlier, the engines drove the elevators and belts through a system of rope and chain drives. However, many of the diesel engines were replaced as the electricity supply network reached the rural areas, and three variants on introducing electrical power into these sites are seen.

The most commonly found option was to install individual electric motors to drive each of the elevators and belts [PIENAA & REITZ]. A second option was to install a single large electric motor in place of the original diesel engine, and to use this, as before, to drive the elevators and belts through rope and chain drives as before [KOSTER & KLERKS]. The third way was a combination of the first two whereby each elevator was driven by rope drives from an electric

motor, but the belt conveyors each have their own small electric motor [BETHLE]. Unusually, the elevator at Potchefstroom has had a new diesel engine installed instead of electricity to run the system through the rope and chain drives.

Of interest at Bothaville is a small diesel locomotive, built by the Hunslet Engine Co., Leeds, and used for on-site shunting [BOTHAV-0110 & BOTHAV-0109].

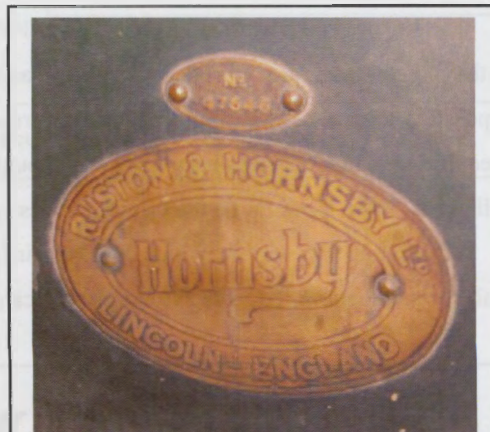


Figure 66

Ruston & Hornsby maker's plate (number 47646) at Potchefstroom, 2001.

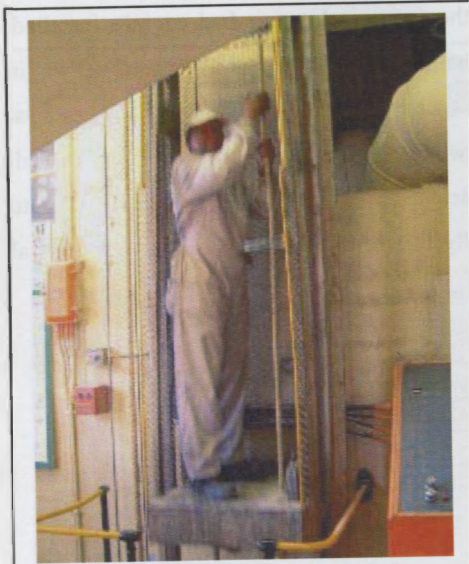


Figure 67
Petrus Moewera operating the man lift
at Ventersburg, 2001.

The vertical nature of the elevator has always presented accessibility problems. Today, 'Health and Safety' issues are taken far more seriously than they were eighty years ago, and modern practice reflects this. Steel stairways and guard rails have been inserted in some sites to supplement the ladders originally installed [KLERKS-0061].

The 'man-lifts' work on a counterweight system, and can carry only one person at a time (Figure 67). A foot brake has to be kept depressed in order to allow the lift to travel, and the operator pulls up or down on a rope to move. If pressure is taken off the brake, then the lift stops. There are varying opinions regarding the continued use of the man-lifts, some of which are operable, but are perhaps not safe enough to be used [RENDEZ-0033 & VENTDP-0012].

The smaller, more portable, pieces of equipment used in the old elevators, are not reflected in the available documentary record, and only through site survey is it possible to assess what might have been present. The 'Uitsakstoor', the corrugated iron bagging out shed, has in many instances been removed, though the concrete bases remain. Where the bagging out shed still exists, what appear to be the original scales can sometimes be found.

Illustrating the way in which local engineers worked with imported equipment, the bagging out scales, manufactured by the "Richardson Scale Co., Passaic, NJ." [COLIGN-0129, FRANK-0025 &

LINDLE], are sometimes mounted in what is clearly an original iron frame, constructed by "Gilbert Hamer & Co. Ltd., Structural Engineers, Durban" (Figure 68) [FRANKF-0022].

Mechanical counters are occasionally found attached to the bagging frames and these are again imported from the United States. That at Frankfort is a "Bristol Counter", supplied by "The Root Co., Bristol, Conn., USA" [FRANKF-0029], while that at Arlington was made by "Durant Mfg. Co., Milwaukee, Wis." [LINDLE].

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Figure 68
Advertisement for Gilbert Hamer & Co. Ltd., 1921.
[Industrial South Africa 1921: 4]

At Bethlehem, Heilbron and Viljoenskroon [RENDEZ-0042], the concrete bases of the bagging out sheds have been re-used for the installation of drying ovens, though at Bethlehem these have subsequently been removed. At Senekal, the original bagging out shed has been enlarged, and at Coligny, a pit has been dug into the floor of the bagging out shed to accommodate a portable bag lifter [COLIGN-0129].

Whilst many office buildings have been removed, at Reitz a new control cabin has been constructed on the site of the old [REITZ-0050]. Electronic control boards have been installed on some of the sites still in use, with Kaallaagte being a good example, where the old bin plan can be compared with a modern control board [KAALAA-0066 & KAALAA-0067].

Engine houses have also been demolished or re-used on some sites. At Arlington, the engine house has been entirely removed, and a dryer and two additional elevators installed in its place [LINDLE-0075]. The engine house at Ventersdorp now houses a dust cyclone, and that Kaallaagte an electricity sub-station. Other alterations include installation of cooling fans [BETHLE-0057] and new loading spouts [POTCHE-0021], sometimes in association with a discontinuation in the use of loading out bins.

The potential significance of the 'Bellman hangars' was not recognised during the course of the fieldwork, and thus they were not consistently recorded. These bulk stores, constructed of steel sheeting fixed to steel stanchions, are still in use at Frankfort [FRANKF-0014], Viljoenskroon and other sites.

Site owner	Demolished	Derelict	In use	Occasional Use	Totals
Lesco Foods [Lesotho Milling]	-	-	1	-	1
M Foods, Nelstroom	-	-	1	-	1
Noord Wes Ko-op (NWK)	-	2	1	-	3
Not known	-	1	-	-	1
Oos Transvaal Ko-op (OTK)	-	5	3	-	8
Oos Vrystat Ko-op (OVK)	-	-	1	-	1
SAR&H	1	-	-	-	1
Sentrale Oos Ko-op (SOK)	-	-	3	-	3
Sentrale Wes Ko-op (SenWes)	-	2	6	2	10
Suid Wes Ko-op (SWK)	-	2	-	-	2
Vrystaat Ko-op Beperk (VKB)	-	-	3	-	3
Totals	1	12	19	2	34

Figure 69

Ownership and use of the country elevators, 2001.

In 1951, the Railway Administration began negotiating with the Mealie Industry Control Board with a view to transferring the ownership of, and responsibility for, the elevators to that body. It was to take more than a decade, and required that bodies such as the Association of South African Chambers of Commerce be re-assured, before the transfer was finally effected. When concerns such as whether those using the elevators would continue to have use on the same terms and conditions as before, and the

position of non co-operative agents of the Mealie Industry Control Board, had been satisfactorily addressed, all the inland elevators, with the single exception of Moorreesburg, were transferred with effect from the 1st May 1963. SAR&H retained the port elevators at Cape Town and Durban, as well as the Moorreesburg elevator.⁴³

The elevators were immediately transferred to the local farmers' co-operatives, and some were later subject to change in ownership again when the smaller farmers' co-operatives merged. The Bethlehem [BETHLE-0055] and Kaallaagte sites were at one time owned by Drakensberg Ko-op, and the Senekal site by Senekal Ko-op. These two organisations joined to form the Sentrale-Oos Ko-op in 1993, which in turn was bought by Oos-Transvaal Ko-op (OTK) in 1999.⁴⁴

A map at *Figure 94* shows the spatial distribution of the extant country elevators and indicates their size and current usage. It will be seen from the table above (*Figure 69*) that the Moorreesburg elevator, built for the wheat trade in the Western Cape, is the only one of the original thirty-four inland elevators not to have survived. It was demolished in about 1970, when the Moorreesburg Co-op built a new elevator facility in the town.⁴⁵ By far the highest proportion of the thirty-three remaining inland elevators now belong to the Sentrale Wes Ko-op (SenWes) with ten (30%), and the Oos Transvaal Ko-op (OTK) with eight (24%). Nineteen of the thirty-three elevators continue in use, with again the highest proportion (32%) being among those owned and managed by SenWes. OTK only uses three of its eight sites, and the other five are now derelict.

Integrated into modern facilities?		Yes	No	Not Applicable	Totals
Single Working House	Size 2	2	1	6	9
	Size 3	-	1	-	1
	Size 4	3	1	3	7
	Size 5	3	-	2	5
Double Working House	Size 6	4	1	-	5
	Size 7	-	1	2	3
	Size 8	2	2	-	4
Totals		14	7	13	34

Figure 70

Relationship of original country elevators to modern facilities

The old Ventersdorp elevator (3,000 tons) is occasionally used in association with an adjacent modern complex belonging to SenWes. This complex covers 2.5 hectares, and has a storage capacity of 173,000 tons. The northernmost of its bins, which is 40 metres high, and has a diameter of 18 metres, has

⁴³ National Archives, Cape Town (3/CT 3/4/1/66): UN15. 1963.

⁴⁴ Personal Communication: James Oosthuizen, Silo Manager, SenWes, Ventersdorp, 21 Nov. 2001.

⁴⁵ Personal Communication: Willie De Jager, former employee, 2 July 2001.



Figure 71

Ventersdorp, showing the original SAR&H elevator at far left. 2001.

a capacity of 8,000 tons.⁴⁶ These statistics, baldly stated, show how a single modern bin can be more than four times the size of some complete original installations, and in this case the old elevator is completely dwarfed by its modern counterpart (*Figure 71*).

The Balfour elevator [BALFOR-0004] is also completely dwarfed by the modern complex which has grown up around it. Given the relatively large scale of modern grain handling facilities, it is reasonable to infer that the smaller elevators are generally less economic to run, and that the larger units *thus have a better chance of remaining in use*. *Of the twenty-one inland elevators that do remain in use*, fourteen have been integrated into modern facilities, and only seven are stand-alone operations.

Integration of original and modern facilities has been achieved on a number of sites (see *Figure 70*), and in a variety of ways. At some sites new concrete bins are connected at the level of the headworks by a belt conveyor, [LESLIE-0041] [LINDLE-0075] [VREDE] while others additionally have links at a lower level. At Arlington, belt conveyors at ground level pass through corrugated iron sheds, at Westminster the tunnel below the old storage bins has been extended under the new bins, and at Ficksburg an enclosed belt system runs under the disused loading out bins. Frankfort has a different arrangement, whereby the old is linked to the new with a belt entering the old working house at the scale floor [FRANKF-0014]. At

⁴⁶ Personal Communication: James Oosthuizen, Silo Manager, SenWes, Ventersdorp. 21 Nov 2001.

other sites, new facilities have replaced the old, but there has been no integration of these phases. At Maquassi [MAQUAS-0009] and Vermaas, for example, the old elevators are derelict, while the farmers' co-operative associations operate adjacent large modern complexes.

It is clear that survival of these sites is linked to a number of factors, and that the survival of the elevators themselves, and the survival of the outbuildings, fittings and equipment, are separate issues. This is not surprising, and is not peculiar to this type of site. These factors will be discussed briefly in the final part of this chapter which introduces the conservation issues and more fully in Chapter 7.

The port elevators

This section should be read with close reference to the earlier section on grain elevator operation and with the site overview and inventory at Appendices B and C, where the block plan and schematic elevation presented here as *Figure 72* and *Figure 73* respectively are again reproduced.

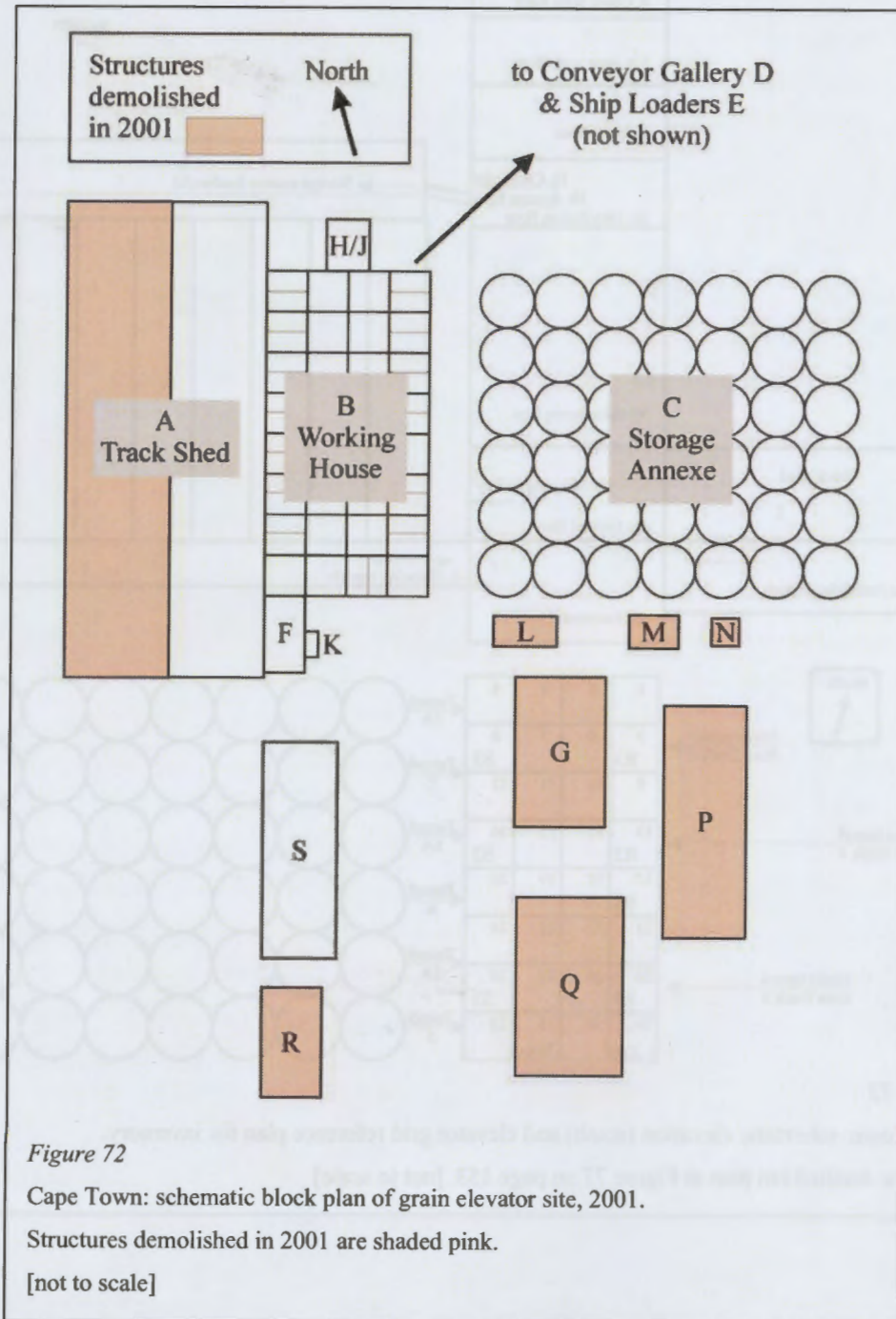


Figure 72
 Cape Town: schematic block plan of grain elevator site, 2001.
 Structures demolished in 2001 are shaded pink.
 [not to scale]

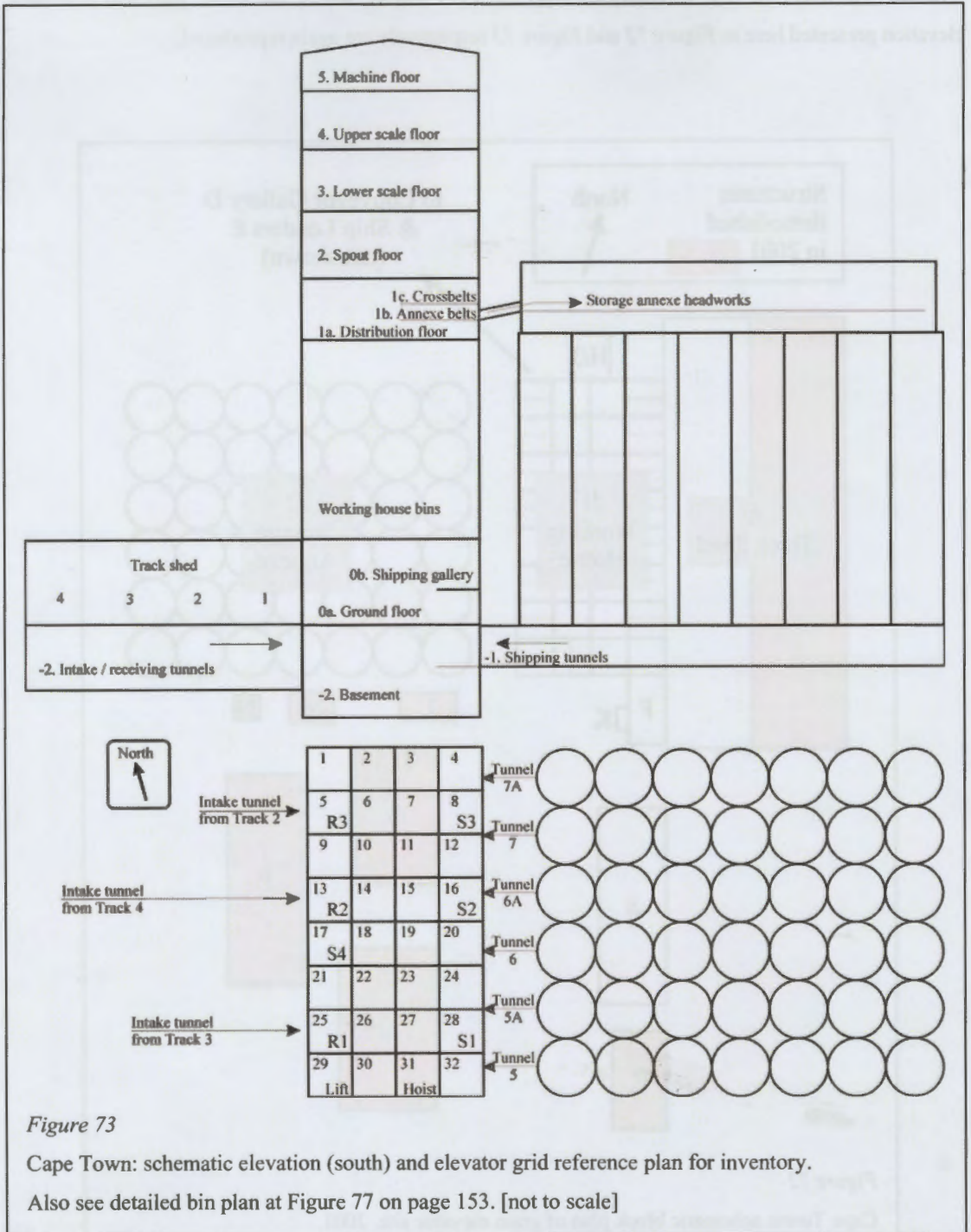


Figure 73

Cape Town: schematic elevation (south) and elevator grid reference plan for inventory.

Also see detailed bin plan at Figure 77 on page 153. [not to scale]

For the purposes of this discussion, the Cape Town Grain Elevator is considered to include the entire complex of buildings and associated structures which were built in Table Bay Docks during 1923 and 1924 for the purpose of receiving bulk grain from the interior by rail, and exporting it by sea, together with additional buildings, erected in 1966 for use by the port authorities and also associated with the original grain elevator complex.⁴⁷

As reported elsewhere, the required storage capacity for the port elevators was calculated on the basis of a complete stock turn eight times per year, thus an estimated annual throughput of 240,000 tons at Cape Town required storage capacity of 30,000 tons [Report of the Grain Elevator Committee 1918: 2]. As with the country elevators, the archaeology of the port elevators, and thus by extension, the size and form of the structures and associated services, was determined by that projected throughput and required storage capacity.

The archaeology of the Cape Town elevator is described as it was seen during its final years of operation. Although the elevator was closed in 2001, and some of the equipment was subsequently removed, much of the machinery remained in place at the time of writing.

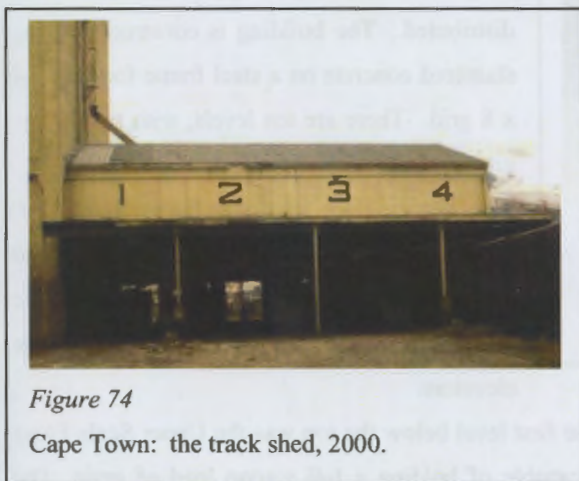


Figure 74
Cape Town: the track shed, 2000.

Four lines of railway served the track shed [A], where grain taken into the grain elevator was received. Each of the railway tracks served a below ground hopper, into which grain was discharged from purpose designed railway wagons.

Two types of wagon were used, the first of which was flat bottomed, and needed to be tipped on end to discharge its cargo. The second type, which had hopper shaped sections in its floor, was simply discharged by opening valves

in the bottom of the wagon. Three of the intake hoppers were served by hydraulic lifts, by means of which railway wagons could be lifted to an angle of approximately 35° to discharge grain through gates in the end of each wagon. There were originally four lifts, though one was removed more than forty years ago.⁴⁸ (After the elevator closed, two of the hydraulic wagon lifts were removed, the railway lines lifted, and the width of the track shed halved. The third remaining wagon lift was left in situ, sealed, and closed over with concrete.)

⁴⁷ Plan of Table Bay Harbour 106/301 21 Apr. 1966

⁴⁸ Transnet Archives (SIL/8353): Grain Elevators in South Africa. 1961.



Figure 75

Cape Town: a railway wagon being tipped on track number four, 2000.

Special end opening railway wagons were designed for use in the elevators, with an additional one thousand of these being ordered from the Leeds Forge Company and Metropolitan Carriage Company, England, in 1926 [SAR&H Magazine 1926: 83]. It is not known whether any of the original wagons survive, though modern versions remain in daily use on South African railways.

The 57 metre high working house, [B] received grain from the track shed, lifted it to the top of the building by the use of bucket elevators, and provided facilities for it to be weighed, cleaned, bagged, stored and distributed. The building is constructed using shuttered concrete on a steel frame forming a 4 x 8 grid. There are ten levels, with two below ground, and seven above.

The top floor, known as the machine floor, allowed access to the heads of the elevators, and contained all the electric motors and chain drive mechanisms which powered and drove the elevators.

Moving down through the working house, the first level below the top was the Upper Scale Floor which housed 'garners', or 'pre-weighers', each capable of holding a full wagon load of grain. The received grain was then dropped to the Lower Scale Floor where the scales were located. On the intake

side there were four, 50-ton 'dormant scales', and on the shipping side, three 3-ton 'Richardson Scales'.

Below the scales was a floor containing nothing more than an arrangement of flexible spouts, the articulation of which allowed grain to be directed as necessary to the required place on the next level (Figure 76).

A passenger lift in the south-western corner of the building appeared to be original, and given that one was specified at Durban, it

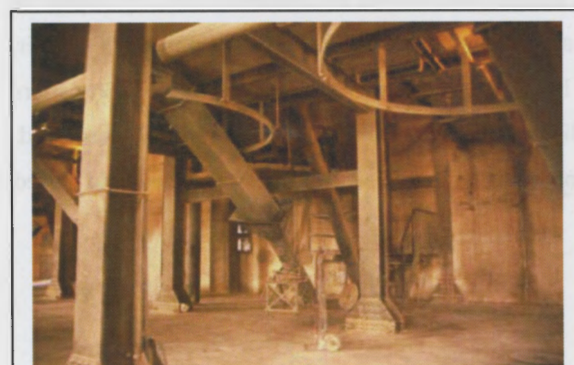
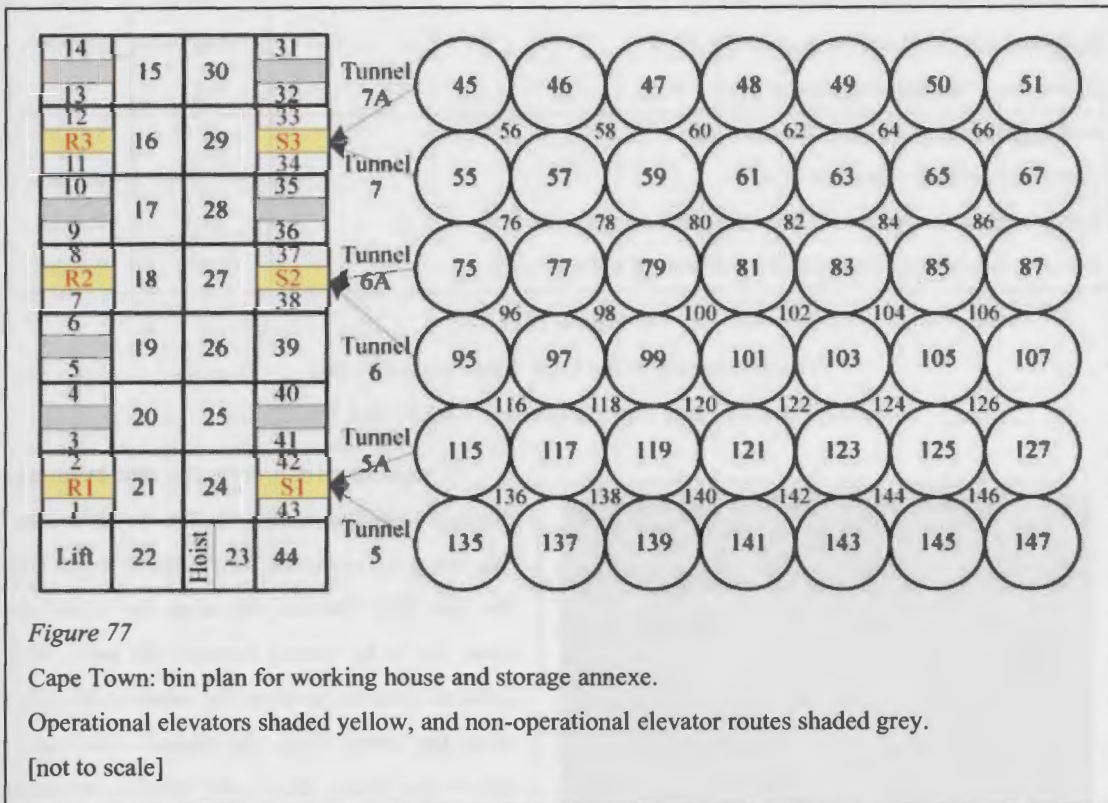


Figure 76

Cape Town: the spout floor, 1995.

seems likely that this was the case.⁴⁹ Four other methods of moving vertically through the building were provided. An internal stair was constructed around the lift well, and a fire escape was installed on the outside of the building between the working house and the storage annexe. Additionally, an electrically powered man elevator allowed movement between the machine floor and the distribution floor, and a series of brass ‘fireman’s poles’ facilitated quick descent from floor to floor.

On the Distribution Floor a mezzanine platform carried two horizontal belt conveyors running on the north-south axis through the building, and three cross belts conveyed grain to the bins in the storage annexe. A total of forty-four rectangular ‘working’ bins in the working house were at what would normally be considered ‘first floor level’, and beneath them, on the ground floor, were machines for cleaning grain, and for sewing and lifting full bags.



From the working floor, at ground level, a shipping gallery with four conveyors ran on to the Collier Jetty from where ships were loaded using four electrically powered ‘loaders’ on the eastern side of the jetty. In the basement there were tunnels leading from the track shed, and from the storage annexe to the bottoms, or ‘boots’, of the elevators. These tunnels were equipped with belt conveyors, the driving ends and motors of which were at the working house end of the tunnels. At the time of closure, a the conveyor gallery had already been stripped of its corrugated iron cladding, and a substantial section of the gallery had been removed between the elevator and the collier jetty.

⁴⁹ Transnet Archives. Specifications for Terminal Elevator at Durban. 1921.

The dimensions of the Cape Town grain elevator	Imperial	Metric
machine floor to apex of roof	21'1½"	6.439m
upper scale floor to machine floor	18'0"	5.486m
lower scale floor to upper scale floor	18'0"	5.486m
spout floor to lower scale floor	20'0"	6.096m
distribution floor to spout floor	20'0"	6.096m
base of bins to distribution floor	63'0"	19.202m
vertical dimensions are working floor to base of bins	26'2"	7.976m
assumed average depth of rock below floor of working house	27'6"	8.382m
total height from ground to apex of roof	213'9½"	56.782m
dimension of vertical steel joists on level 5	8"	20cm
dimension of vertical steel joists on levels 3 & 4	10"	25cm
dimension of vertical steel joists on levels 1 & 2	12"	30cm
working house bins – distance between walls	18'1"	5.512m
working house bins – thickness of walls	7"	0.178m
storage annexe - larger (round) bins - distance between walls	13'4"	4.064m
storage annexe - larger (round) bins – thickness of walls	8"	0.203m

Figure 78

The dimensions of the Cape Town grain elevator.

Source: Plans of Table Bay Harbour L3-2005/10 & L3-2005/18.

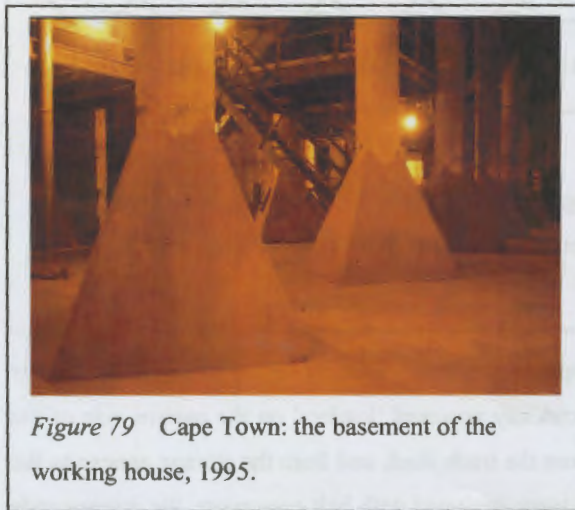


Figure 79 Cape Town: the basement of the working house, 1995.

A high speed fan drew the dust laden air through a ducting system. Before it reached the fan, however, a cyclone dust collector separated the dust from the air, allowing the relatively clean air to be vented through the roof. Six separate systems covered the intake conveyors from the track shed; the transfer conveyors below the spout floor; the three conveyors above the bins in the storage annexe; the screens and automatic weighers on the four shipping elevators; the four shipping conveyors on the ground floor of the working house; and the four shipping conveyors in the gantry

[Simon-MacForman 1972]. In 1972 the earlier system was modified by Simon-MacForman, of Johannesburg, to increase the efficiency of the earlier low pressure system, and to cover additional areas of the working house and gantry. Most of the dust collection system was removed by WPK when they vacated the site.

The storage annexe [C] stood separated from the working house, but connected by bridges to the scale floors of the working house, and by tunnels to the basement of the working house.

The forty-two larger, circular grain bins in the storage annexe, set in seven rows of six, lay parallel to the east wall of the working house. The grain bins were constructed of massed reinforced concrete, each capable of containing approximately 500 tons of grain. Set in the spaces between the larger bins were thirty smaller 'star' bins, each capable of containing approximately 120 tons of grain. It is apparent from one of the plans held in the Port Engineer's Office (unreferenced) that there was a proposal, soon after the elevator was built, to extend the storage annexe with three further rows of bins to the east. This would explain the apparently 'missing' bin numbers at the end of each row, though no further evidence has been found regarding this proposal (*see Figure 77 on page 153*).

The aluminium clad steel structure on top of the storage annexe was used as an office and look-out station by the Port Captain from about 1935, until it was rendered redundant by the Lourens Muller Building, and it latterly housed cellular telephone equipment.

The raised conveyor gallery [D] housed four conveyor belt systems which delivered grain from the shipping gallery in the working house to four ship loaders located on the east side of the Collier Jetty [E]. Each loader moved along rails laid on the jetty, using electricity, and received grain into its own internal elevator, which was simply a smaller version of those found in the working house. Telescopic spouts from the top of the loaders then directed grain into the holds of the ship being loaded. Two of the loaders were broken up after the site was vacated, and the remaining two have been moved from the south to the north side of the Collier Jetty.

The machinery for lifting the railway wagons in the track shed was powered by hydraulic rams, fitted in cast iron sheathes. The required hydraulic power was produced on site by the application of electrical power to pump water to a pair of hydraulic accumulators originally specified to operate at a pressure of 1,000 pounds per square inch [F]. At the time when the two wagon lifts were removed, the hydraulic accumulator systems were in full working order (*Figure 80*).

The electrical power requirements of the elevator necessitated the contemporaneous building of an electrical sub-station [G]. This was a concrete structure, located near the south end of the elevator, and although all the original switch-gear and transformers were replaced long ago, the sub-station continued to fulfill its original function until July 2001.

To the north of the working house was a double volume concrete structure which originally formed part of the grain drying facility, and since 1972 housed the dust cyclone [H]. Adjacent to this was another smaller



Figure 80
Cape Town: the hydraulic accumulator house,
1995.

structure which housed the boiler for the grain drying facility [J]. The base of a chimney was still visible to the south of this building.

In 1966, offices and mess facilities [S] were provided for in a double storey brick building for the thirty-eight 'European' staff, together with offices for management, clerical staff, and grain graders. A separate, single storey, brick building contained the mess facilities for the 'non-European' staff, who numbered about forty in 1980 [P]. Latterly it served as the mess facility for the non-supervisory staff, who numbered about twenty.

Other peripheral buildings included the Fire Pump House [K], which housed an electrical pump for the fire hydrants; two toilet blocks [L & M], the second of which bore the sign 'Whites Only'; an oil store [N], workshops [Q], and a garage [R].

With the exception of the office block [S], all the remaining peripheral buildings were demolished in 2001 as the elevator was being closed.

The Durban elevator was not surveyed to the same level of detail as the Cape Town elevator, with only a brief visit having been possible. Only the briefest summary of significant variances is possible here (*Figure 81*).



Figure 81

Durban: the grain elevator viewed from the seaward side, 1927.

[Transnet Archives]

In essence it is the same as the Cape Town elevator, but has a larger throughput capacity, and an appropriately larger storage capacity. The Durban elevator was constructed with four receiving and five shipping elevators, compared with three and four respectively found at Cape Town. The storage annexe contains ten rows of five bins, each of 500 tons capacity, and the thirty-six interstitial 'star' bins each have a capacity of 100 tons. Two new silos, known on this site as the 'Sun' silos, were built in 1978 for the storage of sunflower seeds. Each has a capacity of 14,000 tons of maize, and thus each has a storage capacity equivalent to one third of that of the original site. An additional, non-reversible, cross-belt was installed to feed the new silos, and the operation of the 'Sun' silos required the building of a dedicated electricity sub-station. At Durban, belt weighers have been installed which measure weight and rate of flow, and new dust suppression installed. When the site is busy, it easily produces 30 tons of dust in a week.⁵⁰

The shipping system at Durban is different to that used at Cape Town, and this has been described earlier in the section on elevator operation. Here it is appropriate to record that a portable belt conveyor was constructed in 1975 to supplement the original fixed conveyor. This new conveyor was built to be reversible, and could thus later be used for handling imports. The operation of the site was adapted for handling grain imports in 1995, when a number of pneumatic 'vacuators' were installed to suck grain from the holds of arriving ships. From the vacuators, grain is delivered onto a portable belt conveyor for delivery into the elevator.⁵¹

The most significant difference between the two original port elevators is that Durban remains in use, located in the industrial part of Durban harbour. Cape Town, however, has been closed, stands empty, and awaits a future dependant on whether it is perceived as 'an ugly eyesore', or 'an exciting opportunity'. The area on which it stands can no longer be seriously considered as part of the working harbour, despite the presence of the nearby fishing companies. In Cape Town, the working harbour has been supplanted by 'destination tourism' and retail and commercial development. This critical difference will be addressed further in the Chapter 7.

The conservation of South Africa's grain elevator network

In *The Grain Silo and Fish Quay Precinct: A Conservation Study* [Revel Fox and Partners 1994], Cape Town's grain elevator complex was deemed worthy of retention. Nonetheless, declaring that it is a "cultural resource" with a "heritage value", proves to be arguable. It is clear that notions of value and significance cannot be taken for granted, that they may shift and change through time, and that different people and interests will have different values. *The landmark value of the Cape Town grain elevator* might, for example, be taken for granted by the owners and developers of the site, while those most recently employed in it may have entirely different ideas. Many people in Cape Town, including many

⁵⁰ Personal Communication: Steve Smidt, Silo Manager, Durban, 25 Nov. 1998.

⁵¹ Personal Communication: Steve Smidt, Silo Manager, Durban, 25 Nov. 1998.

visitors to the Waterfront, will never even have noticed this 'landmark', and know or care nothing about its past or continued existence.

The Cape Town site is at once unique in the Western Cape, while simultaneously being part of a larger networked industrial landscape. As has been shown, there are more than thirty smaller elevators in the maize growing areas of the country, and another large export elevator at Durban. Thus it is clear that individually, these sites are vulnerable to a gradual attrition. Individually, as the sites themselves become redundant, there will be economic pressure for the elevators to be at best, neglected, and at worst, demolished. In Chapter 7, the conservation issues arising out of this study of the grain elevator network will be discussed in detail, and in Chapter 8 arguments will be made for the conservation of the network within the broader framework of sustainable development.

Chapter 7: Conserving the Networked Landscapes of Gas and Grain

The Conservation Plan process

“There is a symbiotic relationship between effective conservation policies and the growth of understanding. Monuments will only be conserved and interpreted if they are understood, and the justification for conserving structures must be based on arguments derived from knowledge and not on mindless assertions of questionable superlatives”.

[Trinder 2000: 53].

The preceding chapters of this thesis have demonstrated the contribution industrial archaeology can make to an understanding of networked industrial landscapes. This chapter will consider the cultural significance of the extant material evidence for Cape Town’s nineteenth century gas supply network, and that of South Africa’s twentieth century grain elevator system, examining what issues might impact on that significance, and suggesting how policies might be designed to reveal, retain or enhance any such cultural significance within the broader contexts already established. By using an archaeological approach, this research has attempted to clearly link cultural significance to an understanding of fabric. The necessity for this is fundamental if the values inherent in the fabric are to be properly articulated, and subsequently conserved.

It will be seen that this approach, based on the understanding gained in the earlier case study chapters, attempts to develop a model closely based on the Conservation Plan methodology first formulated by Kerr, and subsequently used and modified by Clark and others.

The Conservation Plan model requires that proper UNDERSTANDING of the site(s) be obtained before going on to assess SIGNIFICANCE, possible ISSUES, and finally the formulation of CONSERVATION POLICIES.

Chapter 8: Conclusions departs from the Kerr model in attempting to set policy making within the broader context of sustainable development, thus requiring the consideration of a broader range of values than ‘cultural significance’ alone.

“The Conservation Plan is a process that seeks to guide the future development of a place through an understanding of its significance. The objective is to evolve policies to guide work that are feasible as well as compatible with the retention, reinforcement and even revelation of significance. These twin concepts of compatibility and feasibility are the bases on which the policies are built”

[Kerr 1999: 9.]

Kerr's quote has been paraphrased by Clark as follows: "what have we got that's important, and being realistic, what are we going to do about it?"⁵²

Conservation Plan methodology addresses these questions in four discrete phases:

- Understand the place;
- Assess its cultural significance;
- Look at the issues which might affect that significance or make it vulnerable;
- Formulate policies for retention of significance.

Thus Conservation Plan methodology is therefore entirely consistent with the requirements of South Africa's National Heritage Resources Act (No.25 of 1999) as shown in the following table:

Conservation Plan	National Heritage Resources Act (No.25 of 1999) Section 38, paragraph 3
Understanding	a) Identification and mapping
Significance	b) Assessment of significance
Issues and vulnerability	c) Assessment of impact on heritage resources d) Evaluation relative to sustainable social and economic benefits e) Consultation with communities
Policies	f) If heritage resources adversely affected – consider alternatives g) Plans for mitigation during and after development

Figure 82

Conservation Plans and the National Heritage Resources Act.

Conservation Plans have been an accepted part of heritage practice in Australia for many years, and have also become part of practice in the United Kingdom as they became obligatory for seekers of Heritage Lottery Funding. The Chief Executive of English Heritage recently highlighted three aspects of the Conservation Plan's use:

- their role in overall strategy for managing change in the historic environment;
- their function as a tool, to be used in partnership, and not as an end in themselves;
- and the dynamic nature of the process [Alexander 1999: 3].

⁵² Personal Communication: Kate Clark, RESUNACT Industrial Archaeology Workshop, Cape Town, 11 Feb. 1998.

Thus a Conservation Plan is an appropriate starting point for:

- developing a new project for a heritage site
- preparing management proposals
- developing a restoration scheme
- planning any conservation work [Stratton 2000c: 31].

Conservation Plan methodology is straightforward enough if one remembers Kerr's focus on the need for "compatible and feasible" policies to manage a place so that its significance is retained. Clark's *Informed Conservation* [2001] is a set of guidelines predicated on the "fundamental assumption that understanding is the bedrock of conservation", and is an invaluable guide to the practical application of the principles and techniques required for understanding, assessing, and managing places with heritage value.

The assessment of significance is the core element of a conservation plan. It begins with any existing assessments, and involves two basic processes. Ideally, an overview of all of the values inherent in the site should be distilled into a single core statement, negotiated between and agreed by all stakeholders. The broad statement of significance for the Cape Town grain elevator set out here is drawn directly from the earlier Conservation Study [Worth 1994]. A four rung ladder is a useful analogy for setting these levels of significance in context [Kerr 2000: 19].

- exceptional significance
- considerable significance
- some significance
- little significance

The assessment of significance is based on understanding of the site, and takes no account of the practical issues which must be resolved by policies for retention of significance. However, it is necessary to identify those factors which have made the significance of a site vulnerable in the past, or are likely to do so now or in the future, a concept deriving from sustainability as applied to the natural world.

The Burra Charter and South Africa's National Heritage Resources Act both emphasise the importance of ensuring that public participation is actively sought. Stratton emphasised the importance of public opinion throughout the process, writing that "the purist approach, developed and applied by conservationists, historians and industrial archaeologists, is now being undermined as much from within the preservationist movement as by its critics. The boat has been rocked though not yet capsized by the commitment to public participation, and more specifically the study and protection of twentieth-century commercial and industrial buildings. These are often large structures that need commercial uses to fund their maintenance ... the broad public can only be expected to share such enthusiasms if these buildings are made attractive and usable" [Stratton 2000b: 22].

The policy section of the conservation plan requires the provision of guidelines for the retention of significance in any future use, alteration, management or conservation. Guidelines provided in the Conservation Plan must balance statutory requirements with the needs of the site owners and managers, and those of others involved with the future of the site.

Policy frameworks should therefore ideally be developed in the following areas:

- conservation philosophy;
- care for the setting of the place;
- care for the culturally significant fabric and other significant attributes;
- interpretation in a manner appropriate for its cultural significance;
- appropriate uses;
- maintaining educational values;
- ongoing consultation and participation;
- maintenance and repair priorities;
- balancing commercial requirements and conservation;
- recording the fabric of the site as well as recording decisions and actions affecting the site;
- physical and intellectual access.

The Conservation Plan should be a dynamic, ongoing process, and not an end in itself. It should therefore be the subject of periodic revision, to ensure that it remains useful and relevant. Equally, however, the networked industrial landscapes considered here also represent processes, not static monuments, and the Conservation Plan also needs to consider whether and how the cultural significance of these processes might appropriately be conserved. An adaptive re-use scheme that reflects the form of a building, without acknowledging or even understanding its function, can be very problematic.

Conserving the networked landscape of gas supply

This section considers the significance of the material evidence for gas supply in Cape Town, and suggest some of the specific issue that would have arisen in the event of any initiative to conserve that significance. As indicated in the introductory section of this chapter, this broadly follows the conservation planning principles articulated by James Kerr and Kate Clark.

The Woodstock Gas Works was a fine example of a dirty, smelly, unsightly, and uneconomic industry, albeit one that had, as a representative component of Cape Town's gas supply network, played an important role in the development of the city. Yet not only was it not possible to motivate any support for its conservation, there was not even sufficient backing for adequate recording to be undertaken before it was demolished.

The cultural significance of the networked landscape of gas supply

In physical terms, the gas works manifested itself in the landscape in various ways. The gas holders in the city bowl, in Woodstock, and in Mowbray, would have been significant landmarks in the townscape, and in the nineteenth century the street lamps were a constant and visible reminder not only of Cape Town's aspirations to development, but also of the politically divisive nature of such aspirations. Less visible, though no less important, was the creation of a buried network of pipes, necessary for the distribution of gas to both public and private customers.

By 1996, the only extant large-scale marker of the coal gas industry's presence in Cape Town was the gas works in Woodstock, and it was thus the principle visible reminder of this utility's history.

Soon after closure of the works, the site was superficially evaluated [5 Mar. 1996] by representatives of the *National Monuments Council* (subsequently to become the *South African Heritage Resources Agency*), and the City of Cape Town's Urban Conservation Unit, who deemed that some of the structures had 'cultural significance'. Nonetheless the overall condition of the site, and its heavily polluted nature, led the authorities to conclude that an application for total demolition should be granted.

A summary of the site evaluation produced by the Urban Conservation Unit appears below as *Figure 83*.

The Woodstock gas works would not have been considered rare in the middle of the twentieth century. Both design and plant for the Cape Gas works were largely imported from Britain, where many similar works existed until the early 1970s. However, after that time the introduction of natural gas made the traditional coal gas works a dying breed. Whereas in 1900, in Britain alone, there had been more than a thousand gas works, by 1973 this had been reduced to just eighty-one, and by 1977 they had all been closed [Stratton & Trinder 2000: 30].

In South Africa similar installations had existed in Port Elizabeth, Johannesburg and other towns. However, by the 1990s the Port Elizabeth gas works was producing bottled gas, and the works in Newtown, Johannesburg was standing empty awaiting re-development of the area. Woodstock's rarity lay in the fact that it was the last survivor in Africa of a site type that could once be found in many industrialised countries across the world.

The significance of the network of gas supply pipes, where the visible becomes invisible beneath the city's streets, is more difficult to assess. Yet it could be argued that its significance is indistinguishable from that of the gas works and consumers it connected and served.

The symbolic impact of gas supply on the cultural and social, as well as industrial and commercial, landscapes of the day is best represented by the bitter divisions within the town during the period between 1866 and 1871. It was witnessed again in 1895, when electricity finally supplanted gas as the lighting source for Cape Town's streets. In that year, the Graaff Electric Lighting Works, were inaugurated, next to the Molteno Reservoir. Public street lighting had been a political battlefield for years, and electricity was the "light of the future". With more than an echo of Baron von Ludwig's speech, half a century earlier, it was now said that the increased illumination "would bring about a very great improvement in the moral atmosphere of the city, and would also afford protection to property of the citizens which was so necessary". The building constructed to house the dynamos, which could be worked by steam or water power, was described as a "handsome structure" by the mayor at the opening ceremonies, and is now a Provincial Heritage Site (by virtue of it having formerly been designated a National Monument). It conforms to an architectural aesthetic which the grubby gas works could never lay claim to.

It is evident that the significance of the Woodstock gas works site, and its component structures, was seen in terms of a number of standard criteria.

Historical Value

Structures forming part of late nineteenth and early twentieth century works; no recognition of condition, rate of deterioration or alterations.

Aesthetic, Landmark or Iconographic Value

Focused on bulk, shape and verticality; archetypal appearance; contribution to sense of place.

Uniqueness and / or Rarity

Visual and historic qualities not found elsewhere in South Africa.

Scientific or Social Significance

Places where unique or rare processes undertaken.

An extract from the evaluation of the Woodstock gas works site made by the Urban Conservation Unit⁵³ can be found at Figure 83.

Item	Evaluation
Offices [8]	Previously the manager's cottage; one of the older buildings on the site.
Storage Tanks & Fans [13, 15 & 16]	Less than 50 years old but 'evocative industrial elements'.
Condenser [14]	At least 49 years old; 'rare piece of industrial equipment'.
Old Retort House [5]	Dates to 1913; landmark structure; "one of the few remaining examples of early twentieth century industrial architecture in Cape Town"; formed determined by function; has "scientific and social value".
New Retort House [3]	Dates to 1940s; similar to Old Retort House.
Tar Stills [18] and Boiler Houses [21 & 22]	Early twentieth century structure; housed original horizontal retort beds; contains "unique historic machinery"; chimney is a "landmark element" of the site.
Water Gas Plant [12]	Pre-dates 1947; "visually integral part of the landmark quality of the site"; contains machinery that contributes to "its rarity and scientific and social value".
Gas Tank [37]	Pre-dates 1903; only the base remains.
Gas Tank [43]	Pre-dates 1903; the tank has been cut down to approximately 1m in height; recently used as a storage tank for recycled foul water.
Purifier Building [41]	Plans submitted 1903; declared dangerous in 1945.

⁵³ The figures shown in square brackets, thus [3], refer to the site plan at *Figure 28* on page 95, and to the various annotated photographs presented here. They are not part of the City Council's evaluation report.

Item	Evaluation
Gas Tank [38]	Dates to 1947; important “landmark and iconographic qualities”.
Gas Tank [43]	Dates to between 1951 and 1973; important “landmark and iconographic qualities”.
Number 4 Gas Holder ⁵⁴ [39]	Smaller than the other two holders.
Offices, Mess and Showroom [46]	Pre-dates 1947; originally the foreman’s cottage; substantially modified.
Wet Purification Systems [40]	Livesey and ammonia washers (not under roofs); part of a “unique and scientifically and socially significant process”.
Control Panel [28]	Shows all areas which received gas so has “social and scientific value”; “strong iconographic element”.

Figure 83

Evaluation of Cape Gas by the City of Cape Town’s Urban Conservation Unit, 1996.

The buildings latterly containing the tar stills [18] and the boilers [21 & 22], no longer housed retorts, but nonetheless formed the Victorian era core of the Cape Gas site at Woodstock. Prior to closure, in February 1996, it was therefore possibly the only Victorian gas works in the world still in commercial production. The gas company had played an important, though sometimes contentious, role in providing street lighting for the town. It had also played an important role in the development of a network of public utilities in Cape Town, albeit a privately owned public utility.

There is no question that the Woodstock gas works had landmark significance. The problem is that this, like gas works all over the world, was perceived as a landmark with very negative connotations. Highly visible from the surrounding higher ground, from the elevated freeways, and the slopes of Table Mountain, the site also made an impact on the other senses. The gas works was, by its very nature, a filthy, reeking site. The overpowering smell of foul gas and the greasy smuts from the chimneys and the retort houses never made a gas works a ‘good neighbour’. Mumford suggests that the gasworks was usually to be found in the poorer part of town, and this was indeed the case with Woodstock.

... huge gas tanks reared their bulk over the urban landscape, great structures, on the scale of a cathedral ... like every other building in the new towns, they were dumped almost at random; the leakage of escaping gas scented the so-called gas-house districts, and not surprisingly these districts frequently became among the most degraded sections of the city. Towering above the town, polluting its air, the gas tanks symbolised the dominance of “practical” interests over life-needs.

[Mumford 1940: 191-192]

⁵⁴ The Urban Conservation Unit’s designation is incorrect. The smaller, most recent holder [39], was in fact first known as the No.5 relief holder, and later as the carburetted water gas holder.

Remembering the smell of coal gas

I remember the smell of coal gas from the furnaces which heated the barracks. We had a fellow called the furnace man. He was bound and determined he wasn't going overseas.

Russell J Fay, *I Remember 1944-1946: The 89th Infantry Division*.⁵⁵

The Blasting Department Office huts were evacuated for several days in 1956 due to the smell of coal gas. It took several days of digging to find the source of the trouble, as gas was coming up the telephone conduit. We boasted about the modern gas-operated telephone for a long time.

Philip Butcher, Design Engineer and Works Study Manager, 1948-1958, Ardeer.⁵⁶

I was walking around the main part of Cheng-Du (China) in the evening where there's not much except the smell of coal gas.

John Tranter, 1989, An interview with Kenneth Koch.⁵⁷

The distinctive smell of coal gas, almost impossible to invoke with the written word, serves as a useful link to some of the conservation issues relating to this particular type of networked landscape. Eight years after demolition, the maps, plans and text books saved from the Woodstock site, including the 1921 copy of Meade referred to extensively earlier in this chapter, remain heavily impregnated with the odour of the gas works. When this material is handed to the archives for conservation, it is almost certain that the first action taken by the archivists will be to fumigate it. The smell, like the manufacturing process, will be gone forever. Is a smell material evidence? Can it ever be truly replicated, any more than the working practices that created it?

Issues relating to the conservation of the networked landscape of gas supply

When this research was commenced, it was thought that policies might be formulated for conserving the cultural significance of fabric on the Woodstock site. With the closure of the Cape Gas works, followed almost immediately by its demolition, such considerations became superfluous. No serious consideration was given to physical conservation of any part of the site, and proposals to mitigate total loss were dismissed for a variety of practical and economic reasons.

There are a number of issues which might be said to have impacted on the cultural significance of the Woodstock gas works, and thus affected the decision to clear the site. The structural integrity of the retort house was but one of these, though clearly it was of major importance. Structural steelwork had become very badly corroded over years of use, and indeed in some places had already been replaced. The nature of the retort house structure, with its steel framing and brick infill, did not lend itself to re-use. As

⁵⁵ Internet Site: www.89infdivwww2.org/memories/pstory9.htm accessed 15 Mar. 2003.

⁵⁶ Internet Site: www.bigidea.org.uk/poa/A_B_C/ accessed 15 Mar. 2003.

⁵⁷ Internet Site: www.austlit.com/jt/iv-by/koch89.html accessed 15 Mar. 2003.

has previously been recorded, the retort house effectively formed a weather resistant shell for the retorts, and for the men working on them. It was not designed as a free standing building with conventional floors and dividing walls.

A second major issue affecting the cultural significance of the gas works site was that of contamination. In a report to the City Council in 1996, consultants Gibb Africa identified the site as a “pollution hotspot”, and the “single largest potential pollution source in the area” [Gibb Africa 1996: 48]. Former gas works sites are renowned for an accretion of heavy metals, such as mercury, as well as phenols, ammonia, and other carcinogenic materials [Environmental Resource Ltd 1987]. Gibb Africa’s report stated, “there are strong indications that Cape Gas requires a detailed ground contamination investigation”, though it is unclear if this took place at that time. The gas works was demolished by a specialist contractor, brought in from the United Kingdom, and the site sold to a local demolition contractor for use as a vehicle and plant yard. In 2003, with the site having been resold for industrial development, a major remediation effort was being undertaken at great expense in order to make the site fit for re-use.

Thirdly, it is almost unthinkable that the process of making coal gas could itself be conserved. Even the Ironbridge Gorge Museum, which had harboured ambitions of having a working gas works on its Blist’s Hill site more than a decade ago, finally had to admit defeat and accept that it would not be feasible.

The final issue to be considered here, and the one that is central to this thesis, is the attitude towards industrial heritage, prevailing in the mid 1990s, among the heritage profession in Cape Town. Put crudely, the Woodstock gas works simply did not fit in with anybody’s notion of ‘heritage’. Thus the site was not properly considered, and was quickly lost.

In summary, any notions of physically conserving the significance of the site would have needed to be considered in the context of the following constraints:

- the poor state of repair of the retort house structures, rendering them potentially unstable and thus dangerous, and the economics of retaining structures for which it would have been very difficult to find new uses;
- the high levels of pollution recorded on the site;
- the impracticability of conserving the process of gas making, now at an end world-wide.
- the gas works had none of the aesthetic qualities required by architects and their clients for an adaptive re-use scheme, and thus did not conform to the idealised ‘heritage’.

Perhaps the nineteenth century ‘Clean and Dirty’ debate is now to be updated to reflect positions on the conservation of the industrial heritage. In the late twentieth century, conservation was driven by the ‘Clean Party’ seeking to sanitise notions of heritage, keeping only what is aesthetically pleasing, politically non-contentious, and ideally capable of turning a profit. Their opponents, attempting to wrest

control of conservation from the 'Clean Party', would argue for a broader engagement with the issues, and consultation with the communities whose people lived and died working in industries such as gas supply. It will be seen in the following section that whilst there has been some progress, and the 'Clean Party' have suffered losses, there is still a long way to go.

Policy options for the networked landscape of gas supply

Perhaps therefore it is only the mapping and interpretation of such infrastructures that can serve to conserve their cultural significance. This contrasts strongly with the numerous examples of infrastructural developments that are large enough for people to be able to physically explore. London's Victorian sewers, and Lisbon's extensive eighteenth century water supply aqueducts are but two examples that are not only conserved and interpreted, but marketed as visitor attractions. London's gas museum, however, which opened in 1983, was closed in 1998. Issues such as cost, access and security, together with a national re-organisation of the industry, meant that it could no longer be sustained. The collection was sent to Leicester for storage, pending a long-term decision on its future, and documentary material was sent to the British Gas archives in Manchester.

Arguments for properly recording the site before demolition were defeated by the counter-argument that as extensive plans existed for the site, recording was not necessary. The latter view failed to recognise that virtually no site will remain as planned or as built. The cumulative effects of years of alterations and modifications necessarily meant that original plans, valuable as they are undoubtedly are, did not accurately reflect the state of the gas works as it was at the end of its operational life. It must be acknowledged that recording the existing structures would not have been a simple matter, however. Exploratory discussions held with the University of Cape Town's Geomatics Department suggested that due to the confined space around the site, and the difficulties of getting good line of sight, a photogrammetric solution would not have been easily or economically achieved.⁵⁸

Networks of gas and water supply pipes, and similarly, networks of electricity and telecommunications cables, are not practical candidates for conservation in their own right. In Britain, where natural gas replaced coal gas, the network of supply pipes could be re-used [Trench & Hillman 1993], but South Africa's natural gas resources have yet to be exploited to a similar extent.

Cape Town's street plan is still clearly visible in the plan, and names, of the streets such as Buitengracht and Heerengracht, which follow the old 'grachts' through which fresh water was conveyed. More difficult to establish is how much of the historic fabric, such as kerbstones and walls; and drain covers and manholes remains today. Such material might appear insignificant today, especially in the case of items as seemingly mundane as manhole covers, but nonetheless important issues are raised. These issues become critical as this type of material evidence becomes increasingly rare. In some cases they may be the solitary reminders of an otherwise obliterated past, like Cape Town's salt water hydrants and the gas company's inspection plates, while in others they have simply been replaced due to factors such as breakage and theft. The function may in some cases be redundant, while in others modern

⁵⁸ Personal Communication: Sue Binedell, University of Cape Town, 15 Feb. 1996.

castings take the places of the old. While they add texture to our sense of place, particularly due to the *continuing tradition of casting dates into them*, they also contribute to our understanding of the passage of time in the urban landscape. Importantly, they give physical form to the historical record that documents early public utilities in the city. In that, they have an ability to demonstrate the provision of services in a very tangible way.

In the case of the gas works, there is very little left visible above ground. Both the gas works sites have been cleared, and only the below ground network of supply pipes remains.

It has been stated above that gas works inspection plates, like manhole covers and salt water hydrants, are almost all that remain visible above ground of these early utilities. Thus the question that faces the conservation community is, if the last remaining Victorian sewer manhole cover or gas works inspection plate is identified, and found to embody 'cultural significance', what then should be done with it? Should it be taken up and stored safely, or left in place, in context, and in use, until it is broken, stolen, or just worn out?

The City of Cape Town were persuaded to send a film unit (using broadcast quality video) to the site during the final two days of operation. This enabled some sense of the process to be recorded, and supplemented video material recorded by David Worth. The timing of the City's video record meant that the plant was already shutting down when it was filmed, and that therefore only a partial record of the process was possible.

Site museums of the gas industry do exist, most notably at Biggar, Scotland; and at Dunedin, New Zealand. There are also exhibits in museums such as the Museum of Science and Industry in Manchester, and at London's Science Museum. Such exhibits do allow for limited interpretation of the scientific and technical aspects of gas production.

Conservation of the network of gas supply pipes has been driven wholly by the practical use to which they could be put by the parastatal telecommunications service provider, Telkom. It is understood that Telkom bought the entire infrastructure, and continue to use it. This at first this appears to be a pragmatic solution to the conservation problem, but it is clear that this is a purely incidental side-effect. Conservation of the historic infrastructure and, more importantly, of the cultural significance embedded within it, has not been considered at all.

Networks of gas and water supply pipes, and similarly, networks of electricity and telecommunications cables, are not practical candidates for conservation in their own right. This contrasts strongly with infrastructural networks that are large enough for people to be able to physically explore. London's Victorian sewers, and Lisbon's extensive eighteenth century water supply aqueducts are but two examples that are not only conserved and interpreted, but that are marketed as visitor attractions.

For the Woodstock gas works, then, it would appear that conservation by mapping and conservation by narrative are two possible options. Such narrative and mapping could be the foundation of an interpretive scheme in the city, with appropriate story-boards and other material being displayed on relevant buildings and pavements. Displaying a map of the network, as a proxy for the networked

landscape itself, could become a way of initiating dialogue with those whose oral histories around the manufacture and consumption of gas might be an appropriately recorded. Associated with the archiving of the documentary records, and a detailed record of the archaeology of the networked landscape, such a scheme could provide a valuable means of embedding an understanding of Cape Town's historic environment within the experience of Cape Town today.

Conserving the networked landscape of grain elevators

Introduction

As has already been detailed, the grain elevator system comprises port elevators at Cape Town and Durban, and a network of thirty-three extant inland elevators. In considering the conservation of this network, attention is first given to the Cape Town site, for which a draft Conservation Plan has been prepared, then to the country elevators as a group, and finally to the system as a whole. The Durban port elevator is not assessed independently, but rather as part of the larger network. This approach, dictated by pragmatism, is not intended to detract from the argument that the network can, and indeed should, be considered as an entirety.

Note: Detailed analyses of the Cape Town grain elevator's component structures and an inventory of their contents may be found at Appendices D and E respectively.

Cape Town

It will be shown that the approach to the grain elevator at Cape Town harbour was necessarily very different to that applied in the consideration of the Cape Gas site. The location of the elevator at the Victoria and Alfred Waterfront, in what by 2003 had become South Africa's most popular tourist attractions, meant that it was almost inevitably swept up in a much larger process.⁵⁹ The economics of the site were significantly different to those affecting the Cape Gas site, with office, retail and residential space at a premium. There was no contamination issue to be addressed, though the silos certainly present a design challenge, and the working house at least is a more conventional box-like structure into which architects can design new uses. It can also be argued that, because of its location, the elevator had a higher profile and thus engendered a greater sensitivity among conservation professionals than the grubby gas works had done.

While conservation of the historic harbour was first motivated in 1980 by architect Gawie Fagan [Cape Argus 10 July 1980], it was the report of the government appointed Burggraaf Committee that directly led to the formation of The Victoria and Alfred Waterfront Company (Pty) Ltd in 1988 (referred to hereafter as the Victoria and Alfred Waterfront or abbreviated as V&AW). Since 1988, the Victoria

⁵⁹ A report in the business section of the Johannesburg based *Sunday Times* [17 Aug. 2003], stated that the Waterfront is now South Africa's most visited tourist attraction, with 22 million visitors a year, of whom 7 million are tourists. Chairman Fatima Abrahams is quoted as saying, "What was for Transnet a loss-making asset twelve years ago has become a vibrant and profitable property development project which enjoys a high national and international profile."

and Alfred Waterfront has successfully redeveloped a large area of the historic part of Cape Town's *harbour for a mixture of retail, commercial and leisure uses*. *Current development on a site that was originally a quarry, and latterly a tank farm for bunker fuel, will add yet another substantial element of additional hotel and residential use.*

As the area was not provided for in the Town Planning Scheme of 1941, or in subsequent Zoning Schemes, a 'Package of Plans' approach was adopted to facilitate the planning of development [Worth 1993: 96]. Within this context the objectives, policies and proposals of the V&AW were set out first in a 'Contextual Framework' and then a 'Development Framework' [MLH Architects and Planners 1989].

The development is divided into a series of precincts, and individual 'Precinct Plans' became the "basis for determining the spatial responsibilities, limitations and rights of the local authority, the land owners and the investors and developers" [de Tolly 1992]. Once 'Precinct Plans' had been approved, the process moved on through approval of 'Site Development Plans' to the formulation of individual 'Building Plans' [Birkby 1998].

Included in the Development Framework was this summary of the V&AW's Urban Conservation Policy:

To recognise the importance of the historic aspects of the site; identify the historical environment and its treatment as a unique and special place; maintain and retain historical monuments; identify precincts of historical worth as conservation areas; renovate and adapt other listed and key buildings; ensure that buildings are put to uses compatible with their historic and architectural character; adopt as conservation guidelines the ICOMOS Venice Charter as adapted by Australia ICOMOS (the Burra Charter).

[Victoria and Alfred Waterfront]

Nicolas Baumann, who has undertaken a number of conservation studies of the Waterfront, has written extensively of this process [1997].

As part of the 'package of plans' development process agreed with the Cape Town Municipality, a conservation study of 'The Grain Silo and Fish Quay Precinct' was commissioned by the V&AW in 1994 [Baumann 1994]. The study included a specialist report on the grain elevator [Worth 1994], but was limited to evaluating the cultural significance of the site, and no proposals were made with regard to possible conservation policies for retention of that cultural significance. This study, undertaken in the context of the National Monuments Act (No.28 of 1969) and the V&AW's own Burra charter based conservation policy, broadly identified some of the key issues on the precinct, and was used to support the demolition of some structures and the retention of others. The concept of 'conservation planning' had yet to enter the South African heritage discourse.

The grain elevator itself had first been recognised as a site "of national or local historic importance or association" in 1983 by the compilers of a catalogue of Cape Town's buildings for the Cape Provincial Institute of Architects [Louw, Rennie and Goddard 1983: 630], and in terms of the then extant National Monuments Act, the grain elevator complex and associated conveyor gallery were designated 'Grade

Two'. The conservation study also indicated the possibility that remains of the eighteenth century Chavonnes Battery may still exist in the area [Baumann 1994].

It is within the above context that the Precinct Plan for the "Clocktower Precinct" (previously known as the "Grain Silo and Fish Quay Precinct") was approved on 29 July 1999, by the Planning Committee of the City of Cape Town. The Precinct Plan acknowledged that the "site is characterised by the landmark building, the grain silo and the associated conveyor gallery on the Collier Jetty", and additionally that "the Clocktower itself is a distinguishing building ..." [MLH 1999: section 2.2.3]. Yet the change of name for the precinct reflects changing design and business philosophies, as the historic Clocktower became regarded as the primary design focus for the precinct.

As the millennium drew toward a close, the V&AW began to plan for the development of the renamed Clocktower Precinct. One of the first conservation related responses was the excavation of the site identified by Baumann as potentially containing remains of the Chavonnes Battery. The site was excavated by the University of Cape Town's Archaeology Contracts Office, initially working inside the Concentra Fish Meal factory. Traces of the defensive artillery battery were indeed found, in early 1999, and a huge and costly operation launched to excavate and conserve the remaining fabric. The Chavonnes Battery excavation and subsequent conservation was to be the first time in which a conservation plan would be drafted for the V&AW, and the remains have subsequently become the focus of a major interpretive scheme.

As development of the Clocktower Precinct proceeded, the V&AW entered into negotiations with the Western Province Farmers' Co-operative (WPK) for an early termination of its lease. In terms of this agreement, WPK would cease bringing stock into the elevator at the end of February 2001, and would vacate the site by the end of August 2001.

A Conservation Plan for the Cape Town Grain Elevator, on the Kerr/Clark model, was commissioned by the V&AW, during the period November 2000 - August 2001. The contract was awarded to the ACO, who in turn sub-contracted this researcher (David Worth). Conservation Plans should ideally not be a response to specific development proposals, and in the case of the Cape Town grain elevator although there were pre-existing economic and developmental pressures on the site, and general approval for development had been given in terms of the Development Framework agreed with the City Council, there were in fact no specific proposals for the re-use of the site. Any Conservation Plan would therefore need to be framed within the context of those factors.

The V&AW were informed that the preparation of a conservation plan requires access to a range of skills and knowledge, and that consultation should be built into the programme. An informally constituted 'Conservation Planning Working Group', which met regularly during 2001, comprised representatives from the V&AW, the consultants employed to draft the Conservation Plan, and representatives of the South African Heritage Resources Agency and the City of Cape Town's Urban Conservation Unit. However, the V&AW were not prepared to establish a legitimately constituted stakeholder group at that time, and the preparation of the Conservation Plan, without proper reference to such a group, meant that it could be seen as only the first part of a process.

The preparation of this plan coincided with the final days of the elevator's operation, and the draft plan was used to inform official responses to applications for the demolition of peripheral structures. Work on the Conservation Plan stalled, however, at the point where the bought-in opinion should have given way to a process of public participation.

It is interesting to note that the Mission Statement of the Victoria & Alfred Waterfront Company, was used as a guiding framework in formulating the draft Conservation Plan in 2001, has changed significantly since that time. The original Mission Statement was worded as follows:

The Victoria & Alfred Waterfront Company develops, promotes and manages the Waterfront of Cape Town in the long term.

We are committed to:

enhancing the maritime heritage of the historic docks;
retaining working harbour activities.

We are committed to creating and maintaining a:

preferred location to invest and trade;
desirable place to shop, work, live and play;
quality, safe and clean environment for Capetonians, visitors and tourists.

We value our:

employees, and recognise their performance;
tenants and customers, and strive to satisfy their needs in order to maximise value for our investors and shareholders.

[<http://www.waterfront.co.za/html/index/history.html> (accessed 12 Nov. 2000)]

The new Mission Statement has no place for heritage, the working harbour, or even, one fears, Capetonians. Rather, the new Mission Statement of the Waterfront reflects its aspirations to be a world player, and to be recognised as such. It is a bland and unimaginative statement, couched in the international language of 'management-speak', and not only confirms the Waterfront's changing focus, but also its commitment to a role in the new networked landscape of the global economy.

We want the V&A Waterfront...

we are proud of the V&A Waterfront brand and building on the continued success of the V&A Waterfront in Cape Town, intend to be the world leader in waterfront developments

...to develop...

we are committed to being developers of quality mixed-use developments

...and manage...

we intend to manage all developments by being innovative, visionary, ethical and successful by valuing the loyalty of our stakeholders and exceeding their expectations

...leading...

we are internationally recognised as leading waterfront and mixed-use project developers and managers, and are committed to building and protecting our reputation

...waterfronts...

although we are mixed-use developers and managers, waterfront developments remain our focus

...worldwide.

based on the worldwide demand for our participation and consultation on waterfront developments, we are committed to expand our business activities nationally and internationally.

[<http://www.waterfront.co.za/profile/companmy/mission.php> (accessed 30 Dec. 2003)]

The Victoria and Alfred Waterfront's Urban Conservation Policy includes a commitment "to adopt as conservation guidelines the ICOMOS Venice Charter as adapted by Australia ICOMOS (the Burra Charter)."

Although the phrase 'Conservation Plan' as such does not appear in the Burra Charter, Article 25 states that "A written statement of conservation policy must be professionally prepared, setting out the cultural significance and proposed conservation procedure together with justification and supporting evidence, including photographs, drawings and all appropriate samples" [Marquis-Kyle & Walker 1992: 65]. This is indeed the Conservation Plan, very largely as described by Kerr, Clark and others, and thus the Burra Charter was used as a point of reference for the Conservation Plan process and for the conservation policies derived from that process.

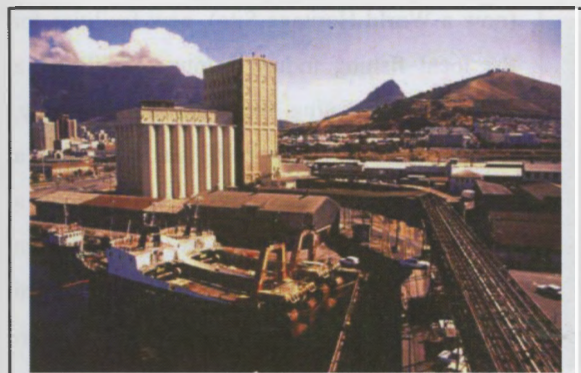


Figure 84

Cape Town: the grain elevator from the Collier Jetty, 1995.

The Victoria and Alfred Waterfront Company has taken exception to the criticism that the Waterfront is "primarily a heritage honey pot for tourists rather than an initiative in conservation and interpretation" [Stratton 2000d: 117], and point proudly to the awards it has won for its architecture and design.

While it is acknowledged that it is not the primary goal of the Victoria and Alfred Waterfront to develop the Waterfront as an initiative in conservation and interpretation, the "retention of cultural significance" is important, it is certain that a properly formulated

Conservation Plan would assist the company in meeting its conservation commitments.

By 2001, the relevant legislation was the National Heritage Resources Act (No.25 of 1999). Three categories of 'conservation-worthiness' are distinguished by the Act, and it is appropriate and necessary

to reassess the earlier designation in the context of the new legislation [National Heritage Resources Act 1999: section 7]. While the legislation imposes certain constraints and obligations on property owners such as the Victoria and Alfred Waterfront, it makes no provision for the use of public funding in a case such as this. Thus the full cost of conservation work is borne by the developer, and has to be provided for by them in planning and budgeting. The requirement to conserve and interpret the Chavonnes Battery had already imposed a significant financial burden on the V&AW's development of the Clocktower Precinct, and there was, unsurprisingly, little enthusiasm for further expense.

During the development of the western part of the Clocktower Precinct, the V&AW identified a need to undertake major infra-structural works in the immediate vicinity of the grain elevator early in 2001. Whilst deemed not likely to have a direct impact on the main elevator structure (the working house), or the attached silos (the storage annex), these works would require the removal of two of the four railway tracks, and the demolition of half of the track shed to the west side of the working house. The V&AW also wished to demolish most of the peripheral structures including the staff mess and toilet facilities, the workshop and the garage.

With extensive construction work already under way on the Clocktower Precinct, and with many buildings already having been demolished, concerns were expressed internationally that "demand for more 'themed' shops and restaurants will result in the clearance of historic structures, including an impressive grain elevator" [Stratton 2000b: 17]. Retention of the grain elevator building envelope, for the main part, was prescribed in terms of condition 2.9 attached to the approved Precinct Plan, but there were no guarantees for the future of the building itself.

The precinct surrounding the grain elevator site has a high public profile as it incorporates the terminal for ferries servicing Robben Island (now a World Heritage Site), new facilities for the local fishing industry, tourist facilities, a museum interpreting the Chavonnes Battery, retail outlets, and the prestigious offices of a large banking group. The precinct forms a pivotal point in the broader urban design concept of the Waterfront, and a tree-lined boulevard, aligned on the historic Clocktower, now routes visitors directly into new public spaces which have been created around the Clocktower.

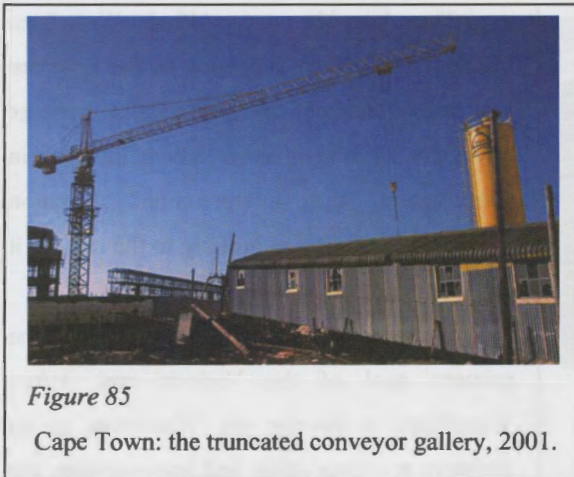


Figure 85

Cape Town: the truncated conveyor gallery, 2001.

From the above, it is clear that future management and use of the grain elevator needs to be informed by documents that include, but are not exclusive to, the Victoria and Alfred Waterfront's Mission Statement and Urban Conservation Policy (and thus also the Burra Charter), the Development Framework and Precinct Plans already approved by the local authority, and national heritage and planning legislation. Management of the site needs to

respond to a wide range of issues, and it is important that all stakeholders are involved in collaboratively mapping out its future.

The cultural significance of the networked landscape of grain elevators

It is suggested that in terms of Section 7 of the National Heritage Resources Act the Cape Town Grain Elevator should be categorised as Grade 2: a site of regional historical significance.

The statement of significance outlined below should be read in association with the overview of the site's component structures at Appendix D and the inventory at Appendix E. The inventory suggests for each element a grading in terms of significance, identifies particular issues which might impact on that significance, and outlines policies for retention of significance. The statement of significance below presents a synthesis and overview for the site as a whole.

When this assessment was made, in 2001, the intactness of the site contributed to its significance. Thus the working house, the storage annexe, the conveyor gallery and the track shed were seen as forming a whole. Since that time the track shed and the conveyor gallery have been partially demolished, while the electricity sub-station, dating to 1924, and the mess, ablution and workshop facilities, dating to 1966, have all been demolished.

The Cape Town grain elevator is of significance for the following reasons.

It is the most visible symbol of the industrial heritage of the docks.

- it is visible as a landmark from within and above the city, and to seaward;
- it was the highest building in the country when constructed;
- it provides the highest point within the Victoria and Alfred Waterfront to view the city and the harbour.

It is significant in that it was, at the time of closure, a largely intact and working early twentieth century complex.

- many major component structures remain largely intact and unmodified;
- virtually all machinery was intact and in working order;
- it contributed to the "working harbour" component of the Victoria and Alfred Waterfront.

It is a symbol of the importance of grain in the South African economy.

- the building of the elevators was instrumental in significantly increasing South Africa's grain exports;
- in recent years it has been the major hub of the grain trade in the Western Cape.

It has educational potential.

- it represents a period of South African history in which government supported 'white' commercial farmers, to reduce the number of rural unemployed 'poor whites', thus further politicizing racial divides;
- the construction of the elevator is well documented, with contemporary reports, original drawings, and photographs;

It is a rare surviving example of an early twentieth century elevator.

- Cape Town's elevator is largely unmodified whereas the Durban elevator has undergone significant change;
- many overseas port elevators have been demolished in recent years, and this was a rare working example;
- it represents a country-wide network connecting the railway to the sea, and South Africa's agricultural economy to its export markets.

It is of aesthetic and architectural importance

- elevators are an important influence in International Modern Movement architecture in the twentieth century;
- its form is closely defined by its function in terms of the materials used, and the relative scale of each component structure.

It is an example of South African innovation

- the use of concrete on this site was one of the first major construction projects to use Cape Portland Cement, and was thus a landmark in the history of the Pretoria Portland Cement Company, known as PPC.

It demonstrates the international transfer of technology.

- all designs, machinery and fittings were brought from overseas.

It represents an important historical aspect of banking and money supply in South Africa

- 'elevator receipts' were negotiable instruments, and could be used in a variety of financial transactions.

Issues relating to the conservation of networked landscape of grain elevators

There is currently no Site Development Plan for the Cape Town grain elevator, and no proposed new use. This means that the entire site is vulnerable in its most extreme sense. Its future depends on a new, economically feasible, use being found that is compatible with the Development Framework and the Clocktower Precinct Plan, yet which recognises and conserves the cultural significance of the site.

The landmark quality of the grain elevator derives from its exceptional height in the context of the Victoria and Alfred Waterfront, and as one of the few landmark industrial buildings visible from the city, the mountain and the sea. Using the height of the elevator to establish the height for new development, as indicated in the approved Precinct Plan, significantly diminishes that landmark quality. Similarly, the scale and form of the individual components, and their relationship to each other, can easily be destroyed by ad hoc partial or total demolitions and alterations.

The grain elevator was constructed as part of a country-wide system designed to export South African maize to the world. There has already been some loss of significance as all the railway connections to the site have been removed, and the physical connection to the collier jetty and the sea broken. Allowing new building to take place between the elevator and the collier jetty would diminish, rather than enhance or reveal, the significance of that historic connection.

The Victoria and Alfred Waterfront have made it clear that they do not favour short term uses for the site.⁶⁰ Short term uses would bring with them associated threats to the cultural significance of the site, and it would be important that these are properly managed. This does not mean, however, that short term strategies may not be appropriate.

Access to the Clocktower Precinct is an imperative for the V&AW, and provision needs to be made for pedestrian and vehicle access for visitors and tourists, bus and taxi stops, parking, delivery and service vehicles, and the fishing industry. The boulevard linking the Dock Road entrance of the Victoria and Alfred Waterfront with the Clocktower has impacted significantly on the track shed and led to its partial demolition.

The immediate environs of the elevator are currently being used for open air parking. In the longer term, underground parking is likely to be required for the planned new buildings, as well as for the elevator itself. Any demolition and subsequent excavation of groundworks on this site may reveal archaeological evidence of the former grain and coal sheds, and shipwreck material, and would need to be conducted with the oversight of an archaeologist.

The structural integrity and load-bearing capacity of both the working house and storage annexe are unknown, and it will not be possible to formulate any long term plans for the site until such report has been prepared. The dangers of embarking on a major adaptive re-use project, without first establishing the structural integrity of the site, are detailed extensively by Sabbagh in his account of the conversion of the Bankside Power Station into Tate Modern. In that case, failure to properly understand the corrosion of roof slabs delayed the project for some weeks, at considerable expense [Sabbagh 2001].

A structural engineer's report became particularly important after an incident in February 2001 whereby damage to Bin 135 was sustained after the collapse of 400 tons of soya oil cake. This incident signalled the possibility that similar damage may have affected other bins in the past, and could impact on the structural integrity of the storage annexe. Visual inspection of the perimeter bins indicated that similar damage may have been incurred to other parts of the structure in the past.

It is necessary to understand not only the structural integrity of the working house and storage annexe, as it stands now, but also the likely implications of removing interior vertical divisions (such as some or all of the bins in the working house or the storage annexe) or horizontal divisions (the floors in the working house).

The working house is likely to present a different set of questions for the structural engineer. As has been reported elsewhere, this building is in part steel framed, and part concrete. Whilst it has been constructed to bear enormous loads, those loads are borne by the structure itself. The floors (approximately 15cm thick) are clearly not designed to carry significant loading. Furthermore, the walls show signs of spalling in some areas, particularly in the north-west corner of the machine floor on level

⁶⁰ Meeting of Victoria and Alfred Waterfront Conservation Plan Working Group, 21-May-2001.

five. Plans indicate the use of “Clinton” fabric as reinforcement in the walls, roof and floors of both the working house and storage annexe.⁶¹

In July 2001 the site appeared to be in a generally good condition (with the exception of the conveyor gallery and the damaged bin), with repair and maintenance work having continued to keep the buildings and equipment in good working order. As the site is, and is will continue to be, owned by the Victoria and Alfred Waterfront then the question of who is legally responsible for it does not arise. However, the grain elevator site needs to be subject of ongoing management and care if it is not to become derelict. Particular care needs to be taken to ensure the integrity of the building, particularly its roofs, gutters and services (electrical, plumbing, drainage, etc).

Much of the machinery in the elevator dates to its origins, and could potentially be considered as a collection of “heritage objects” under section 32 of the National Heritage Resources Act (No.25 of 1999). The machinery ranges from the huge truck lifts to the small stainless steel buckets attached to the elevator belts. Most of the machinery was in good working order at the time of closure. It is also possible that there will be the temptation to break it up for scrap, either with or without the authority of the V&AW, and security of the site is therefore likely to be a problem.

In designing future uses for the elevator, the machinery can either be seen to be occupying valuable lettable floor space, or to be an asset in the development of the site. In some cases (for example the pre-weighers and scales) the machinery is simply too large to allow for any other use of the space in which they are situated. In the light of the above, it is going to become particularly important to re-assess possible options and opportunities for dealing with the remaining machinery when there are definite proposals for the future use of the site.

Furthermore, a comprehensive repair and maintenance schedule is required to ensure that the building does not deteriorate while new uses are being sought.

Collections of plans and drawings were held by WPK and the Victoria and Alfred Waterfront. Much of the WPK material was subsequently passed to the Victoria and Alfred Waterfront, and it is important that all this material is now properly conserved in terms of the National Archives Act.

Form and function: the aesthetic issues relating to grain elevators

The issue of aesthetics is important enough to warrant close scrutiny. It has already been suggested that the gas works did not ‘fit’ into any acceptable aesthetic architectural model for re-use. In contrast, examination of the aesthetics of, and artistic and architectural response to grain elevators, reveals a wide range differing views, locally and internationally.

As early as 1865, after visiting Buffalo, New York, Anthony Trollope had written that “an elevator is as ugly a monster as has yet been produced”, arguing that it symbolized commercial greed, and the most “objectionable and monstrous qualities” of American life [quoted in Brown 1993: 305]. A local

⁶¹ Plans of Table Bay Harbour: (TBH 106 L3-2005/35) roof of working house uses “Clinton” No.9 fabric; (TBH 106 L3-2005/14) detail of 8” walls including use of “Clinton” No.8 fabric and vertical wires; (TBH 106 L3-2005/35) floors over storage annexe bins reinforced with “Clinton” No.7 fabric and roof of annexe uses “Clinton” No.9 fabric.

newspaper writer was later to describe them as “indescribably ugly structures ... (which) shock the artistic eye ... these are nightmare buildings” [quoted in Brown 1993: 305]. An 1882 lithograph of the Union Railroad’s 250,000 ton capacity port elevator gives some sense of what they were describing (*Figure 86*).

In the early twentieth century, as Brown has demonstrated, the American “nightmare buildings became the American Dream”. In Europe too, a growing architectural voice “in favour of simple, unadorned, geometric forms, and against ornamentation” led to an interest in elevators by architects such as Walter Gropius, founder of the Bauhaus movement in Germany. Gropius, with Le Corbusier and other architects of the International Modern Movement, was to become extremely influential in twentieth century architecture. In a 1913 article entitled *Die Entwicklung Moderner Industrie-baukunst*, Gropius enthused about the huge Washburn-Crosby and Dakota terminal elevators in Buffalo, arguing that the function of the structures could be read from their form.

As Banham has shown, Gropius had never seen an elevator at the time, and based his views entirely on photographs he had seen, and subsequently used to illustrate his article. Banham and Brown describe how some of the photographs used had been altered before they were published, and suggests that they may even have been changed before Gropius first saw them [Banham 1980b & Brown 1993].

Banham also argues that neither Gropius, nor Le Corbusier who followed him, and who used the same images in his work, appears to have had any knowledge of the functioning of the structures about which they were writing. “When Walter Gropius introduced American



Figure 86
Union Railroad’s Toledo port elevator, 1882
[Library of Congress]



Figure 87
Charles Demuth, *My Egypt*, 1927.⁶²
[Whitney Museum of American Art, New York]

62 Charles Demuth’s *My Egypt*, 1927, is known as a Precisionist masterpiece, and shows the grain elevator at Lancaster, Pennsylvania. The title refers to the then current vogue for all things Egyptian. [www.artarchive.com/artarchive/D/demuth.html accessed 15 Sep. 2003]



Figure 88

Preston Dickinson, *Grain Elevators*, 1924.⁶³

[With permission: Zabriskie Gallery, New York]

elevators to the thinking architects of the world, he described them as ‘almost worthy of comparison with the works of the Ancient Egyptian,’ but explained neither how they worked, nor what they were made of, nor exactly how gigantic they really were” [Banham 1980b: 43]. Nor did these influential architects acknowledge that the elevators about which they were writing were of a very specific type. Banham notes that the terminal elevators Gropius had seen, if only in photographs, were very different to the much smaller inland elevators that populated the American prairies. The terminal elevators were provided with ‘marine legs’ for off-loading grain barges arriving from the interior, and Banham suggests that Gropius and Le Corbusier may not even have been aware of the mobile nature of these fourteen storey structures. Thus “it was an unreal and corrupted vision of American elevators that the Modern Movement followed”

as these utilitarian structures, built for economy, were promoted to “romantic symbols of a mythical industrial promised land to the West” [Banham 1980b: 44].

In North America, Precisionist artists of the 1920s, such as Charles Demuth (*Figure 87*), Preston Dickinson (*Figure 88*) and Charles Sheeler, all chose to portray elevators, while in 1933 they were lyrically described as the ‘Castles of the New World’.



Figure 89

Ugandan 1,000 shilling banknote, 2002.

Herbert described Canada’s concrete terminal elevators as “drab and ugly” and noted the “country elevators standing stark and rather unbeautiful at every town and siding along the railway line”. These were, he said, “the shadow cast-before of a village around the bend”, though “architecturally, the country elevator is nothing to inspire delight unless one has a decided flair for the sharp and uncompromising lines of l’Art Moderne” [Herbert 1933: 243].

⁶³ Preston Dickinson’s *Grain Elevators*, 1924, portrays the Peters Mills elevators at Omaha, Nebraska. It is believed to be one of about ten by the artist on this subject. [Personal Communication: Renee Devine, Zabriskie Gallery, New York 12 Sep. 2003].



Figure 90
Canadian postage stamp, 1942.

More recently, two books have celebrated the role of the American elevator in the landscape. Lisa Mahar-Keplinger's work [1993] creates a typology based on building materials, and takes the viewpoint of architect and planner, while Gohlke's photo-essay *Measure of Emptiness* [1992] first showcases and then hides elevators within the vast 'empty' prairie landscape.

Uganda has depicted an inland grain elevator on its 1,000 shilling banknote, presumably as an expression of that country's commitment to developing a modern agricultural economy and the significant role that grain has to play (Figure 89), while Canada

used a port elevator on its postage stamps in 1942 (Figure 90).

South African artists, in contrast to their North American counterparts, appear to have been unmoved by the appearance of the grain elevators on the flat landscape of the maize growing areas. Whilst the Cape Town elevator is occasionally represented (for example, the pencil sketch by Charles

Ernest Peers at Figure 43), no examples of artistic interpretations of South African country elevators have been located during this research.

Old Mutual, established in 1845, is South Africa's oldest insurance company. Its art deco building in the centre of Cape Town's business district, completed in 1940 as the company's headquarters, is generally regarded as one of Africa's finest art deco buildings. The building is lavishly decorated inside and out, with well known contemporary artists having been commissioned to create sculptured and painted friezes. One such frieze (Figure 91) adorns the Assembly Room, and is painted in the social realism style, "strongly mitigated by a capitalist perception of industrial, social and labour relations" [Freschi 1994: 53]. With Table Mountain as a backdrop, the frieze shows the spire of St George's Cathedral to the left. The cathedral was the tallest structure in the city, until the building of the elevator, seen to the right of the image, in 1924. In the centre of the picture, self-consciously reflecting the

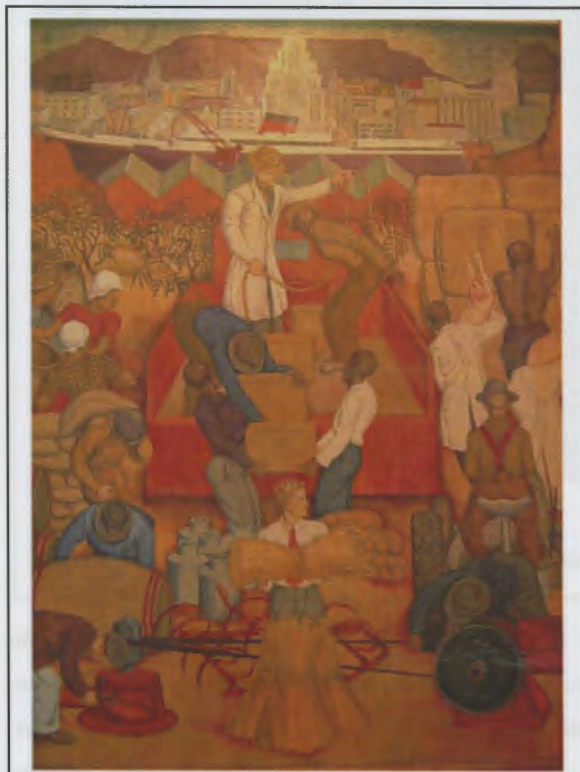
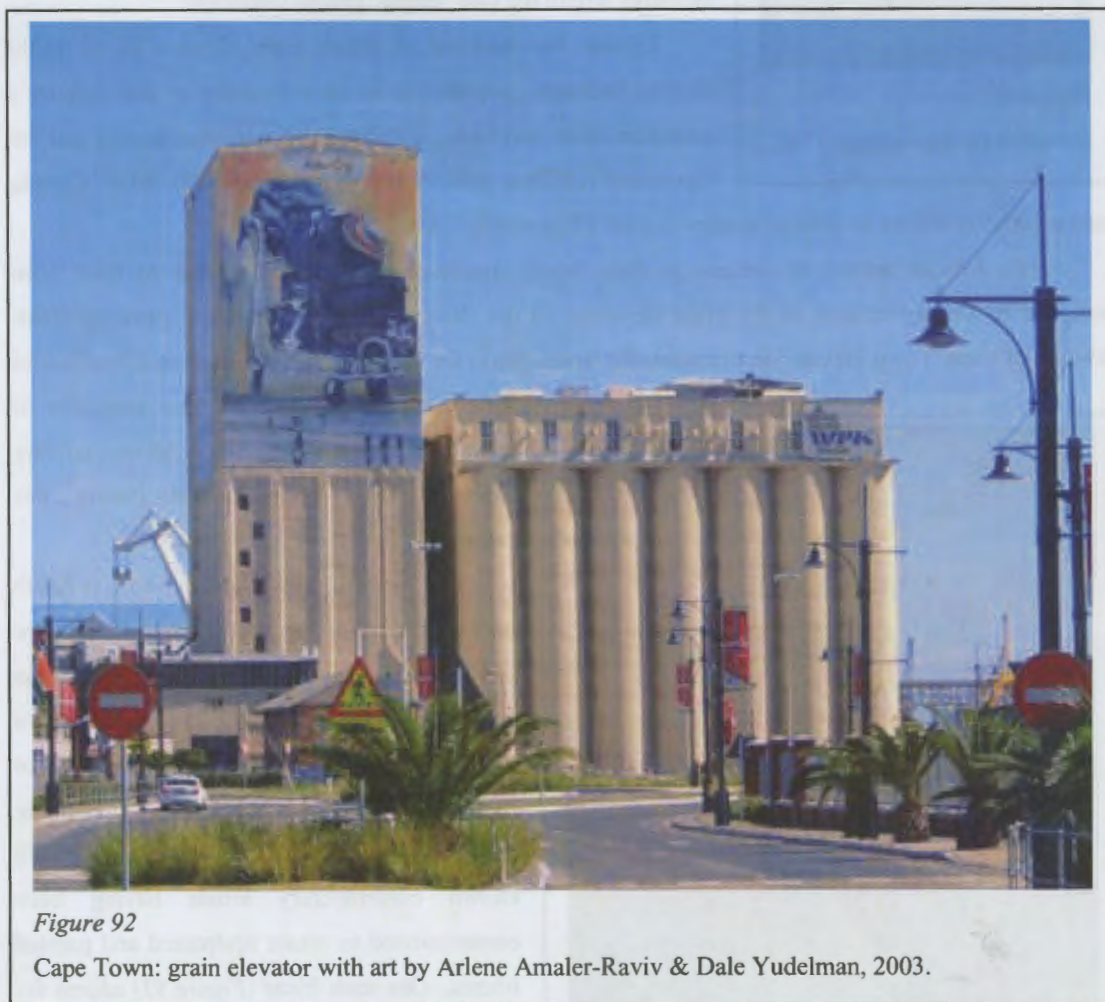


Figure 91
Le Roux Smith Le Roux, *Agricultural Industries* (detail), 1942.

Egg tempera on plaster mural in the Assembly Room of the Old Mutual Building, Cape Town.

company's pride in its new offices, stands the Old Mutual building, now dominating the skyline.

Significantly, in the 1990s, with the transformation of part of Cape Town Harbour into the Victoria and Alfred Waterfront, the presence of the elevator appears to have been deliberately suppressed. What was originally called the 'Grain Silo Precinct' has been re-branded 'The Clocktower Precinct', and publicity photographs of the Waterfront are often cropped to exclude the site.



An exception to this trend has been the use of the grain elevator as an outdoor art venue. In December 2003, three 28m x 17m graphic images were installed on the exterior of the upper stories of the working house as part of the 'For the City' initiative (*Figure 92*). The works, a collaborative effort between artist Arlene Amaler-Raviv and photographer Dale Yudelman, were sponsored by cellular telecommunications company Cell C, and advertised as 'the largest outdoor art display in Cape Town'. Ensured of maximum exposure on the 'tallest structure at the V&A Waterfront', the works were floodlit at night and drew significant media attention.⁶⁴

⁶⁴ Personal Communication: Arlene Amaler-Raviv and Dale Yudelman, 23 Dec. 2003; Cape Times 16 Dec. 2003; and www.bigwrap.co.za 23 Dec.2003.

Clearly the architectural aesthetic appeal of grain elevators has fluctuated with fashion, while there has been an over-emphasis on the form of the structure, and insufficient understanding of the process within. It is suggested that modern schemes for the adaptive re-use of elevators risk encountering the same problem.

Policies options for the networked landscape of grain elevators

Policies for the retention of significance at the Cape Town grain elevator, should, it is argued, be informed by particular reference to the following:

- context and setting;
- character and interpretation;
- appropriate new uses.

Article 8 of the Burra Charter stresses the importance of the visual setting; form, scale, colour, texture and materials; and the importance of views of and views from a place [Marquis-Kyle & Walker 1992: 38]. In respect of the context and setting of the site, it is suggested these should be retained as far as possible, particularly by ensuring the provision of views to the north and south elevations, which facilitate a functional understanding of the site. Crucial to that functional understanding are the links to the networked landscape of which the Cape Town grain elevator was an integral part. Thus the importance of the railway to the site should be acknowledged in any future development, and it is suggested that this could be done retaining and interpreting the remaining hydraulic tippler, preferably in situ. Similarly, the horizontal conveyor to the collier jetty should ideally be retained, or failing that, at the very least be reflected in any new structure that is built on the jetty. No new building should be permitted that would obstruct the sight line between the grain elevator and the collier jetty.

Appropriate methods of interpreting the history of the elevator should ideally be integrated into any development proposals, with people who have extensive working knowledge of the site being asked to assist in the preparation of any interpretive material. The historic function of the elevator is perhaps best expressed in the vertical nature of the working house structure itself, and the void spaces within it. It may therefore be appropriate to work some of these elements into future design, rather than necessarily trying to retain 'one of everything' from the surviving machinery.

Aspects of the mechanics of grain handling may well best be expressed in a large scale working model of the site. Whilst this approach may in exceptional circumstances be supported where there is no viable alternative to removing original fabric, it should not be used as justification for removing that fabric. Similarly, drawings, photographs and video material may also serve as interpretive media for the site, demonstrating how its particular role is embedded within the broader networked landscape of grain elevators across South Africa.

Article 7 of the Burra Charter states that the conservation policy will determine which uses are compatible [Marquis-Kyle & Walker 1992: 34]. It must also be stressed, however, that the structural integrity and load-bearing capacity of the structure will also determine which uses are compatible. It is therefore imperative that a structural engineer's report is commissioned before any firm decisions are taken on the future of the site.

An appropriate use, or combination of uses, needs to be found that allows the cultural significance of the place to be retained, whilst providing an economically sustainable basis for the site.

Internationally there have been a number of proposed and actual silo conversions demonstrating a range of imaginative ideas for the re-use of such sites. It is not intended to suggest that any of the projects described here be regarded as the perfect model for the Victoria and Alfred Waterfront, but it is useful to review them in order to stimulate discussion about possible futures for the Cape Town grain elevator and the country elevators.

The remains of an elevator in the old port of Montreal are preserved as an archaeological site in much the same way as many Roman and Medieval sites in Britain and Europe. Stratton and Trinder describe the site in the following terms:

In the Old Port of Montreal visitors can observe the outline of the concrete foundations of a thirty-two-storey grain elevator erected in 1912, together with associated fragments of rubber belting, twisted steelwork and rusting electric motors. The conserved ruin conveys a vivid sense of the scale of the Canadian grain trade and provides enlightening evidence of the new materials of the early twentieth century. The elevator encapsulates the fundamental, if elementary, concept that our understanding of the twentieth century is increased by an awareness of its archaeology, of the artefacts, images, structures, sites and landscapes of the past 100 years.

[Stratton & Trinder 2000: 1]

Also in Montreal, an imaginative project explored the acoustic properties of a giant disused elevator by playing sounds through the silos. This project, which ran for almost a year, aimed to “raise popular awareness of the building and to catalyse activity that will eventually result in the discovery of an appropriate new function for the abandoned elevator.”⁶⁵

The best known adaptation and re-use of a silo complex is that of Quaker Oats silos, in Akron, Ohio. During the late 1970s the complex was converted into a hotel which opened in 1980. This was something of a leader in the field of silo conversions, and hence has been frequently noted in the literature [Trinder 1992: 5; *Heritage Dividend* 1999: 10 and others]. Nowadays the visitor is encouraged to 'sleep in a silo' and 'dine in a mill'.⁶⁶ The Ohio Division of Travel and Tourism has published an analysis of the site on its website, and enthusiastically describes how the “success of this large-scale development, undertaken despite a growing uncertainty about the future of downtown, is a catalyst for social and economic revitalization of Akron.”⁶⁷ Seed money to renovate part of the complex was raised by selling equipment from the disused mill. The revenues generated from the letting of four shops and a restaurant were in turn used to open another 26 shops. With this kind of critical mass having been achieved, the development was then able to raise loans for further rehabilitation of the site. At that time it was considered that the cost of rehabilitating the site was approximately one third of the cost of a new building.

⁶⁵ Internet site: www.silophone.net/eng/about.html accessed 20 Oct. 2000.

⁶⁶ Internet site: www.hiltonakron.com accessed 15 Oct. Sep. 2000.

⁶⁷ Internet site: www.ohiotourism.com/industry/heritage/outreach/quaker.html accessed 15 Oct. 2000.

At Gateshead, in the north-east of England, the 'Baltic' is the flagship project in a £250m urban regeneration scheme. Here, a flour mill built in 1950 has been transformed into a major centre for the arts, with temporary exhibitions having been being mounted even whilst construction was still under way. During two 'reunion days' at the Shipley Art Gallery in 1998, over forty former workers at the Baltic Flour Mills came forward to record their memories, providing a vernacular history of the building from its construction in the 1950's through to its closure in 1980. 'Baltic Memories' was an exhibition that combined living recollections with industrial archaeology. It consisted of textual material and period photographs with projections, and provided information about where the wheat came from, and the methods of testing and baking as well as providing insights into the social lives of the workers at the mill.

Gateshead, narrowly beaten by Liverpool in its bid to be named European City of Culture for 2008, had hoped to ride the wave of 'the Bilbao effect', named after that city's response to the 1997 Guggenheim Museum designed by Frank Gehry. Writing in *The Guardian*, Andy Beckett questions "the idea that culture, very broadly defined, can be used to revive declining places" [2 Jun. 2003]. He suggests that statistics mapping attendance at 'cultural events' and the numbers of jobs created, can be misleading as cultural tourism follows fashion, not necessarily being sustained in the face of competition, and that the type of jobs created, especially in the hospitality industry, are often lowly skilled, and lowly paid.

In the worldwide history of grain elevators, those at Buffalo are perhaps the best known, if only for their influence on Gropius and Le Corbusier. Here too, debate rages around whether or not to preserve these sites. The Great Northern elevator, built in 1897, is the focus of The Grain Elevator Project, a joint initiative by the University of Buffalo and the local Landmark Society. The case for significance has been clearly articulated, with the result that two of Buffalos eighteen elevators are now recorded on the



Figure 93
The architect's vision for Metronome Canada, Toronto,
2000.

[Internet site: www.metronomecanada.com]

National Register of Historic Places, and the Project is seeking to have the other sixteen similarly designated. However, the city of Buffalo is nonetheless struggling with the implications of allowing not demolition of the Great Northern, as its owners, ADM Milling, threaten to leave the city entirely, tasking with them much needed employment at its other sites [Metropolis 2003].

The website for The Grain Elevator Project recognises the imperative for 'a public conversation', asserting that "acts of preservation begin with talk – about the meaning and value of the objects in question and

about the possibilities of their future use".⁶⁸ It is lack of acknowledgement of this point that is so badly missing in the South African context.

Another Canadian project, this time in Toronto, is an ambitious scheme to convert "the Canada Malting Silo Complex on Toronto's waterfront into 'The World's First Music City', featuring Canada's Music Museum, an 800 seat concert theatre, offices for the music industry, The Music Education Centre, music related retail, The Canada Malting Museum, restaurants, a music themed children's playground and The Riverboat, a floating exhibit celebrating Yorkville Avenue in the 1960s." The promoters of Metronome Canada intend that it become "the jewel in the crown of Toronto's rejuvenated waterfront and a lasting legacy to Canada's Millennium", which "will integrate, educate, celebrate and promote all facets of the Canadian music industry."⁶⁹

Opposing the scheme, the 'Urbanism' website argues that "The public is being asked to destroy its own architectural heritage. Under the advertised scheme the Canada Maltings austere concrete silos will get a makeover, turning them into a tarted up whore. In the end this flashy and superficial fix will have diminished the architectural and historical integrity of a 'Grade A' industrial heritage site."⁷⁰ The site has been stirring debate since it was closed in 1987. Then, a Toronto city councillor was reported as saying "It's so ugly that it's a crime to have this building continue to stand", while others argued for its historical significance [Society for Industrial Archaeology vol. 17 no.1 Spring 1988].

Internationally, perhaps the best known recent example of the adaptive re-use of an industrial building is Tate Modern, in the former Bankside Power Station, London. However, there is a danger that success of this project will be seen to validate of an approach which expressly ignores the archaeology of the site [Moore and Ryan 2000].

The Victoria and Alfred Waterfront have indicated that they are not in favour of short-term uses for this site, pending its longer term future being secured. This is unfortunate as adoption of short term strategies, involving minimal intervention in the historic fabric, could lead to the development of longer term solutions if properly managed. Temporary art exhibitions, possibly involving comprising installation art, sculpture, music and performance, linked with displays interpreting the history of the site, would undoubtedly generate interest in the site itself, and potentially lead to the generation of creative ideas about possible future uses. Various floors in the working house have potential as gallery space, allowing some of the elevator machinery to remain in place as static exhibits around which to work. The exterior appearance of the silos in the storage annexe would be diminished by the creation of fenestration, but they present all sorts of possibilities for the provision of light wells. A use for this area that does not require external light sources would seem to be best, such as a cinema or theatre space.

In the longer term a mixed use cultural centre may provide an appropriate way of conserving the cultural significance of the site. The challenge would be to make that economically sustainable. There are many examples overseas of industrial buildings being given mixed uses, a key element of which may

⁶⁸ Internet site: www.urbandesignproject.ap.buffalo.edu/gr_el/publicconv.htm accessed 29 Dec. 2003.

⁶⁹ Internet site: www.metronomecanada.com accessed 18 Oct. 2000, and printed promotional material.

⁷⁰ Internet site: www.interlog.com/~urbanism/malt.html accessed 24 May 2003.

be social and cultural activities such as music, dance, art galleries and museums, supported by income generating activities such as restaurants, shops, offices and residential apartments [Stratton 2000b :24]. The close proximity of the site to both the Chavonnes Battery and the Robben Island Gateway suggest possibilities for further museum related use on this site, perhaps one that addresses labour history and the development of the docks.

This kind of mix suggests that some form of partnership between the Victoria and Alfred Waterfront and provincial or local government may be appropriate, as conservation is often only a by-product of the social and economic regeneration that such uses can create.

Having focused in detail on the cultural significance of the Cape Town, the next section of this chapter briefly considers the rest of the networked landscape of grain elevators. In Chapter 8: Conclusions this thesis will argue that cultural values can be balanced with social, economic and other values under the broad banner of 'sustainable development'.

The country elevators

Significance

As stated previously, the network of country elevators has not been analysed in the same detail as the Cape Town site. However, it is clear that with the exception of the site specific attributes relating to Cape Town docks, almost all the other reasons why the Cape Town elevator is considered significant could be applied to most of the individual country elevators.

Very importantly, there is considerable significance in the almost complete survival of the entire system. The original population of sites is known and mapped, and with a single exception, has not yet suffered from random demolitions. It is this particular attribute that this thesis will attempt to exploit in *Chapter 8: Conclusions*.

Issues

Of the nineteen inland elevators in continuous use, nine are of the smaller type, and ten of the larger type, thus an approximately equal number of each type has survived. However, relating this to the original populations, it is seen that eleven of the original twenty-two (50%) smaller elevators are either derelict, or have been demolished, while the only two of the original eleven (18%) larger elevators have become derelict.

It is clear that with the country elevators, as with Cape Town, the economics of use must be balanced with the economics of disuse. Use, or re-use, means responding to considerations such as the economics of the market place, labour costs, repairs and maintenance, and economies of scale. The size of modern elevator complexes, compared with the historic sites, suggests that the latter is not an insignificant concern. It is apparent that six of the twelve derelict sites are of the smallest size (Size 2), and that overall a higher proportion of the units with a double working house has survived than that of the smaller, single working house units.

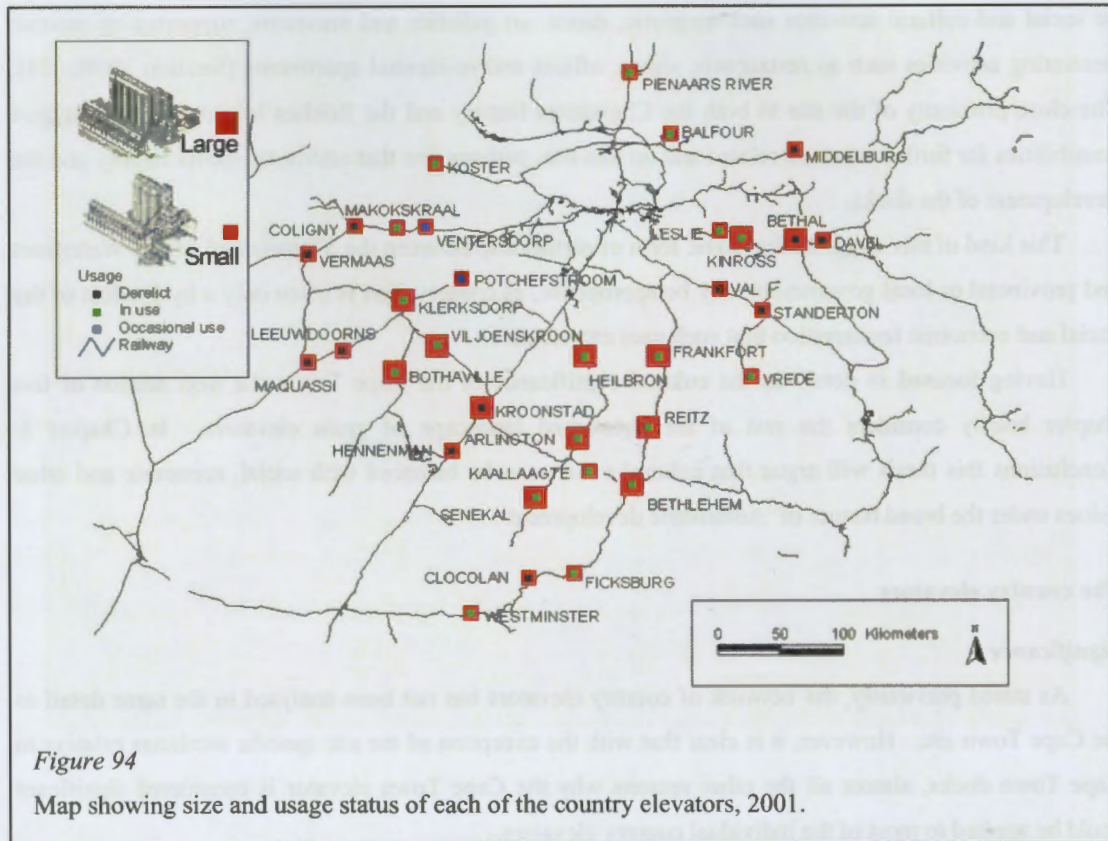


Figure 94

Map showing size and usage status of each of the country elevators, 2001.

Current Usage Status		In Use	Occasional Use	Derelict	Demolished	Totals
Single Working House	Size 2	3	-	6	-	9
	Size 3	1	-	-	-	1
	Size 4	3	1	2	1	7
	Size 5	2	1	2	-	5
Double Working House	Size 6	5	-	-	-	5
	Size 7	1	-	2	-	3
	Size 8	4	-	-	-	4
Totals		19	2	12	1	34

Figure 95

Table showing size and usage status of the country elevators, 2001.

The economics of disuse requires an assessment of what each structure would cost to demolish, the value of removable buildings like the corrugated iron sheds, and whether there is any demand for the land to be reused for anything else.

Practical issues also need to be considered, such as maintenance, health and safety, power supply, access and security. Whilst some of the derelict buildings have been secured against trespass and vandalism, this is not always the case. Some are left open, and are thus vulnerable to being robbed of equipment which may have cultural significance, simply for the cash value.

The importance of the original fabric as material evidence cannot be over-emphasised. However, it will not always be appropriate to demand retention of original fabric, and an alternative range of responses needs to be considered. This research suggests that much of the machinery in the grain elevator is of considerable significance, but many of the elements are repeated and a representative example should suffice for conservation purposes.

Finally, there is the question of aesthetics, explored at length in the previous section. Policies for the re-use of grain elevators are bound to be informed by whether they are considered 'picturesque', or a 'blot on the landscape'.

The impact of derelict buildings on neighbouring communities, and property values, cannot be overlooked. Yet those same buildings, cared for, integrated back into their host towns, and with a new purpose, could well have beneficial impacts for those same communities.

Chapter 8: Conclusions

Introduction

The previous chapters have examined the networked landscapes of gas and grain in a relatively conventional manner, with an emphasis on 'conservation values' and 'cultural significance', and on the conservation issues arising out of our understanding of these landscapes in a like manner. This chapter will attempt to formulate conclusions within a broader framework, arguing that in a developing nation such as South Africa, hungry for democratic governance at all levels of society, consideration of other appropriate values is not simply to be recommended, but has to be at the core of any policy that seeks to conserve the industrial heritage. Only in exceptional cases are conservation values or cultural significance alone likely to be sufficient to motivate for conservation.

It is clear from the case studies presented in this thesis that there are significant differences between the ways in which Cape Town's primary sites relating to the networked landscapes of gas and grain were considered. It is suggested that this difference is in part a function of the changing political and social landscape of South Africa during the past decade, and the way in which change has been played out in the conservation debate. However, it is also a function of the widely differing economic drivers prevailing in each case.

In 1996, consideration by the legislative authorities of the gas works was largely influenced by *simplistic considerations about its aesthetics, and was at best superficial. The gas works closed due to the unsustainable economics of its operation, and there was no financial pressure to develop the land. Demolition was prompted rather by a view that no economic value for the site could be realised while the gas works remained standing, and it is ironic that after the works had been demolished, the site was used as a plant depot by another demolition contractor.*

Only four years later, the grain elevator found itself regarded no longer as a working part of Cape Town docks, but rather as an unwelcome obstruction in the development path of the Waterfront. Here, the imperative for closure was the potential economic returns to be gained from redevelopment, rather than from anything inherent in the operation itself. As long as land at the harbour was not in demand, rents were low and industrial enterprises sustainable. However, with the successful re-branding of the old docks into a glitzy international style 'Waterfront', and 'bulk rights' allowing development of seven and eight storey commercial buildings, potential rents were far greater than anything that could be achieved hitherto. Nonetheless, the implementation since 1999 of the South African Heritage Resources Act (No.25), and an increased awareness among Cape Town's conservation professionals of the value of industrial heritage, meant that the future of the grain elevator has thus far been treated with much greater sensitivity than was the gas works.

This thesis, however, set out to examine the networks of which the Woodstock gas works and Cape Town grain elevator formed integral parts, and asked “Can historic networked industrial landscapes, built to facilitate economic, political and social development, be conserved and re-used to serve similar purposes in the future?” In this final chapter, therefore, this thesis will use the network of grain elevators as a model to suggest a possible new way, within the paradigm of sustainable development.

Changing notions of development and value

As has been demonstrated in the preceding case study chapters, both the networked landscapes of gas and grain were built for the purposes of ‘development’. The gas works was started under British Empire rule, with the company making grand claims for social and moral improvements, while jealously guarding its monopoly, and its profits. The grain elevators, built in the aftermath of the First World War, also had an explicit role to play in development, with the creation of employment opportunities for ‘poor whites’ an important aspect of this particular strategy. It is clear, however, that in both cases what the promoters of the schemes would then have declared was developmental (though in language more befitting their times), was in fact part of a wider system aimed at entrenching political power at the expense of the underclass. As gas was not supplied to the ‘black’ areas of Cape Town, nor were grain elevators provided in the eastern Cape.

It is clear that ideas about what constitutes development have changed significantly in the century and half since the inception of the gas supply network. In principle, though not always in practice, development in South Africa today means the putting aside of narrow, sectional, profit-driven interests, and replacing them with broad, inclusive, socially-driven agendas. The global contexts for development have also changed, and indeed the very word development has begun to lose currency in favour of the even broader concept of ‘social transformation’. This concept, according to UNESCO’s Social and Human Sciences website “is increasingly used to describe societal changes and generally indicates a critical stance towards older notions of the idea of development”.⁷¹ Whilst it is outside the scope of this thesis to problematise this change of terminology, it nonetheless needs to be acknowledged.

Globally, and locally, notions of development have changed particularly in the past two decades. The World Summit on Sustainable Development (WSSD), the World Economic Forum (WEF), and the World Social Forum (WSF) all place development high on their agendas, though from differing perspectives.

At the same time, other world bodies such as the International Committee for Monuments and Sites (ICOMOS), which manages the inscription of World Heritage Sites, have begun to recognise the need to correct their former bias towards ‘developed’ as opposed to ‘developing’ states.

In South Africa, still adjusting to its young, if no longer new-born, democracy, the need to make visible formerly ‘hidden’ histories, and to make heard formerly ‘silent’ voices, is now well established.

⁷¹ Internet site: http://portal.unesco.org/shs/fr/ev.php@URL_ID=3148&URL_DO=DO_TOPIC&URL_SECTION=201.html (accessed 2 Feb. 2004).

Robben Island Museum, formerly an apartheid jail for high profile political (and other) prisoners, was recognised as South Africa's first World Heritage Site, and has been party to many initiatives in this field.

However, the new democratic dispensation notwithstanding, one of the defining features of South African life is the huge wealth gap between rich and poor. Thus for conservation of the historic or natural environments to have relevance, it must address the economic imperatives of job creation, housing, education and health care. Countries such as the United Kingdom, with highly developed service industries, can better afford the luxury of cultural development, yet even there, there is an awareness that state funds alone cannot adequately support conservation projects. Indeed, the state's role is increasingly to act as facilitator and policy maker, enabling partnerships between commercial interests, non-profit making organisations, and community groups. [Falk 2000: 74; Taggart 2000: 100].

Britain's Heritage Lottery Fund, which has given £2.8 billion to over 14,000 heritage projects since 1995, has a specific remit with regard to regeneration, in particular "reducing economic and social deprivation" and "creating heritage benefits" for people and places. Prospective grantees are required to demonstrate economically sustainable new uses, as well as community participation, of any proposed projects. It is easy to assume that Britain's very different economic and social circumstances would produce a different set of conservation imperatives to those in South Africa, but goals such as the provision of community-oriented activities, employment, and sustainable tourism, and a requirement that projects "contribute to social inclusion" would be equally applicable in either country [Heritage Lottery Fund 2003: 1-5].

In a separate initiative, the Conservation Area Partnership programme, English Heritage have calculated that for every £10,000 they have given in grant aid, another £48,000 has been leveraged from other agencies, private companies and community groups [English Heritage 1999a: 42].

With regards to 'heritage' in South Africa, the economic and cultural development agendas are often seen to be at odds with one another, presenting a tension for policy makers that is difficult to resolve.

The arguments presented in Chapter 7 are, as has been earlier stated, based on fairly conventional "heritage" values. In international best practice, the study of industrial archaeology has moved beyond the recording of large machines and redundant industrial sites, and from judging cultural significance based solely on values such as age, size and rarity. In South Africa, however, where an appreciation of the industrial heritage is still in its infancy, the conventional heritage discourse still holds sway.

Economic values are often represented at their most fundamental by the adaptation and re-use of specific buildings. Recent Cape Town examples include the United Tobacco Company site, now a successful centre for the local film and TV industry, and the former Cunningham and Gearing Engineering Works, now the up-market Victoria Foundry development. Whilst there is a need for a greater awareness of the value of industrial sites as catalysts for regeneration, there is a need for caution with regard to allowing regeneration itself to become a motor for the loss of historic fabric, as, it is argued, is the case with the grain elevator at Cape Town's Victoria and Alfred Waterfront. The economic benefits of 'heritage tourism' are generally acknowledged, though it can also be argued that 'heritage tourism' may bring with it certain disadvantages in terms of conservation.

A further economic context in which to consider conservation and development is that known in England as 'enabling development'. This concept treats heritage sites as 'heritage assets' and refers to situations where a development proposes to 'benefit' a heritage asset in ways that would not normally conform to planning guidelines. It means that the benefits of a development must outweigh the dis-benefits to the broader community, not just the owner, thus recognising that the optimum viable use compatible with fabric, interior and setting is not necessarily the most profitable use, especially if that would entail destruction of the heritage asset. To be successful, therefore, the integrity of the heritage asset must not be materially compromised by the development [English Heritage 1999b & 2000].

Castles suggests that "emphasis on economic growth leads to inequality, impoverishment, and environmental degradation," and asserts that sustainable development drives "not just economic growth but also health, education, political participation, civil society and good governance" [Castles 1999].

Agenda 21: A Global Plan for Sustainable Development

"Integration of environment and development concerns will lead to the fulfillment of basic needs, improved living standards for all, better protected and managed eco-system and a safer more prosperous future."

Department of Environmental Affairs and Tourism n.d.: 7

To speak only of 'cultural significance' begs the immediate questions, 'whose culture?' and 'of significance to whom?' Indeed, why should the majority of South Africans care about a heritage which can be seen as symbolic of an economic power that contributed so much to their social and economic disempowerment over the centuries? If we are unable to suggest practical, rather than purely academic, answers to such questions, then conservation will continue to be seen in opposition to development, rather than as a potential facilitator or partner in the development process.

Internationally, it is significant that recent industrial heritage projects in the Iberian pyrite mining belt, the silver mining region of Mexico, and the coal mining region of Northern Spain, have all used the development of the industrial heritage as the basis for programmes of social and economic upliftment. In each case, archaeology was used to guide and modify project proposals, as well as being essential to subsequent site interpretation.

The development of the industrial heritage in conservation projects, site museums, and adaptive re-use initiatives, is seen as an integral part of the historic environment, with a focus on its role in a "universal heritage".

The educational value of the industrial heritage goes way beyond the simple demonstration of how things work. Internationally, industrial heritage has been recognised as having the potential to reveal the histories of previously "invisible" workers, including women, indigenous peoples and slave communities.

The concept of 'resource value' has been used to argue that energy and natural resources are used more efficiently during construction and re-use, than demolition and redevelopment [English Heritage 1997], whilst recreational and aesthetic values, which improve quality of life, also need to be considered.

In Poland, however, an initiative to use the industrial heritage to further Agenda 21 aims, identified a number of risks to that heritage [Jaskiewicz 2001]. Many of these are equally applicable in the South African situation, and are therefore usefully summarised here:

- the nature of economic transformation and the predominance of market economy instruments;
- the necessity of re-structuring non-economic industries;
- a lack of opportunity for State intervention;
- a lack of broad awareness regarding industrial heritage and its role in the country's development;
- a shortage of financial resources at national, regional and local levels;
- the weakness of non-governmental organisations working in 'heritage';
- a lack of broad awareness the potential benefits of using industrial heritage for regeneration;
- a lack of broad awareness of the potential benefits of using industrial heritage for sustainable development;
- the lack of a joint national strategy.

That public and professional taste changes over time is also seen in the varying responses to concrete slabs as utilitarian as the grain elevators. As has been previously discussed, Gropius and other Modern Movement architects, thought very highly of the concrete grain elevators built during the first decades of the twentieth century.

In the context of a democratising and developing country, with a history of narrowly defined 'monuments' designated by a national body, Agenda 21 has the additional advantage of promoting public participation. This is entirely consistent with the provisions of the National Heritage Resources Act, as well as with international charters such as the Burra Charter. Thus the "existence, form and extent" of heritage sites can be decided locally, and the functioning of local democratic processes strengthened [Pendlebury & Townsend 1999: 73]. It is therefore evident that the definition of possible stakeholders will be far broader than simply one that recognises those holding equity in the development company.

In the rural areas, it is equally evident that economic factors are significantly different to those driving development at the Victoria and Alfred Waterfront. Rural South Africa continues to see a net loss of population as people migrate to urban areas in search of perceived better economic opportunities.

As discussed previously in Chapter Two, South Africa's strategic plan for agriculture presents a strategy for sustainable rural development. in which the establishment of service centres would allow an emphasis on "income generation and livelihood activities by women, youth and disabled to meet needs of poor families and local market demand" [Department of Agriculture 2001: 20]. Another "job creation and poverty relief initiative targeted primarily at rural people" creates 'community production centres' for small-scale craft industries [Department of Works 2000: 7].

Among the Agenda 21 principles publicly assured of high level political commitment, is that the “integration of environment and development concerns will lead to the fulfillment of basic needs, improved living standards for all, better protected and managed eco-system and a safer more prosperous future” [Department of Environmental Affairs and Tourism n.d.: 21]. Thus there is emphasis on creating equity and combating poverty by the creation of sustainable livelihoods. This is provided for in many ways, of which the most relevant here are perhaps the promotion of sustainable agriculture and rural development; improving farm production and farming systems through diversification of farm and non-farm employment and infrastructure development; land conservation and rehabilitation; environmentally sound management of hazardous waste and strengthening of the role of farmers. Furthermore, Agenda 21 asserts that the roles of major groups such as women, youth and indigenous communities should be strengthened by ensuring that development plans work towards improved living standards, education and jobs. The promotion of education programmes, public awareness and training around sustainable development is also called for, as is the strengthening of partnerships with non-governmental organisations.

For the City of Cape Town, “the term environment is defined to include the natural, social, economic, urban, rural and cultural context as experienced by the communities of Cape Town” [City of Cape Town 2001: 5]. This definition follows that expressed in South Africa’s Constitution, enacted in 1996, which guarantees everyone the right to an environment that is not harmful to their health or well-being, and explicitly encompasses not only the natural, but also the historic, environment [The South African Constitution (Act 108 of 1996)].

Agenda 21 requires that local social and political circumstances be always taken into account, and adherence to this principle would serve to mitigate against what might be seen as the ‘globalised waterfront’ approach of the V&AW. It also requires a more environmentally friendly approach to building, and places “a political emphasis on ‘brownfield’ development” [Latham 1999: 3]. Thus, as Latham writes, “The key to success is to work with the building rather than against it. This does not imply that the building as it exists should dictate the nature of re-use, but rather that the constraints and opportunities of a building have to be fully understood in abstract before identifying how to accommodate a new use that is viable for the location” [Latham 1999: 7].

Thus, in regard to industrial archaeology, a weighting in favour of ‘adaptive re-use’ as opposed to new building is immediately apparent. Whilst being posited as a global plan, nonetheless Agenda 21 has been adopted at national and local levels. South Africa has its own Local Agenda 21, and the City of Cape Town considers it an imperative for implementing its Integrated Metropolitan Environmental Policy.

However, there are a number of focus areas in which it is apparent that Agenda 21 can, and indeed ought to, have relevance to any debate around the future of networked landscapes such as that of Cape Town’s gas supply and South Africa’s railway grain elevators.

Conserving the networked landscape of gas supply

When this research began in 1995, two of the key nodal sites in the networked landscapes treated herein as case studies, were still in operation, working largely 'as built'.

The Cape Gas site, located in the relatively unvalued city fringe suburb of Woodstock, acted as the sole remaining nodal point of the networked landscape of Cape Town's gas supply. Having long forgotten its separate identity as an independent municipality, Woodstock, and its housing, commercial and industrial building stock, is largely run down and neglected.

Like all gas works sites, Cape Gas was a notoriously unpleasant neighbour: grubby and smelly, polluting clean houses, laundry, and the very air that people breathed every day.

As described in Chapter 5, the Woodstock gas works was demolished in 1996. It had closed in early in the same year, after giving a scant single month's notice to its customers that its century old enterprise had come to an end. The National Monuments Council, together with the City Council's Urban Conservation Unit, evaluated the application to demolish the Cape Gas according to the standard criteria. The evaluation was simplistic, based on a very limited study of the site, and without reference to any formal conservation study. Notwithstanding its age and rarity, and the fact that it was still a working entity, the found was found to be unworthy of conservation, and demolition was authorised. It has to be said that the relatively degraded state of the main structures, together with the environmental hazards inherent in the site, mitigated against any serious consideration of retention. The gas works had been, after all, a dirty and unfriendly neighbour for many years, and it would indeed have been very surprising if the local community had lobbied for its preservation.

When it was demolished the principle structures were literally torn down, and the foundations buried in the seriously contaminated rubble. It is likely that the exact locations of all the structures could easily be uncovered by archaeological excavation. However, as the site has been adequately recorded, both prior to and during demolition, and there is a good archival record, it is doubtful that good purpose would be served by archaeologists exposing themselves to the toxic hazards of the site.

With many former industrial sites, the issue of contaminated land is a major concern. Former gas works sites are among the worst possible sites in this respect, and carry with them substantial hazards [Environmental Resource Ltd 1997]. As has been described in *Chapter 5*, the demolition and subsequent treatment of the Cape Gas site is a major cause for concern, carrying with it the risk of exposure to cyanide, phenols and a hazardous cocktail of carcinogenic pollutants [Gibb Africa 1996]. In 2003, seven years after closure, remediation work was still being undertaken on the site to enable it to be used for further industrial use.

With the site cleared of buildings and structures, and even the soil itself latterly being removed, little remains to be seen of Cape Town's gas supply, other than a few inspection plates in the road and a few old lamps. The network of gas supply pipes, buried beneath Cape Town's streets, are invisible, rather than visible reminders of the city's history of gas usage. At the time of closure the pipes were sold to telecommunications parastatal Telkom for use with fibre-optic cables. This seems an appropriate re-use, extending their usefulness into the networked landscapes of the twenty-first century. Finding an

economic new use for the Woodstock gas works would clearly have been impossible, and there was no support, financial or otherwise, for the creation of a site museum. Sadly, an accurate large scale-model of the site was destroyed because no institution or individual could be found to take custody of it. Indeed, not a single item in the way of machinery or other artefacts was saved for museum collections.

A further constraint in respect of any notion to conserve the gas works, and perhaps one of the most important, is that the process itself could not have been conserved, even if the principle structures were. Without the process, which had the additional disadvantage of being invisible, the distinctive gas works smell, and the airborne dust and soot that accompanied it, would also disappear. How could one preserve, or in any way conserve any of this?

Even the documentary record for this site was vulnerable to total loss as South Africa's National Archives are not required to be the legal custodians of the archives of private companies such as Cape Gas. It is imperative, as increasing numbers of historic commercial and industrial concerns close, that policies and infrastructure are put in place to handle culturally significant material. In this case the National Archives (Cape Town) were persuaded to take custody of the collection of plans and drawings, though this material falls outside their collections policy.

Principally though, it is argued that the community of "heritage professionals" in Cape Town was simply not ready to consider that such a site could have any cultural significance, even whilst acknowledging the undoubted age and rarity of the site. The National Monuments Council certainly did not have the capacity or will to take a leadership role, and to make a case for retention.

The opportunity to create a site museum, perhaps incorporated into a museum of Cape Town's industrial history, has been lost in this case, and with it the opportunity to provide a motor for urban regeneration, economic transformation, social upliftment and historical awareness. Thus it is concluded that conservation by narrative, attempted in this thesis, is one of the most appropriate options. Though the site itself was a 'lost cause', recording its history and materiality forms the basis on which an interpretive scheme can be based, and the possibility of raising historical awareness recovered. As the District Six Museum has become the focus for community involvement, the recording of life stories, and the reclaiming of a history, so the networked landscape of gas supply could also form the basis of similar community story-telling. Interpretive boards in Woodstock, Cape Town, and the suburbs, could be created not only for straight forward 'educational' purposes, but also as a way of inviting community participation in mapping its own history.

Conserving the networked landscape of grain elevators

The grain elevator at Cape Town Harbour, which closed a little over five years later, has been considered within a very different set of social, economic and political contexts. Unlike Woodstock, where there was no significant value attached to the contaminated land on which the gas works stood, the Victoria and Alfred Waterfront development has hugely increased the value of land in the harbour area. The gentrification, for it can be classed as little else, of the older part of the docks by the Waterfront has

meant that instead of simply refurbishing derelict buildings to create new uses, the land hungry development has now begun to evacuate serviceable industrial buildings in order to demolish them and replace them with new office and retail space.

The derelict Cape Town grain elevator is now an anomaly at the Waterfront. At the centre of one of South Africa's premier international tourist destinations, the land on which it stands has acquired enormous value. It is the first twentieth century industrial structure in South Africa for which a Conservation Plan has been prepared, and this was done in advance of specific development proposals for the site. Yet the Conservation Plan is incomplete; it has no legal status; it does not, in its current form, conform to the guidelines set out in the Burra Charter; and it would not satisfy the requirements of the National Heritage Resources Act for heritage impact assessments. The site stands derelict in the midst of one of the country's premier tourist attractions, where millions of rands have been invested in retail, hotel and office space. Assessed largely on the basis of traditional heritage values, with passing reference to 'enabling development', the draft Conservation Plan has so far failed to engage with a broader range of values.

While there is undoubtedly an economic demand for the site, its owners appear to be ambivalent about its future. On the one hand they are committed to a conservation policy, based on the Burra Charter, which retains the working harbour. On the other hand they appear not to recognise the cultural values attached to the site. Attwell [1998] has noted how "vigorous planning procedures involving planning for view corridors, massing, sight lines, key focal points, as well as design controls, have resulted in an environment of outstanding visual qualities", with a "strong sense of architectural order and harmony". However, she continues, "a major concern is that the conflictual and industrial history of the Waterfront has been transformed through processes of selective imaging and simplification into a late nineteenth century romantic vision that could exist in a waterfront anywhere in the world." Clearly, the grain elevator clearly does not conform to the gentrified aesthetic which the V&AW has sought to promote, and which is supported by the conservation architects on its Design Review Committee.

The Victorian and Alfred Waterfront prides itself on its ability to compete with other similar waterfront developments throughout the world. Cities such as Baltimore, San Francisco, and Sydney have developed similarly successful residential, office and residential complexes as 'festival market places' based on the Rouse model [Urry 1990], all of which conform to a broadly similar post-modern aesthetic. Hannigan [1998] describes such developments as 'fantasy cities', proposing six defining characteristics, all of which are readily discernible at the Waterfront. The waterfront theme is fundamental to the entire development, though as has been suggested, the centrality of the working harbour is arguable. The V&AW's branding has been astonishingly successful, with 'The Waterfront' now being a must-see for every visitor to Cape Town, with many (though not all) trading sites operating late into the evening. Another feature shared with 'fantasy cities' around the world is the use of 'modular components' such as the themed restaurant (*Hard Rock Café* and *Planet Hollywood* have both had a short-lived presence at the Waterfront); multi-screen cinemas (of which the Waterfront has two); an IMAX large format cinema; record and book shops; and a range of 'public projects'. Among the latter,

the Waterfront hosts an aquarium, a maritime museum and the Nelson Mandela Gateway, an introduction and link to the Robben Island Museum World Heritage Site.

The Waterfront also presents clear indications of being what Hannigan suggests is a 'solipistic' development, in that it is "isolated physically, economically and culturally from the surrounding neighbourhood" [1998: 4]. However, a thorough analysis of this particular point is outside the scope of this thesis. Criticisms notwithstanding, so successful has the Waterfront company become that it now markets itself internationally to provide consultative and project management services for similar developments in other parts of the world.

Nonetheless, at Cape Town's Waterfront the owners have bound themselves to a conservation policy based on the Burra Charter. This establishes a unique dynamic and set of tensions for the developer, and it is at the grain elevator site that this becomes a 'moment of truth'.⁷² During the earlier stages of the development, which involved the adaptive re-use of nineteenth century warehouses, offices, and even the Breakwater Prison, it was possible to reconcile a gentrified design aesthetic with broad conservation principles.

With the elevator, however, the V&AW are confronted with a structure that does not easily lend itself to the design guidelines they have committed much time and financial resources to creating. Yet they have committed themselves to a process in which conservation principles carry considerable weight. Furthermore, as the development has progressed, the heritage professionals in Cape Town have developed more critical responses to the issues arising from such sites.

The Waterfront is, first and foremost, an economic enterprise. Its principle stakeholders are seen as its shareholders, who have a strong vested interest in the financial viability and long term profitability of the enterprise. Conservation has a price. The bulk rights attached to the Clocktower Precinct mean that there is a price to be paid for not developing the grain elevator site to its full potential.

The aesthetic of the Waterfront is guided and guarded by a Design Review Committee that is populated largely by the same prominent local 'conservation architects' who carry out much of the work at the Waterfront. Fashions for building styles change, and it has been said that "fashion is a poor guide to what should be preserved" [Earl 2003: 137]. Whilst Victorian 'pretty' buildings can be made to work within the current design aesthetic, this has not always been the case. The Midland Hotel at London's St Pancras Railway Station, designed by Sir George Gilbert Scott in 1874, is often cited as an example of the "metamorphosis from monstrosity to masterpiece" [Earl 2003: 137] that can accompany changing public perceptions of taste.

As with the 'development' of the gas industry in Cape Town from the mid-nineteenth century, 'development' at the Waterfront primarily serves the narrow, sectional interests of an urban middle class. As has been shown, it has carved for itself a piece of the global tourism and leisure entertainment market, and its earlier, much vaunted, conservation objectives, appear to have been downgraded to the role of 'design informants'. Even the Chavonnes Battery, on the conservation, partial reconstruction, and

⁷² Personal Communication: Martin Hall, University of Cape Town. 10 June 2003.

interpretation of which much was spent, is neglected and rarely seen. It could be surmised that this is due to a lack of commitment on the part of the Waterfront, but perhaps it is also due to the lack of any real constituency of stakeholder support for the site.

Within the confines of the Waterfront development, discussions around economic re-use of the grain elevator fall naturally to conventional ideas such as apartments and offices, with only the working house being retained and the storage annexe silos, and all peripheral structures being demolished. Yet retention of the 'building envelope' of the principle structure alone, with all traces of its former use removed from the inside, would render the building meaningless and sterile. Like a scene viewed through a telephoto lens, detail is decontextualised, and it is difficult to see what conservation ends would be served by such an approach. Even with an ordinary lens tightly focused on the elevator and its associated structures in the Waterfront, and an insistence on retaining meaningful linkages with the railway and the collier jetty, the Waterfront's options remain limited. Ideas such as art galleries, museum and performance spaces, founder for lack of economic feasibility. Only with a wide angle lens, set to view not only the Cape Town elevator, but the networked landscape of which it is part, do radical new opportunities suggest themselves. The Cape Town elevator was established to service the developmental needs of the rural areas, and perhaps it could do so again.

Conclusion

This thesis set out to answer the question: "Can historic networked industrial landscapes, built to facilitate economic, political and social development, be conserved and re-used to serve similar purposes in the future?" It concludes, then, by offering a vision for the conservation of the network of country grain elevators. In this vision, the elevators are not conserved simply for historicist reasons, or because they are 'pretty' buildings, but because conserving them serves national and local interests as expressed in Agenda 21. In this vision, the network of country elevators itself becomes a conceptual model for Agenda 21 management, and the Waterfront is challenged to resolve its ambivalence to the Cape Town elevator.

The survey of the country elevators presented in this thesis provides an opportunity to propose a innovative and far-reaching approach, and to attempt the proper integration of conservation policy into sustainable development initiatives as represented by Agenda 21.

The network of country elevators represents an almost entire known population of a particular site type, a rare attribute in itself. Although ownership is now dispersed, there is nonetheless a continuity and synergy among the various owners. As has been shown, some of the country elevators are derelict, some have attributes that remain largely as built, while others have been incorporated into large modern grain handling complexes. The conservation of the active sites cannot be considered as a priority, other than to see that any unique aspects of their operation are not lost. The derelict sites however offer exciting opportunities to look not only at the fairly simplistic conservation arguments, that may ultimately be

unsupportable, but to consider how the principals and values articulated in Agenda 21 might be used to support arguments for the conservation and adaptive re-use of these sites.

Thus it is proposed that a number of the derelict sites be conserved, each fulfilling a different local need as appropriate. The table and map below are designed to show hypothetically how this might work in practice. At each site, where the value of the land is likely to be minimal, and the cost of demolishing the elevator relatively high, it is suggested that only the working house, the taking in shed, and the bagging-out store, if it survives, would be re-used. Because of the lack of economic pressure to re-use the silos, as is the case at the Waterfront, the silos could be left unused.

That there will be a different aesthetic dynamics at play in the rural communities to that espoused by the Waterfront is also clear. This difference creates opportunities for more imaginative responses to design issues arising out of any initiative to re-use old building stock.

Funding requirements for the programme proposed would be limited to making the structures safe and accessible, removing grain handling equipment, and providing basic amenities. In most instances, where the sites are in the ownership of farmers' co-operatives, the question of site acquisition may not necessarily be an issue. The programme could be used to encourage dialogue between the large scale commercial farmers who have historically had access to the facilities offered by the co-operatives, and historically disadvantaged small scale farmers working at a subsistence level.

Whilst it is proposed that a comprehensive programme be drawn up to conceptualise the project as a single entity, with synergies between the various activities and sites, it should be possible to fund and manage each site separately within the broader programme.

In the short term, however, it is imperative that the South African Heritage Resources Agency take a broad view of the system as a whole, and consider the attributes of the networked landscape rather than only its individual sites. The risk at present is that requests to demolish isolated sites would be handled first by local authorities, and then Provincial Heritage Resource Agencies, who would perhaps not see the broader significance of the network. This is, after all, a new approach for South Africa. It is not being suggested that ultimately every site would necessarily be retained, only that decisions on individual sites should be informed by reference to the whole.

Many of the activities listed in *Figure 96* below could appropriately be combined, for example, environmental education, tourist information and museum activities might all be located at one site.

Site	Agenda 21	Proposed new uses
A	Promotion of sustainable agriculture and rural development; improvement of farm production and farming systems through diversification of farm and non-farm employment and infrastructure development; conservation and rehabilitation of land.	Training centre for small farmers; legal advice centre for farm labourers; labour exchange; marketing centre.
B	Environmentally sound management of hazardous waste.	Recycling centre.
C	Strengthening role of major groups: women; youth (development plans should ensure young people have improved living standards, education and jobs); indigenous peoples and communities; partnerships with NGOs.	Craft training and retail centre for rural women for activity such as spinning, dyeing, weaving or pottery.
D	Promotion of education, public awareness and training around sustainable development.	Environmental education centre.
E	Strengthening role of farmers.	Small business development centre.
F	Strengthening role of major groups: women; youth (development plans should ensure young people have improved living standards, education and jobs); indigenous peoples and communities; partnerships with NGOs.	Location for community groups comprising facilities for education, performance etc.
G		Tourist information centre.
H		Museum of the maize industry
J	Promotion of sustainable human settlement development: construction using local materials; energy efficient; labour intensive.	Training Centre - teaching construction skills so that communities can build energy efficient houses using local materials.
K		Retail centre for farm produce, arts and crafts.
		Community Production Centres
Cape Town	Promotion of education, public awareness and training around sustainable development.	

Figure 96

Proposed model for re-use of derelict country elevators.

It is suggested here that one site be used as a site museum for the maize industry. This would constitute an opportunity to bring together at one location significant artefacts from the other derelict elevators, and provide an opportunity for conservation and interpretation within the broader context.

Finally, returning to the current question of how to deal with Cape Town's grain elevator, it is concluded that this is a pivotal point in the development of the Waterfront, and indeed in South Africa's approach to industrial heritage. The Victoria and Alfred Waterfront Company's apparent ambivalence is entirely understandable in this context, as they try to resolve an apparently irreconcilable dichotomy. The model proposed here for the country elevators would not be possible within the confines of a development such as the Waterfront, but it is suggested that development of the Cape Town elevator could not only lend itself to an imaginative programme of activities grounded in Agenda 21, but that it could also serve to re-establish the historic links between the port city and the agricultural interior.

By focusing on the developmental needs of the country, through the lens of Agenda 21, and by emphasising the synergies, rather than the oppositions, conservation can indeed be seen to contribute to economic upliftment and sustainable development.



Figure 97

Cape Town: a storm around the grain elevator.

An omen. But of what ?

[Photograph: Antonia Malan, 2003.]

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Appendix A

Cape Town Gas Light and Coke Company Insurance Policy Schedule, 1907

This Insurance Policy Schedule for the Gas Company is discussed in Chapter 5. (The plans referred to in this schedule have not been located.)

Woodstock, adjoining the Cape Government Railway

building of retort house (no.1 on plan)	£750
retorts and settings and fittings therein	£1,000
building of coal store communicating therewith (no.2)	£750
[memo: stock of coals in store not included]	
building of workmen's lobby (no.3)	£150
building of spare boiler shed (no.4)	£150
spare boiler with seating and fittings therein	£200
tar separator, iron built (no.5)	£300
building of condenser, iron built (no.6)	£500
building of condenser, iron built (no.7)	£500
building of tar tank, iron built (no.8)	£250
building known as "Water-Gas Plant House" not at present in use as such, notice to be given when in use (no.9 and no.10)	£200
boilers & settings, fixtures & fittings, and on steam engines, shafting, gearing and appurtenances ..	£1,000
all plant and machinery except as specified above	£2,500
building of coal store (no.11)	£500
[memo: stock of coals in store not included]	
disused gasholder, used as a store for plant and machinery, no process of manufacture carried on, iron built (no.12)	£400
stock in trade and machinery stored therein	£600
[memo: the building of the old purifier and oxide shed (no.13 and no.14) and contents therein are not included in this policy]	
building of tool store, laboratory and washer house (nos. 15, 16, and 17)	£600
stock of tools therein	£200
photometer therein	£200
scientific instruments and apparatus therein	£150
washer scrubber therein	£500

Appendix A

building of meter and governor house, gas engine and exhauster house;	
brick and iron built under iron roof (nos.18, 19 and 20 on plan)	£250
gas meter therein	£300
gas governor therein	£100
gas engine and all fittings, shafting and gearing, and on exhauster	£350
building of gasometer, iron built, at present in course of construction,	
together with materials for construction of same (no.21)	£2,000
building of gasometer, iron built, with all fixtures and fittings belonging thereto, (no.22)	£4,000
building of new purifier house, including all purifying structures attached to and forming part of it; steel and iron built under iron roof (no.23)	£8,000
electric motor, hoist and all machinery and fittings in connection with it	£200
building of Fitter's Shop, Blacksmith's Shop and Oil Store;	
about 400 gallons of lubricating oils and 20 gallons of paraffin stored therein (no.24)	£500
pumping engine and fittings therein	£100
stock-in-trade, tools, utensils and tank therein	£100
building used as office only (no.25)	£200
office furniture, fixtures, fittings etc therein	£50
building of sack store (no.26)	£50
stock of sacks therein	£10
Total	£27,610 @ 11s

stocks of coals, coke and breeze in open yards, and general stores in open yards not included;

all buildings brick or stone under iron roofs unless otherwise stated; Water Gas Clause:

manufacture on the premises of Water Gas to be used in combination with ordinary gas and Benzol Gas is noted and allowed without prejudice; steel cylindrical tank about 16' x 14' for storing 9,000 gallons Benzol is situate 20' from the gasometer marked no.21 on the plan.

Prestwich, Sea and Long Streets

buildings are all brick or stone built under iron roofs, and the whole detached as a block; occupied by the Insured as a Gas Works; sundry gas stoves allowed; lighted by gas or incandescent electric light.

manufacture on premises of water gas to be used in combination with ordinary gas, and of Benzol gas (the latter generated by steam in a Benzol carburettor for the purpose of enriching other gases) is noted and allowed without prejudice.

Block A - Gas Works at Prestwich, Sea and Long Streets

On one-half of each of the amounts specified in the annexed Schedule which is desired to form part of this Policy.

coal stores, stokers' rooms, offices, (no.11 on plan)	£500
stock of coal therein cancelled 1 May 1908	£800

Appendix A

retort house, excl. retorts and incl. chimneys, WC, mess room, offices (no.2) stock of coal therein cancelled 1 May 1908	£300
boiler house adjoining (no.3)	£400
boilers and their settings, (no one boiler more than £300)	£700
engine house (no.4)	£350
steam engines, exhausters, appurtenances, shafting, gearing, belting, belonging to each and on dynamos, electrical apparatus therein	£1,000
purifiers and attachments, with fittings (no.5) cancelled 24 Mar. 1909	£1,000
[note: underground tar tank (no.6) is not included in this insurance]	
stock of coke in open yard - cancelled 1 May 1905	£100
governor house building (no.7)	£300
governors and all machinery therein	£800
coal store (formerly General Managers office (no.8)	£100
stock of coals therein - cancelled	£200
meter house with rooms over, 40 gallons paraffin kept for use in carburettor	£350
meter and all fixtures and fittings therein	£500
washers and condensers, incl. iron roof over no.10, adjoining no.2 & no.3	£700
carburettor, vaporising by steam, part iron built (no.11)	£200
Total	£9,000 @ 10s

Block C - houses and offices at Prestwich, Sea and Long Streets

building of dwelling houses and offices at 9 Prestwich Street (no.14 on plan)	£700
building of dwelling houses and offices at 7 Prestwich Street (no.15 on plan)	£700
[above buildings are occupied by tenants as private dwelling houses]	
building used as a store for gas stoves at 2 Sea Street (no.16 on plan)	£500
stock of gas stoves therein £200 [all brick or stone built under slate or iron roofs]	
Total	£2,100

Block D - offices at Prestwich, Sea and Long Streets

building with offices, toilets etc., all communicating; used as offices only; all brick or stone built under slate or iron roofs (no.17 on plan)	£2,000
office furniture, fixtures, fittings, drawings and plans, books and safes	£600
[coal store (no.18 on plan) and coal therein NOT included in this insurance]	
Total	£2,600

Block E - building at corner of Long and Prestwich Streets

building at corner of Long and Prestwich Streets occupied as Insured as a store for general merchandise; no process or manufacture carried on; also occupied as a fitters workshop, and or meter making, sundry coke forges and gas stoves for soldering irons; no power other than hand power used; gas lighting; brick or stone built under iron roof detached, (marked no.19 on plan)	£3,000 @ 17s 6d
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[memo: building is in risk of windows of steam saw mill, occupied by Karl Lithmann and Co., on opposite side of Prestwich Street, distant some 30 feet clear]

stock of general merchandise, office furniture and fixtures, fittings, books "in the warehousing part of said building"	£10,000
similar property, including tools, meters and all appurtenances "in the workshop part of the building"	£2,000
building of gasometer, with all fixings and uprights, iron built (no.20 on plan)	£4,000
[stock of materials in open yards not included in this policy]	
Total	£19,000

Block F - Coal stores

building of coal store and offices communicating, situate in Prestwich Street extending to Michau Street, occupied as a storeroom; no process of manufacture carried on and no hazardous goods except coal to be stored (no.22 on plan)	£3,000
coal stocks therein	£1,000
Total	£4,000 @ 10 s

Mowbray

On one-half of each of the amounts specified in the annexed Schedule which is desired to form part of this Policy.

On stock in trade of all descriptions, and on business fixtures and fittings, including gas meter, office furniture, fixtures, fittings, printed books, unused stationary and safes, whilst contained in that portion of a building fronting the Main Road, and extending to St John's Street, Mowbray; partly occupied by the insured as a Sale-Shop, Show Rooms and Office; otherwise occupied as Bottle Store, or shop in non-hazardous tenure, dwelling house, stable and coach-house; no process of manufacture carried on, and no hazardous goods except for use allowed to be deposited therein; brick or stone built under a slate or iron roof, and as shown on plan held by this company £500 @ 15s

Sundry gas lights, gas stoves and gas engines are allowed to be fitted and used for exhibition purposes only. The risk of explosion by gas is covered by this insurance.

On the building of gasometer, and all fixings, apparatus and attachments belonging thereto; iron built; situate Main Road, Mowbray.

Total	£8,000 @ 20s
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[annotated: revised in 1906 to £8,000 @ 11s]

Darling Street showroom

On one-half of each of the amounts specified in the annexed Schedule which is desired to form part of this Policy.

stock in trade of all descriptions	£700
On Business Fixtures, Fittings and Utensils, (excepting Plate Glass Fronts) and on Office Furniture, Fittings, Safes, Printed Books and unused Stationary	£300

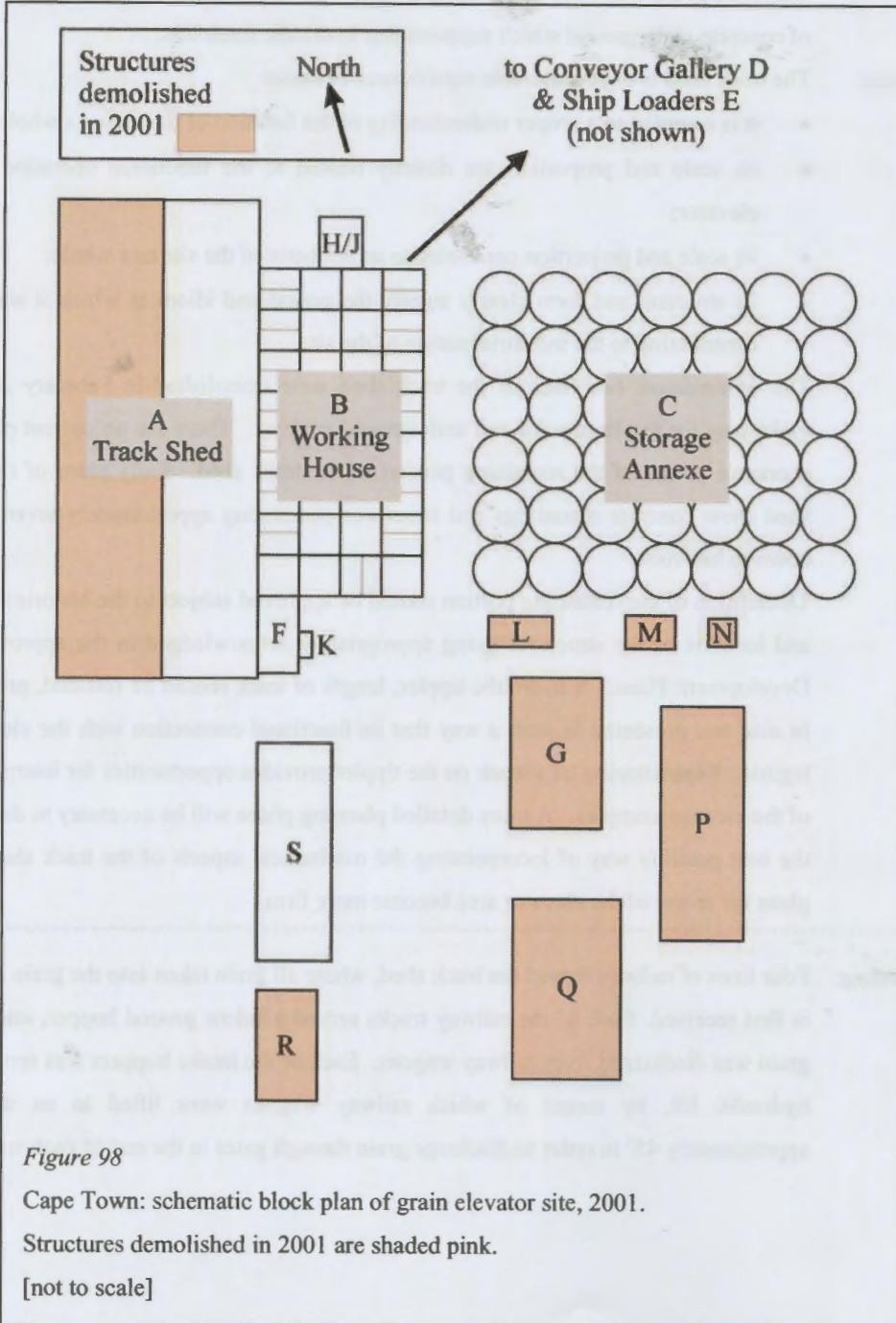
Total£1,000 @ 42s

All whilst contained in their shop premises, fronting Darling Street, forming part of a block of buildings situate on the Grand Parade, Cape Town, and known as the Opera House; occupied by the Insured as Sale-shop and Show-rooms: sundry gas-lights, gas stoves and gas engines allowed to be fitted and used for exhibition purposes only: lighted by gas; otherwise occupied as shops, in non-hazardous tenures, as offices, as restaurants and bars, and as a theatre; brick or stone built under slate or iron roof, with skylights in parts; and detached. The risk of explosion by gas is covered by this insurance. It is agreed that, as soon as the Sprinkler Installation with the necessary ordinary appliances, to be completed in the above described block, and approved, the insured shall be entitled to the rate of discount applying as from the date of such approval.

Water Gas Clause: manufacture on the premises of Water Gas to be used in combination with ordinary gas and Benzol Gas is noted and allowed without prejudice; steel cylindrical tank about 16' x 14' for storing 9,000 gallons Benzol is situate 20' from the gasometer marked no.21 on the plan.

Appendix B

Cape Town grain elevator: overview of component structures, 2001



A The Track Shed

(PARTIALLY DEMOLISHED 2001)

Understanding: This is an integral part of the complex, though structurally a 'bolt-on' addition, the track shed is where grain is received into the elevator. Whilst it is a lightweight structure, with little in the way of foundations to support its walls and roof, there is a huge amount of concrete underground which supports that hydraulic truck lifts.

Significance: The track shed is of considerable significance because:

- it is essential to a proper understanding of the function of the site as a whole;
- its scale and proportion are directly related to the functional operation of the elevator;
- its scale and proportion contribute to an aesthetic of the site as a whole;
- its structure and form clearly signify the period and idiom in which it was built, contributing to the industrial nature of the site.

Issues: The westernmost two lines of the track shed were demolished in February 2001, to make way for the Boulevard and underground parking. There are no current plans for economic re-use of the remaining portion of the track shed. Early plans of the track shed show concrete mountings and structures penetrating approximately seven metres down to bed rock.

Policies: Demolition of the remaining portion should be approved subject to the historic function and location of the structures being appropriately acknowledged in the approved Site Development Plans. A hydraulic tippler, length of track should be retained, preferably *in situ*, and presented in such a way that its functional connection with the elevator is legible. Repositioning of a truck on the tippler provides opportunities for interpretation of the elevator complex. A more detailed planning phase will be necessary to determine the best possible way of incorporating the mechanical aspects of the track shed, once plans for re-use of the elevator area become more firm.

Understanding: Four lines of railway served the track shed, where all grain taken into the grain elevator is first received. Each of the railway tracks served a below ground hopper, into which grain was discharged from railway wagons. Each of the intake hoppers was served by a hydraulic lift, by means of which railway wagons were lifted to an angle of approximately 45° in order to discharge grain through gates in the end of each wagon.

Appendix B

Significance: The railways lines, hoppers, tippers and associated capstans are of considerable significance because:

- they form an integral part of an intact and largely original complex still in working order;
- they demonstrate the transfer of technology;
- they are rare surviving examples of hydraulic technology;
- they have educational potential;
- the railways are the essential link to the broader economic landscape which the elevator was built to serve

Issues: The truck lifts require a hydraulic accumulator to remain serviceable if they are ever to be operated. However, if they were to be operated regularly for display purposes it is clear that they would quite require considerable maintenance and spare parts which are no longer available. In short, they will eventually wear out.

Policies: Every effort should be made to retain at least one hydraulic truck lift *in situ*. A maintenance schedule should be drawn up for the truck lifts and the hydraulic accumulator to ensure that they remain in good order and capable of being operated. One truck lift in the raised position would have the potential to form the basis of a good interpretative static display.

Understanding: Two types of wagon are used, the first of which is flat bottomed, and needs to be tipped end on to discharge its cargo, and the second type, which has hopper shaped sections in its floor, is simply discharged by opening valves in the bottom of the wagon.

Significance: The wagons are of modest significance because:

- they represent historical change in methods of grain handling;
- they represent the close economic ties between South Africa and Great Britain during the 1920s.

Issues: The railway wagons are not owned by the Victoria and Alfred Waterfront, and are not physically part of the site.

Policies: Negotiations should be entered into with Spoornet to retain on site one FZ wagon for display with the truck lift.

Understanding: Signage

Significance: The signage (inside and outside) is of modest significance because:

- it indicates spatial control;
- it serves as a reminder of the fire hazard implicit in grain handling and storage.

Issues: The signs are all painted on wooden boards. They are likely to have no commercial value, and could easily be discarded as worthless.

Policies: The signs should be recorded in situ and taken down for storage pending decisions on the future of the site.

B The Working House

Understanding: The working house is the principal operational component of the entire site. It comprises all the machinery for moving grain laterally and vertically, as well as for weighing, cleaning, treating and storing it.

Significance: The working house is of exceptional significance because:

- it is the landmark building, giving height to the site;
- it provides views of the sea, the docks and, the city and the mountain
- it is the core of the entire site

Issues: The working house seems at first to provide good opportunities for office or residential space. However, floor loadings are unlikely to meet modern standards. Whilst the building as a whole was designed to take considerable loads, this is all borne on the vertical steel work and concrete structures, not the floors. The bins in the working house, which are rectangular in form, would need to be removed if the space contained was to be effectively re-used. This would entail strengthening and supporting the upper floors.

Policies: The retention of the working house and storage annexe (silos) is paramount. The form, structure and historic function should be appropriately acknowledged in any new proposals, although removal of some interior walls between bins is going to be an imperative if an economic future is to be found for the site.

Understanding: Each elevator consists of a chain-driven endless rubber belt, to which is attached a series of steel buckets. As the full buckets reach the top of the elevator, they are inverted, spilling the grain into chutes which direct it to the next level.

Significance: The bucket elevators are of considerable significance. Modern elevators work on pneumatic principles, and do not employ continuous bucket systems. The elevators are the principle component that gives the form to the building.

Issues: The remaining 24" intake and shipping elevators are all in working order. The 12" and 18" elevators that served functions such as the drying and cleaning facilities have been removed some years ago.

Policies: One bucket elevator system should be retained.

Understanding: Rectangular grain bins in the working house are constructed of reinforced concrete, with steel bases. The bins are built on a steel structure extending into the basement.

Significance: The bins are of modest significance.

Issues: The bins are an integral part of the structure. If they are partially removed, by taking out internal dividing walls, it will be necessary to provide other structural support.

Understanding: On the intake (west) side of the building, there are three 48 ton pre-weighing scales, known as 'garners' or 'dormant scales', each serving a single intake elevator. On the shipping (east) side of the working house there are three automatic scales of 6 tons capacity, serving the shipping elevators. A fourth automatic scale is located on the west side as a spare.

Significance: The pre-weighers are of modest significance. The three units on the intake side are original, and still fully functional. They demonstrate the level of manual operation need, especially compared to the later machines fitted in the 1960s and beyond. The more modern scales are of lesser significance.

Issues: The original pre-weighers and scales are extremely bulky and solid. It is difficult to see how any use could be made of them, and it is therefore likely that they will have to be removed in order for the site to become economically feasible.

Policies: The operation of the pre-weighers and scales would best be demonstrated by the use of a scale model.

Understanding: There is a series of man elevators and slide poles provided inside the working house, (though only at the level of the top five floors). Each man elevator consists of an endless rubber belt, running vertically, which has handles and small ledges attached at regular intervals, allowing a man to step on to it and ride up or down one floor at a time as required. The slide poles (like the traditional fireman's pole) allow rapid descent from each floor to the next.

Significance: The man elevators and slide poles are of considerable significance. They serve to emphasise the vertical nature not only of the building but its operation.

Issues: The man elevator is operable, though many of the hand and foot holds are missing. The man elevators and slide poles create significant Health and Safety hazards while in their current state.

Policies: One example of each of features could be retained by incorporating them into imaginative design approaches. Enclosing the man elevator in Perspex (or similar) would enable it to be properly understood.

Understanding: Above the working house bins, a series of 'crossbelts' are raised on a mezzanine structure. Each is provided with a chain-driven movable 'feeder', which collects the grain directed into it from the Spout Floor above, and a movable 'tripper' which takes the grain from the moving belt, and delivers it to the spout below. Grain taken from these conveyors is then passed either directly into the working bins, or onto another set of conveyors, running on the east-west axis, to be taken to the storage annexe.

Significance: The crossbelts are of modest significance. There is nothing unique about their operation, which is replicated by the annexe and tunnel belts (on this site) and by similar systems on other sites.

Issues: For this floor to have any viable use it will be necessary to remove the crossbelts and mezzanine structure in their entirety.

Understanding: On the ground floor there are various machines, such as a Cleaning Machine, a Bag Sewer and a Bag Lifter. Along the eastern side of the building, a conveyor running from south to north takes grain to the north east corner, where it is in turn loaded onto another set of belts serving the conveyor gallery.

Significance: The cleaning machine is of modest significance, and demonstrates the technological processes required to sieve and clean the maize. It is thought to be contemporary with the site. (Other equipment was removed by WPK).

Issues: WPK indicated that they would like to remove the cleaning machine.

Policies: The cleaning machine should be cleaned and stored for possible future use as part of an interpretation scheme.

Understanding: The shipping side of the Basement is fitted with a steel mezzanine floor, onto which lead six tunnels (two per elevator) leading from the six lines of bins in the storage annexe. Horizontal conveyors move the grain from the bottom of the bins to chutes, which in turn lead to the boots of the shipping elevators. At the lowest point of the working house, in the basement of the working house, are the 'boots' of the bucket elevators. On the intake side of the building, there are tunnels leading from each of the receiving hoppers in the track shed.

- Significance:** The tunnels and belts are of considerable significance. They represent the literal connections between the track shed, the working house and the storage annexe.
- Issues:** One complete tunnel and belt system (including feeders and trippers) should be retained, together with the relevant elevator. If one of the truck lifts in the track shed is to be retained, then ideally it should be that set that is retained with it.
- Policies:** If it is not possible to retain one of the intake sets, then one of the shipping sets should be retained.
-

C The Storage Annexe

- Understanding:** The storage annexe stands separated from the working house. However, it is connected by bridges to the scale floors of the working house, and tunnels to the basement of the working house. Above the bins are three identical horizontal conveyor systems, running at right angles to the east wall of the working house. Each system uses endless rubber belts to carry grain from the working house and deposit it, by means of a 'tripper' and a chute, into the required storage bin.
- Significance:** See above for comments on belt systems.
- Policies:** The "memory" of a connection between the working house and the storage annexe should be a requirement of any new design proposals.
-
- Understanding:** Six below ground tunnels allow for the transfer of grain back to the working house from the storage annexe. Grain is dropped from the base of the silo into a 'feeder' which directs it onto a continuous rubber belt, from where it is carried into the basement of the working house.
- Significance:** See above for comments on working house tunnels and belt systems.
-
- Understanding:** The aluminium clad steel structure on top of the storage annexe was used as an office and look-out station by the Port Captain from about 1935, until it was rendered redundant by the Lourens Muller Building. It is now being used by Vodacom to house telecommunications equipment.
- Significance:** The former look-out is of modest significance.
- Issues:** It will almost certainly be a requirement of any re-use scheme that a new structure is built on top of the storage annexe. In the short-term it will continue to be necessary for the telecommunications companies to have access.
- Policies:** Removal of the old look-out should be permitted.

D The Conveyor Gallery to the Collier Jetty

(PARTIALLY DEMOLISHED 2001)

Understanding: The raised conveyor gallery, is constructed of steel members, and is clad at the landward end in corrugated iron sheeting. Until the late 1990s, similar sheeting remained in place on the portion of the gallery above the Collier Jetty, but it was removed because of a perceived danger of corroded sheets falling onto people working on the jetty below. With the sheeting now removed, the steelwork, machinery and rubber conveyor belts quickly deteriorated and have subsequently been removed.

Significance: The conveyor gallery is of considerable significance. Apart from the strong industrial aesthetic (now compromised by having had the cladding removed), the conveyor gallery is an integral part of the elevator complex. Forming as it does the connection between the elevator and the sea, it is vital to a proper understanding of the site. The purpose of the elevator was, after all, not principally to receive grain, or store it, but to ship it to the export markets.

Issues: The Design Review Committee considered options for the future of the gantry on the collier jetty. The V&AW has made previous commitments to retaining and maintaining the gantry, and these commitments are enshrined in the Clocktower Precinct Plan (approved by the City of Cape Town 29-Jul-1999) and its annexures. In a report on the Grain Elevator included in The 'Grain Silo and Fish Quay Precinct' Conservation Study (December 1994) it was recommended that repairs be made to the gantry in order to prevent further deterioration. No action having been taken, the gantry was in a poor state of repair by 2001, and the V&AW requested that the gantry be demolished in its entirety. Permission was refused by the South African Heritage Resources Agency (SAHRA), and a maintenance programme has since been implemented. Lack of adequate maintenance is now being used as post hoc justification for demolition of a structure which has been deemed to have cultural significance, and is an integral part of the grain elevator complex. Sketch proposals prepared by Evon Smuts Architects for the gantry were enthusiastically accepted by the Design Review Committee. However, it must be noted that there no potential client for any development and that the existing Precinct Plan makes no allowance for any development on the jetty itself.

Policies: At the meetings of the Conservation Planning Working Group, both SAHRA and the City's Urban Conservation Unit have expressed concerns around the proposal to demolish the gantry without firm proposals being put in place for future development, and without an agreed design framework have been agreed. The draft Conservation Plan did not support the contention that demolition of the gantry be allowed, and rather suggested that creative ways of using the existing form and fabric needed to be found. A low cost, low return solution is likely to prove most appropriate, with simple timber decking replacing the decaying concrete, and a lightweight Perspex or similar covering being applied to the gantry. The gantry could then be opened to public access, creating a corridor into the sea, allowing views of the working fish quays and back towards the city. It would be necessary to amend the Precinct Plan, both to allow removal of the existing structure, and to allow other development.

Understanding: Four horizontal conveyors, with trippers, run the length of the gallery; chutes in the floor receive grain taken off the belts by the tripper, which then drops into the boot of one of the ship loaders.

Significance: See above comments on working house belts.

E The Ship Loaders

Understanding: Four loaders moved along rails laid on the collier jetty, using electricity supplied, to the chute nearest to where it was needed. Receive grain into own internal elevator, then by telescopic spouts from the top of the loaders, into the holds of the ship.

Significance: The loaders are of exceptional significance because:

- they are essential to a proper understanding of the site
- they are rare surviving pieces of historic machinery
- it has educational potential

Issues: Video footage has been recorded of the last ship being loaded. Two loaders already broken up, remaining two displaced out of context to wrong side of collier jetty. This relocation was required by I&J in order to facilitate operational requirements of the fishing industry. The remaining loaders are in a poor state of repair and in urgent need of remedial work.

Policies: The remaining loaders should be conserved as a matter of urgency in order to mitigate further deterioration.

F The Hydraulic Accumulator House

Understanding: The hydraulic power for the truck lifts is produced on site by the application of electrical power to pump water to a pair of hydraulic accumulators. Each of the two accumulator 'tables' is supported on three steel pylons and is filled with concrete, scrap railway line and similar steel. The accumulators each have a simple trip mechanism which shuts off the pump when they have reached full height, or re-activates it when they have dropped to half height.

Significance: The hydraulic accumulator house (including contents) is of considerable significance because:

- it is essential to the functioning of the track shed;
- it is a rare working surviving piece of historic machinery;
- it has educational potential.

Issues: The hydraulic accumulators are thought to be quite rare, and it would be important that the necessary pumps and motors are retained with the accumulators. It will be relatively difficult to operate and maintain this machinery once the skills of the existing staff are lost, and the machinery has been allowed to stand idle and deteriorate. However, regular running of the machinery will also lead to breakdowns for which neither the necessary skills nor spares are available.

Policies: Demolition of the structure itself should only be allowed on condition that at least one set of the machinery is properly conserved. Ideally, one of the accumulators should be retained in working / workable order, and with appropriate interpretation. It is crucially important to maintain the linkage between the accumulators and the operation of the remaining tippler. A lot of thought would need to go into the conservation of these units, and mechanical engineers will need to be consulted.

G The Electricity Sub-Station – 1923/4

(DEMOLISHED 2001)

Understanding: Built with the elevator in 1923 because there was insufficient power available. The construction is similar to the upper parts of the working house, being cast concrete panels on a steel frame. All the original equipment has been stripped and replaced by more recent switchgear. The sub-station was decommissioned in July 2001 and has subsequently been demolished.

- Significance:** This sub-station was of modest significance. It was contemporary with the elevator as there was insufficient electrical power to supply the elevator;
- Policies:** On the understanding that the working house and storage annexe are to be conserved, demolition of the electricity sub-station was allowed.
-

H The Dust House – 1923/4

- Understanding:** The dust house is contemporary with the main structures. It was extensively refitted by Simon-MacForman, of Johannesburg, in 1972.
- Significance:** The dust house is of modest significance, being an essential part of the original structure, adapted for changing circumstances, and adding to the industrial feel of the site.
- Issues:** Whilst this may at one level be considered a relatively unimportant and even intrusive annexe to the working house, nonetheless it does contribute to the industrial nature of the site.
- Policies:** The dust house & fan house / grain drying facility have similar proportions to the working house. It is suggested that if a working model of the elevator were to be built, then this would be an appropriate place to house it.
-

J Fan House / Grain Drying Facility - 1923/4

- Understanding:** See comments above for Dust House [H]. The base of a chimney for the drying house is still extant to the immediate south of the structure.
-

K Fire Hydrant Pump House – 1966

- Understanding:** Single storey small brick structure with flat concrete roof; contains electrical installation to pump water in event of a fire in the elevator.
- Significance:** This may be considered an intrusive element
- Issues:** The equipment is relatively modern. There is a need to establish whether it is necessary for future fire protection of the site.
- Policies:** Demolition should not be allowed unless adequate fire fighting capability is established elsewhere.

L Men's toilet – 1966 (DEMOLISHED 2001)

Understanding: Single storey small brick structure with steel windows; corrugated iron roof; secured with steel gate.

Significance: Of minimal significance.

Policies: Demolished 2001.

M Men's toilet – 1966 (DEMOLISHED 2001)

Understanding: Single storey small brick structure with steel windows and corrugated iron roof. Signs painted "Whites Only" on exterior wall. Secured by padlocked gate.

Significance: Moderate significance. The duplication of ablution facilities is a vivid reminder of the political regime operating in the 1960s when these buildings were erected;

Issues: Apartheid era signage is now rare and marketable, but in this case it is painted on the brickwork and not easily removable.

Policies: Signage should be recorded in situ and thereafter demolition allowed. Demolished 2001.

N Oil Store – 1966 (DEMOLISHED 2001)

Understanding: Single storey brick structure with concrete roof and steel doors.

Significance: None

Policies: Demolished 2001.

P Mess Room – 1966 (DEMOLISHED 2001)

Understanding: Single storey brick building with corrugated asbestos roof; used by 'non-European' staff; comprises toilets and showers, a locker / changing room, and mess / kitchen area.

Significance: Minimal significance – but see remarks at [M] above.

Policies: Demolished 2001.

Q Workshops – 1966

(DEMOLISHED 2001)

Understanding: Single storey brick structure with corrugated asbestos roof; comprises workshop, stores and garage.

Significance: None

Policies: Demolished 2001.

R Garage / Car Port – 1966

(DEMOLISHED 2001)

Understanding: Single storey timber frame structure clad in corrugated iron and open on the east side; provides covered parking for four vehicles

Significance: None

Policies: Demolished 2001.

S Office and Mess Facilities – 1966

Understanding: Two storey brick structure with corrugated asbestos roof and steel windows; built from plans dated 21/04/1966 - mess accommodation for 38 staff - note these would all have been white - 'non-Europeans' were, and still are, provided with separate facilities [P]; ground floor comprises locker room, shower & toilets, pay office, clock room for non-whites, grain grader's office; upper floor comprises kitchen / mess, various offices.

Significance: Minimal.

Issues: This building is likely to be useful in the short term; the offices and facilities are in good condition and perfectly functional.

Policies: Demolished 2001.

T Documentation

Understanding: Plans and documentation currently held by Victoria and Alfred Waterfront that were previously held by Port Engineer's Office. Large pile of badly damaged plans (stored in workshops) from Simon MacForman of Johannesburg, dated 1971 - all relate to major refit of dust extraction and broken grain handling systems.

Significance: Some of these plans, dating to 1920, are of considerable significance.

Issues: Vulnerable to theft, insect, rodent and water damage.

Policies: Should be properly archived and conserved.

Appendix C

Cape Town grain elevator: detailed inventory, 2001

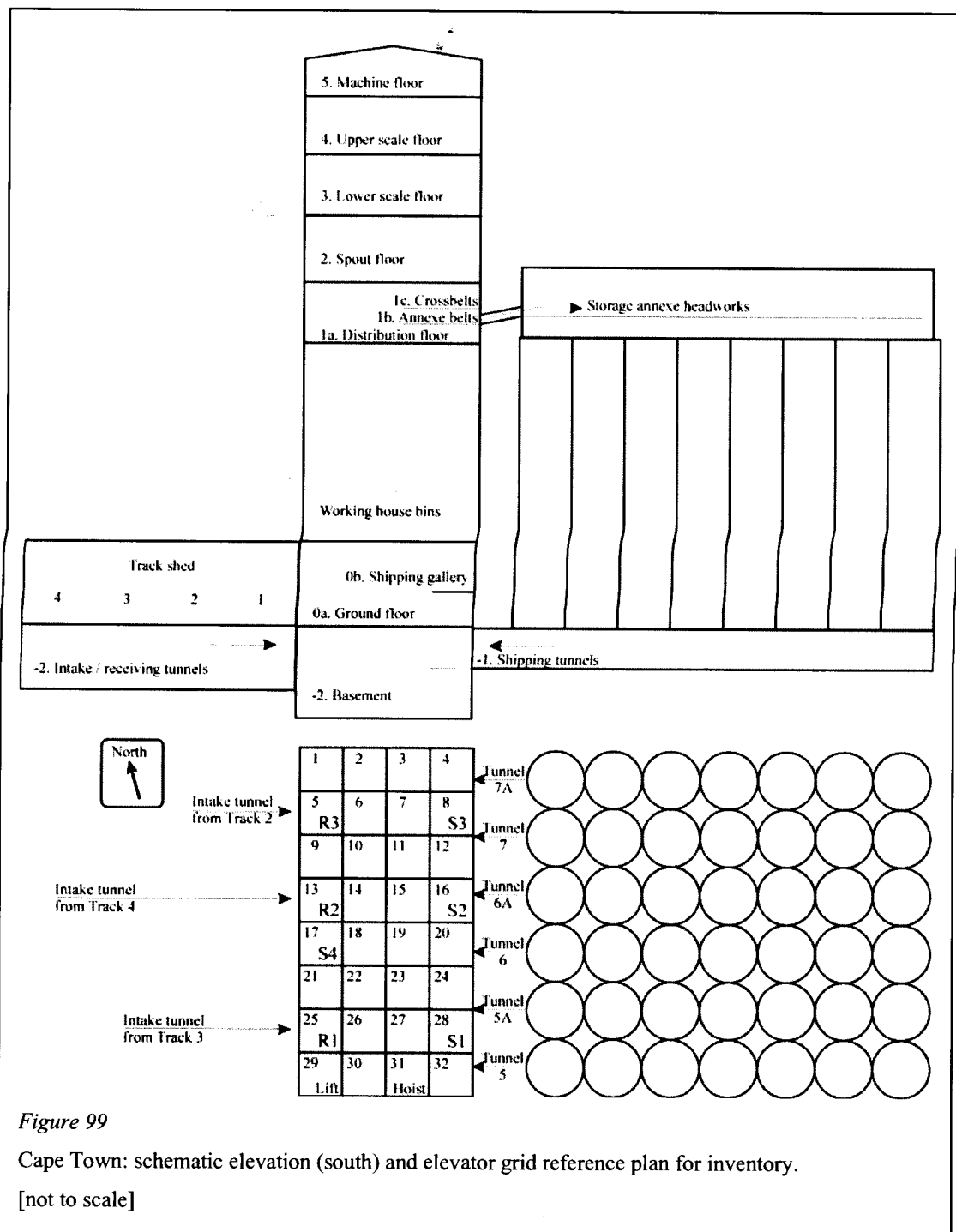


Figure 99

Cape Town: schematic elevation (south) and elevator grid reference plan for inventory.

[not to scale]

A - Track Shed

Roof**General****A 001 Roof material**

- Understanding steel IBR sheet
- Significance possibly original but probably no different to today's material
- Issues vulnerable to theft - this would lead to deterioration inside the track shed and consequently damage the tippers
- Policies roof should be secured against trespass [04-May-2001: this is no longer relevant as there is no security to the west side of the structure since part of it has been demolished].

A 002 Gutters

- Understanding stainless steel
- Significance WPK replacement
- Issues vulnerable to theft - this would lead to deterioration inside the track shed and consequently damage the tippers

A 003 Roof structure

- Understanding steel 'L' framing of 7 bays in saw tooth pattern
- Significance this is the basic 'north-lit' weaving shed transplanted to the Southern hemisphere - contributes to industrial feel of site and is unique in the area
- Issues likely to be requisitioned for 'informal' accommodation unless it is well secured.
- Policies 04-May-2001: security is no longer relevant since the western half of the structure has been demolished. Even if the original roof fabric is not appropriate for some potential uses of this structure, it is important that the form be recognised in any future development.

A 004 Light fittings

- Understanding 12 x pendant electric lamp fittings of original 18 hung from roof trusses still remain in place
- Significance nice period touch to the shed
- Issues theft and vandalism
- Policies should be removed and stored with view to re-using some of the old ones. [04-May-2001]: some have been taken down and stored.

A 005 Light fittings

- Understanding 4 x new pendant lamps put in by WPK
- Significance much brighter and more effective - illustrates changing needs and standards - but really no need for retention
- Issues theft and vandalism
- Policies can be removed

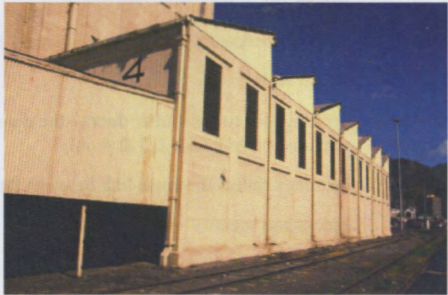
A 022 Bulk spout

- Understanding suspended from the roof above Tippler 1 and between lines 1 & 2 is a 'Bulk Spout' used for loading railway wagons and road trucks - this is fed by the spout seen outside and above the Track Shed - mostly original but with some new sections (see B.263)*
- Significance original fabric
- Issues likely to be in the way of pretty much anything that happens.
-

Ground**A 006 Roof glazing**

- Understanding heavy wire reinforced fixed glazing in steel frames on S facing vertical side of saw tooth roofing; some broken and closed up with steel plate
- Significance again - contributes to authenticity of place - serves useful function too in lighting the shed

Issues	vandalism
Policies	need not necessarily be retained, though the basic form of the glazed roof should be recognised in future plans.
A 007	South wall
Understanding	openings for roller shutter doors - the doors themselves were removed about 5 years ago - part of roller machinery remains above tracks 2, 3 & 4 only.
Significance	openings reflect the close link between the shed and the tracks which run through it
Issues	access and security - when the building is vacant it is likely that these openings will need to be closed up.
A 008	South wall
Understanding	concrete wall with steel frames for 4 x roller shutter doors - parallel vertical construction lines clearly visible - heavy cast concrete beam over doors continues into structure of Hydraulic Accumulator House 'F'
Significance	illustrates construction methods
Issues	marks will disappear if wall is given heavy surface treatment such as plaster
Policies	wall should only be painted.
A 009	South wall
Understanding	standard four panel wooden door between tracks 2 & 3.
Significance	was originally only pedestrian access to shed from rail tracks; indicates that there was previously much greater spatial control than there is now - the doorway is probably more significant than the door itself.
Issues	deteriorating due to lack of maintenance and exposure to weather
Policies	to be photographed
A 010	North wall
Understanding	similar to south wall
Significance	illustrates construction methods
Issues	marks will disappear if wall is given heavy surface treatment such as plaster
Policies	wall should only be painted.
A 011	North wall
Understanding	2 x window openings between tracks 1 & 2 (a), and 3 & 4 (b).
Significance	allowed man operating capstan to see the wagons being pulled through.
Issues	access and security - when the building is vacant it is likely that these openings will need to be closed up.
Policies	photographed
A 012	North wall
Understanding	corrugated iron afdak attached - wooden structure with corrugated iron roof and 5 x sections of railway line as vertical supports; supports between 1 & 2 (a) and 3 & 4 (b) show evidence of rope wear
Significance	rope wear demonstrates use of capstan and changes to original structure - why wasn't it made long enough to protect capstan operator from the rain?
Issues	this is a scruffy add-on and unlikely to find much favour with anyone - so how do we deal with the worn uprights?
Policies	photographed
A 013	North wall
Understanding	vertical sections between 1 & 2 (a) and 3 & 4 (b) have steel capstan guides attached - these also show evidence of rope wear
Significance	rope wear demonstrates use of capstan
Issues	these are likely to be lost when temporarily closing the doorways
Policies	should be removed and stored for later reinstatement

A 014	West wall	
Understanding	steel frame of 14 bays (compare roof of 7 bays) - with horizontal member approximately half way up cast concrete panels - glazing to upper section using square glass block - 6 across and 14 high	
Significance	contributes to sense of scale and proportion - there is a direct relationship between the size of the track shed (and the number of tracks) and the size of the elevator - compare Durban and Buenos Aires.	
Issues	the new roadway is passing some 3.5m up the outside of this wall, and its foundations will probably undermine it unless the road itself is moved.	
Policies	04-May-2001: since this commencement of this study, the western portion of the Track Shed has been demolished.	
A 015	East wall	1925
Understanding	Double steel doors to Working House; inserted in 1925 [TBH 106 L3-2019 of 1925 refers] to facilitate loading of bagged grain.	
Significance	represent change of working practice	
Issues	access and security - when the building is vacant it is likely that these openings will need to be closed up.	
A 016	East wall	
Understanding	Bag Conveyor (above double doors to Working House)	
Significance	relates to recent use by WPK serving local farming community	
Issues	likely to be in the way of pretty much anything that happens.	
Policies	photographed	
A 017	East wall	
Understanding	Single wooden door to Working House closed up with permanently locked steel gate	
Significance	original fabric	
Issues	access and security - when the building is vacant it is likely that these openings will need to be closed up.	
A 018	East wall	
Understanding	at the southern end a loading spout (largely original) is used to load from the Dust House	
Significance	dust, and disposal of dust, is a critical part of the elevator story - it also has a commercial value as animal feed	
Issues	likely to be in the way of pretty much anything that happens.	
A 019	East wall	1925
Understanding	Double steel doors to Working House; inserted in 1925 [TBH 106 L3-2019 of 1925 refers] to facilitate loading of bagged grain.	
Significance	indicates change of working practice	
Issues	could be used as a fire exit	
A 020	East wall	
Understanding	at the southern end the east wall of the Track Shed forms the west wall of the Hydraulic Accumulator House (F) - this is corrugated iron sheeting on a steel frame	
Significance	it is unclear why this is such a lightweight structure, and whether it is original - why didn't they put up another concrete panel wall? - perhaps this is a later addition?	
Policies	retention in the short-term, but in long-term could be replaced with appropriate modern wall	
A 021	East wall	
Understanding	4 x new truck spouts inserted through new penetrations of Working House wall	
Significance	relates to recent use by WPK serving local farming community	
Issues	likely to be in the way of pretty much anything that happens.	

A014: west wall of track shed.

Policies to be photographed

A 049 Capstans

Understanding outside north end - powered capstan between lines 1 & 2 - had a new motor fitted in 1999 - pedal switch has makers plate "Allen West & Co. Ltd., Brighton 93142 - Robert Hurn says this is a replacement switch and not the original

Policies photographed and stored for possible future display

A 050 Capstans

Understanding outside north end - unpowered capstan between lines 3 & 4 used to be at south end until 1999 when it was brought here to replace a broken unit.

Policies photographed

A 051 Capstans

Understanding outside north end - white painted unpowered capstan between 2 & 3 used to be between 1 & 2 until 1999 when it was moved to make way for the new development

A 052 Capstans

Understanding outside south end - 2 x unpowered capstans

A 053 Capstans

Understanding outside north end - powered capstan between lines 3 & 4 - probably original - pedal switch marked BTH, Rugby

A 054 Capstans

Understanding inside south end - 2 x unpowered capstans (a) & (b)

A 055 Capstans

Understanding outside south end - 2 x yellow painted powered capstans - (a) & (b) - came from East London Elevator - electric motors attached - (a) has foot switch marked 'Allen West & Co.Ltd, Brighton'

A 056 Capstans

Understanding electrical switch gear mounted on vertical supports of afdak were put there in 1998 as emergency over-rides.

A 057 Signage

Understanding outside south end - wooden sign - black lettering painted on white background "Trokke moenie verdaan oorstaan nie / Trucks must not be staged beyond this point"

Significance relates to need to keep elevator building secure at night - ability to close roller shutters

Issues theft - vandalism

A 058 Signage

Understanding inside south end - wooden sign - white lettering painted on red background "Rook verbode in graansuier bou / Smoking prohibited in elevator building"

Significance relates to combustible nature of grain dust

Issues theft - vandalism

A 059 Signage

Understanding Track numbers painted on exterior of end north elevation

Significance modest significance

Issues lines 3 & 4 lost when this side of the track shed demolished March / April 2001;

A 060 Signage

Understanding outside north end - wooden sign - red lettering on white background "Nie rook nie / No smoking / Akutshaywa"

Significance relates to combustible nature of grain dust; use of three languages

Issues theft - vandalism

A 061 Signage

Understanding wooden sign - yellow lettering on red background "No smoking allowed in elevator building / Rook verbode in graansuierbou"



A049: powered capstan.

Significance	relates to combustible nature of grain dust; use of three languages
Issues	theft - vandalism
A 062	Signage
Understanding	Track numbers painted on exterior of end south elevation
Significance	see [A.059]
Issues	see [A.059]
Policies	see [A.059]
A 063	Railway Lines
Understanding	Lines 1, 2 & 3 were re-aligned and shortened in 1999
Issues	original positions can still be traced from documentary records.

Track 1

A 036	Tippler
Understanding	line 1 - removed in 1980 - used to serve intake elevator #4
Significance	reflects changing pattern of use

Track 2

A 023	Tippler
Understanding	line 2 - 2 x truck secure cables
Significance	stops the trucks rolling forward while be raised.
Issues	could be retained as working example
Policies	04-May-2001: to be retained as working example of system
A 030	Tippler
Understanding	line 2 - hopper gate control
Significance	integral part of tippler
Issues	could be retained as working example
Policies	04-May-2001: to be retained as working example of system
A 031	Tippler
Understanding	line 2 - hopper grid modified for road transport
Significance	integral part of tippler - demonstrates changing transport needs.
Issues	could be retained as working example
Policies	04-May-2001: to be retained as working example of system
A 032	Tippler
Understanding	line 2 - ventilation fan outlet with cover
Significance	again reflects importance of dust control and extraction from all parts of the elevator
Issues	could be retained as working example
Policies	04-May-2001: to be retained as working example of system
A 033	Tippler
Understanding	line 2 - hydraulic ram
Significance	lifts the truck table
Issues	could be retained as working example
Policies	04-May-2001: to be retained as working example of system
A 034	Tippler
Understanding	line 2 - lift table

Significance	essential component of the elevator system
Issues	bulky and difficult to work around, but don't actually have to be disturbed at all
Policies	04-May-2001: to be retained as working example of system
A 035	Tippler
Understanding	line 2 - serves intake elevator #3
Issues	now closest to Working House - therefore has the shortest tunnel serving it - also furthest from planned road layout.
Policies	04-May-2001: to be retained as working example of system
A 040	Tippler
Understanding	line 2 - control valve lever
Significance	integral part of tippler
Issues	could be retained as working example
Policies	04-May-2001: keep the original from line 4 and put it here

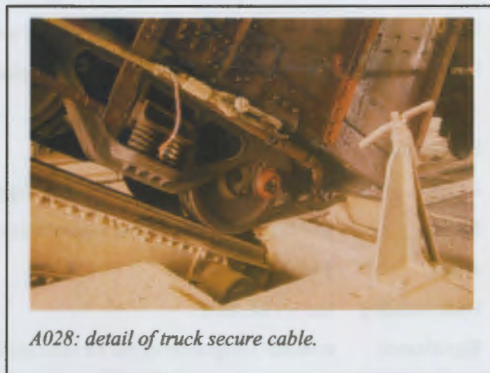
Track 3

General

A 024	Tippler
Understanding	line 3 - hopper gate control
Issues	directly in the way of the new road alignment
Policies	04-May-2001: demolished with consent of SAHRA
A 025	Tippler
Understanding	line 3 – hopper grid modified for road transport
Issues	directly in the way of the new road alignment
Policies	04-May-2001: demolished with consent of SAHRA
A 026	Tippler
Understanding	line 3 – control valve lever
Issues	directly in the way of the new road alignment
Policies	04-May-2001: demolished with consent of SAHRA
A 027	Tippler
Understanding	line 3 – ventilation fan outlet with cover
Issues	directly in the way of the new road alignment
Policies	04-May-2001: demolished with consent of SAHRA
A 028	Tippler
Understanding	line 3 - 2 x truck secure cables
Issues	directly in the way of the new road alignment
Policies	04-May-2001: demolished with consent of SAHRA
A 029	Tippler
Understanding	line 3 - lift table
Issues	directly in the way of the new road alignment
Policies	04-May-2001: demolished with consent of SAHRA
A 039	Tippler
Understanding	line 3 - hydraulic ram
Issues	directly in the way of the new road alignment
Policies	04-May-2001: demolished with consent of SAHRA



A025: rail truck discharging to intake hopper grid.



A028: detail of truck secure cable.

A 047 Tippler
 Understanding line 3 - serves intake elevator #1
 Issues directly in the way of the new road alignment
 Policies 04-May-2001: demolished with consent of SAHRA

Track 4

A 038 Tippler
 Understanding line 4 - serves intake elevator #2
 Issues directly in the way of the new road alignment
 Policies 04-May-2001: demolished with consent of SAHRA

A 041 Tippler
 Understanding line 4 - hopper gate control
 Issues directly in the way of the new road alignment
 Policies 04-May-2001: demolished with consent of SAHRA

A 042 Tippler
 Understanding line 4 - hydraulic ram
 Significance lifts the truck table
 Issues directly in the way of the new road alignment
 Policies 04-May-2001: demolished with consent of SAHRA

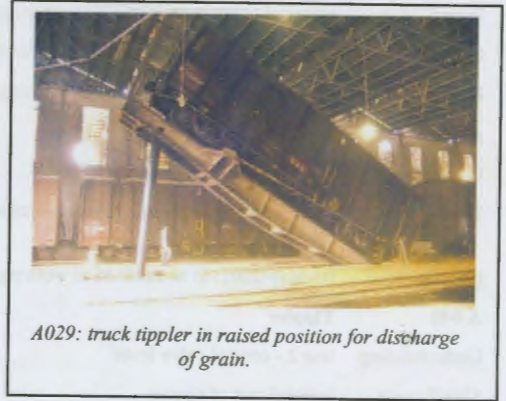
A 043 Tippler
 Understanding line 4 - 2 x truck secure cables
 Significance stops the trucks rolling forward while be raised.
 Issues directly in the way of the new road alignment
 Policies 04-May-2001: demolished with consent of SAHRA

A 044 Tippler
 Understanding line 4 - ventilation fan outlet with cover
 Significance again reflects importance of dust control and extraction from all parts of the elevator
 Issues directly in the way of the new road alignment
 Policies 04-May-2001: demolished with consent of SAHRA

A 045 Tippler
 Understanding line 4 - control valve lever
 Significance this one is probably original though the others aren't.
 Issues directly in the way of the new road alignment
 Policies 04-May-2001: removed when the tippler was demolished - stored for reinstatement on track 2

A 046 Tippler
 Understanding line 4 - hopper grid - original
 Issues directly in the way of the new road alignment
 Policies 04-May-2001: demolished with consent of SAHRA

A 048 Tippler
 Understanding line 4 - lift table
 Significance essential component of the elevator system
 Issues directly in the way of the new road alignment
 Policies 04-May-2001: demolished with consent of SAHRA



Tracks 2-4
A 037 Tiplers

Understanding	there are 3 remaining tiplers of the original 4 and each set is pretty much the same, comprising a lifting table; hydraulic ram; pair of truck secure cables; ventilation fan; control valve lever; hopper grid and hopper gate control. [NOTE: the actual hoppers and conveyors are dealt with in the section on the Basement.]
Significance	these are a hugely important and impressive part of the whole operation, without which it would have been impossible to operate the elevator at all before the introduction of bottom opening hopper trucks.
Issues	Victoria and Alfred Waterfront road scheme which wants to use at least part of the Track Shed for its foundations
Policies	04-May-2001: tipler on track 2 to be retained as working example of system

B - Working House

Important Note: this section is ordered as though moving down through the working house from the top (level 5) to the basement (level -2). Each floor is ordered with general items first, then according to the grid numbering, 1 - 32.

Machine Floor: Level 5**General****B 003 Steel framing 1924**

Understanding	rivetted 20cm square l-bar steel joists forming framing for concrete walls and carrying concrete roof; some later additions clearly visible; identifiable by different paint colour;
Issues	the steel frame; and below that the concrete frame, of the building, form a clear grid which can be used for reference throughout the building; the load-bearing capacity of the structure is not known, though given that the upper floors were capable of handling about 160 tons of grain at a time, it is unlikely that they will be found unsuitable for residential / commercial use; the steelwork appears to be in good condition, though there are patches of spalling in the concrete walls on level 5.
Policies	structural engineers reports should be commissioned to establish the load capacity of the structure, as well as the condition of it.

B 004 Roof 1924

Understanding	concrete cast on steel joists; various circular openings closed up; steel ladder to wooden trapdoor and then to outside of roof at 5.11; Robert Hurn replaced the door so that is not original - rest probably is
---------------	---

B 005 Light fittings 1924

Understanding	three styles - (A) has a shade while (B) & (C) do not; all are 'spark safe' as was necessary in the atmosphere of the elevator. (A) 5.13 / 5.17 / 5.21 / 5.25 / 5.3 / 5.7 / 5.11 / 5.23 / 5.12 / 5.20 / 5.24 (B) 5.5 / 5.9 / 5.15 / 5.27 / 5.8 (C) 5.19
Significance	part of the original industrial nature of the site, and demonstrating yet again the vulnerability to fire.
Issues	vulnerable to theft and vandalism, but unlikely to be adequate for future usage.
Policies	a representative sample should be set aside for possible incorporation into a new scheme.

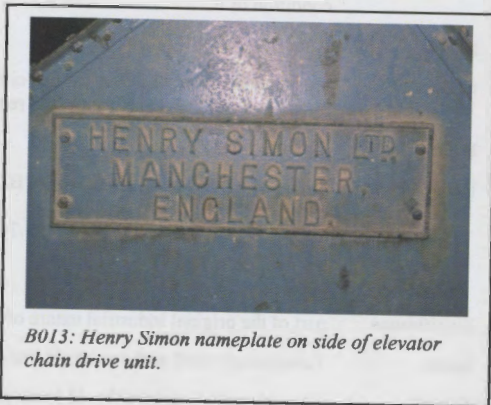
B 009 Windows

Understanding	5.1 to 5.4 all wooden fixed casements and appear to have been inserted since original build; North wall 5.5 steel framed, hinged at bottom, top half fixed; West wall 5.9 / 5.13 / 5.17 / 5.21 / 5.25 wooden fixed; East & South walls all steel framed 4x4 with centre 2x2 panes on centre horizontal pivot hinge except 5.12 which has been broken and remade differently;
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B 011 Floor

Understanding	circular manhole at 5.6, 5.14, 5.26 (B.271-B.273)
Significance	see [B.22]
Issues	see [B.22]

Policies	see [B.22]
B 020	Dust vent pipe from garner
Understanding	there are vertical pipes from garner, through level 5, and out through the roof at 5.2 / 5.5 / 5.6 / 5.10 / 5.13 / 5.14 / 5.25 / 5.26
Issues	these are for dust extraction - likely to be part of the original system
Level 5	Grid 02
B 002	Dust extraction system >1987
Understanding	3 separate systems (Intake / Shipping / Annexe); electrically operated; venting through roof; each with its own electric motor serving an exhaust fan;
Significance	modest significance - but illustrates importance of keeping free grain dust to a minimum due to risk of explosion
Issues	this equipment is relatively modern and will be in the way of any future use;
Policies	to be photographed; WPK to be permitted to remove on vacation of premises;
Level 5	Grid 04
B 001	Electrical equipment >1996
Understanding	VHF aerials for Port Control; also a grey wall box which contains equipment belonging to "Nautilus Marine" for their VHF radios; age about 7 years
Issues	access; safety; electricity supply; safety
Policies	consideration will need to be given to providing access to this equipment when the elevator is decommissioned; it will be important to ensure that the security of the site is not compromised.
B 010	Steel door to fire escape
Understanding	also gives access to external ladder to outside of roof
Issues	safety; security; views from; retains function as fire escape;
Policies	could continue to retain function as fire escape;
Level 5	Grid 05
B 013	Elevator - Intake #3 1924
Understanding	elevator supplied by Henry Simon Ltd., Manchester; electric motor supplied by English Electric Co. Ltd.; this is a "belt-driven bucket elevator; electric motor works through chain drive to gear (in red steel drum) and then drive to elevator head; modern electrical switchgear, otherwise everything is original, still in working order, and in daily use; when switched on motor and chain run free; engage clutch to drive gear to head pulley; electric motor has fresh air intake through wall to outside; uses 5m 1.5 inch pitch 'Renold Croft' chain;
Significance	the entire structure is designed to accommodate (and is even named for) the elevators it contains; they are thus of considerable significance;
Issues	this is the elevator served by line 2 in the track shed; as the tipper on that line is possibly being retained it would make sense to try and retain something of this elevator to provide a 'memory' of what this building was all about.
Policies	this is the elevator served by line 2 in the track shed; as the tipper on that line is possibly being retained it would make sense to try and retain as much as possible of this elevator to provide a 'memory' of what this building was all about; it would then be possible to 'trade off' the remaining elevators.



B013: Henry Simon nameplate on side of elevator chain drive unit.

Level 5 **Grid 06**
B 271 **Access hatch to garner**

1924

Understanding hatch in floor down to steel ladder gives access to inside of garner for service and maintenance

Significance see [B.035]

Issues see [B.035]

Policies see [B.035]

1



B013: Signage on elevator drive unit – “this door to be kept closed while belt is in motion”.

Level 5 **Grid 08**
B 017 **Elevator - Shipping #3**

1924

Understanding similar to [B.13] but with vibrating screen to screen out broken maize; broken maize then falls through to screenings conveyor B.62 on level 3;

Significance see [B.13]

Issues see [B.13]

Policies see [B.13]

1

Level 5 **Grid 12**

B 006 **Fireman's pole**

1924

Understanding circular hole in floor protected by steel rail; brass pole mounted from steel walls brackets descends one floor only; note that there is also a closed hole and traces of a similar pole at 5.24

Significance underscores vertical nature of operation and fire hazard

Issues safety; fire; practicality

Policies could perhaps be incorporated as an interesting and unusual architectural feature



B006: top of fireman's pole.

Level 5 **Grid 13**

B 014 **Elevator - Intake #2**

1924

Understanding see [B.13]

Significance see [B.13]

Issues see [B.13]

Policies see [B.13]

Level 5 **Grid 14**

B 272 **Access hatch to garner**

1924

Understanding hatch in floor down to steel ladder gives access to inside of garner for service and maintenance

Significance see [B.035]

Issues see [B.035]

Policies see [B.035]

Level 5 **Grid 16**

B 018 **Elevator - Shipping #2**

1924

Understanding similar to [B.13] but with vibrating screen to screen out broken maize; broken maize then falls through to screenings conveyor B.62 on level 3;

Significance see [B.13]



B014: maize chute from elevator head to pre-weigher floor.

Level 5	Grid 29	
B 012	Passenger lift	1968
Understanding	steel stair up to lift motor room at mezzanine level; OTIS - max 560kg - 8 persons; wooden doors opens outwards; simple 'spark safe' controls; Robert Hurn remembers earlier model with steel sliding gates; a lift was provided when the elevator was first built, occupying a standard bin space within the working house); new machine room was also installed in 1968.	
Issues	maintenance; safety; disabled access;	
Level 5	Grid 31	
B 008	Hoist well	1924
Understanding	vertical space, equivalent to about a third of the grid, all the way to the basement; electrical hoist (may be original) at 5.32; protected by a (not very safe) steel rail and chain; lightweight wire hoist with circular steel can attached used to raise/lower documents (known as "intake shunts" by SAR&H) between floors;	
Significance	again stresses the height of the building	
Issues	safety; access; likely to be particularly useful during future construction;	
Policies	this fine vertical space running the entire height of the building could obviously be used for services, but this would detract from its power to give the demonstrate the verticality of the operation; it is suggested that here would be a good place for a significant art installation, either temporary or permanent.	

Upper Scale Floor: Level 4**General**

B 021	Roof	1924
Understanding	concrete cast on steel joists	
Issues	the load bearing capacity of the roof is not known, nor it's structural integrity;	
B 022	Floor	1924
Understanding	concrete; forms roof of next level; some openings closed up; steel manhole plates at 4.10 / 4.11 / 4.3	
Significance	minimal	
Issues	concrete floor is apparently sound; various openings, including the closed ones, provide evidence of former usage;	
B 023	Steel framing	1924
Understanding	25cm square I-beams (larger than on level 5); some diagonal bracing; much of steel marked "Cargo - Fleet - England"	
Significance	the markings on the steel are indicative of transfer of technology from England;	
Issues	the steel superstructure is not protected against fire hazard and is therefore probably not consistent with modern building regulations;	
Policies	it is likely that the steel work would have to be made fireproof	



B023: details of structural steel framing.

B 024	Signage	
Understanding	4.4 "No Smoking / Nie Rook Nie" 4.32 "Nie Rook Nie / No Smoking / Akutshaywa" painted white on red on outside of [B43] 4.32 "No Naked Lights or Fires Allowed in Elevator Building / Geen Ope Ligte of Vure in Graansuier Toegelaat Nie" painted yellow on red on board fixed to outside wall of [B43]	
Significance	indicators of fire hazard, and also of different language groups employed on site;	
Issues	will be quickly lost when the building is changed to new use;	
Policies	photograph in situ and retain representative selection	



B024: signage

B 025	Windows	1924
Understanding	wooden framed windows; 4 panes wide x 6 panes high; top four rows are fixed; bottom two rows open at central pivot hinge;	
Significance	contribute to industrial aesthetic of site, and somewhat stark form;	
Issues	many of the windows have been broken and patched up in various ad hoc ways; it is not clear which are original and which have been inserted; unlikely to provide adequate levels of daylight for any future use;	
Policies	new windows should be designed to reflect the industrial nature of the site, but are likely to be larger than those existing;	

B 026	Light fittings	
Understanding	see [B.5] type A at 4.1 / 4.3 / 4.4 / 4.5 / 4.8 / 4.9 / 4.11 / 4.12 / 4.13 / 4.16 / 4.17 / 4.19 / 4.20 / 4.21 / 4.23 / 4.25 / 4.28 / 4.29 / 4.30	
Significance	see [B.5]	
Issues	see [B.5]	
Policies	see [B.5]	

B 042	Bucket Elevators	1924
Understanding	INTAKE: 4.25 Intake #1; 4.13 Intake #2; 4.5 Intake #3 SHIPPING: 4.28 Shipping #1; 4.16 Shipping #2; 4.8 Shipping #3; 4.17 Shipping #4	
Significance	see individual items	
Issues	see individual items	
Policies	see individual items	

Level 4	Grid 02	
B 031	Dust extraction system	>1987

Understanding	two pipes connect level 5 and easternmost unit has cyclone attached at this level; see [B.002]
Policies	see [B.002]; WPK to be permitted to remove on vacation of premises;

Level 4 **Grids 03, 04, 12 & 24**

B 277	Traces of former elevator route	1924
Understanding	various closed up holes in floor, and bolt holes in adjacent steel work, show where bucket elevators have been removed; it is clear that these elevator did NOT go up to level 5 but route can be traced down to the working floor; at 4.3 a large rectangular hole is present where the off-take spout from this elevator would have run down to scale floor and beyond; when they were removed is not known but it must be before he started working there; documentary evidence states "dryer leg" TBH 106 L3-2005/10.	
Significance	see [B.135]	

Level 4	Grid 04	
B 041	Steel door to fire escape	1924

Understanding	see [B.10]
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Level 4 Grid 06**B 035 Garner - Intake #3 1924**

Understanding marked (R3/T2) meaning - Intake elevator #3 on track 2; 50 ton capacity; manually operated; comprises steel box with canvas chute to scale below; left hand lever goes through floor to level 3 where it operates a circular segmented slide; pull to open (turns slide anti-clockwise) and push to close (turns slide clockwise); right hand lever operates four slides under the garner; circular glazed porthole / inspection hatch; "Massamatic" LED display "head" measures in kg; dates to 1987; function is to hold an entire 40 ton truck load of grain before passing to weighers; Massamatic 'C' with hand lettered sign: "Mayo Spout Receiver 4 reaches R5 to bins 9,10,16,18,28; R6 to bins 11, 12, 17, 29; R7 to bins 13, 14, 16, 30, dryer; S5 to bins 17, 27, 29, 35, 36; S6 to bins 16, 28, 33, 34; S7 to bins 15, 29, 31, 32; C3 to bins B5, A4, A5"; note that A1 & B1 are the two cross belts, and C1-3 are the annexe belts;

Significance exceptional significance

Issues if (R3/T2) [B.13] is to be retained in any meaningful way, then a scale set should ideally be retained as well; however these things take up a lot of space, and it is hard to see how they could be worked into any scheme that involved subdividing the floor space; if this level was a single open area, then of course more flexible design approaches might be possible;

Policies this scale set should ideally be retained as an integral part of intake elevator #3; signage should all be photographed;



B035: garner - intake #3 on track 2.

Level 4 Grid 07**B 038 Garner - Shipping #3**

Understanding see [B.44]

Level 4 Grids 09 & 10**B 275 Traces of former elevator route 1924**

Understanding at 4.9 closed up holes in floor, and bolt holes in adjacent steel work, show where a bucket elevator has been removed; it is clear that this elevator did NOT go up to level 5 but it's route can be traced down to the working floor; at 4.10 a large rectangular hole is present where the off-take spout from this elevator would have run down to scale floor and beyond; function of these elevators is unclear though Robert Hurn thinks they may have been for the cleaning machines; when they were removed is not known but it must before he started working there; documentary evidence states "cleaner leg"; see [B.135]

Level 4 Grid 12 & 28**B 027 Fireman's pole 1924**

Understanding 4.12 see [B.6] pole offset from the one above and descends to level 3;
4.28 see [B.6] no pole from level 5 but there is one to level 3 from here

Significance underscores vertical nature of operation and fire hazard

Issues safety; fire; practicality

Policies could perhaps be incorporated as an interesting and unusual architectural feature



B038: garner - shipping #3.

Level 4	Grid 14
B 036	Garner - Intake #2 1924
Understanding	marked (R2/T4) meaning - Intake elevator #2 on track 4; see [B.35] Massamatic 'B' with hand lettered sign: "Mayo Spout Receiver 3 reaches R3 to bins 5, 6, 20, 26; R4 to bins 7, 8, 17, 19, 27; R5 to bins 9, 10, 16, 18, 28, car loader; S3 to bins 19, 25, 39; S4 to bins 18, 26, 28, 37, 38; S5 to bins 17, 27, 29, 35, 36; C2 to bins B3, A2, A3 & A4"

Significance	exceptional significance
Issues	as [B.035], but if Intake #3 was to be retained it is less easy to argue retention of further garners and scales;
Policies	signage should all be photographed;

Level 4	Grid 15
B 039	Garner - Shipping #2

Understanding	see [B.44]
Significance	see [B.44]
Issues	see [B.44]
Policies	see [B.44]

Level 4	Grid 17
B 033	Rest room 1960s?

Understanding	small brick structure; steel windows to work floor; wooden benches; door marked "Elevator staff only";
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Level 4	Grid 18
B 044	Garner - Shipping #4 <1980

Understanding	automatic 'Schenk' scale head with manual control lever; performs same function as 'Massamatic' scales; capacity 7 tons; continuous sequence of operation is: (1) set weight on scale; (2) close scale & open garner; (3) scale reaches weight; (4) garner closes automatically; (5) scale prints weight; (6) scales opens and empties; (7) scale prints empty check weight; (8) garner opens
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Significance	less significant than the original scales on the intake side;
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Issues	whilst not as old as the intake scales, the shipping scales are smaller and would be easier to work around; thus it would in some ways be easier to retain one of these than one of the old ones;
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Level 4	Grid 20
B 028	Man elevator 1924

Understanding	see [B.7]
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Level 4	Grid 21 & 22
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B 276	Traces of former elevator route 1924
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Understanding	at 4.21 closed up holes in floor, and bolt holes in adjacent steel work, show where a bucket elevator has been removed; it is clear that this elevator did NOT go up to level 5 but it's route can be traced down to the working floor; at 4.22 a large rectangular hole is present where the off-take spout from this elevator would have run down to scale floor and beyond; function of these elevators is unclear though Robert thinks they may have been for the cleaning machines; when they were removed is not known but it must be before Robert started working there; documentary evidence states "cleaner leg";
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Significance	see [B.135]
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Issues	see [B.135]
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B036: garner - intake #2 on track 4.



B036: garner - intake #2 on track 4.



B037: garner - intake #4 and B044: garner - shipping #4.

Policies see [B.135]

Level 4 **Grid 24**

B 032 **Control cabin** >1967

Understanding electrical controls for scales are all here; steel ladder to roof of cabin for access to dust extraction vent; access is from south side through a wooden door; (23-Mar-2001) as you enter the control room there is one control panel to your right (B.280), two directly in front of you (B.281 & B.282), and one to the left (B.282); from right to left these are designated S1 to S4; each includes a touch key pad, LED display, dot matrix printer and set of control buttons [SEE B.280-B.283 FOR DETAIL]; there is also a power distribution box, a chalkboard bin plan, and three free standing dot matrix printers against south wall; all three of the operating shipping scales are controlled from this room, while the three intake scales are all operated manually; the three separate printers against the wall are for the intake side; each of the shipping garners has what is known as a "high level switch" which switches off power to the system and sounds a siren in the event of any malfunction; this can only be reset by using a key switch;

Significance modest significance

Issues control room has seen various changes in the electrical gear it contains; whilst it might be important in a museum context to retain the control room, it is not likely to be feasible within the context of any future commercial use;

Policies equipment should be photographed in situ

B 034 **Compressed Air Line** ?

Understanding air was originally supplied from a compressor at the synchrolift; principle function is cleaning ; no wet cleaning in elevator; wet fumigation usually every 6 months for pest control; WPK now has its own compressor

B 280 **Control Board - Shipping #1** ?

Understanding 'Massamatic' control panel; touch key pad used to input product code, total mass to be loaded, and bin number being drawn from; LED display for weight reading; dot matrix printer used to print weights (zero and loaded); two rows of labelled control buttons and lights in vertical pairs; (from left to right, upper) POWER / RUN / OPEN / CLOSE / OPEN / CLOSE / AUTO/MAN / PRINT TOTAL; (from left to right, lower) EMERGENCY / RUN / FILL GATE / FILL GATE / DISCHARGE GATE / DISCHARGE GATE / STOP / DISCHARGE TIMER.

Significance considerable significance

Issues this is going to be difficult to make sense of if it isn't operating; probably not crucial to understanding of whole system though it may add more texture to any display / interpretation;

Policies retain for possible future display ./ interpretation

B 281 **Control Board - Shipping #2**

Understanding 'Massamatic' control panel; touch key pad used to input product code, total mass to be loaded, and bin number being drawn from; LED display for weight reading; dot matrix printer used to print weights (zero and loaded); two rows of labelled control buttons and lights in vertical pairs; (from left to right, upper) POWER / RUN / OPEN / CLOSE / OPEN / CLOSE / AUTO/MAN / PRINT TOTAL; (from left to right, lower) EMERGENCY / RUN / FILL GATE / FILL GATE / DISCHARGE GATE / DISCHARGE GATE / STOP / DISCHARGE TIMER. see [B.280]



B032: control room bin plan.



B280: control board - shipping #1.

B 282 Control Board - Shipping #3

Understanding 'Massamatic' control panel; touch key pad used to input product code, total mass to be loaded, and bin number being drawn from; LED display for weight reading; dot matrix printer used to print weights (zero and loaded); two rows of labelled control buttons and lights in vertical pairs; (from left to right, upper) POWER / RUN / OPEN / CLOSE / OPEN / CLOSE / AUTO/MAN / PRINT TOTAL; (from left to right, lower) EMERGENCY / RUN / FILL GATE / FILL GATE / DISCHARGE GATE / DISCHARGE GATE / STOP / DISCHARGE TIMER.
see [B.280]

B 283 Control Board - Shipping #4

Understanding 'Schenk' control board - not in use - similar function to Massamatic heads that replaced this type. see [B.280]

Level 4 Grid 26**B 037 Garner - Intake #1****1924**

Understanding marked (R1/T3) meaning - Intake elevator #1 on track 3; see [B.35] Massamatic 'A' with hand lettered sign: "Mayo Spout Receiver 1 reaches R1 to bins 1, 2, 20, 24; R2 to bins 3, 4, 19, 21, 25; S1 to bins 21, 25, 42, 43; S2 to bins 20, 24, 26, 40, 41; C1 to bins B1, A1 & Bin 22"

Significance exceptional significance

Issues as [B.035], but if Intake #3 was to be retained it is less easy to argue retention of further garners and scales;

Policies signage should all be photographed;

Level 4 Grid 27**B 040 Garner - Shipping #1**

Understanding see [B.44]

Level 4 Grid 29**B 030 Passenger lift****1924**

Understanding see [B.12]; this is the highest level served by the lift;

Level 4 Grid 31**B 029 Hoist well****1924**

Understanding see [B.8]; a steel gangway crosses hoist well at this level; Robert put in the guard rails but the chains are original;

B 045 Fire main

Understanding rises through hoist well

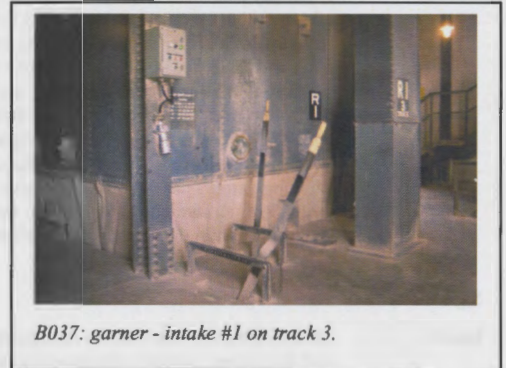
Significance exceptional significance;

Issues very important for historic reasons and for the future; needs to maintained in good working order;

Policies needs to maintained in good working order;

Level 4 Grid 32**B 043 Weighing Foreman's Office (Disused) <1987**

Understanding brick built office with board ceiling on light steel joists; contains 2 old desks, cupboard, basin and filing rack; wooden casement window and half glazed door to work floor; wooden floor; internal telephone system;



B037: garner - intake #1 on track 3.

Lower Scale Floor: Level 3**General****B 046 Roof**

Understanding see [B.21]

B 047 Floor

Understanding as [B.22] except that there are rectangular openings in the floor at 3.3 / 3.10/ 3.11 with spout guides (but no spouts) fitted below these; see [B.274-B.279]

Level 3	Grid 14	
B 055	Scale - Intake #2	1924
Understanding	see [B.054]	
Significance	see [B.035]	
Level 3	Grid 15	
B 058	Scale - Shipping #2	
Understanding	as [B.57]	
Significance	see [B.044]	
Level 3	Grid 18	
B 060	Scale - Shipping #4	
Understanding	as [B.57]	
Significance	see [B.044]	
Level 3	Grid 20	
B 053	Man elevator	1924
Understanding	see [B.7]	
Level 3	Grid 26	
B 054	Scale - Intake #1	1924
Understanding	scale with circular glass inspection hole; connecting rods on west side linking level 4 to bottom of scale (see [B.35]); capacity 50 tons;	
Significance	see [B.035]	
Level 3	Grid 27	
B 057	Scale - Shipping #1	
Understanding	very similar principles to [B.54] but a more modern scale and only 7 ton capacity	
Significance	see [B.044]	
Level 3	Grid 29	
B 052	Passenger lift	
Understanding	see [B.12]	
Level 3	Grid 31	
B 080	Hoist well	
Understanding	see [B.8]; as level 4 but no bridge	

Spout Floor: Level 2
General

B 065	Roof	1924
Understanding	see [B.21]	
B 066	Floor	1924
Understanding	concrete; numerous steel manhole covers; steel stair at 2.19 down to level 1C	
Significance	see [B.22]	
B 067	Steel framing	1924
Understanding	30cm square I-beams (larger than on level 3; additional steel upright in wall at 2.8 carries fire escape stair; some uprights marked with white 'finger pointers' to bins (see sketch plan); see [B.23]	



B066: steel stairway to cross belts on level 1C.

B 068 Light fittings

Understanding as [B.5] type A at 2.1 / 2.6 / 2.8 / 2.9 / 2.14 / 2.16 / 2.17 / 2.22 / 2.24 / 2.25 / 2.30 / 2.32

B 069 Bucket Elevators

Understanding as [B.42]

Significance see individual items

Issues see individual items

Policies see individual items

B 071 Passenger lift

Understanding as [B.12]

B 072 Man elevator

Understanding see [B.7]

B 075 Spouts

1924

Understanding spout rings at 2.3 / 2.6 / 2.7 / 2.10 / 2.11 / 2.14 / 2.15 / 2.18 / 2.26 / 2.27 and spouts at 2.6 / 2.7 / 2.14 / 2.15 / 2.26 / 2.27; spouts are carried on circular guide rail, and pulled round into position manually using a rope; articulated joint uses ball bearings to swivel; lower part of leg is supported on a jockey wheel;

Significance exceptional significance

Issues these items are bulky, very specific in the nature of their use, and unlikely to be able to be used in any way; they do however form an integral part of the system, and as a group have an almost sculptural quality to them;

Policies ideally at least one of the spouts would be retained, in association with Intake Elevator #2;

Level 2 Grid 01

B 081 Machine base

Understanding concrete base with 4 holding down bolts exposed; next to small metal chute in floor; possibly relates to one of the former elevators;

Issues function not known

Policies record in situ

Level 2 Grid 02

B 073 Dust extraction system

>1987

Understanding three systems appear to join at this level; see [B.002]

Policies see [B.002]; WPK to be permitted to remove on vacation of premises.

Level 2 Grid 04

B 076 Steel door to fire escape

Understanding see [B.10]; best access to roof of storage annexe.



B075: arrangement of spouts.



B081: machine base with holding down bolts.

B 102 Feeders - Cross belt #1 1924

Understanding there are two movable feeders - one at either end of each cross belt; runs on flanged wheels on cross belt frame; gets parked under opening in floor above to direct grain on to belt;

Significance see [B.101]

B 104 Bypass chutes 1924

Understanding steel chutes from floor above bypass the mezzanine to level 1 and the spouts below; there are 8 on west side at 1.2 / 1.6 / 1.10 / 1.14 / 1.18 / 1.22 / 1.26 / 1.30

B 266 Electric motor - Cross belt #2 1924

Understanding as [B.100]

Issues the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;

Policies at least one motor to be retained in working order with another available to be broken for spares;

B 267 Crossbelt #2 1924

Understanding see [B.101]

B 268 Feeders - Cross belt #2 1924

Understanding see [B.102]

B 269 Tripper - Cross belt #2 1924

Understanding see [B.103]

Level 1C Grids 02 to 30

B 101 Crossbelt #1 1924

Understanding there are two cross belts running the length of the working house on it's north/south axis; reversible - can run north to south or south to north; 1C2-1C30 cross belt #1: continuous rubber belt (Dunlop) supported on steel rollers carried in steel frame; driven by electric motor;

Significance considerable significance

Issues similar in nature to other horizontal belts on site; if Intake elevator #2 is to be retained in an integral form, including its belts, then there is less need to retain other horizontal belts;

Policies to be photographed in situ; could then be removed;

Level 1C Grid 10

B 103 Tripper - Cross belt #1 1924

Understanding one movable tripper per cross belt; runs on flanged wheels on cross belt frame; lifts belt and delivers grain to side chutes (on inner side) and then to bins below; see [B.101]

Level 1C Grid 12 & 24

B 105 Steel bridges to storage annexe 1924

Understanding there are 2 steel bridges within IC leading to steel doors and then to a second set of bridges crossing exterior space to storage annexe



B268: feeder on cross belt #2 after removal of belt.



B269: tripper on cross belt #2 after removal of belt.



B105: steel bridge to storage annexe.

Issues provide access to fire escape and therefore very important;

Level 1C **Grid 30**

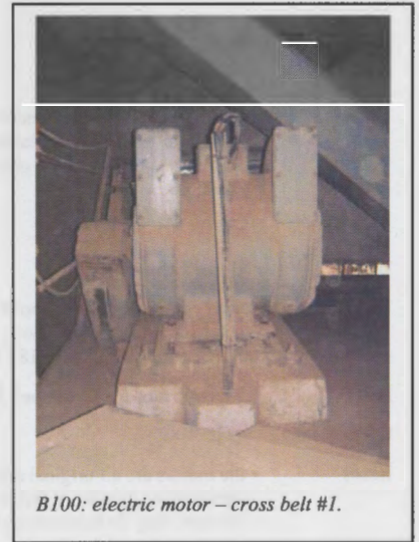
B 100 **Electric motor - Cross belt #1** **1924**

Understanding English Electric motor for cross belt

Significance considerable significance

Issues the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;

Policies at least one motor to be retained in working order with another available to be broken for spares;



B100: electric motor – cross belt #1.

Level 1B

B 106 **Annexe belts** **1924**

Understanding there are 3 'annexe belts' at 1B.6-8 / 1B.18-20 / 1B.25-28; similar in form and function to cross belts, but travelling across the building to the storage annexe; for information on trippers see [C.8]

Significance see [B.101]

Level 1B **Grids 18 to 20**

B 264 **Annexe belt** **1924**

Understanding see [B.106]



B106: annexe belts (seen in the storage annexe).

Level 1B **Grids 25 to 28**

B 265 **Annexe belt** **1924**

Understanding see [B.106]

Level 1A

B 083 **Floor**

Understanding circular manhole covers with safety grids below to bins; bin numbers marked in concrete next to covers; the grids were put in place by WPK after a man fell into a bin and died;

Significance see [B.22]

Issues see [B.22]

Policies see [B.22]



B083: steel manhole covers over working house bins.

B 089 **Signage**

Understanding as discussed before, signage is interesting for all sorts of reasons;

Significance considerable significance

Issues not necessary for all signage to be retained, and much of it is duplicated;

Policies photograph in situ and retain unique examples;

Issues provide access to fire escape and therefore very important;

Level 1C **Grid 30**

B 100 **Electric motor - Cross belt #1** **1924**

Understanding English Electric motor for cross belt

Significance considerable significance

Issues *the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;*

Policies at least one motor to be retained in working order with another available to be broken for spares;



B100: electric motor – cross belt #1.

Level 1B

B 106 **Annexe belts** **1924**

Understanding there are 3 'annexe belts' at 1B.6-8 / 1B.18-20 / 1B.25-28; similar in form and function to cross belts, but travelling across the building to the storage annexe; for information on trippers see [C.8]

Significance see [B.101]

Level 1B **Grids 18 to 20**

B 264 **Annexe belt** **1924**

Understanding see [B.106]

Level 1B **Grids 25 to 28**

B 265 **Annexe belt** **1924**

Understanding see [B.106]



B106: annexe belts (seen in the storage annexe).

Level 1A

B 083 **Floor**

Understanding circular manhole covers with safety grids below to bins; bin numbers marked in concrete next to covers; the grids were put in place by WPK after a man fell into a bin and died;

Significance see [B.22]

Issues see [B.22]

Policies see [B.22]

B 089 **Signage**

Understanding as discussed before, signage is interesting for all sorts of reasons;

Significance considerable significance

Issues not necessary for all signage to be retained, and much of it is duplicated;

Policies photograph in situ and retain unique examples;



B083: steel manhole covers over working house bins.

B 090 Spouts

Understanding each spout serves 4 bins; loose nozzles carried fixed to four wheeled trollies (x7); Spout rings at 1.2 / 1.3 / 1.6 / 1.7 / 1.10 / 1.11 1.14 / 1.15 / 1.18 / 1.19 / 1.22 1.23 / 1.26 / 1.27; Spouts at all of the above labelled R7 / S7 / R6 / S6 / R5 / S5 / R4 / S4 / R3 / S3 / R2 / S2 / R1 / S1; plus additional fixed spout at 1.31 direct to screenings bin;

Significance similar to [B.75]

Issues similar to [B.75]

Policies similar to [B.75]

B 099 Bosun's chair

Understanding three-wheeled hand winch apparatus with bosun's chair attached for silo inspection

Significance considerable significance

Issues easily portable and vulnerable to theft;

Policies both should be retained, with one being used during inspection and work on the site, and the other stored for future display;

Level 1A Grid 02

B 088 Dust extraction system

>1987

Understanding see [B.002]

Policies see [B.002]; WPK to be permitted to remove on vacation of premises;

Level 1A Grid 06

B 097 Compressed Air Line

?

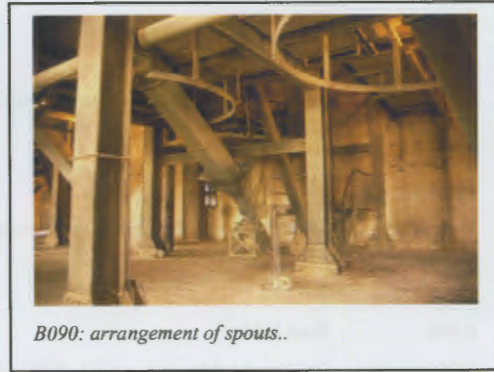
Understanding see [B.34]

Level 1A Grids 06 & 26

B 094 Fireman's pole

1924

Understanding from cross belt floor 1C to 1A only; see [B.27]



B090: arrangement of spouts..



B090: loose spout nozzle

Level 0B	Grid 15	
B 257	Walkway	?
Understanding	access walkway from platform at 0B15 to 0B9 under the spouts from the remaining cleaning machine - allows access to slide control for spouts	
Issues	this is a very shaky, insecure arrangement, and is almost certain to contravene any notions of health and safety;	
Level 0B	Grid 16	
B 150	Traces of former elevator route	1924
Understanding	see [B.135]	
B 151	Bricked up opening	
Understanding	small bricked up rectangular opening - another similar in 0B.15	
Issues	function not known	
Policies	record in situ	
B 152	Bin 37	1924
Understanding	half size bin; chute to working floor; see [B.110]	
B 153	Bin 38	1924
Understanding	half size bin; chute to working floor; see [B.110]	
Level 0B	Grid 20	
B 177	Conveyor	
Understanding	remains of Shipping Conveyor #4	
Issues	see [B.149]	
B 178	Steel footbridge	
Understanding	crosses over Shipping Conveyor #4	
B 179	Feeders	1924
Understanding	Two steel framed units mounted on remains of Shipping Conveyor #4	
B 180	PVC Pipe	
Understanding	suspended at head height; runs whole length of Shipping Gallery	
Level 0B	Grid 24	
B 138	Light signal	1924
Understanding	electric box with four pairs of red & green lights, one pair for each shipping belt; linked to loaders and to the foreman's office; approx. 2 minute time lag from when bins are closed to when the belt would be empty and stop loading; loaders and shipping belts are interlocked so in the event of a loader breakdown the belts stop automatically;	
Significance	exceptional significance; represents part of the link between elevator and quayside;	
Issues	now effectively de-contextualised;	
Policies	should be photographed and stored for possible future display	
B 181	Bin 40	1924
Understanding	full size bin; shares chute with Bins 41 to working floor; see [B.110]	
B 182	Bin 41	1924
Understanding	full size bin; shares chute with Bins 40 to working floor; see [B.110]	
B 183	Traces of former elevator route	1924
Understanding	see [B.135]	
Level 0B	Grid 32	
B 208	Bin 44	1924
Understanding	full size bin; chute to hopper grid in working floor; see [B.110]	

B 209	Steel ladder	1924
Understanding	access down to working floor through the end of the shipping gallery	
B 210	Signage	
Understanding	painted white on black numbers '3' & '4' being the numbers of the shipping belts	
Significance	modest significance	
Issues	likely to be lost as new uses are found	
Policies	photograph in situ	



B210: signage at southern end of shipping gallery.

Ground Floor: Level 0A

Ground level Grid 01

B 107 Tanks

Understanding	bulk liquid tanks - probably polythene on steel frames; used to spray insecticide onto wheat from the 1980s - not in use;	
Significance	none	
Issues	likelihood of hazardous chemicals;;	
Policies	need to be carefully disposed of;	

B 108 Steel door to track shed

Understanding	sliding door;
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B 109 Fire alarm lever

Understanding	has to be reset with a key; siren is outside the hydraulic accumulator house but used to be with Portnet;	
Issues	important for security and fire safety of building during change of use;	
Policies	needs to be maintained in good working order	

B 111 Bin 13

Understanding	half size bin; chute through wall to Track Shed; see [B.110]
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B 110 Bin 14

1924

Understanding	half size bin; rope operated hopper control at base; fixed spout to working floor; all the bins would have been operated by chains originally; note - these are concrete bins with steel bases; historic photographs show that the bins are of cast reinforced concrete, without steel framing;	
Significance	exceptional significance	
Issues	the bins are going to be highly problematic when it comes to re-using this site, yet they are at the core of it, not only in terms of the process, but in terms of how the elevator building has been constructed;	
Policies	it is almost inevitable that the working house bins will have to be demolished, and the upper levels supported in some other way, if his building is to be retained in a way that allows for its future conservation;	

Ground level Grid 02

B 112 Steel door and steps

1924

Understanding	leading to Dust Extraction and Drying house
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B 113 Bin 15

1924

Understanding	full size bin; used for dust; see [B.110]
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B 114 Control valves

?

Understanding	for pest control spray - see [B.107]
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B 115 Steel door

Understanding	leads to dust house
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B 116 Ducting

Understanding	to dust house
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Ground level	Grid 03	
B 117	Bin 30	
Understanding	full size bin; see [B.110]	
Ground level	Grid 04	
B 118	Bin 31	
Understanding	half size bin; see [B.110]	
B 119	Bin 32	1924
Understanding	half size bin; see [B.110]	
B 120	Access to sloping gantry	1924
Understanding	leads to shipping belts - see [D.*]; belts 3 & 4 on upper level [0B] and belts 1 & 2 on lower level [0]; belts 3 & 1 to the inside and belts 4 & 2 to the outside (closest to storage annexe)	
Significance	exceptional significance; the gantry is the link between the elevator and the quayside;	
Issues	much of the gantry has already been demolished; if there is any opportunity for interpretation it is likely to be on this short remnant of the sloping section;	
Policies	some section of the gantry should ideally be used to interpret its function - however this may have to be done through interpretation only; if the remaining sloping section of the gantry is ever removed, it would be important to represent in any new design the linkage between this corner of the elevator and the collier jetty itself;	
B 121	Steel ladder	1924
Understanding	to shipping gallery	
Ground level	Grid 05	
B 131	Elevator - Intake #3	1924
Understanding	with steel access ladder; see [B.13]	
B 132	Bin 11	1924
Understanding	half size bin; shares chute with Bin 12; see [B.110]	
B 133	Bin 12	1924
Understanding	half size bin; shares chute with Bin 11; see [B.110]	
Ground level	Grid 06	
B 129	Hopper Grid	1924
Understanding	see [B.128]	
B 130	Bin 16	1924
Understanding	full size bin; shares chute with Bin 29; see [B.110]	
Ground level	Grid 07	
B 127	Bin 29	1924
Understanding	full size bin; shares chute with Bin 16; see [B.110]	
B 128	Hopper Grid	1924
Understanding	allows grain to be directed from working house bins to the elevator boots in the basement;	
Issues	contributes to industrial nature of space, and also allows access through floor;	
Ground level	Grid 08	
B 125	Bin 33	1924
Understanding	half size bin; shares chute to working floor with Bin 34; see [B.110]	
B 126	Bin 34	1924
Understanding	half size bin; shares chute to working floor with Bin 33; see [B.110]	

Policies	record in situ	
B 144	Bin 28	1924
Understanding	half size bin; see [B.110]	
B 143	Manhole	
Understanding	steel manhole in the floor; see [B.142]	
Ground level	Grid 13	
B 162	Bin 07	1924
Understanding	half size bin; see [B.110]	
B 165	Opening in upper wall	
Understanding	inserted	
Issues	function not known	
B 164	Sack barrow	
Understanding	steel sack barrow with rubber tyres;	
Issues	vulnerable to theft; its 'rarity' value isn't known;	
Policies	should be retained for possible display / future interpretation	
B 163	Bagging machine	
Understanding	mobile unit on the working floor; comprises weighing, bagging and sewing machines;	
B 161	Elevator - Intake #2	1924
Understanding	with inspection ladder - ladder gives access to oil bearings on elevator guide rollers; see [B.13]	
B 166	Bin 08	1924
Understanding	half size bin; see [B.110]	
Ground level	Grid 14	
B 159	Hopper Grid	1924
Understanding	closed with steel cover; see [B.128]	
Issues	see [B.128]	
B 160	Bin 18	1924
Understanding	full size bin; see [B.110]	
Ground level	Grid 15	
B 155	Chute	
Understanding	from Bins 36, 37, 38 direct to basement	
B 156	Steel stairway	1924
Understanding	down to shipping tunnels level	
B 157	Hopper Grid	1924
Understanding	see [B.128]	
Significance	x	
Issues	see [B.128]	
Policies	x	
B 158	Bin 27	1924
Understanding	full size bin; chute to Hopper Grid [B.157] see [B.110]	

Ground level Grid 22**B 190 Bag lifter**

1

987

Understanding continuous belt raises filled bags from work floor through wall at 0.21 through to Track Shed; own electric motor; all on four wheel trolley; belongs to WPK

Significance modest significance

Policies record in situ with use of bag conveyors and sewing machines; see [B.184]; WPK to be permitted to remove on vacation of premises;



B190: bag lifter.

Ground level Grid 23**B 184 Bagging machine #1**

Understanding Avery Type 4904; comprises hopper, Avery scale and bag holder; max 100kg; mechanical counter; steel frame marked 'Lilleshall (British Steel)'; works on a similar principle to the large scales on levels 4 & 3 with the upper section being a pre-weigher and the lower part the scale;

Significance modest significance

Issues this is potentially worth keeping in the 'museum' environment, but otherwise probably unusable;

Policies record in situ with analysis of working practices; WPK to be permitted to remove on vacation of premises;

B 185 Bag conveyor #1

1987

Understanding part of bagging machine set up; continuous canvas belt over stainless steel rollers; foot operated switch acts on electric motor to move belt and/or operate the sewing m/c;

Policies see [B.184]; WPK to be permitted to remove on vacation of premises;

B 186 Bag sewing machine #1

Understanding PM No.4208 - original frame and machine mounting, but sewing machine itself is more modern; heavily modified

Policies see [B.184]; WPK to be permitted to remove on vacation of premises;



B186: bag sewing machine #1.

B 187 Bagging machine #2

Understanding see [B.184]

Policies see [B.184]; WPK to be permitted to remove on vacation of premises;

B 188 Bag conveyor #2

Understanding similar to [B.185] except that belt comprises series of timber slats;

Policies WPK to be permitted to remove on vacation of premises;

B 189 Bag sewing machine

Understanding as [B.186]

Policies WPK to be permitted to remove on vacation of premises;

B 191 Bin 25

1924

Understanding chute to Bagging machines; see [B.110]

Ground level Grid 25**B 196 Electrical box**

Understanding for 'Light Distribution'

B 197	Elevator - Intake #1	1924
Understanding	with inspection ladder; see [B.13]	
B 198	Bin 01	1924
Understanding	half size bin; chute to working floor; see [B.110]	
B 199	Bin 02	1924
Understanding	half size bin; chute to working floor; chute through wall to Track Shed; 2see [B.110]	
B 200	Scale	
Understanding	freestanding Avery scale	
Significance	modest significance	
Policies	WPK to be permitted to remove on vacation of premises;	
B 201	Scale	
Understanding	freestanding Avery scale with wheels	
Significance	modest significance	
Policies	WPK to be permitted to remove on vacation of premises;	
Ground level	Grid 26	
B 202	Bin 21	1924
Understanding	full size bin; shares a chute with Bin 20 to Hopper Grid at 0.27; see [B.110]	
B 203	Hopper Grid	1924
Understanding	closed with steel cover; see [B.128]	
Ground level	Grid 27	
B 204	Bin 24	1924
Understanding	chute to Bagging machine; chutes to Hopper Grid; see [B.110]	
B 205	Steel rails	
Understanding	aligned with and identical to [B.175]	
B 270	Stairs	1924
Understanding	concrete stairs carried on steel framing around the passenger lift inside what is in effect a full size bin	
Ground level	Grid 28	
B 206	Bin 42	1924
Understanding	half size bin; chute to Bagging machines; see [B.110]	
B 207	Bin 43	1924
Understanding	half size bin; chute to hopper grid in working floor; see [B.110]	
Ground level	Grid 29	
B 227	Fire alarm lever	
B 226	Glass bricks	1924
Understanding	allow light through from hydraulic accumulator house	
B 225	Passenger lift	
Understanding	see [B.12]	
Ground level	Grid 30	
B 220	Electrical box	
Understanding	for Lighting Distribution	
B 221	Bin 22	1924
Understanding	full size bin; see [B.110]	

B 222	Office	
Understanding	brick built; windows and doors to work floor; closed up document hatch in one window; wooden floor	
Significance	modest significance	
B 223	Wooden cupboard	
Understanding	houses a blackboard with permanently painted bin plan and chalked details of current contents	
Significance	exceptional significance	
Policies	should be retained for future display / interpretation	
B 224	Clock card machine	
Understanding	with holder for 150 clock cards	
Ground level	Grid 31	
B 212	Steel door	
Understanding	sliding door to outside south side of working house	
B 213	Signage	
Understanding	see [B.064]	
B 214	Signage	
Understanding	see [B.064]	
B 215	Bin 23	1924
Understanding	half size bin; this is the screenings (broken maize) bin; see [B.62] & [B.110]	
B 216	Fire main	1928
Understanding	foundry mark 'MS & Co. 1928'	
Significance	considerable significance; foundry mark indicates that it was installed after the elevator was built.	
Issues	this is possibly still going to be needed in the future - certainly in the short-term;	
B 217	Hoist well	1924
Understanding	floor is covered with wooden boards which are removed for access to basement; see [B.8]	
B 218	Hoist	
Understanding	lightweight wire hoist with circular container attached; hauled by hand for movement of "intake shunts" and other documentation	
B 219	Electrical cabling	
Ground level	Grid 32	
B 211	Signage	
Understanding	painted white on black numbers '1' & '2' being the numbers of the shipping belts	
Significance	modest significance	
Issues	likely to be lost as new uses are found	
Policies	photograph in situ	



Shipping Tunnels: Level -1

Level -1	Grid 04	
B 284	Concrete steps	1924
Understanding	five steps leading to upper level of sloping gantry	

B 285	Shipping tunnel 7A	1924
Understanding	serves bins 45-51, as this is the last tunnel it only serves the round bins immediately above it and none of the interstitial 'star' bins; note that there are no bins numbered 52-54.	
Significance	exceptional significance	
Issues	provides potential service access beneath this part of the site;	
Policies	one tunnel should perhaps be retained with the bin bases intact to make explicit the connection between the shipping side and the storage annexe	
B 286	Off-take spout	1924
Understanding	from shipping tunnel 7A; see [B.285]	
B 291	Steel ladder	
Understanding	to working floor	
B 292	Traces of former elevator route	
Understanding	traces of former elevator visible in roof - closed up; see [B.135]	
B 313	Tunnel belt	1924
Understanding	rubber belt on steel frame raised at inner end to feed delivery spout; see [B.316]	
B 314	Feeders	1924
Understanding	gathers grain onto belt from bins above; one is mobile and runs on flanged wheels along the steel frame, the other is fixed on the raised section; see [B.316]	
B 315	Bins	1924
Understanding	base of annexe bins; square openings directly above belt; hand wheel operates slide to release grain onto belt; see [B.110]	
Level -1	Grid 08	
B 287	Electric motor	1924
Understanding	supplied by English Electric	
Significance	considerable significance	
Issues	the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;	
Policies	at least one motor to be retained in working order with another available to be broken for spares;	
B 288	Elevator - Shipping #3	1924
Understanding	Shipping elevator S3 (here marked "7S"); see [B.13]	



B 289 **Shipping tunnel 7** **1924**
 Understanding serves bins 55-67 being the round bins above it and the star bins to the left; see [B.285]; note that there are no bins numbered 68-74.

B 290 **Electric motor** **1924**
 Understanding supplied by English Electric
 Significance considerable significance
 Issues the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;
 Policies at least one motor to be retained in working order with another available to be broken for spares;

B 316 **Tunnel belt** **1924**
 Understanding rubber belt on steel frame (not raised at end)
 Significance exceptional significance
 Policies if tunnel 7 is to be retained in working order then this belt should be retained intact

B 317 **Feeder** **1924**
 Understanding gathers grain onto belt from bins above; is mobile and runs on flanged wheels along the steel frame; see [B.316]

B 318 **Bins** **1924**
 Understanding base of annexe bins; square openings directly above belt for round bins, and offset openings from left/north side for star bins; hand wheel operates slide to release grain onto belt; see [B.110]

Level -1 **Grid 12**

B 293 **Steel ladder**

Understanding to working floor

B 294 **Traces of former elevator route**

Understanding traces of former elevator visible in roof - closed up

Significance see [B.135]

B 295 **Electric motor** **1924**

Understanding supplied by English Electric - similar to B.287 but reversed configuration

Significance considerable significance

Issues the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;

Policies at least one motor to be retained in working order with another available to be broken for spares;

Level -1 **Grid 15**

B 301 **Steel framing** **>1927**

Understanding steel platform extension from shipping tunnel floor, with loose concrete slabs; function unknown; steel from Vereeniging - inserted after original build.

Significance modest significance

Policies record in situ

Level -1 **Grid 16**

B 296 **Off-take spout** **1924**

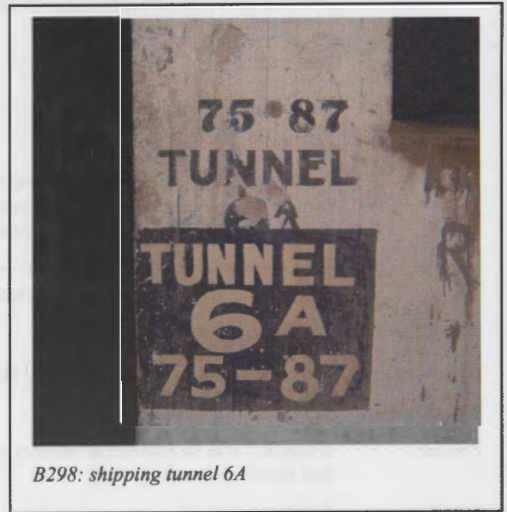
Understanding from shipping tunnel 6A

Significance see [B.285]



B289: shipping tunnel 7

B 297	Steel steps	
Understanding	down to basement at BA15	
B 298	Shipping tunnel 6A	1924
Understanding	serves bins 75-87 being the round bins above it and the star bins to the left; see [B.285]; note that there are no bins numbered 88-94.	
B 299	Void space	
Understanding	against outside wall	
Significance	not known	
Issues	function not known	
Policies	record in situ	
B 300	Elevator - Shipping #2	1924
Understanding	Shipping elevator S2 (here marked "6S")	
Significance	see [B.13]	
B 302	Steel steps	
Understanding	leading up to work floor	
B 319	Tunnel belt	1924
Understanding	rubber belt on steel frame raised at inner end to feed delivery spout	
Significance	see [B.316]	
B 320	Feeders	1924
Understanding	gathers grain onto belt from bins above; one is mobile and runs on flanged wheels along the steel frame, the other is fixed on the raised section	
Significance	see [B.316]	
B 321	Bins	1924
Understanding	base of annexe bins; square openings directly above belt for round bins, and offset openings from left/north side for star bins; hand wheel operates slide to release grain onto belt; see [B.110]	
Level -1	Grid 20	
B 303	Void space	
Understanding	against outside wall - function not known; similar to but not the same as B.299; see [B.299]	
B 304	Off-take spout	
Understanding	from shipping tunnel 6; see [B.285]	
B 305	Electric motor	1924
Understanding	supplied by English Electric - as B.287	
Significance	considerable significance	
Issues	the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;	
Policies	at least one motor to be retained in working order with another available to be broken for spares;	



B298: shipping tunnel 6A

B 306 Shipping tunnel 6 1924

Understanding serves bins 95-107 being the round bins above it and the star bins to the left; see [B.285]; note that there are no bins numbered 108-114.

B 322 Tunnel belt 1924

Understanding rubber belt on steel frame raised at inner end to feed delivery spout; see [B.316]

B 323 Feeders 1924

Understanding gathers grain onto belt from bins above; one is mobile and runs on flanged wheels along the steel frame, the other is fixed on the raised section; see [B.316]

B 324 Bins 1924

Understanding base of annexe bins; square openings directly above belt for round bins, and offset openings from left/north side for star bins; hand wheel operates slide to release grain onto belt; see [B.110]

Level -1 Grid 24

B 307 Electric motor 1924

Understanding supplied by English Electric - as B.290

Significance considerable significance

Issues the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;

Policies at least one motor to be retained in working order with another available to be broken for spares;

B 308 Shipping tunnel 5A 1924

Understanding serves bins 115-127 being the round bins above it and the star bins to the left; see [B.285]; note that there are no bins numbered 128-134.

B 325 Tunnel belt 1924

Understanding rubber belt on steel frame (not raised at end); see [B.316]

B 326 Feeder 1924

Understanding gathers grain onto belt from bins above; is mobile and runs on flanged wheels along the steel frame; see [B.316]

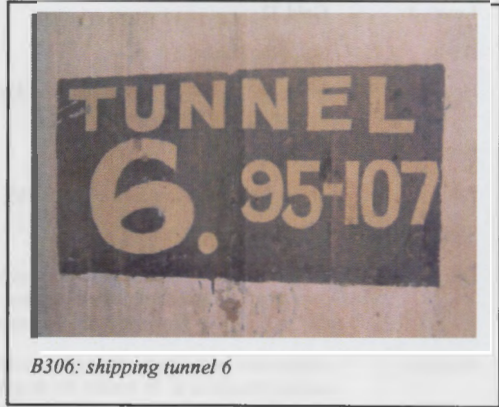
B 327 Bins 1924

Understanding base of annexe bins; square openings directly above belt for round bins, and offset openings from left/north side for start bins; hand wheel operates slide to release grain onto belt; see [B.110]

Level -1 Grid 28

B 309 Elevator - Shipping #1 1924

Understanding Shipping elevator S1 (here marked "5S"); see [B.13]



B306: shipping tunnel 6



B308: shipping tunnel 5A

Intake Tunnels and Basement Level -2

General

B 251	Intake tunnel #1	1
	924	
Understanding	see [B.237]; from track 3 to intake elevator 1	
B 253	Dust extraction system	
Understanding	see [B.239]	
Policies	WPK to be permitted to remove on vacation of premises;	
B 254	Air vent	
Understanding	see [B.240]	
B 255	Fumigation pill delivery system	
Understanding	see [B.241]	
B 256	Electric motor	
Understanding	see [B.242] supplied by English Electric Co.; chain driven	
Significance	considerable significance	
Issues	the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;	
Policies	at least one motor to be retained in working order with another available to be broken for spares;	
Level -2	Grid 02	
B 228	Machine base	
Understanding	concrete base on floor with holding down bolts	
Issues	function not known	
Policies	record in situ	
Level -2	Grid 05	
B 229	Elevator - Intake #3	1924
Understanding	boot of elevator	
Significance	see [B.13]	
B 230	Intake tunnel #3	1924
Understanding	see [B.237]; from track 2 to intake elevator 3	
Significance	see [B.013]	
B 231	Chute	1924
Understanding	chute from hopper grid in floor of 0.6	
Level -2	Grid 08	
B 232	Elevator - Shipping #3	1924
Understanding	see [B.13]	
B 233	Chute	1924
Understanding	from hopper grid at 0.7	
Level -2	Grid 09	
B 234	Chute	
Understanding	2 x chutes from cleaning machine on working floor;	



B251: bottom of hopper on track 3 serving intake elevator #1.

Level -2	Grid 11	
B 235	Steel pipe	
Understanding	from shipping tunnel - ends in a flat spout	
Level -2	Grid 13	
B 236	Elevator - Intake #2	1924
Understanding	boot of elevator	
Significance	see [B.13]	
B 237	Intake tunnel #2	1924
Understanding	see [B.237]; from track 4 to intake elevator 2; houses endless rubber belt on steel rollers carried in steel frame; has its own electric motor;	
Significance	see [B.237]	
B 238	Hopper - Intake #2	1924
Understanding	gear wheel opens and closes the hopper from below track 4	
Significance	see [A.041]	
B 239	Dust extraction system	
Understanding	cowl over belt	
Policies	WPK to be permitted to remove on vacation of premises;	
B 240	Air vent	
Understanding	possibly original - 3 openings	
B 241	Fumigation pill delivery system	>1987
Understanding	glass tube filled with small pebbles - gauge at one end	
B 242	Electric motor	1924
Understanding	supplied by English Electric Co.; chain driven	
Significance	considerable significance	
Issues	the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;	
Policies	at least one motor to be retained in working order with another available to be broken for spares;	
Level -2	Grid 15	
B 243	Steel stairway	?
Understanding	leads up to shipping tunnels; foundry mark 'Vereeniging'; it is thus unlikely to be part of the original build, unless it was a local modification; (Vereeniging Steel first produced 1912 - source: Industrial South Africa; 1967; ed. Herd, N; Johannesburg, Seal Publishing; p.300)	
Significance	unclear	
Issues	not enough known about this	
Policies	record in situ	
Level -2	Grid 16	
B 244	Elevator - Shipping #2	1924
Understanding	boot of elevator	
Significance	see [B.13]	
B 245	Electrical box	
Understanding	for 'Slide Control'	
Level -2	Grid 17	
B 246	Elevator - Shipping #4	1924
Understanding	boot of elevator; chute attached runs from hopper grid at 0.18	
Significance	see [B.13]	

B 247 Intake tunnel (closed) 1924
 Understanding this tunnel was presumably closed up when the tippler on line 1 was removed;

Level -2 Grid 23

B 248 Dust extraction system

Understanding steel pipe from shipping tunnels level to dust extraction systems

Policies WPK to be permitted to remove on vacation of premises;

Level -2 Grid 25

B 250 Elevator - Intake #1

1

924

Understanding boot of elevator; chute from hopper grid at 0.26

Significance see [B.13]

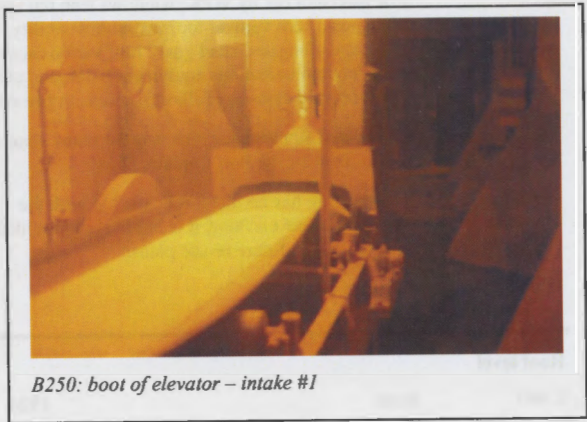
B 249 Electrical box

Understanding for conveyor

B 252 Hopper - Intake #2

Understanding see [B.238]

Level -2 Grid 28



B250: boot of elevator – intake #1

B 258 Elevator - Shipping #1 1924

Understanding boot of elevator; chutes from 0.24, 0.27, 0.32

Significance see [B.13]

Level -2 Grid 29

B 259 Passenger lift

Understanding see [B.12]; lowest level served by lift at a mezzanine level on steel stairway

Significance see [B.12]

Level -2 Grid 30

B 260 Stairs 1924

Understanding concrete steps up to lift and working floor

B 261 Electric pump

Understanding to pump flood water from basement

Issues likely to be needed in the short term and should be retained for practical purposes;

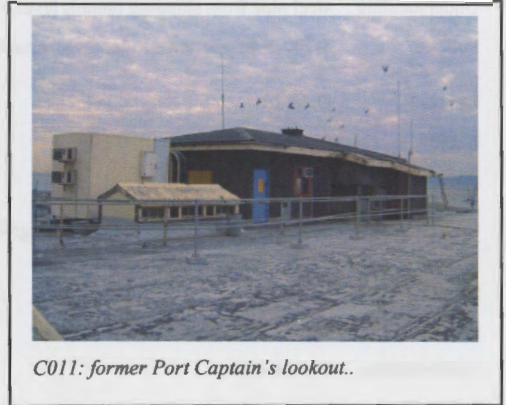
B 262 Electrical box

Understanding for 'Light Distribution'

C - Storage Annexe

Above Roof

C 011	Former Port Captain's Lookout	1930s
Understanding	timber framed structure clad in corrugated cast iron; now used as a bar by WPK; windows lean out approx. 20 degrees from vertical for maximum visibility; lined with insulation tiles; steel guard rail; various aerials and telecommunications equipment belonging to MTN, Vodacom and Ericson (Telkom); access to fire escape	
Significance	exceptional significance; this was for many years used as a lookout by the Port Captain;	
Issues	this structure has no direct relationship with the operation of the elevator; it is lightweight not likely to have a place in future re-use plans;	
Policies	record in situ	



C011: former Port Captain's lookout.

Roof level

C 001	Roof	1924
Understanding	flat concrete slabs carried on steel joists; the joists are laid on the E/W axis of the building and create 20 sections; there are raised (clerestorey) skylights in the roof (see [C.3])	
C 002	Steel framing	1924
Understanding	steel frame above massed concrete bins creates 7x5=35 bays; within that there is a steel framed mezzanine level comprising a pedestrian bridge along entire length of west wall (grid 1, 8, 15, 21, 29) and three bridges carrying annexe belts [B.106]; pedestrian bridge as doors to working house level 1 (grid 8, 21) and steel steps to main floor (grid 8, 14, 21, 28) and steel steps up to roof (grid 13)	
C 003	Skylights	
Understanding	six raised timber framed clerestorey rooflights (grid 9, 11, 13, 23, 25, 27) with steel windows; bottom hinged casements operated from below by ropes	
Significance	modest significance	
Issues	are functional and contribute to industrial nature of the site;	
C 004	Windows	
C 005	Light fittings	1924
Understanding	as type 'A'; see [B.5]	



C003: storage annexe skylights.

Level 1B

C 008	Tripper	1924
Understanding	two principle differences between these trippers and those on the cross belts, (1) these only have to work in one direction and are therefore simpler; (2) they have a valve which allows the grown to be thrown to left or right of the belt;	
Significance	considerable significance	
Issues	there are various types of tripper on site; it is not going to be practical to keep one of each unique type;	
Policies	if trippers are being retained elsewhere on site then those in the storage annexe could be allowed to go.	

Level 1A**C 007 Control cabin**

Understanding sheet steel cabin with internal phone system and desk

C 009 Spouts 1924

Understanding fixed steel spouts to all bins - each one is clearly numbered

Significance modest significance

Issues issues similar to B.075

C 010 Bosun's chair

Understanding see [B.099]



C007: storage annex control cabin.

D - Conveyor Gallery**D 001 Gallery 1924**

Understanding steel frame fixed to collier jetty; carries conveyor gallery at height of approx 7m above ground; floor of gallery is cast concrete slabs; steel superstructure was previously covered in corrugated iron sheeting but this has been mostly removed; steel windows; carried four shipping conveyors - each with its own tripper which directed grain to spouts located under centreline of structure and then into the loaders; there are 21 sections of the gallery remaining on the jetty; 2nd from landward end has dust cyclone equipment; steel work carries foundry mark "Cargo Fleet England"; some remedial work being carried out to make the structure safe; each of the 21 sections seen at ground level is divided into 4 smaller sections at the gallery level

Significance exceptional significance - this is the critical link between the elevator and the ships; of particular value in demonstrating the shipping function of the elevator, in contrast to the intake function demonstrated by the track shed; also has landmark value and contributes to industrial nature of area and working harbour 'feel';

Issues the structure has become seriously corroded over the years, with the superstructure deteriorating quickly since the cladding was removed a few years ago; the working belts have all been removed; concept proposals to hand by Evon Smuts, Architects, for (a) 19 duplexes or 38 rooms, or (b) hotel, or (c) exhibition space; all these proposals recognise the basic form of the existing structure, while attempting to re-work it into an economically sustainable use; concerns around possible "re-creation" of the two remaining loaders to form stairs etc;

Policies should be conserved and retained as far as possible; possible future designs/uses to take into consideration the fact that what we see now is a light, airy, structure, but that until 1995 it was wholly clad in grey painted corrugated iron;

D 002 Rails 1924

Understanding only the eastern side of the collier jetty was used for loading from the grain elevator; there are 6 pairs of steel rails inset either side of the collier jetty for rail transport; 2 pairs make one track; looking seaward these pairs are numbered here as 1-6 on the western side of the jetty and 7-12 on the eastern side; 1 & 4 presently carry the two remaining loaders - but it is important to note that these loaders were only recently removed to this side of the gallery - previously cranes would have worked this side; all four of the loaders originally ran on 9 & 12; rail pairs 2 & 3 and 10 & 11 thus ran beneath the cranes and loaders working on the jetty; on the eastern side the height clearance would not have allowed the bulk grain trucks to operate - only the DZ trucks carrying grain in bags would have been able to operate at the quayside; the other rail pairs 5 & 6 and 7 & 8 would have been used when shunting empty trucks through the elevator and other areas; in the days before ships with wing tanks were used, bags of grain were loaded on top of loose bulk grain to help stabilise the load whilst at sea;

Significance exceptional significance

Issues rails tend to be a nuisance even when set flush into the road surface as these are; however, the rails are important in that they emphasise the connections between the elevator and the interior, and we must remember that all the other related railway infrastructure has already been removed;

Policies at the very least, the rail set on which the loaders are to stand must be retained; the location other rails should be reflected in design for the jetty;

D 003	Sloping Gantry	1924
Understanding	this is the landward section of [D.1] which runs on an incline from the shipping side of the working house at [B.120] towards the collier jetty; corrugated asbestos roof and corrugated iron cladding still in place; currently six sections remaining	
Issues	importance of line of sight with remaining part of gantry; permission already given by SAHRA to demolish two seaward sections;	
Policies	demolition of the remaining portion of the sloping section of the gantry should be allowed on condition that a visual and clearly legible connection remains between the working house and the seaward end of the collier jetty.	

E - Ship Loaders

E 001	Loader	1924
Understanding	steel structure carried on 8 flanged wheels; moves under its own power using electric power supplied by overhead lines; lower section unclad to allow passage of railway trucks beneath [see D.03]; mid-section clad in corrugated iron sheeting; upper section clad in sheet steel; all painted grey; electric motors; shipping spout has been removed since last used in 1995; iron weights laying on base section; box shape to rear of unit contains intake for grain dropped from conveyor gallery spouts; internal belt and bucket elevator system to loading spout; (see 1995 video and photographs); steel structure carried on 8 flanged wheels; moves under its own power using electric power supplied by overhead lines; lower section unclad to allow passage of railway trucks beneath [see D.03]; mid-section clad in corrugated iron sheeting; upper section clad in sheet steel; all painted grey; electric motors; shipping spout has been removed since last used in 1995; iron weights laying on base section; box shape to rear of unit	
Significance	exceptional significance; see [D.001]	
Issues	not in working order; could be part of static display; see [D.001]	
Policies	the remaining two loaders should be conserved as far as possible in their present form; though it may be necessary to remove parts or all of the internal workings, efforts should be made to retain the exterior appearance as far as possible;	
E 002	Loader	1924
Understanding	see [E.001]	

F - Accumulator House

Roof		
F 001	Structure	
Understanding	Double volume cast concrete structure 5 bays wide x 1 wide - containing 2 x hydraulic accumulators for lifting the railway wagons to discharge the grain	
Policies	see [F.006]	
F 002	Roof structure	
Understanding	steel 'L' framing of 2 bays in saw tooth pattern	
Policies	see [F.006]	
F 003	Roof material	
Understanding	steel IBR sheet	
Policies	see [F.006]	
F 004	Roof glazing	
Understanding	heavy wire reinforced fixed glazing in steel frames on S facing vertical side of saw tooth roofing; some broken and closed up with steel plate	

Policies see [F.006]

Ground

F 005 North wall

Understanding cast concrete - has glazed blocks through to Working House; see [F.006]

F 006 East wall

Understanding shuttered concrete - 3 x steel windows at upper level with one closest to Working House being pierced by ventilator F17; each window 4 panes across x 6 high with rows 4 & 5 forming an opening section with a central tilt; double door to accumulators

Significance considerable significance

Issues large horizontal cracks in main structural beam visible from outside

Policies the important thing here is the accumulators rather than the building housing them;

F 007 South wall

Understanding has single steel framed window at upper level - 6 panes across x 4 high with middle 4 x 2 section being opened on central pivot.

Policies see [F.006]

F 008 Water Tank

Understanding steel, painted grey, yellow paint marking 'PM1004'

Significance part of accumulator system

Policies see [F.015]

F 009 Hydraulic main

Understanding feeds both pumps via a valve mechanism; then both tables and return to tank

Significance exceptional significance

Issues integral part of the accumulator system

Policies should be retained as part of the overall system

F 010 Electric Motor (S)

Understanding manufacturer's name in casting: English Electric / Supplier's name plate: Henry Simon Ltd., Manchester. Machine number N29045, Output 60HP, Temp Rise 49oC, Revs 485 / Number plate: 507

Significance considerable significance

Issues the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;

Policies at least one motor to be retained in working order with another available to be broken for spares;

F 011 Pump (S)

Understanding manufacturer's name in casting: Fielding and Platt, Gloucester, England; see [F.015]

F 012 Accumulator table (S)

Understanding guide pylons marked 'Barrow Steel HRR BS SAH21'; see [015]

F 013 Electric Motor (N)

Understanding manufacturer's name in casting: English Electric / Supplier's name plate: Henry Simon Ltd., Manchester. Machine number N29045, Output 60HP, Temp Rise 49oC, Revs 485 / Number plate: 507

Significance considerable significance

Issues the motors are all original and in good working order; demonstrate transfer of technology, but not unique to this site; they do however add to context;

Policies at least one motor to be retained in working order with another available to be broken for spares;

F 014 Pump (N)

Understanding manufacturer's name in casting: Fielding and Platt, Gloucester, England; see [F.015]

F 015 Accumulator table (N)

Understanding	guide pylons marked 'Barrow Steel HRR BS SAH21'; yellow paint marking 'PM1003'; the table comprises a superstructure of three steel pylons which provide a guide support for the vertical movement of the table itself; this is a steel drum, filled with concrete and scrap metal; the table is raised by hydraulic pressure, and as that pressure is removed, the table drops under its own weight, raising the tippler tables in the track shed; this is the same principle on which Tower Bridge operates in London; modern hydraulic systems use oil, rather than water;
Significance	the accumulators are of considerable significance as they demonstrate an aspect of technological innovation that has since become redundant;
Issues	now thought to be quite rare; no other known working examples in Cape Town, though enquiries should be made of Portnet and the railways; important that the necessary pumps and motors are retained with the accumulators; it will be very difficult to operate this machinery once the skills of the existing staff are lost, and when the machinery is allowed to stand idle and deteriorate; however, regularly running of the machinery will also lead to breakdowns for which neither the skills nor the spares are available;
Policies	one of the accumulators should be retained in working / workable order, and with appropriate display / interpretation; vital to retain narrative link between hydraulic accumulators and operation of the remaining tippler; second accumulator might need to be cannibalised to provide spares for first; a lot of thought needs to go into the conservation of these units, and mechanical engineers will need to be consulted.

F 016 Fire extinguisher box

Understanding	glass fibre box to hold fire extinguisher, marked SAR/SAS, contains modern extinguisher.
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F 017 Ventilation fan

Understanding	probably not original
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F 018 Electrical switchgear

Understanding	modern
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F 019 Set of tools (S)

Understanding	collection of heavy spanners and wrenches
Significance	considerable significance
Issues	highly vulnerable to theft
Policies	should be retained for future display / interpretation

F 020 Set of tools (N)

Understanding	collection of heavy spanners and wrenches
Significance	considerable significance
Issues	highly vulnerable to theft
Policies	should be retained for future display / interpretation

G - Electricity Sub-Station**G 001 Electricity sub-station 1924**

Understanding	Cast concrete; all original equipment has been stripped and replaced by more recent switchgear, and it is still in use for the moment; was built specifically for the elevator due to inadequate power being available from the existing system;
Significance	considerable significance
Issues	this is part of the original provision for the elevator; will soon become redundant; presents limited opportunities for re-use as it has no windows;
Policies	it has been agreed that this building can be demolished

H - Dust Cyclone

H 001	Dust extraction system	1972
Understanding	The dust house and fan house were extensively refitted in 1972 by Simon-MacForman of Johannesburg. The refit was extensively documented with plans and an operating manual. Various items including switchgear, rotary seals and dust cyclones are to be removed by WPK when they vacate the premises.	
Significance	little significance	
Issues	the form and proportions of the dust house are similar to that of the working house, but on a smaller scale; it has been suggested that the dust house would make an appropriate venue in which to display and interpretive (working) model of the elevator.	
Policies	WPK to be allowed to remove the equipment required by them; demolition should not be approved.	

K - Fire hydrant pump house

K 001	Fire hydrant pump house	1966
Understanding	Single storey small brick structure with flat concrete roof; contains electrical installation to pump water in event of a fire in the elevator	
Issues	needs clarification as to whether it is necessary for future fire protection of the site;	
Policies	this structure should NOT be demolished unless other fire protection has been provided to the upper levels of the elevator.	

L - Men's toilet

L 001	Men's toilet	1966
Understanding	Single storey small brick structure with steel windows; corrugated iron roof; secured with steel gate.	
Significance	see [L.001]	
Policies	to be demolished	

M - Men's toilet

M 001	Men's toilet	1966
Understanding	Single storey small brick structure with steel windows and corrugated iron roof. Signs painted "Whites Only" on exterior wall. Secured by padlocked gate.	
Significance	vivid reminder of the political regime operating in the 1960s when these buildings were erected;	
Issues	apartheid era signage is now rare and marketable; in this case it is painted on the brickwork and not easily removable;	
Policies	record signage in situ; to be demolished	

N - Oil Store

N 001	Oil Store	1966
Understanding	Single storey brick structure with concrete roof and steel doors.	
Policies	to be demolished	

P - Mess Room

P 001	Mess Room	1966
Understanding	Single storey brick building with corrugated asbestos roof; used by 'non-European' staff; comprises toilets and showers, a locker / changing room, and mess / kitchen area.	
Issues	ablution facilities are likely to be of short-term use;	
Policies	to be demolished	

Q - Workshops

Q 001	Workshops	1966
Understanding	Single storey brick structure with corrugated asbestos roof; comprises workshop, stores and garage.	
Policies	to be demolished	

R - Car-port

R 001	Car-port	1966
Understanding	Single storey timber frame structure clad in corrugated iron and open on the east side; provides covered parking for four vehicles	
Policies	to be demolished	

S - Offices

S 001	Offices & mess facilities	1966
Understanding	Two storey brick structure with corrugated asbestos roof and steel windows; built from plans dated 21/04/1966 - mess accom. For 38 staff - note these would all have been white - 'non-Europeans' were, and still are, provided with separate facilities [P]; ground floor comprises locker room, shower & toilets, pay office, clock room for non-whites, grain grader's office; upper floor comprises kitchen / mess, various offices.	
Significance	minimal	
Issues	likely to be useful in the short term;	
Policies	will be used as site facilities for contractors and others in short term, then likely to be demolished.	

T - Documentation

T 001	Documentation
Understanding	Miscellaneous plans and drawings (stored in office building).
Significance	Varies - some are likely to prove critical in understanding operation of items such as the tippers.
Issues	vulnerable to water, insect and rodent damage;
Policies	all documentation NOT specific to WPK operation to be retained for future interpretation and archiving; needs to be integrated with material previously held by Portnet, and now with the V&AW.
T 002	Documentation
Understanding	pile of badly damaged plans (stored in workshops) from Simon MacForman of Johannesburg, dated 1971 - all relate to major refit of dust extraction and broken grain handling systems; see [T.001].

Appendix D

Country grain elevators: site register, 2001

The following illustrated site register, of the country grain elevators built by South African Railways and Harbours in 1923 / 1924, is based on fieldwork undertaken during November 2001.

Appendix D

Country grain elevators: site register, 2001

The following illustrated site register, of the country grain elevators built by South African Railways and Harbours in 1923 / 1924, is based on fieldwork undertaken during November 2001.

Appendix D

Current name	ARLINGTON	Original name	LINDLEY ROAD	
Short reference	LINDLE	Latitude	-27.882897	Longitude 27.91699
Type	Country	Size	6	Railside elevation South
Date of visit	27-11-2001	Group	A	Division 5
Site owner	SenWes [Sentrale Wes Ko-op]		In use / derelict	Demolished
Storage capacity (tons)	4,000	Working houses	2	Intake hoppers 4
Main bins:	8	Interstitial bins	3	Loading out bins 32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins 80
Engine	drying oven installed here		Engine #	not known
Bag store	in situ	Office	removed	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos SAR&H Magazine - 1923 p.441 - under construction

Manager: Henrik Lottering.

5 new concrete bins are worked in conjunction with the original elevator; these lie to the west of the site and are connected at headworks level by belt conveyor in an overhead gantry, and at the lower level through some corrugated iron sheds.

The scale in the bag store has the same frame as that seen at Frankfort, but has been repainted, and the bag counter is made by 'Durant Mfg. Co., Milwaukee, Wis.'

The man lift was not working. There are two additional elevators installed for the dryers.

A crude wooden model of the entire complex is stored in the control cabin.

The engine house roof and eastern end wall have been removed, and an additional dryer installed in its place.

The LOBs are all in use as original.

Previously known as Lindley Road.

ARLINGTON

LINDLE-0068

View from North

Additional height of Working House 'A' accomodates the drying oven.

A belt conveyor to the right connects to the modern facility.



ARLINGTON

LINDLE-0069

View from North-East
'Bellman' hangar seen in the foreground.



ARLINGTON

LINDLE-0075

View from South
Green steelwork is the dryer installed next to engine house.



ARLINGTON

LINDLE-0076

View from South
New bins adjoining the old elevator.



Current name	BALFOUR	Original name	BALFOUR	
Short reference	BALFOR	Latitude	-25.65665	Longitude 28.58116
Type	Country	Size	5	Railside elevation East
Date of visit	24-11-2001	Group	D	Division 7
Site owner	OTK [Oos Transvaal Ko-op]		In use / derelict	In use
Storage capacity (tons)	3,000	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins 80
Engine	not known			Engine # not known
Bag store	removed	Office	removed	
Generic drawings	SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4			
Archival photos	none			

The old elevator has been heavily modified and integrated into the modern silo complex.
This is one of the two elevators that Willie de Jager worked at.

BALFOUR**BALFOR-0004**

View from West

Looking from left to right (S to N):

5 new concrete silos / new working house / original working house / 3 pairs of original silos / 9 new concrete silos

**BALFOUR****BALFOR-0010**

View from South-East

The LOB headworks have been removed, and the main headworks extended to service the additional new bins.

The original working house is connected to the new working house.



Appendix D

Current name	BETHAL	Original name	BETHAL		
Short reference	BETHAL	Latitude	-26.433962	Longitude	29.479911
Type	Country	Size	7	Railside elevation	North
Date of visit	22-11-2001	Group	D	Division	7
Site owner	OTK [Oos Transvaal Ko-op]			In use / derelict	Derelict
Storage capacity (tons)	4,800	Working houses	2	Intake hoppers	4
Main bins:	10	Interstitial bins	4	Loading out bins	32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins	80
Engine	partly broken up			Engine #	plates removed
Bag store	removed	Office	removed		
Generic drawings	SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18				
Archival photos	none				

All machinery has been removed.

BETHAL

BETHAL-0019

View from North

There is a large modern OTK complex adjacent to this site.



BETHAL

BETHAL-0020

View from North



BETHAL

BETHAL-0022

View from South-East



BETHAL

BETHAL-0023

View from South-West

Roof has been removed from road intake shed.



BETHAL

BETHAL-0024

View from West

The roof has been removed from engine house, though the remains of both engines remain in place.



BETHAL

BETHAL-0025

View from West

The roof has been removed from engine house, though the remains of both engines remain in place.



Appendix D

Current name	BETHLEHEM	Original name	BETHLEHEM	
Short reference	BETHLE	Latitude	-28.223750	Longitude 28.304446
Type	Country	Size	7	Railside elevation West
Date of visit	27-11-2001	Group	A	Division 5
Site owner	OTK [Sentraal Oos Ko-op]		In use / derelict	In use
Storage capacity (tons)	4,800	Working houses	2	Intake hoppers 4
Main bins:	10	Interstitial bins	4	Loading out bins 32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins 80
Engine	removed			Engine # not known
Bag store	removed	Office	removed	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos none

There is a single large electric motor powering each elevator through the original rope drives.

Each belt has a direct drive electric motors.

There is a new loading out hopper to the road intake shed.

Cooling fans have been installed in the lower parts of the bins.

Grain drying ovens once installed on the base of the bag store have been subsequently removed.

The remains of the old cleaning machines are laying outside the building.

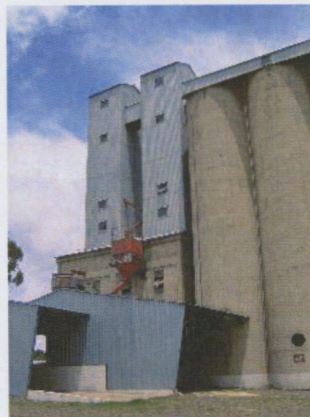
OTH have large modern adjacent complex.

BETHLEHEM

BETHLE-0051

View from East

The loading out hopper above the road intake shed (red).



Appendix D

BETHLEHEM

BETHLE-0052

View from South-West
Bag hopper adjacent to road intake sheds.



BETHLEHEM

BETHLE-0053

View from South-West



BETHLEHEM

BETHLE-0055

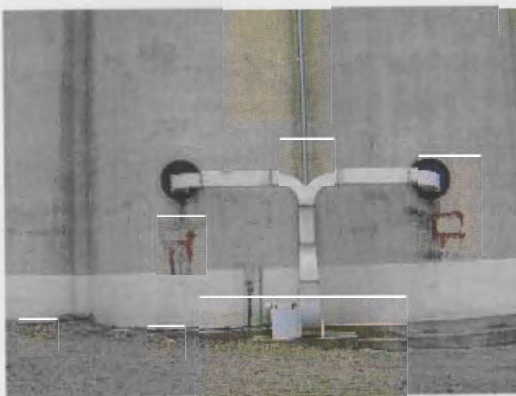
View from South-West
Drakensberg Ko-op signage on S side of 'A' elevator.



BETHLEHEM

BETHLE-0057

View from East
installation for cooling fans into bins.



PHOTOGRAPHED BY: [illegible] DATE: [illegible]
DESCRIPTION: [illegible]



PHOTOGRAPHED BY: [illegible] DATE: [illegible]
DESCRIPTION: [illegible]



Appendix D

Current name	BOTHAVILLE	Original name	BOTHAVILLE	
Short reference	BOTHAV	Latitude	-27.395353	Longitude 26.614885
Type	Country	Size	6	Railside elevation South
Date of visit	20-11-2001	Group	C	Division 5
Site owner	SenWes [Sentrale Wes Ko-op]		In use / derelict	In use
Storage capacity (tons)	4,000	Working houses	2	Intake hoppers 4
Main bins:	8	Interstitial bins	3	Loading out bins 32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins 80
Engine	removed - all machinery independently powered		Engine #	not known
Bag store	in situ	Office	in situ	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos none

The LOBs are not in use as there is no longer rail access to this site.

All belts and ropes have been removed.

New steel stairwayshave been inserted into the building.

The bag store is marked 'Uitsakstoor'.

This site is operated as part of a large modern complex.

BOTHAVILLE

BOTHAV-0105

View from North



BOTHAVILLE

BOTHAV-0106

View from South-East

New installation seen behind and to the north of the original.



BOTHAVILLE

BOTHAV-0107

View from East

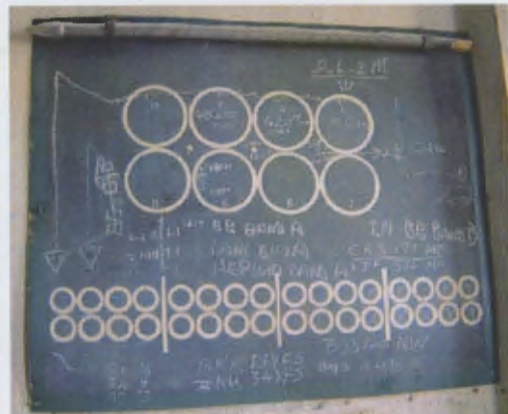


BOTHAVILLE

BOTHAV-0108

View from South

All large and small bins are identified on this chalkboard bin plan, but not the LOBs.



BOTHAVILLE

BOTHAV-0109

View from
Cleaning machine with electric motor attached.



BOTHAVILLE

BOTHAV-0110

View from South
LOCOMOTIVE: number 4505
Manufactured by The Hunslet Engine Co. Ltd, Leeds. 1953.
Owned and operated by Sen-Wes for on-site shunting.
[see BOTHAV-00109 for close up of makers' plate]



BOTHAVILLE

BOTHAV-0111

View from
LOCOMOTIVE: number 4505
Manufactured by The Hunslet Engine Co. Ltd, Leeds. 1953.
Owned and operated by Sen-Wes for on-site shunting.
[see BOTHAV-00110 for photograph of locomotive]



Appendix D

Current name	CLOCOLAN	Original name	CLOCOLAN	
Short reference	CLOCOL	Latitude	-28.911403	Longitude 27.567153
Type	Country	Size	5	Railside elevation North
Date of visit	28-11-2001	Group	A	Division 5
Site owner	not known			In use / derelict Derelict
Storage capacity (tons)	3,000	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins 80
Engine	removed			Engine # not known
Bag store	in situ	Office	removed	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

The siding under the LOBs is still in use for local shunting, though not by the elevator.

All engines and belt drives have been removed.

It is not clear who owns & manages the property now.

The derelict railway housing opposite has been robbed of all building materials.

The yellow flowers are wild, but the roses are growing on the wire fence of the railway housing.

CLOCOLAN

CLOCOL-0118

View from North-West



CLOCOLAN

CLOCOL-0121

View from North-East



CLOCOLAN

CLOCOL-0122

View from North-West



CLOCOLAN

CLOCOL-0123

View from East



Appendix D

Current name	COLIGNY	Original name	COLIGNY	
Short reference	COLIGN	Latitude	-26.329227	Longitude 26.320164
Type	Country	Size	4	Railside elevation West
Date of visit	21-11-2001	Group	D	Division 2
Site owner	NWK [Noord Wes Ko-op]			In use / derelict Derelict
Storage capacity (tons)	2,600	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 24
Main bin tonnage:	362	Interstitial bin tonnage	85	Height of main bins 70
Engine	in situ			Engine # not known
Bag store	in situ	Office	removed	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

The bagging out store has a chute on the south side to a scale.

Coligny is now a busy siding, though for general goods and not grain.

[THIS SITE EXTENSIVELY MEASURED]

Visually this elevator is much more a part of the town than many others. Often the elevators are visible from far out of town, but not from within the town itself;

COLIGNY

COLIGN-0126

View from South-East



Appendix D

COLIGNY

COLIGN-0127

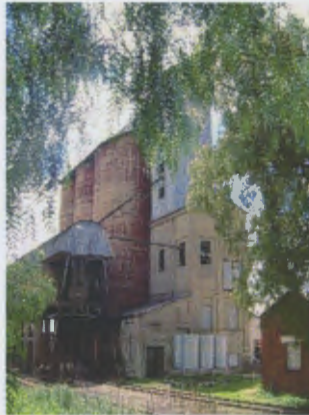
View from North



COLIGNY

COLIGN-0128

View from North-West



COLIGNY

COLIGN-0129

View from North

The scale is manufactured by "Richardson Scale Co, Passaic, NJ".

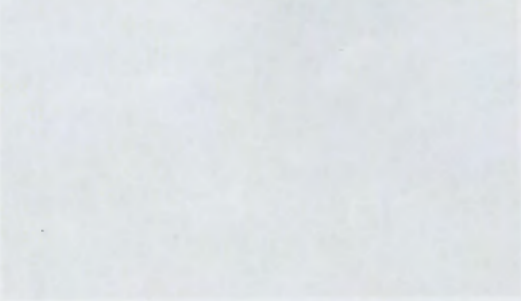
A bag lifter is set into a pit below floor level.



COLIGNY

COLIGN-0130

View from North-West



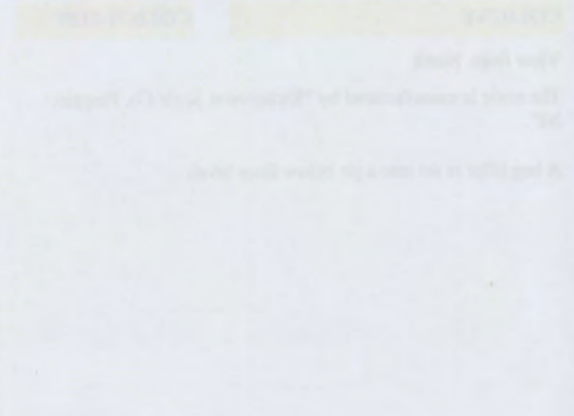
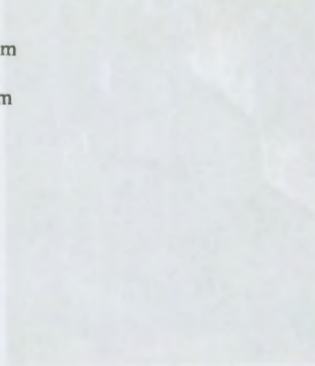
COLIGNY

COLIGN-0132

View from South-West

Diameter of flywheel = 2.28m

Diameter of beltdrive = 1.40m



Appendix D

Current name	DAVEL	Original name	DAVEL		
Short reference	DAVEL	Latitude	-26.440699	Longitude	29.671152
Type	Country	Size	2	Railside elevation	West
Date of visit	22-11-2001	Group	D	Division	7
Site owner	OTK [Oos Transvaal Ko-op]			In use / derelict	Derelict
Storage capacity (tons)	1,800	Working houses	1	Intake hoppers	2
Main bins:	6	Interstitial bins	2	Loading out bins	16
Main bin tonnage:	250	Interstitial bin tonnage	60	Height of main bins	50
Engine	partly broken up			Engine #	plates removed
Bag store	removed	Office	removed		

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

Most of the engine remains in situ.

Some belts and wheels have been removed.

Scales and elevators remain in situ.

Rails to siding have been lifted.

DAVEL

DAVEL-0026

View from South

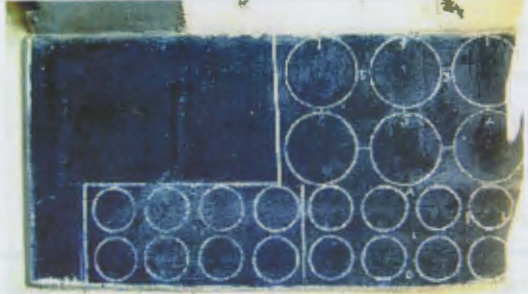


DAVEL

DAVEL-0027

View from West

Bins and LOB groups are identified.



DAVEL

DAVEL-0028

View from South-West

There is an additional access stair into the LOBs from the working house.



DAVEL

DAVEL-0030

View from North-West



Appendix D

Current name	FICKSBURG	Original name	FICKSBURG	
Short reference	FICKSB	Latitude	-28.877068	Longitude 27.883933
Type	Country	Size	4	Railside elevation North
Date of visit	27-11-2001	Group	A	Division 5
Site owner	Lesco Foods [Lesotho Milling]		In use / derelict	In use
Storage capacity (tons)	2,600	Working houses	I	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 24
Main bin tonnage:	362	Interstitial bin tonnage	85	Height of main bins 70
Engine	removed			Engine # not known
Bag store	demolished	Office	demolished	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

Spoke to Justice Qhobosheane who said the site is commercially sensitive and who doesn't want people inside.

To the west of the original elevator there is a new external elevator serving 5 new bins, while to the east there is a new rail loading facility for receiving and loading out.

A covered belt system runs under the LOBs.

FICKSBURG

FICKSB-0089

View from South



FICKSBURG

FICKSB-0090

View from North-West



FICKSBURG

FICKSB-0092

View from
A covered belt system runs under the LOBs.



Appendix D

Current name	FRANKFORT	Original name	FRANKFORT		
Short reference	FRANKF	Latitude	-27.283697	Longitude	28.494375
Type	Country	Size	8	Railside elevation	West
Date of visit	26-11-2001	Group	A	Division	5
Site owner	Vrystaat Ko-op Beperk			In use / derelict	In use
Storage capacity (tons)	5,800	Working houses	2	Intake hoppers	4
Main bins:	12	Interstitial bins	5	Loading out bins	32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins	80
Engine	being broken up at time of inspection			Engine #	47940 & 47941
Bag store	in situ - still has origi	Office	in situ		

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos SAR&H Magazine 1928-Dec p.2003

Manager: Paul Van Rensburg.

Current product stocked is sorghum and sunflower seed.

A reversible belt runs between the old elevator and the modern complex.

A new control board was installed about c.1977.

This site still belongs to the railways but is leased to VKB (according to Van Rensburg).

A date on the underside of one of the LOBs (the furthest north and closest to the railway in group H) bears the date "8/8/23".

The modern complex has a capacity of 112,000 tons and connects to the original working house.

The intake hoppers have been modernised.

FRANKFORT

FRANKF-0014

View from South

A reversible belt runs between the old elevator and the modern complex.



FRANKFORT

FRANKF-0015

View from West

All bins and LOB groups are identified on the chalkboard bin plan.

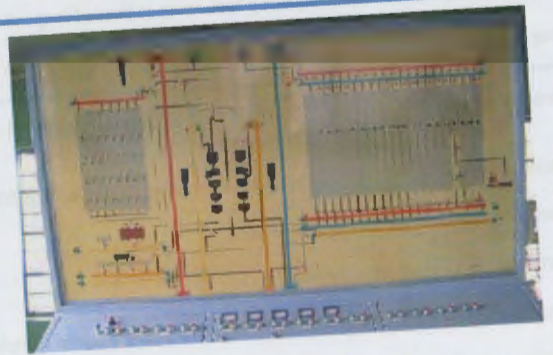


FRANKFORT

FRANKF-0016

View from South

The modern control board: the 17 bins of the original elevator are represented on the right of the diagram, while the 8 units on the left are the LOB groups.



FRANKFORT

FRANKF-0017

View from West

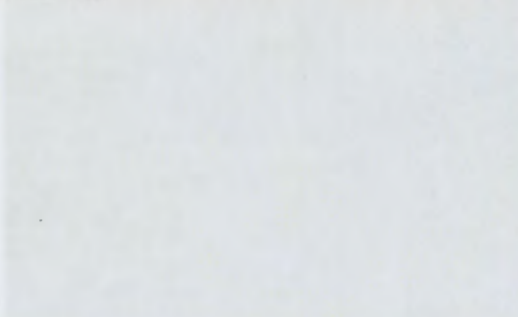
The flywheel of engine 47941 seen through an opening in the outside wall.



FRANKFORT

FRANKF-0018

View from West



FRANKFORT

FRANKF-0020

View from North-West



FRANKFORT

FRANKF-0022

View from North

The scale in the bag store is still in the original frame, sign written for "Gilbert Hamer & Co Ltd, Structural Engineers, Durban". [see FRANKF-0025].



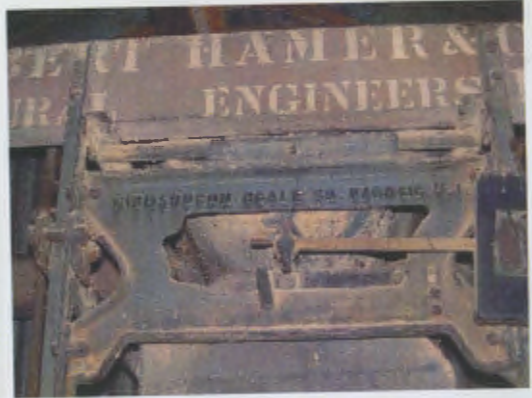
FRANKFORT

FRANKF-0025

View from North

The scale in the bag store is still in the original frame, sign written for "Gilbert Hamer & Co Ltd, Structural Engineers, Durban". [see FRANKF-0022].

The scale is manufactured by "Richardson Scale Co, Passaic, NJ".

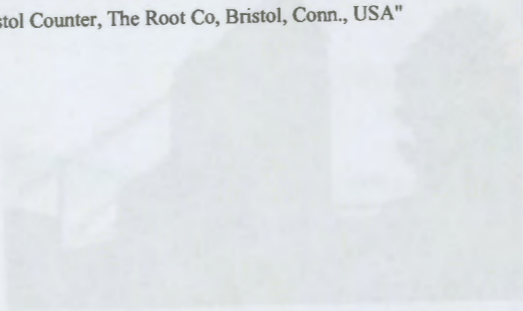


FRANKFORT

FRANKF-0029

View from North

"Bristol Counter, The Root Co, Bristol, Conn., USA"



Appendix D

Current name	HEILBRON	Original name	HEILBRON	
Short reference	HEILBR	Latitude	-27.285329	Longitude 27.967112
Type	Country	Size	8	Railside elevation East
Date of visit	26-11-2001	Group	B	Division 5
Site owner	SenWes [Sentrale Wes Ko-op]			In use / derelict In use
Storage capacity (tons)	5,800	Working houses	2	Intake hoppers 4
Main bins:	12	Interstitial bins	5	Loading out bins 32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins 80
Engine	removed			Engine # not known
Bag store	replaced by drying o	Office		in situ

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos none

A large modern silo complex adjacent to the west consists of 4 small and 10 large bins.

A loading belt installed to the north of the original working houses connects the modern complex to the railway.

All original belts and drives have been removed.

All machinery is now worked from individual electric motors.

New inspection manholes are currently being installed in the sides of the old bins.

LOBs are not in use as new loading spouts have been installed.

HEILBRON

HEILBR-0002

View from South-West

A drying oven has been erected on the concrete base of the old bag store.



HEILBRON

HEILBR-0004

View from South-East

A drying oven has been erected on the concrete base of the old bag store.



HEILBRON

HEILBR-0006

View from West

Station name sign (concrete).



HEILBRON

HEILBR-0009

View from

A new rail loading system has been installed to serve the modern complex.



Appendix D

Current name	HENNENMAN	Original name	VENTERSBURG ROAD	
Short reference	HENNMN	Latitude	-27.977104	Longitude 27.023069
Type	Country	Size	2	Railside elevation North
Date of visit	19-11-2001	Group	B	Division 5
Site owner	SenWes [Sentrale Wes Ko-op]		In use / derelict	Derelict
Storage capacity (tons)	1,800	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 16
Main bin tonnage:	250	Interstitial bin tonnage	60	Height of main bins 50
Engine	removed			Engine # not known
Bag store	in situ	Office	in situ	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

From the outside, this site looks largely unmodified, although the engine has been removed, and a dust cyclone has been added at the level of the cleaning floor.

No access to interior of structure

There are extensive structural cracks and the sites appears to be in poor structural condition.

HENNENMAN

HENNMN-0001

View from North-East



HENNENMAN

HENNMN-0006

View from West



Appendix D

HENNENMAN

HENNMN-0008

View from South-East

The corrugated iron shed in the foreground is the original standard bag store.



HENNENMAN

HENNMN-0010

View from South



Appendix D

Current name	KAALLAAGTE	Original name	KAALLAAGTE		
Short reference	KAALAA	Latitude	-28.128903	Longitude	27.996419
Type	Country	Size	2	Railside elevation	North
Date of visit	27-11-2001	Group	A	Division	5
Site owner	OTK [Sentraal Oos Ko-op]			In use / derelict	In use
Storage capacity (tons)	1,800	Working houses	2	Intake hoppers	2
Main bins:	6	Interstitial bins	2	Loading out bins	16
Main bin tonnage:	250	Interstitial bin tonnage	60	Height of main bins	50
Engine	removed			Engine #	not known
Bag store	replaced by drying o	Office		removed	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos none

Manager: Hannes Heymans (also manages OTK's 'Meads' silo to the east of Kaallaagte).

This site is integrated with a modern 13,500 ton complex.

Senekal Ko-op and Drakensberg Ko-op joined to form the Sentrale-Oos Ko-op in 1993, which in turn was bought by OTK (based in Bethal) in 1999.

Heymans thinks Bethlehem museum may have one of the R&H engines from here.

Drakensberg Ko-op used to own Bethlehem & Kaallaagte, while Senekal Ko-op only had the Senekal site.

Koos van der Berg has worked here in elevators since 1955; he started at Kroonstad, and worked there until 1960, including a 13 month period of compulsory military service; at that time he was a trainee, and then became a 2nd assistant; in 1960 he moved to Clocolan as a 1st assistant class 2, and then in 1961 went on to Ventersdorp, still at the same grade; in 1963 he was sent to Kaallaagte for the first time, missing out on the 1st assistant class 1 grade, and becoming a silo manager; he'd only been there 6 months when the railways sold the site to Drakensberg Ko-op, so he went on to Ficksburg as manager there; stayed at Ficksburg until 1987 to join Drakensberg Ko-op as manager at Eeram silo; when they became Sentrale-Oos Ko-op he went to Montevideo, and then finally returned to Kaallaagte in 1996; retired in Oct'99 when OTK took over.

The man lift is still operating here.

Scales have been removed, and all weighing is done on the weighbridge.

The old cleaning machines as all cleaning is now done in the modern complex.

The long elevator leg is still in use but the short leg (for weighing and cleaning) has been removed.

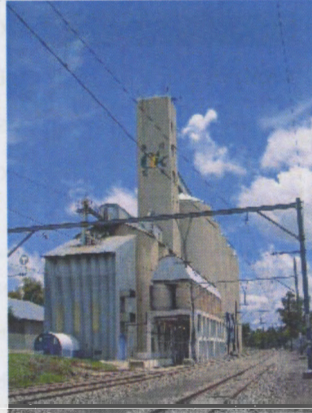
The original LOBs are no longer in use.

The original engine house is now an electricity sub-station.

KAALLAAGTE

KAALAA-0058

View from North-East

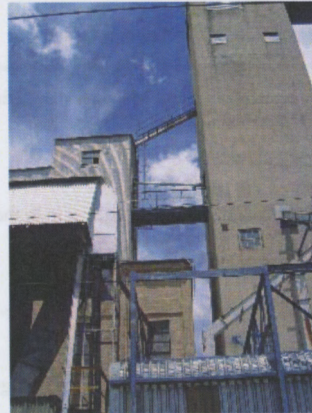


KAALLAAGTE

KAALAA-0059

View from North

Shows original working house to the left, and modern elevator to the right.



KAALLAAGTE

KAALAA-0061

View from

View from railside of new complex towards the LOBs of the old elevator.



KAALLAAGTE

KAALAA-0065

View from West

Looking horizontally from the new silos back towards the old at the new closed belt conveyors.

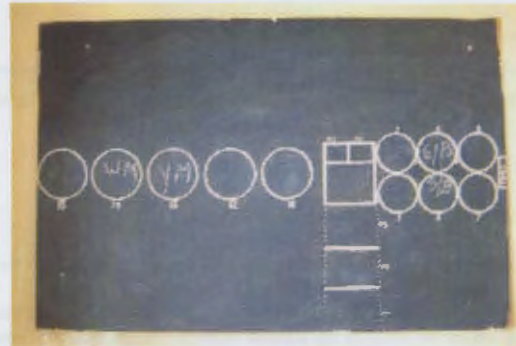


KAALLAAGTE

KAALAA-0066

View from [not applicable]

Bin plan showing 5 inline modern silos to the left, and 3 pairs of original silos to the right.

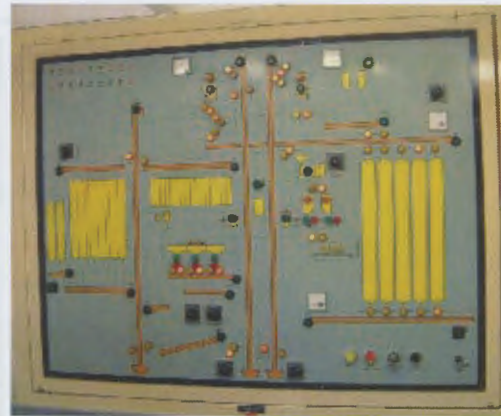


KAALLAAGTE

KAALAA-0067

View from [not applicable]

Modern control panel shows original silos to the left; the LOBs in the centre; and the modern silos to the right.



Appendix D

Current name	KINROSS	Original name	KINROSS	
Short reference	KINROS	Latitude	-26.421087	Longitude 29.092965
Type	Country	Size	6	Railside elevation East
Date of visit	22-11-2001	Group	D	Division 7
Site owner	OTK [Oos Transvaal Ko-op]	In use / derelict	In use	
Storage capacity (tons)	4,000	Working houses	2	Intake hoppers 4
Main bins:	8	Interstitial bins	3	Loading out bins 32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins 80
Engine	not known	Engine #	not known	
Bag store	removed	Office	removed	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos none

Site is closely integrated into modern complex.

Additional elevator at far end of headworks services two lines of five large concrete bins at right angles to the original structure.

ARCHIVAL: 27 Feb. 1922 letter from the local MP for Pretoria South, J van der Walt, writes that there is "a good deal of feeling" about the siting of the Kinross elevator. "Competition seems to be between the farmers and the Jewish interests". Final decision was to adhere to the original plan of putting the elevator on the south side of the station [National Archives, Pretoria: PM 1/2/51 PM13/6].

KINROSS

KINROS-0032

View from East



KINROSS

KINROS-0033

View from North



KINROSS

KINROS-0037

View from South-East



Appendix D

Current name	KLERKSDORP	Original name	KLERKSDORP		
Short reference	KLERKS	Latitude	-26.871517	Longitude	26.669347
Type	Country	Size	8	Railside elevation	East
Date of visit	20-11-2001	Group	C	Division	2
Site owner	SenWes [Sentrale Wes Ko-op]			In use / derelict	In use
Storage capacity (tons)	5,800	Working houses	2	Intake hoppers	4
Main bins:	12	Interstitial bins	5	Loading out bins	32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins	80
Engine	replaced with single electric motor			Engine #	not known
Bag store	in situ	Office	demolished		

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos SAR&H General Manager's Report 1924 - diagram #6

12 bins @ 450 tons and 5 bins @ 100 tons.

While photographing the elevator was transferring stock from Bin 7 into Bin 8.

KLERKSDORP

KLERKS-0046

View from South-East



KLERKSDORP

KLERKS-0047

View from South-West

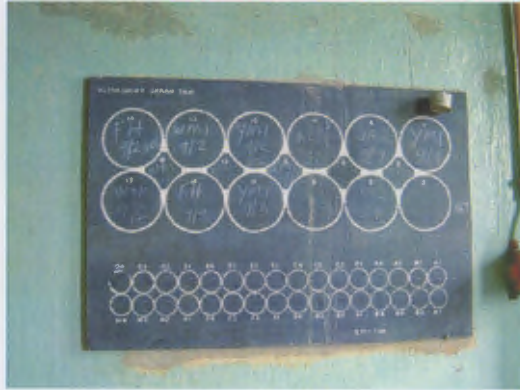


Appendix D

KLERKSDORP

KLERKS-0048

View from West
All bins clearly identified.



KLERKSDORP

KLERKS-0049

View from East
Although the original engine has gone, it has been replaced by a single electric motor. Therefore all the original belt and rope drives remain in use.



KLERKSDORP

KLERKS-0053

View from East
Belt drive 'B' in headworks.



KLERKSDORP

KLERKS-0057

View from North
Grain being transferred into Bin 8.



KLERKSDORP

KLERKS-0058

View from North
Grain being transferred into Bin 8.



KLERKSDORP

KLERKS-0059

View from
Rope drive for elevator [see KLERKS-0060 for detail].



KLERKSDORP

KLERKS-0060

View from
Rope drive for elevator [see KLERKS-0059 for context].



KLERKSDORP

KLERKS-0061

View from North
Steel stairways have been inserted in some elevators to replace the fixed vertical ladders.



KLERKSDORP

KLERKS-0062

View from
This is the type of ladder arrangement that has been supplemented here by the steel stairways.



KLERKSDORP

KLERKS-0065

View from
Grain being discharged from Bin 7 and running back towards
elevator boot.



KLERKSDORP

KLERKS-0066

View from
Grain being discharged from Bin 7 and running back towards
elevator boot.



KLERKSDORP

KLERKS-0068

View from North
View along basement tunnel as Bin 7 discharges.



Appendix D

KLERKSDORP

KLERKS-0072

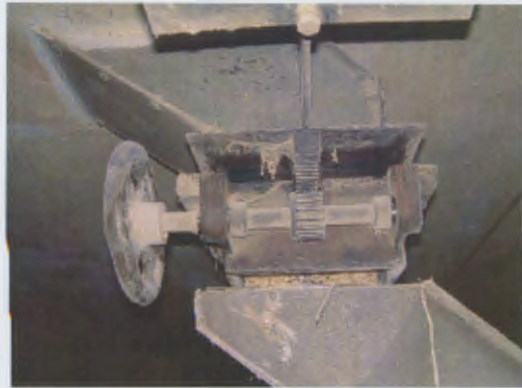
View from North
Grain being discharged from Bin 7.



KLERKSDORP

KLERKS-0073

View from East
Grain being discharged from Bin 7.



KLERKSDORP

KLERKS-0074

View from North
Grain being discharged from Bin 7.



Appendix D

KLERKSDORP

KLERKS-0079

View from West
Rail intake hopper tunnel.



KLERKSDORP

KLERKS-0084

View from North
Top of belt drive in engine house.



KLERKSDORP

KLERKS-0085

View from East
Bottom of belt drive in engine house.



Appendix D

Current name	KOSTER	Original name	KOSTER	
Short reference	KOSTER	Latitude	-25.873001	Longitude 26.903558
Type	Country	Size	2	Railside elevation East
Date of visit	23-11-2001	Group	D	Division 7
Site owner	NWK [Noord Wes Ko-op]	In use / derelict	In use	
Storage capacity (tons)	1,800	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 16
Main bin tonnage:	250	Interstitial bin tonnage	60	Height of main bins 50
Engine	in situ	Engine #	plates removed	
Bag store	in situ	Office	in situ	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

All 16 LOBs have been completely removed.

New arrangement of 4 rail loading spouts and shed enables only one truck to be loaded at a time.

The man lift is working.

A single electric motor drives the original belt and rope drive systems.

The original bag spout has been modified to load road transport.

Current stock is sunflower seeds.

KOSTER

KOSTER-0001

View from North-West



KOSTER

KOSTER-0004

View from South-West



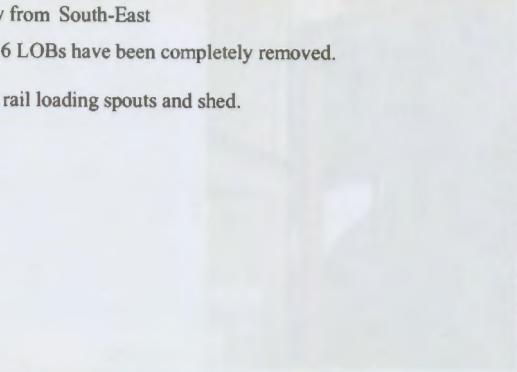
KOSTER

KOSTER-0005

View from South-East

All 16 LOBs have been completely removed.

New rail loading spouts and shed.



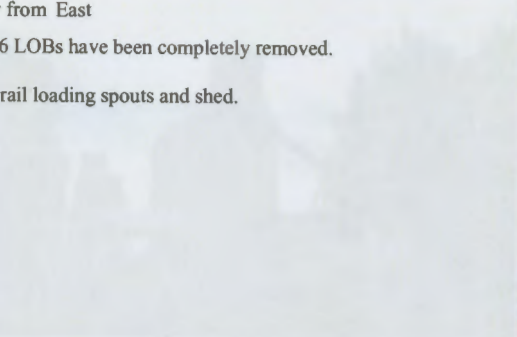
KOSTER

KOSTER-0006

View from East

All 16 LOBs have been completely removed.

New rail loading spouts and shed.



KOSTER

KOSTER-0008

View from North-East
All 16 LOBs have been completely removed.
New rail loading spouts and shed.



KOSTER

KOSTER-0009

View from North
All 16 LOBs have been completely removed.
New rail loading spouts and shed.



KOSTER

KOSTER-0010

View from North



Appendix D

Current name	KROONSTAD	Original name	KROONSTAD	
Short reference	KROONS	Latitude	-27.657237	Longitude 27.238073
Type	Country	Size	7	Railside elevation North
Date of visit	19-11-2001	Group	B	Division 5
Site owner	SenWes [Sentrale Wes Ko-op]		In use / derelict	Derelict
Storage capacity (tons)	4,800	Working houses	2	Intake hoppers 4
Main bins:	10	Interstitial bins	4	Loading out bins 32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins 80
Engine	removed	Engine #	not known	
Bag store	floor slab only	Office		

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos SAR&H General Manager's Report 1924 - diagram #6

Structural steelwork is marked "Cargo Fleet England".

Machinery is marked as supplied by "Spencer & Co., Melksham, England".

The two cleaning machines at the level of the red door were manufactured by "Avery".

All belt and chain drives in situ.

This site is in poor condition, but appears but structurally sound.

The entire site is accessible, and is not secured. Original vertical ladders provide access to upper levels and headworks etc.

KROONSTAD

KROONS-0012

View from East

Headworks belts have been removed.



KROONSTAD

KROONS-0013

View from North
Belt and chain mechanism to top of long leg.



KROONSTAD

KROONS-0016

View from East
Belt and chain mechanism at top of long leg.



KROONSTAD

KROONS-0018

View from West
One of the two cleaning machines - probably original -there is one in each of the working houses.



KROONSTAD

KROONS-0019

View from South-West

Base of garner as it enters scale - showing manual operating lever.



KROONSTAD

KROONS-0021

View from South

The steel work into working house 'B' is to carry electrical wiring into the elevator, indicating that the engine was removed and electricity installed before it fell into dis-use.



KROONSTAD

KROONS-0023

View from North-East

Bag store has been removed.



KROONSTAD

KROONS-0024

View from North-West

Under the LOBs there is a grid system for handling bags received from other sidings. These are emptied manually into the grid and railway intake hopper.



KROONSTAD

KROONS-0025

View from South-West

Dust cyclones are seen on each of the working houses.



Appendix D

Current name	LEEUDOORNS	Original name	LEEUDOORNS	
Short reference	LEEUDO	Latitude	-27.240012	Longitude 26.236227
Type	Country	Size	2	Railside elevation North
Date of visit	20-11-2001	Group	C	Division 2
Site owner	SWK [Suid Wes Ko-op]	In use / derelict	Derelict	
Storage capacity (tons) ⁸	1,800	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 16
Main bin tonnage:	250	Interstitial bin tonnage	60	Height of main bins 50
Engine	not known	Engine #	not known	
Bag store	in situ	Office	in situ	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

This looks like one of the least altered sites.

According to 'a neighbour' this site has been "abandoned since the railway days". The site has been sealed up by security fencing and is not accessible. The neighbour complains that it is an eyesore, and dangerous for children.

LEEUDOORNS

LEEUDO-0091

View from North



LEEUDOORNS

LEEUDO-0092

View from North-West



LEEUDDOORNS

LEEUDO-0093

View from South-West



LEEUDDOORNS

LEEUDO-0094

View from East



LEEUDDOORNS

LEEUDO-0095

View from South



Appendix D

Current name	LESLIE	Original name	LESLIE
Short reference	LESLIE	Latitude	-26.365208
		Longitude	28.930294
Type	Country	Size	4
		Railside elevation	North
Date of visit	22-11-2001	Group	D
		Division	7
Site owner	OTK [Oos Transvaal Ko-op]	In use / derelict	In use
Storage capacity (tons)	2,600	Working houses	1
		Intake hoppers	2
Main bins:	6	Interstitial bins	2
		Loading out bins	24
Main bin tonnage:	362	Interstitial bin tonnage	85
		Height of main bins	70
Engine	not known	Engine #	not known
Bag store	removed	Office	removed

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

Complex consists of original elevator to west of the site, with short elevator at east end of original headworks connecting to second phase single line of five bins, in turn connecting to third phase single line of eight bins, with eighth set at right angles to rest of line.

An extensive roller milling complex adjacent is largely derelict.

LESLIE

LESLIE-0041

View from North

Original elevator to right with connection to phase two



LESLIE

LESLIE-0044

View from West

Last bin in third phase visible at right angles to others, and old elevator closest to camera.



Appendix D

Current name	MAKOKSKRAAL	Original name	MAKOKSKRAAL	
Short reference	MAKOKS	Latitude	-26.343024	Longitude 26.625224
Type	Country	Size	4	Railside elevation North
Date of visit	21-11-2001	Group	D	Division 2
Site owner	SenWes [Sentrale Wes Ko-op]	In use / derelict	In use	
Storage capacity (tons)	2,600	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 24
Main bin tonnage:	362	Interstitial bin tonnage	85	Height of main bins 70
Engine	removed	Engine #	not known	
Bag store	removed	Office	removed	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

Manager: Morne Potgeiter.

The old elevator has been completely incorporated into a huge modern complex.

Site has a bulk store.

MAKOKSKRAAL

MAKOKS-0133

View from North-West

Shows how the old elevator has been completely incorporated into a huge modern complex [see MAKOKS-0134 for closer view].



MAKOKSKRAAL

MAKOKS-0134

View from North-West

Shows how the old elevator has been completely incorporated into a huge modern complex [see MAKOKS-0133 for wider view].



Appendix D

MAKOKSKRAAL

MAKOKS-0135

View from South-West

Shows how the old elevator has been completely incorporated into a huge modern complex.

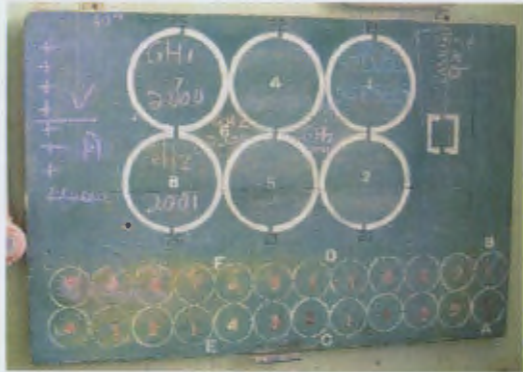


MAKOKSKRAAL

MAKOKS-0136

View from North

All bins and LOBs are identified.



MAKOKSKRAAL

MAKOKS-0137

View from East



Appendix D

MAKOKSKRAAL

MAKOKS-0141

View from North

Link to modern complex.



MAKOKSKRAAL

MAKOKS-0142

View from West

Original Avery scale.

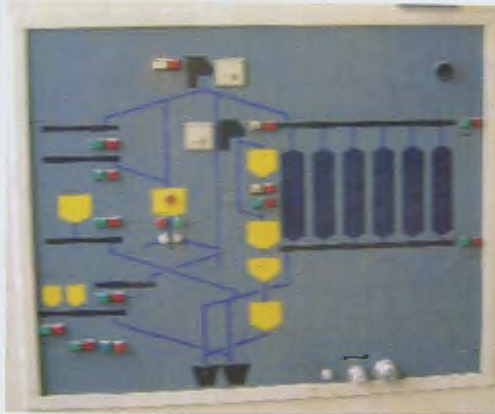


MAKOKSKRAAL

MAKOKS-0143

View from

Shows long and short legs, bins, intake hoppers etc.



MAKOKSKRAAL

MAKOKS-0147

View from
Conveyor to bulk store.



MAKOKSKRAAL

MAKOKS-0148

View from



MAKOKSKRAAL

MAKOKS-0149

View from East

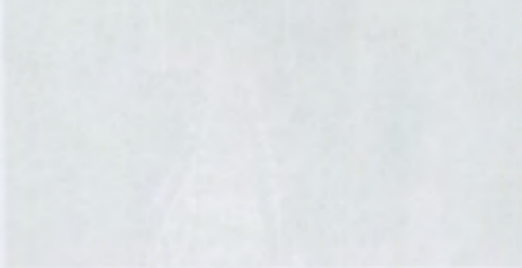


MAKOKSKRAAL

MAKOKS-0150

View from

A later cleaning machine as the original has been removed.

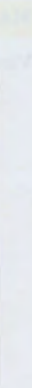


MAKOKSKRAAL

MAKOKS-0151

View from South-West

Conveyor to bulk store to north of working house, and link to modern complex running to south.

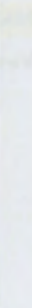
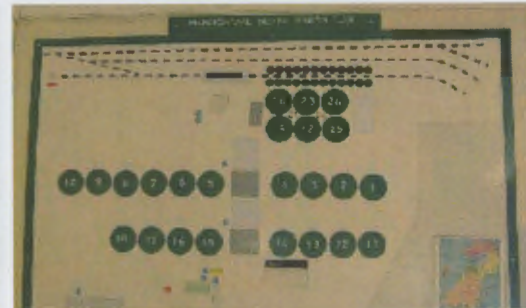


MAKOKSKRAAL

MAKOKS-0152

View from

Shows relationship between the old elevator (6 bins) and the new (18 bins).



MAKOKSKRAAL

MAKOKS-0153

View from North

Shows how the old elevator has been completely incorporated into a huge modern complex [see MAKOKS-0154 for closer view].



MAKOKSKRAAL

MAKOKS-0154

View from North

Shows how the old elevator has been completely incorporated into a huge modern complex [see MAKOKS-0153 for wider view].



Appendix D

Current name	MAQUASSI	Original name	MAQUASSI	
Short reference	MAQUAS	Latitude	-27.321643	Longitude 25.995259
Type	Country	Size	2	Railside elevation South
Date of visit	20-11-2001	Group	C	Division 2
Site owner	SWK [Suid Wes Ko-op]	In use / derelict	Derelict	
Storage capacity (tons)	1,800	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 16
Main bin tonnage:	250	Interstitial bin tonnage	60	Height of main bins 50
Engine	not known	Engine #	not known	
Bag store	removed	Office	removed	
Generic drawings	SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4			
Archival photos	none			

Abandoned and securely fenced against intruders.

MAQUASSI

MAQUAS-0097

View from North



MAQUASSI

MAQUAS-0099

View from West

The concrete base for the bag store remains, though the store itself has been removed.



Appendix D

MAQUASSI

MAQUAS-0101

View from South



MAQUASSI

MAQUAS-0102

View from South-East



MAQUASSI

MAQUAS-0104

View from North-East



Appendix D

Current name	MIDDELBURG	Original name	MIDDELBURG	
Short reference	MIDDEL	Latitude	-25.775083	Longitude 29.473681
Type	Country	Size	4	Railside elevation South
Date of visit	22-11-2001	Group	E	Division 8
Site owner	OTK [Oos Transvaal Ko-op]	In use / derelict	Derelict	
Storage capacity (tons)	2,600	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 24
Main bin tonnage:	362	Interstitial bin tonnage	85	Height of main bins 70
Engine	removed	Engine #	not known	
Bag store	removed	Office	removed	
Generic drawings	SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4			
Archival photos	none			
Contact:	Pieter Malan, OTK, PO Box 100, Bethal 2310.			

MIDDELBURG

MIDDEL-0010

View from West

The original spout into the (now removed) bag store is visible, as well as an additional bulk spout to the road intake side.



MIDDELBURG

MIDDEL-0011

View from South-West



Appendix D

MIDDELBURG

MIDDEL-0013

View from North



Appendix D

Current name	MOORES	Original name	MOORES	
Short reference	MOORES	Latitude	-33.15115	Longitude 18.66957
Type	Country	Size	4	Railside elevation North
Date of visit	15-04-2003	Group		Division
Site owner	none			In use / derelict Demolished
Storage capacity (tons)	2,600	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 24
Main bin tonnage:	362	Interstitial bin tonnage	85	Height of main bins 70
Engine	removed			Engine # not known
Bag store	removed	Office	removed	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

This site appears to have been totally cleared, but as it has been covered by made ground to a depth of perhaps 3m for use as a loading area for gravel, it seems likely that the bases of the working house and bins would have been left in situ before infilling started.

All country elevators EXCEPT Mooreesburg transferred to Mealie Industry Control Board from 1 May 1963 [SAR&H Annual Report 1963].

Willie de Jager was still being sent there until 1970 when Middelburg Co-op built it's own elevator and the old railway elevator was demolished.

Appendix D

Current name	PIENAARS RIVER		Original name	PIENAARS RIVER	
Short reference	PIENAA	Latitude	-25.208373	Longitude	28.294755
Type	Country	Size	3	Railside elevation	West
Date of visit	22-11-2001	Group	F	Division	8
Site owner	M Foods, Nelstroom			In use / derelict	In use
Storage capacity (tons)	2,200	Working houses	1	Intake hoppers	2
Main bins:	6	Interstitial bins	2	Loading out bins	24
Main bin tonnage:	307	Interstitial bin tonnage	72	Height of main bins	60
Engine	in situ			Engine #	47926
Bag store	in situ	Office			

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

Owner: Willem Reyneke, M Foods, Nelstroom 015.491.2115 or 082.805.1546

All belt and rope drives have been removed and each unit now has its own electric motor

The man lift is operational.

To the south of the original elevator are an additional 8 corrugated steel silos of 900 ton capacity each.

PIENAARS RIVER

PIENAA-0002

View from South-West



PIENAARS RIVER

PIENAA-0005

View from South

Conveyor belt between old elevator and newer steel bins.



PIENAARS RIVER

PIENAA-0007

View from North



PIENAARS RIVER

PIENAA-0008

View from North-West

An additional bulk spout has been installed at the south end of the LOBs.



Appendix D

Current name	POTCHEFSTROOM	Original name	POTCHEFSTROOM	
Short reference	POTCHE	Latitude	-26.71596	Longitude 27.08771
Type	Country	Size	4	Railside elevation North
Date of visit	21-11-2001	Group	C	Division 7
Site owner	SenWes [Sentrale Wes Ko-op]		In use / derelict	- occasional
Storage capacity (tons)	2,600	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 24
Main bin tonnage:	362	Interstitial bin tonnage	85	Height of main bins 70
Engine	Ruston & Hornsby - in situ		Engine #	47646
Bag store	in situ	Office	in situ	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos SAR&H General Manager's Report 1924 - diagram #6

A new, smaller diesel engine installed in place of the original runs the old belt and rope drive systems.

POTCHEFSTROOM

POTCHE-0015

View from East



POTCHEFSTROOM

POTCHE-0017

View from North

Ruston & Hornsby engine 47646.



POTCHEFSTROOM

POTCHE-0018

View from North-West



POTCHEFSTROOM

POTCHE-0019

View from North

All bins and LOBs identified.



POTCHEFSTROOM

POTCHE-0020

View from West



POTCHEFSTROOM

POTCHE-0021

View from South

An additional loading spout has been installed to serve the road shed.



POTCHEFSTROOM

POTCHE-0022

View from

A date has been inscribed in (wet?) concrete "1-V-26" on the underside of one of the LOBs.



POTCHEFSTROOM

POTCHE-0023

View from

An external stairway has been added from the cleaning floor.

There is a diesel fuel tank at the west end of the building.

An electric power gantry has been added to the south side of the working house.

The LOBs no longer in use and there are new arrangements for rail loading.



POTCHEFSTROOM

POTCHE-0021

View from South

An additional loading spout has been installed to serve the road shed.



POTCHEFSTROOM

POTCHE-0022

View from

A date has been inscribed in (wet?) concrete "1-V-26" on the underside of one of the LOBs.



POTCHEFSTROOM

POTCHE-0023

View from

An external stairway has been added from the cleaning floor.

There is a diesel fuel tank at the west end of the building.

An electric power gantry has been added to the south side of the working house.

The LOBs no longer in use and there are new arrangements for rail loading.

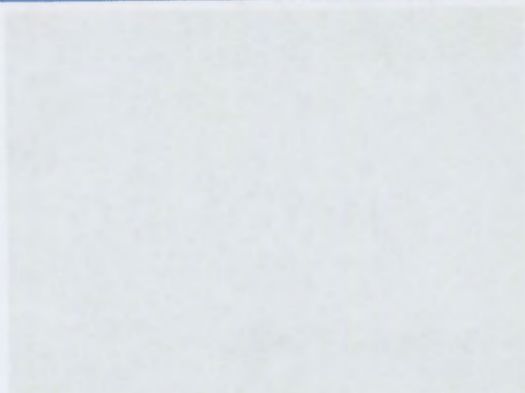


POTCHEFSTROOM

POTCHE-0025

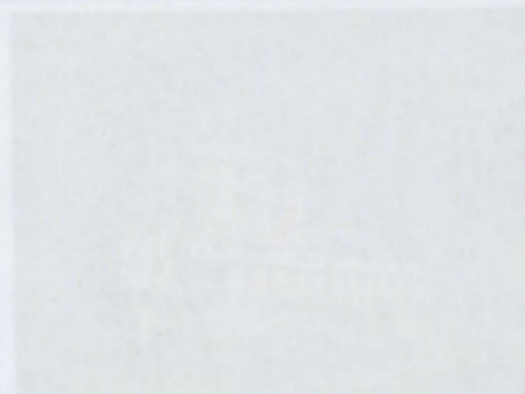
View from

The adjacent roller mill site, built for S.A. Milling in 1936, is now operated as a brewery.



DESCRIPTION **UNIQUE FEATURES**

with an "S" shaped structure (the way of building) and made of galvanized iron to be waterproof



DESCRIPTION **UNIQUE FEATURES**

with a special structure (the way of building) and made of galvanized iron to be waterproof

with a special structure (the way of building) and made of galvanized iron to be waterproof

with a special structure (the way of building) and made of galvanized iron to be waterproof

Appendix D

Current name	REITZ	Original name	REITZ		
Short reference	REITZ	Latitude	-27.803155	Longitude	28.426492
Type	Country	Size	8	Railside elevation	East
Date of visit	27-11-2001	Group	A	Division	5
Site owner	Vrystaat Ko-op Beperk			In use / derelict	In use
Storage capacity (tons)	5,800	Working houses	2	Intake hoppers	4
Main bins:	12	Interstitial bins	5	Loading out bins	32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins	80
Engine	'B' largely intact; 'A' largely dismantled			Engine #	'B' 47936; 'A' plate
Bag store	in situ	Office		in situ	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos none

There is an adjacent modern silo complex.

Petrus Mofokeng (Sotho) has worked there for 25 years.

All belts and elevators use individual electric motors though the 'B' belts are still largely in situ.

REITZ

REITZ-0038

View from East

All bins and LOB groups identified.

This bin plan is a different style to most others in that it uses a rectangular block plan instead of representing the round bins with circles.



Appendix D

REITZ

REITZ-0039

View from South
Headworks.



REITZ

REITZ-0040

View from North
Headworks.



REITZ

REITZ-0041

View from East
Modern cleaning machine on upper level.



Appendix D

REITZ

REITZ-0042

View from North

Modern cleaning machine on upper level [see REITZ-0043 for closer view].



REITZ

REITZ-0044

View from South

Wooden top of scale garner, and elevator legs.



REITZ

REITZ-0045

View from South



Appendix D

REITZ

REITZ-0046

View from West
Station name sign (concrete).



REITZ

REITZ-0047

View from South-East



REITZ

REITZ-0048

View from East
Railway water tank.



REITZ

REITZ-0049

View from East

Addition of new control cabin adjoining north side of elevator 'A'.



REITZ

REITZ-0050

View from North-East

Addition of new control cabin adjoining north side of elevator 'A'.



Appendix D

Current name	SENEKAL	Original name	SENEKAL		
Short reference	SENEKA	Latitude	-28.314995	Longitude	27.619045
Type	Country	Size	6	Railside elevation	East
Date of visit	27-11-2001	Group	A	Division	5
Site owner	OTK [Sentraal Oos Ko-op]			In use / derelict	In use
Storage capacity (tons)	4,000	Working houses	2	Intake hoppers	4
Main bins:	8	Interstitial bins	3	Loading out bins	32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins	80
Engine	removed			Engine #	not known
Bag store	removed	Office	removed		

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos none

All engines and belts have been removed.

There is a new intake shed and receiving hoppers.

There is a new complex in use on the other side of the railway.

A new shed extends the original bagging shed.

SENEKAL

SENEKA-0080

View from



Appendix D

SENEKAL

SENEKA-0081

View from South

A new shed extends original bagging shed.



SENEKAL

SENEKA-0083

View from South-East



Appendix D

STANDERTON

STANDE-0016

View from South-West



STANDERTON

STANDE-0017

View from South-East



Appendix D

Current name	VAL	Original name	VAL	
Short reference	VAL	Latitude	-26.7954	Longitude 28.92952
Type	Country	Size	2	Railside elevation North
Date of visit	24-11-2001	Group	D	Division 7
Site owner	OTK [Oos Transvaal Ko-op]		In use / derelict	Derelict
Storage capacity (tons)	1,800	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 16
Main bin tonnage:	250	Interstitial bin tonnage	60	Height of main bins 50
Engine	in situ			Engine # plates removed
Bag store	in situ	Office	removed	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

Assistant manager: Ian Porter.

No access granted to interior of site.

Adjacent large modern complex to south consists of 9 bins, 3 elevators in a working house, then another 9 bins, and 4 intake hoppers.

VAL

VAL-0018

View from



Appendix D

VAL

VAL-0019

View from



VAL

VAL-0020

View from



VAL

VAL-0021

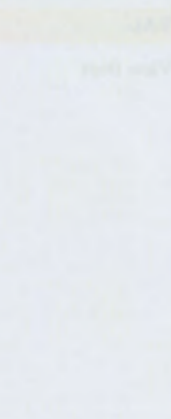
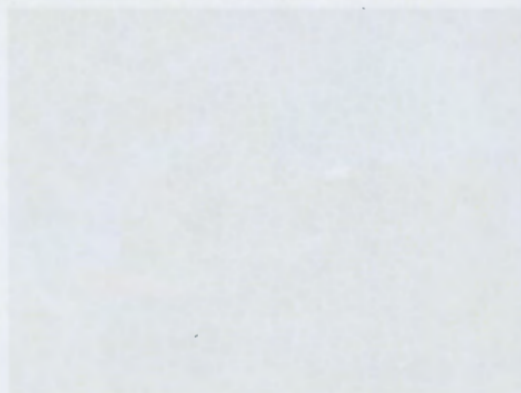
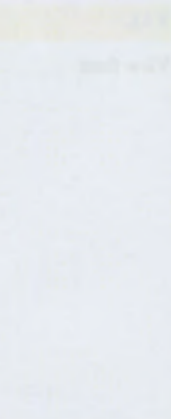
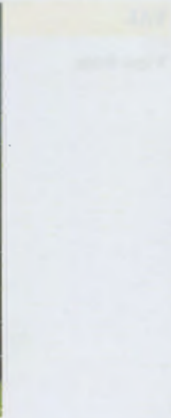
View from



VAL

VAL-0022

View from



Appendix D

Current name	VENTERSDORP	Original name	VENTERSDORP	
Short reference	VENTDP	Latitude	-26.333432	Longitude 26.831785
Type	Country	Size	5	Railside elevation South
Date of visit	21-11-2001	Group	D	Division 2
Site owner	SenWes [Sentrale Wes Ko-op]		In use / derelict - occasional	
Storage capacity (tons)	3,000	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins 80
Engine	removed - engine house now contains dust cyclone		Engine #	not known
Bag store	in situ	Office	in situ	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos SAR&H Magazine - 1924 p.493 - old Co-op grain store & new elevator

This elevator is used only occasionally, in association with adjacent huge modern complex which covers 2.5 hectares and has a capacity of 173,000 tons

Northernmost of the modern bins is 40m high, has a diameter of 18m and contains 8,000 tons.

VENTERSDORP

VENTDP-0001

View from

Site plan (south to top) with reference to the old elevator as the 'B' silos.



VENTERSDORP

VENTDP-0002

View from North

Spout from headworks to bag store.



Appendix D

VENTERSDORP

VENTDP-0003

View from West

Electric motor in engine house occupies space where diesel fuel tank used to be.



VENTERSDORP

VENTDP-0004

View from

Belts and rope drives all still in use running off single electric motor.



VENTERSDORP

VENTDP-0005

View from North

Bin plan.



Appendix D

VENTERSDORP

VENTDP-0007

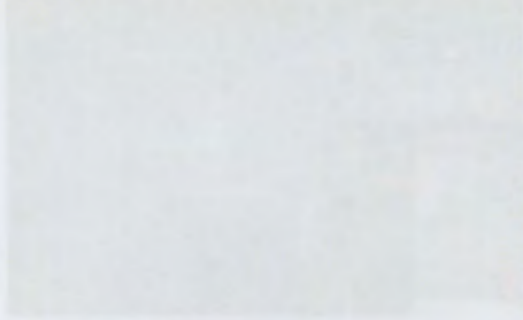
View from



VENTERSDORP

VENTDP-0008

View from

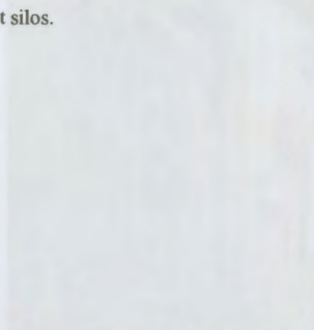


VENTERSDORP

VENTDP-0009

View from

'Bosun's chair' used to inspect silos.



VENTERSDORP

VENTDP-0010

View from North-East



VENTERSDORP

VENTDP-0011

View from
Modified signalling system for headworks.



VENTERSDORP

VENTDP-0012

View from North
Petrus Moewera operating the man lift.



VENTERSDORP

VENTDP-0014

View from North



VENTERSDORP

VENTDP-0155

View from South

The old silo (at the far left of the picture) looks tiny against the modern complex to the west.



VENTERSDORP

VENTDP-0156

View from North-East



VENTERSDORP

VENTDP-0157

View from North-East



Appendix D

Current name	VERMAAS	Original name	VERMAAS		
Short reference	VERMAA	Latitude	-26.532917	Longitude	25.993728
Type	Country	Size	5	Railside elevation	North
Date of visit	21-11-2001	Group	D	Division	2
Site owner	NWK [Noord Wes Ko-op]			In use / derelict	Derelict
Storage capacity (tons)	3,000	Working houses	1	Intake hoppers	2
Main bins:	6	Interstitial bins	2	Loading out bins	32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins	80
Engine	in situ			Engine #	not known
Bag store	in situ	Office	in situ		

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

There is modern installation adjacent but it is not integrated with the old elevator.

No access to interior.

VERMAAS

VERMAA-0118

View from South-East



VERMAAS

VERMAA-0119

View from North-East



VERMAAS

VERMAA-0120

View from North



VERMAAS

VERMAA-0123

View from North

Engine flywheel - photographed through window - no access.



VERMAAS

VERMAA-0124

View from South-West



Appendix D

Current name	VILJOENSKROON	Original name	RENDEZVOUS		
Short reference	RENDEZ	Latitude	-27.204839	Longitude	26.915910
Type	Country	Size	6	Railside elevation	South
Date of visit	19-11-2001	Group	B	Division	5
Site owner	SenWes [Sentrale Wes Ko-op]			In use / derelict	In use
Storage capacity (tons)	4,000	Working houses	2	Intake hoppers	4
Main bins:	8	Interstitial bins	3	Loading out bins	32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins	80
Engine	removed - all line shafting removed			Engine #	not known
Bag store	replaced by drying o Office				

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #2 & #4 / SAR&H General Manager's Report 1923 - p.18

Archival photos none

LOADING OUT BINS (LOBs) work in linear groups of four to fill a single railway wagon; the track closest to elevator receives the empty wagons for filling, which are then moved to outside track as train is made up for despatch; 'long' legs go to the top level to serve the bins; 'short' legs only go to level 3 to serve the cleaning machines; cleaning machines - served by short leg(s) - dust vented to air - 'screenings' returned by chute to farmer delivering grain - he would use them for animal feed etc.; there is a by-pass route to the scales that doesn't go through the cleaning m/cs.

ROUTE IN: receiving hoppers -> short leg -> cleaner / bypass -> scale -> long leg -> head works -> bins.

ROUTE OUT: transfer belt from below bins -> short leg -> cleaner / bypass -> scale -> long leg -> loading out bins.

SHORT LEG: capacity regulated manually by large yellow horizontal intake wheel from intake hopper.

LONG LEG: capacity regulated manually by capacity slide lever with indicator flag.

LOADING OUT BINS: line closest to working house is served by B and furthest from working house by A. Loading capacity is 40 tons (equivalent to one rail truck) per hour - therefore eight trucks per day.

LOB 'A' is bins 1-4 / 5-8 / 9-12 / 13-16 and LOB 'B' is bins 1-4 / 5-8 / 9-12 / 13-16.

On the other side of the railway is a BULK STORE, currently in use for peanuts, built 1946/47.

OUT: Scraper machines move product to hopper belt leading under rails to working house. This is the original rail intake hopper line extended.

IN: Intake to bulk store is done by using the elevators in the working house -> overhead gantry across railway track -> overhead gantry running below ridge line of store at eaves level.

Store is constructed of steel sheeting fixed to steel stanchions.

NOTE: This is a 'Bellman Hangar' erected for 1946/47 season.

This site is still in use, and though modified most of the changes are on the outside in the way it connects to the newer bulk store.

Very bad spalling of concrete under the LOBs.

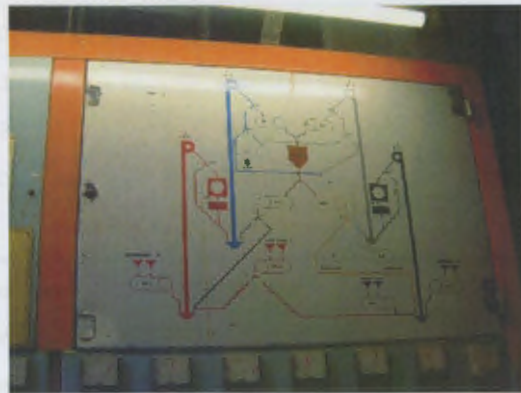
VILJOENSKROON

RENDEZ-0026

View from East

Schematic diagram of elevator operation on scale floor.

Red and black are the 'short leg' elevators served by road and rail intake hoppers 'A' and 'B'; grain is then cleaned and weighed, or bypassed to the blue and grey 'long legs' which lift the grain to the headworks conveyors serving the bins; on discharge the same process passes the grain into the LOBS (loading out bins) for despatch by rail.



VILJOENSKROON

RENDEZ-0028

View from North

Chalk board bin plan indicating the 8 main bins, the 3 smaller inter-stital bins, and 32 loading out bins.



VILJOENSKROON

RENDEZ-0029

View from South

Yellow horizontal handwheel bearing manufacturer's mark "Spencer & Co., Melksham, England" controls one of the road intake hoppers.



VILJOENSKROON

RENDEZ-0030

View from North
Cleaning machine 'A'

The screenings were delivered via this spout back to the road intake shed to allow the farmer to take away his own screenings for animal feed etc.



VILJOENSKROON

RENDEZ-0031

View from North
Cleaning machine 'A'

A spout arrangement allowed grain to be fed into the cleaning machine, or to bypass it as required.



VILJOENSKROON

RENDEZ-0033

View from North

The man lift works on a counterweight system and can carry one person only. The operator pulls up or down on a fixed rope, keeping a foot brake depressed to allow travel. Thus, if he takes his foot off the brake, the lift stops working.

Many of these lifts are no longer in use as they are considered dangerous.



VILJOENSKROON

RENDEZ-0034

View from East
Belts from 'A' and 'B'.



VILJOENSKROON

RENDEZ-0035

View from North
Detail of tripper serving the bins [see RENDEZ-0036 for context] show manufacturer's name @Spencer & Co. Ltd Engineers, Melksham".



VILJOENSKROON

RENDEZ-0036

View from North
The tripper on headworks belt serving bins [see RENDEZ-0035 for detail of one of the wheels].



VILJOENSKROON

RENDEZ-0037

View from East

LONG LEG: operating capacity regulated manually on scale floor by capacity slide lever with indicator flag.



VILJOENSKROON

RENDEZ-0038

View from East

Gantry above the LOBs.



VILJOENSKROON

RENDEZ-0041

View from East

Gantry above the LOBs.

Note that there is only one belt, and that both working houses serve the same one. 'A' serves the line of bins closest to the railway (south - left in this picture), and 'B' serves the one to the north (right).



VILJOENSKROON

RENDEZ-0042

View from South-West

A drying oven stands in place of the bag store.

An overhead belt crosses railway (to south) to a new bulk store.



VILJOENSKROON

RENDEZ-0044

View from West

The drying oven in place of the original bag store.



Appendix D

Current name	VREDE	Original name	VREDE		
Short reference	VREDE	Latitude	-27.433887	Longitude	29.159141
Type	Country	Size	5	Railside elevation	South
Date of visit	26-11-2001	Group	D	Division	7
Site owner	Vrystaat Ko-op Beperk			<i>In use / derelict</i>	<i>In use</i>
Storage capacity (tons)	3,000	Working houses	1	Intake hoppers	2
Main bins:	6	Interstitial bins	2	Loading out bins	32
Main bin tonnage:	417	Interstitial bin tonnage	95	Height of main bins	80
Engine	in situ			Engine #	not known
Bag store	removed	Office	removed		

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

Engine plates are in situ but can't be read from outside building.

Three steel bins have been added to the west end of the original complex, and the original headworks extended to accommodate the additional bins.

No access to interior.

VREDE

VREDE-0030

View from North-East

New road loading shed has been added to the north of the original road intake shed.



VREDE

VREDE-0031

View from North-West



VREDE

VREDE-0032

View from South-West



VREDE

VREDE-0033

View from South-East

A new brick office has been built on the site of the original office.



Appendix D

Current name	WESTMINSTER	Original name	WESTMINSTER	
Short reference	WESTMI	Latitude	-29.166379	Longitude 27.150351
Type	Country	Size	2	Railside elevation South
Date of visit	28-11-2001	Group	A	Division 5
Site owner	OVK [Oos Vrystat Ko-op]			In use / derelict In use
Storage capacity (tons)	1,800	Working houses	1	Intake hoppers 2
Main bins:	6	Interstitial bins	2	Loading out bins 16
Main bin tonnage:	250	Interstitial bin tonnage	60	Height of main bins 50
Engine	removed			Engine # not known
Bag store	demolished	Office	in situ	

Generic drawings SAR&H General Manager's Bulletin 1923 - No.60 - diagrams #3 & #4

Archival photos none

Manager: Johan de Klerk.

The underside of LOB 'C1' is inscribed with the date 26/9/23

4 new bins have been added to the west of the original elevator.

The headworks have been extended up and across to the new (taller) elevator.

The basement tunnel has been extended underneath the new bins.

A new control board has been supplied by "Electrical Apparatus Co. (South Africa) (Pty) Ltd and Spencer (Melksham) (Pty) Ltd".

On the scale floor the original garner serves a new scale, but the original bin hopper remains below the scale.

A new cleaning machine has replaced the original.

The headworks of the old section have new roof cladding

The intake hopper has been modernised.

The old bag scale is now used outside next to the drying oven.

This is one of the two elevators that Willie de Jager worked at.

WESTMINSTER

WESTMI-0128

View from South



WESTMINSTER

WESTMI-0130

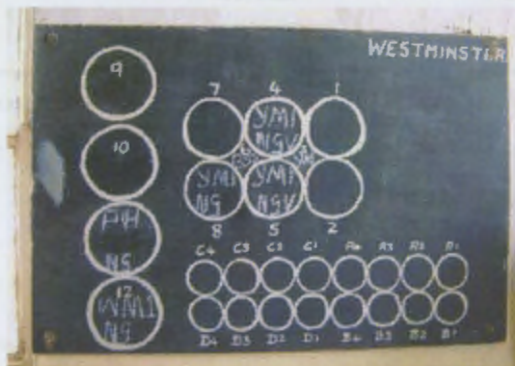
View from South
Bin plan.



WESTMINSTER

WESTMI-0131

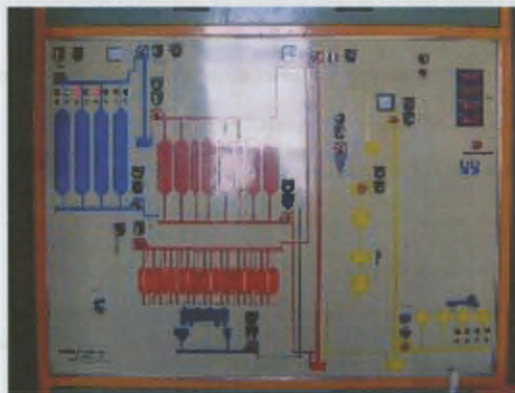
View from South
Alternative bin plan to include LOBs and with different orientation for new bins.



WESTMINSTER

WESTMI-0132

View from East
System diagram:
yellow is the intake system and short leg to scales and cleaners;
red is the long leg to the original bins;
blue is the additional elevator and four new bins.



Appendix D

WESTMINSTER

WESTMI-0134

View from West

Modern headworks looking back towards original section.



WESTMINSTER

WESTMI-0135

View from East

Headworks belt showing trap in floor which allows grain to be directed to the new elevator serving the new bins.



WESTMINSTER

WESTMI-0136

View from East

The extended tunnel underneath the bins.



WESTMINSTER

WESTMI-0138

View from South-East



WESTMINSTER

WESTMI-0139

View from South-West



WESTMINSTER

WESTMI-0141

View from
Old bag scale now used outside next to drying oven.

